



AIT
Asian Institute of Technology



ANNUAL REPORT ON RESEARCH 2008



PREFACE

In the present day dynamic world, the importance of trans-disciplinary research in which the summation of knowledge gained by joint collaborative work between scientists of different background exceeds independent work, cannot be under estimated. AIT mission is to serve the region and beyond as a center of higher education, research and outreach activities. It needs to do this by serving as a common platform for private industry, government and public institutions, local communities and other stake holders. The overall purpose is to work towards poverty alleviation and a better quality of life for the population in the region.

With the aim of creating a thematic knowledge area and consolidate the large amount of knowledge and experience we have in the region, considerable amount of debate and discussion has been held in the institute. Based on our strengths and critical mass of faculty we have decided to create a center of excellence in the thematic knowledge area of, "Sustainable Development in the context of climate change". The sub-areas under this umbrella area has been agreed to be Vulnerability and Risk Reduction, Adaptation and Livelihood Strategies, Urban and Rural Sustainability, Water and Food Security, Energy Security and Low Carbon Society, Cleaner Production and Waste Refining. In order to facilitate and encourage the formation of interdisciplinary groups some seed support from internal funds (about one million baht each) has been provided for some projects recommended by external and internal experts.

In order to highlight the activities and experience we have in this area and to launch a Centre of Excellence in "Sustainable Development in the context of climate change" a conference will be held on the 24th and 25th of September 2009 with stakeholders, partners and collaborators. With the identification of the sub-areas and to further strengthen their activities some post-doctoral candidates will be chosen for each of the sub-areas.

It is considered important to encourage the development of original innovative ideas and help actualize these ideas into real world application or business. In this context an IDEA (Innovation Development to Entrepreneurship Actualized) fund was set up. IDEA 2009 was open to all students (especially the graduating batch), faculty and staff who had done innovative research which with some planning can develop into successful business opportunities or ventures. We were looking for original ideas such as new technology, product, service, software, etc. that can have high impact, value and potential for entrepreneurship. Ideas from research done outside AIT may also be considered in future calls.

The idea for establishment of a specialized and possibly an autonomous entity for providing professional consulting services have been under the consideration for some time now. Internal discussions and a brain storming meetings with different stakeholders have been held in the past year. In order to facilitate formal decisions as regards its set up an external consultant was requested to provide some inputs.

Looking into the future it is felt that AIT needs to urgently strengthen our online distance and e-learning activities. This became especially urgent with the request made by different stakeholders. For example, with support from some developmental agencies, the Ethiopian government is planning higher education for the faculty members in their universities. In the rapidly changing world this type of education and skill development opportunities will be very much in demand.

In order to further facilitate project preparation, infrastructure for project call search, proposal writing and support for budget preparation for AIT faculty and staff has been created. One successful example is the approval of the Erasmus Mundus External Cooperation Window (EMECW) mobility project. The mobility project grant involved 11 partner institutes of higher learning including five Asian partners:

Working pro-actively AIT is in various stages of discussion as regards possible projects with IFAD, the Finnish Development Agency, the Rockefeller Foundation etc. Overall during the period January to December of 2008 there were 466 sponsored and contracted projects which were conducted by the faculty and staff from within the Fields of Study (FoS) of the three schools, School of Engineering & Technology (SET), School of Environment, Resources & Development (SERD), and School of Management (SOM), as well as in AIT Extension, Internet Education & Research Laboratory (IntERLab), and Institute wide projects. The total publications for the same period stood at 692 from across AIT. The breakdown of these activities is indicated in this report.

With greater focus of research, working as interdisciplinary teams, support and incentive for faculty and scientific staff in the institute, greater networking with collaborating partners, realization of the importance for entrepreneurship and innovation, etc., it is hoped that the institute will go from strength to strength.

Professor Sudip Kumar Rakshit
Vice President for Research
July 2009

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Chapter 1: INTRODUCTION

1.1 AIT Mission

The Asian Institute of Technology promotes technological change and sustainable development in the Asian-Pacific region through higher education, research and outreach. Established in Bangkok in 1959, AIT has become a leading regional postgraduate institution and is actively working with public and private sector partners throughout the region and with some of the top universities in the world.

Recognized for its multinational, multi-cultural ethos, the Institute operates as a self-contained international community at its campus located 40 km (25 miles) north of Bangkok, Thailand.

Besides the usual laboratories and academic buildings, the main campus includes housing, sports, and medical facilities, a conference center, and a library with over 230,000 volumes and 830 print and on-line periodicals. All serve to fulfill **the AIT mission** -

to develop highly qualified and committed professionals who play leading roles in the region's sustainable development and its integration into the global economy.

1.2 AIT Vision

To become a leading and unique regional multicultural institution of higher learning, offering state-of-the-art education, research and training in technology, management and societal development.

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With this clear, timeless vision, the multi-skilled team of students, faculty and staff at AIT are set to continuously strengthen the institution by becoming

- A trailblazer in advanced education in the region, with leadership in IT and new types of multidisciplinary programs.
- An exemplary institution, with an emphasis on academic quality in terms of courses and other aspects of the operation.
- A leader in professional development programs.
- A hub for the implementation of regional/transnational research projects, and a research facility for academic professionals. The hub will network with other academic and research institutions in the region and the world.
- A model international citizen.
- A collaborator and partner of national postgraduate institutions.
- A financially viable, self-sustaining institution, able to draw support from donors, the private sector and individuals, with good governance and strong leadership.
- A strong partner to its alumni, who are principal stakeholders through the AIT Alumni Association (AITAA).

Chapter 2: SCHOOL OF ENGINEERING AND TECHNOLOGY

2.1 Mission

School of Engineering and Technology (SET) is the synergistic integration in November 2005 of the two former Schools, namely, the School of Civil Engineering (SCE) and the School of Advanced Technologies (SAT).

Historically, these two schools came into existence only in January 1993 when the Institute reorganized the need to reform its academic structure from smaller-sized units called “Divisions” to larger bodies named “Schools”.

The School of Civil Engineering (SCE) represents the legacy of AIT when it was established with a single field of study in Hydraulics Engineering. Subsequently, other civil engineering fields of study were launched to assist the recovery from the ravages of the Second World War. SCE emphasized on a learning process that combines theoretical problem-solving and real life application of engineering principles. Its research orientation was outward-looking, addressing the actual and anticipated needs of the built environment.

The School of Advanced Technologies (SAT) consisted of fields of study that were launched in response to the needs of the regional industrialization in the second and third decades of AIT's existence. The School was committed to being international, multidisciplinary centers of excellence in Information, Communications, Industrial Systems, and Space Technologies through education, research and outreach.

The new School of Engineering and Technology amalgamating the School of Civil Engineering (SCE) and the School of Advanced Technologies (SAT) will strive to create synergies between the activities of the two former schools to build up world-class multidisciplinary and cross-disciplinary education, research and outreach activities across the boundaries

of traditional fields of knowledge. More interdisciplinary programs shall be launched so faculty members can work effectively across the disciplinary walls. The new school will enhance its academic portfolio by emphatically injecting the “5I” features namely internationality, innovation, integration, information technology and industrial partnership.

In line with the mission of the Institute, the mission of the School of Engineering and Technology is:

To develop highly qualified engineers and technologists who play leading roles in promoting the region's industrial competitiveness in its integration into the global economy.

More information about the school can be accessed at the SET's homepage <http://www.set.ait.asia/>.

2.2 Thematic Groups, Fields of Study and Multidisciplinary Programs

CIVIL AND INFRASTRUCTURE ENGINEERING GROUP

Since the founding of AIT, its civil engineering fields have promoted modern methodologies, emerging technologies and innovative materials for the design and construction of safe and economical infrastructure in the region. The Civil and Infrastructure Engineering group includes the following fields of study:

- Construction, Engineering and Infrastructure Management (CEIM)
- Geotechnical and Geoenvironmental Engineering (GGE)
- Structural Engineering (StE)
- Transportation Engineering (TrE)

- Water Engineering and Management (WEM)

INDUSTRIAL SYSTEMS ENGINEERING GROUP

For several decades, AIT has served in the development of the region by equipping young engineers with the high-tech knowledge required to work in complex industrial environments. Since its inception, the Industrial Systems Engineering (ISE) thematic group at AIT has contributed to this mission by focusing on industrial competitiveness and innovation for sustainable growth in the region. The ISE group is comprised of the following fields of study:

- Industrial and Manufacturing Engineering (IME)
- Nanotechnology
- Mechatronics (Mec)
- Microelectronics (Mic)

INFORMATION AND COMMUNICATIONS GROUP

Information and communications enable access, connections and sharing, in turn enable knowledge creation and economic opportunity. The fields in the Information and Communications group are:

- Computer Science (CS)
- Information Management (IM)
- Remote Sensing and Geographic Information Systems (RSGIS)
- Telecommunications (TC)

Interdisciplinary Programs

- Offshore Technology and Management (OTM)
- Information and Communications Technologies (ICT)
- Disaster Preparedness, Mitigation and Management (DPMM)
- Gender, Transportation and Development (GTD)

2.3 Strategic Research Areas

The School of Engineering and Technology has identified broad research areas related to the strengths of its faculty, its curriculum and its existing facilities that are the building blocks for education niches in engineering and advanced technologies.

The following lists the information about the specific focal areas grouped by Fields of Study

Computer Science and Information Management (CSIM)

Software Engineering and Development; Information and Knowledge Management

Industrial Systems Engineering (ISE)

Design and development of devices and sensors; Automation and control of machines; Product design and integration of machines and processes; Planning, operation, control and logistics of Industrial systems

Remote Sensing and Geographic Information Systems (RS&GIS)

Remote sensing (RS); Geographic information system (GIS); Global positioning system (GPS); Digital mapping technology; Digital photogrammetry

Telecommunications, Information and Communications Technologies (TC, ICT)

Mobile Communications; Teletraffic and Network Performance Analysis; Focal Area 3: Optical Networks

Advanced Infrastructure Development

- *Application of new approaches and concepts in the development of infrastructure including innovative project financing*
- *PPP/PFI, integrated project management*
- *Infrastructure asset and valuation management, and infrastructure safety and security*

Geotechnical and Geoenvironmental Engineering (GGE)

Sustainable geological exploitation for engineering activities; Design of safe structures; Disaster mitigation and rehabilitation

Structural Engineering (StE)

Computational Mechanics, Earthquake Resistant Design, Experimentation Methods, Advanced Structural Materials.

Transportation Engineering (TrE)

Transportation Logistics; Highway Pavement; Road Safety

Water Engineering and Management (WEM)

Integrated Water Resources Management (IWRM); Water Related Disaster Management (WRDM)

2.4 Academic Outreach Centers

The School of Engineering and Technology has a wealth of innovative and untapped knowledge database from its master's and doctoral research activities. Many outreach and research centers are set up to transform the knowledge into industrial needs. These centers also serve to transfer the practical aspects and the society impacts of the knowledge and technology back to the class room.

ACECOMS: Asian Center for Engineering Computations and Software

The prime mission of ACECOMS with 29 satellite centers in 21 cities in Asia and other regions carries out research in engineering computations, develops computer software tools for engineering applications, and conducts training in the effective use of latest computing technology. Visit ACECOMS: <http://www.acecoms.ait.asia/>

ACSIG: Asian Center for Soil Improvement and Geosynthetic

ACSIG provides a strategic location for advanced technological

education, researches and outreach activities on the application and effective utilization of ground improvement techniques. Visit ACSIG: <http://www.set.ait.asia/acsig/>

ACTS: Asian Center for Transportation Studies

ACTS activities include modules on intelligent transportation systems, traffic simulation, freight transport, urban road safety and road safety audit. Visit ACTS: <http://www.set.ait.asia/acts/>

Geoinformatics Center

Geoinformatics Center is dedicated to development and promotion of remote sensing research and activities in Asia-Pacific by sharing satellite data, research results and experiences with researchers in the region. Visit Geoinformatics Center <http://www.geoinfo.ait.asia/>

Habitech Center

Habitech activities include research and outreach activities such as training in production and construction, provision of services associated with projects implemented by various organizations, agencies or the private sector. Visit Habitech: <http://www.habitech-international.com/home.html>

Regional Network Office for Urban Safety

The Regional Network Office for Urban Safety (RNUS) is a collaborative center jointly operated by the AIT and the University of Tokyo for the promotion of urban safety engineering utilizing advanced engineering technologies including remote sensing and GIS. Visit RNUS: <http://www.set.ait.asia/rnus/>

Thailand Accident Research Center

The Thailand Accident Research Center is an offspring of MOTC's Road Safety Master Plan acknowledging the lack of information on accidents in Thailand and the need to establish TARC.

TARC provides academic back up and a base for road safety research. Visit TARC: <http://www.tarc.ait.asia>
<http://www.tarc.or.th/>

AIT Center of Excellence in Nanotechnology

The Center of Excellence in Nanotechnology is jointly supported by Thailand's Nanotechnology Center (NANOTEC) and AIT, to cultivate and foster multidisciplinary activities including research and education in the applications of Nanotechnology in Developing World. Visit CoEN: <http://www.nano.ait.asia>

2.5 School Governance

Dean of School

WORSAK KANOK-NUKULCHAI, BEng (Hon), Chulalongkorn Univ, Thailand; MEng, AIT, Thailand; PhD, Univ of California (Berkeley), USA.

Professor (*Computational Mechanics; Tall Building Static and Seismic Analysis; Bridge Engineering; Genetic Algorithms; Nonlinear Analysis of Structures and Continua; Plate/Shell Structures; Engineering Education; Nanomechanics*)

Associate Dean

JOYDEEP DUTTA, PhD, IACS, Calcutta Univ, India; BSc (Hon), MSc, North Eastern Hill Univ, India.

Professor (*Functional materials, nanomaterials, Nanoparticles, selforganisation, Biomimetic processes, Polyelectrolyte deposition, Gas sensors, Bio-sensors, optoelectronic devices*)

Chapter 3: SET – COMPUTER SCIENCE and INFORMATION MANAGEMENT FIELDS OF STUDY

3.1 Introduction

Computer Science Field of Study

This field of study fosters high-level teaching and research in computer science and aims to meet the growing regional demand for persons skilled in various aspects of computing. One focus is on educating educators who can, in turn, effectively disseminate knowledge and skills to more people.

The core curriculum in computer science covers all aspects of computing, with the faculty particularly active in artificial intelligence, software engineering, networking and information systems. The field of study also endeavors to enhance teaching and research activities in computer architectures, object orientation, neural networks, multimedia and other rapidly evolving areas in computer science.

The courses and research topics range from those addressing the practical problems of applications development, to those dealing with the abstract and theoretical issues of computer science and advanced computing. Students are also encouraged to take courses and conduct research in areas of Computer Science which interact with Information Management, Industrial Engineering, Manufacturing Systems Engineering, Telecommunications, Mechatronics and other fields of study covered at the Institute.

Software Engineering Area of Study

In addition to the traditional Masters program in computer science, the Computer Science field of study also offers a Masters degree in computer science with specialization in software engineering. The Software Engineering Area of Specialization is specially designed to fill the Asia-Pacific regions needs for highly-

trained specialists in software development and the management of software development projects. Students in the program will:

- Receive in-depth training in the latest software development tools, techniques, and trends;
- Learn the industries best practices for management of large software projects;
- Get experience on real problems in collaboration with public and private sector partners during internships.

The software engineering program is particularly aimed at students already having work experience in the software industry.

Information Management Field of Study

This field of study is a strategic response to society's changing needs. It will continue to evolve as organizations cope with the proliferation and complexity of new information technologies and services. It is the first of its kind in Southeast Asia.

Information is an essential resource for academic excellence, competitiveness in business and industry, scientific progress, and national development. Like any other resource, information must be managed. High-quality sources must be located, and arrangements must be made for access to timely, accurate, appropriate, and cost-effective information. Technological advances in telecommunications and the hardware and software of computing can be utilized to provide the optimum access to information.

The need for information management skills in government and private organizations is increasingly recognized. People knowledgeable in methods of facilitating information collection,

dissemination, and use are in demand. Such persons should also be skilled in identifying information needs and in accessing, repackaging, and presenting information in such a way that it can be utilized in support of the objectives of the users.

The Information Management curriculum is designed to prepare students to respond to four basic challenges confronting organizations today:

Planning the effective use of information and communication technologies within organizations;

Developing corporate and government policies to maximize the benefits resulting from the wide-spread use of these technologies;

Improving the strategic management of information resources in business, government, and non-profit organizations; and

Increasing the productivity and creativity of managers and executives who work with information resources.

3.2 Research Facilities and Laboratories

Organized around ten Unix servers, some of them being multiprocessors, CSIM network comprise about 60 micro-computers, running desktop and engineering applications, scientific and research software and programming languages, with full access to the Internet. Through AI3 project, a broadband satellite link is available to Japan and other countries in the region. This link is primarily dedicated for research activities in the field of internetworking, like the new generation of Internet IPv6, distributed education, video conferencing, and unidirectional

routing. Dedicated laboratories are set-up with specialized equipments. Full wireless coverage in the building allows students to conveniently work with their personal notebook computers.

3.3 Faculty and Research Staff

Full-time Faculty

KANCHANA KANCHANASUT, PhD, MSc, Computer Science, University of Melbourne, Australia; Graduate Diploma, Computer Science, BSc Mathematics, University of Queensland, Australia.

Professor, and IntERLab Director (*Networking and Distributed Computing, Algorithms, Programming Languages*)

PETER HADDAWY, BA, Pomona College, Claremont, USA; MSc, PhD, Univ of Illinois, Urbana, USA.

Professor and Vice President for Academic Affairs (*Decision-Theoretic Problem Solving, Probabilities Reasoning, Modeling of User Preferences, Electronic Commerce, Medical Decision Making*)

PHAN MINH DUNG, MSc, PhD, University of Technology, Dresden, Germany.

Professor (*Computer and Network Security, Autonomous Computing, Logic Programming, Artificial Intelligence*)

VILAS WUWONGSE, DEng Systems Science, MEng Control Engineering, BEng Control Engineering, Tokyo Institute of Engineering, Japan.

Professor and Vice President for External Relations (*Information Representation, Semantic Web, Digital Libraries*)

SUMANTA GUHA, MS, PhD, University of Michigan, Ann Arbor, USA; PhD, Indian Statistical Institute, Calcutta, India; BSc, MSc, University

of Calcutta, India.

Associate Professor (*Algorithms, Computer Graphics, Computational Geometry, Robotics*)

VATCHARAPORN ESICHAIKUL, BAcc, Chulalongkorn Univ, Thailand; MBA, Oklahoma State Univ; PhD, Kent State Univ, USA.

Associate Professor (*Electronic Commerce/Electronic Business, Web-based Information Systems, Hypermedia, Electronic Government*)

MATTHEW N. DAILEY, BSc, MSc, North Carolina State University, PhD, University of California, San Diego.

Assistant Professor (*Machine Vision & Learning, Robotics, Software Engineering and Open-source Software Development*)

PAUL JANECEK, BSEE, US Military Academy; MSc, Univ of London, UK; PhD, Swiss Federal Inst of Tech, Switzerland.

Assistant Professor (*Human-Computer Interaction; Analysis and Design of Information Visualization Systems, Semantic Fisheye Views, Software Engineering and Open-source Software Development, and Information System Development*)

Visiting and Adjunct Faculty

KIM H W JOON, BSc, MSc, DSc, Dankook Graduate School, Korea.

Visiting Assistant Professor and Assistant Professor, Rangsit University (*Bounded Variation & its Application, Fuzzy Integral, Fuzzy System & Type-2 Fuzzy Set, Discrete Math*)

FINN ARVE AAGESEN, MSc, PhD, Norwegian Institute of Technology, Norway.

Adjunct Professor and Professor in NTNU (*Telematics Systems, Telecommunication Information Networking Architecture, Services & Resource*

Management, Communication Services & Networks)

CHUTIPORN ANUTARIYA, BSc, Chulalongkorn University, MSc, DTech Sc, Asian Institute of Technology, Thailand.

Adjunct Faculty and Assistant Professor in Shinawatra Univ. (*Knowledge Representation, Intelligent Information Systems, Semantic Technologies, XML & Web Service Technologies*)

Research Staff

PHAN MINH THANG, BEng, Kaldol Kalman College, Hungary, MEng, Computer Science, Asian Institute of Technology, Thailand.

Researcher (*Argumentation*)

3.4 Grants and Sponsored Research Completed in 2008

MOST Content Management System for Tourism

Duration 1-June-07 to 1-Aug-08

Project Description Develop a Content Management System for the office of the Permanent Secretary, Minister of Science and Technology. The system will be used to store the ministry's contents on Science and Technology in Tourism.

Project Investigator Prof. Vilas Wuwongse
Sponsors Thaksin Univ.

Total Contracted Amount (Baht) 800,000

Video Surveillance Using Face Detection and Human Behavior Profiling

Duration 1-Apr-07 to 31-Mar-08

Project Description In order to detect and respond to criminal or terrorist activity in and around sensitive areas such as schools, shopping centers, and military installations, civilian or military security personnel need efficient access to security video footage. Current video surveillance systems generate too much data for effective human monitoring, and it is too difficult to search raw video records for key events. One of the most important aspects of security is knowing who is coming and going at a particular site. Partial automation of the surveillance personnel keeps track of who is coming and going, but also help them detect and respond to suspicious events.

Project Investigator Dr. Matthew Dailey
Sponsors RTG

Total Contracted Amount (Baht) 500,000

3.5 On-going Grants and Sponsored Research

Argumentation as Foundation for Semantic Grid

Duration 2-Jun-06 to 31-May-09

Project Description ARGUGRID aims at providing a new model for programming the Grid at a semantic, knowledge-based level of abstraction through the use of argumentative agent technology. Within this model, this technology is used to provide the reasoning and decision making processes required to facilitate the dynamic composition of Grid resources and services into executable workflows.

Project Investigator Prof. Pham Minh Dung

Sponsors European Commission

Total Contracted Amount (Baht) 10,000,000

Building an integrated leading Euro-Asian higher education and research community in the field of the Semantic Web

Duration 1-Oct-06 to 9-Sep-09

Project Description The goal of this project is to build an Integrated leading Euro-Asian Higher Education and Research Community in the field of Semantic Web, the next generation of the web. Direct target groups are graduate students, faculty, staff and enterprises management personnel. Indirect target groups are European and Asian students, researcher and enterprises personnel at large.

Project Investigator Prof. Vilas Wuwongse

Sponsors European Commission

Total Contracted Amount (Baht) 2,960,964

Enhancement of Efficiency in Inventory Management of Corrugated Paper Carton Manufacturer using RFID Technology

Duration 1-June-07 to 30-Mar-09

Project Description This research project aims to develop an accurate and cost-effective searching-and-tracking system that is applicable to factory environments. Initially, radio frequency identification (RFID) technologies will be used to help locate objects or items without the need to direct sight or contract. The RFID system will then be integrated into the inventory management system for automatic information update. In addition, the project will provide a complete inventory management and planning system framework that may be connected to information or other specific systems of the factory.

Project Investigator Dr. Paul Janecek

Sponsors RTG/Likitomi

Total Contracted Amount (Baht) 2,000,000

Improvement of Logistics and Planning for Fashion Merchandise

Duration 1-June-07 to 30-Mar-09

Project Description The efficiency of the logistic process requires seamless planning and operations. Real-time information management and decision systems can help improve the overall efficiency by reducing delays and interruptions along the logistics process. This research project aims to develop an accurate, cost-effective logistics system for the fashion industry. The system will provide real-time monitoring of inventory levels and logistics activities, as well as decision support for management and planning throughout the distribution network.

Project Investigator Dr. Paul Janecek

Sponsors RTG/BTNC

Total Contracted Amount (Baht) 1,500,000

Projects Initiated in 2008

Asian Autumn School Semantic Web 2008

Duration 1 June 2008- 1 June 2009

Project Description A seminar will be organized entitled "Asian Autumn School Semantic Web 2008". The seminar will teach its attendees how to apply semantic technologies in their own projects and environments. The seminar will mainly focus to the PhD students, young researchers and other interested parties affiliated to academia or industry.

Project Investigator Prof. Vilas Wuwongse

Sponsors Registration Fee

Total Contracted Amount (Baht) 500,000

Asian Semantic Web Conference 2008

Duration 1 June 2008- 1 June 2009

Project Description The Asian Semantic Web Conference 2008 (ASWC2008) will present the latest research and development of the Semantic Web and bring together researchers in relevant disciplines.

Project Investigator Prof. Vilas Wuwongse

Sponsors Registration Fee

Total Contracted Amount (Baht) 2,500,000

Vision-based Industrial Robotic Bin-picking System

Duration 1 Oct 2008- 30 Sept 2009

Project Description Joint research and development on a vision-base industrial robotic bin picking system.

Project Investigator Dr. M. Dailey

Sponsors Solimac Co. Ltd.

Total Contracted Amount (Baht) 765,000

3.6 Publications

Refereed Journals

Bhrammanee, T. and Wuwongse, V., 2008. ODDM: A Framework for Modelbases, Decision Support Systems, Vol. 44, Issue 3, pp. 689-709.

Chun, C., Guha, S., 2008. Individual Profile Graphs for Location Management in PCS Networks. Computer Communications, v. 31, 2008, 3337-3343.

Kazi, H., Haddawy, P., Suebnukarn, S., 2008. Expanding the Plausible Solution Space for Robustness in an Intelligent Tutoring System, 583-592.

Leelapatra, W., Kanchanasut, K., Lursinsap, C., 2008. Displacement BDD and geometric transformations of binary decision diagram encoded images. *Pattern Recognition Letters* 29(4): 438-456.

Naco, A., Wuwongse, V. and Anutariya, C., 2008. A Transformation-based Approach to Application Model Development: Class Diagram Generation. *Int. Journal in Software Engineering and Knowledge Engineering*, Vol. 18, Issue 7 (November 2008), pp. 895-918.

Rajbhandari, S., Andres, F., Naito, M. and Wuwongse, V., 2008, Topic Maps Management in Spatial-Temporal Multimedia Blogs. *Journal of Digital Information Management*, Vol. 6, No. 1, pp. 92-99.

Rhienmora, P., Haddawy, P., Dailey, M.N., Khanal, P., and Suebnukarn, S., 2008. Development of a dental skills training simulator using virtual reality and haptic device. *NECTEC Technical Journal**, 8(20): 140-147, 2008.

Suebnuakarn, S., Haddawy, P., Dailey, M.N., and Cao, D. N., 2008. Interactive segmentation and three-dimensional reconstruction for cone-beam computed-tomography. *NECTEC Technical Journal*, 8(20): 154-161, 2008.

Suebnuakarn, S., Haddawy, P., Rhiemora, P., 2008. A collaborative medical case authoring environment based on the UMLS. *Journal of Biomedical Informatics* 41(2): 318-326.

Ungrangsi, R., Anutariya, C. and Wuwongse, V., 2008. combiSQORE: A Combinative-Ontology Retrieval System for Next Generation Semantic Web Applications. *IEICE Trans. Information and Systems*, Vol. E91-D, No. 11, pp. 2616-2625.

Refereed Books / Chapters

Phan Minh Dung, Robert A. Kowalski, and Francesca Toni. Assumption-based Argumentation. Chapter in *Hand Book of Argumentation in AI*, accepted for publication by Springer-Verlag.

Conference Proceedings

Abbasi, A.R., Dailey, M.N., Afzulpurkar, N.V., and Uno, T., 2008. Probabilistic Prediction of Student Affect from Hand Gestures. *International Conference on Automation, Robotics and Control Systems (ARCS08)*, July 7-10, 2008, pp 58-63, Orlando, FL, USA.

Abbasi, A.R., Dailey, M.N., Afzulpurkar, N.V., and Uno, T., 2008. Obtaining self-reports for affective system design. *NordiCHI2008 Workshop on Research Goals and Strategies for Studying User Experience and Emotion*, October 19-12, 2008, Lund, Sweden.

Haruechaiyasak, C., Kongyoung, S., and Dailey, M.N., 2008. A Comparative Study on Thai Word Segmentation Approaches. *Proceedings of ECTI-CON 2008*, May

14-17, 2008, Krabi, Thailand.

Kaitrungrit, D., Dailey, M.N., and Wutiw WATCHAI, C., 2008. Thai Voice Application Gateway. *Proceedings of ECTI-CON 2008*, May 14-17, 2008, Krabi, Thailand.

Phan Minh Dung and Phan Minh Thang, *Modular Argumentation for Modeling Legal Doctrines in Common Law of Contract*. *JURIX (21st International Conference on Legal Knowledge and Information Systems)*, Florence, Italy, *Frontiers in Artificial Intelligence and Applications*, Vol. 189, pp. 108-117, IOS Press, Dec 2008.

Phan Minh Dung and Phan Minh Thang, *Towards an Argument-based Model of Legal Doctrines in Common Law of Contracts CLIMA IX (9th International Workshop on Computational Logic in Multi-Agent Systems)*, Sept 2008, Germany.

Phan Minh Dung, Phan Minh Thang and Francesca Toni, *Towards argumentation-based contract negotiation*. *COMMA08 (2nd International Conference on Computational Models of Argument)*, Toulouse, France, *Frontiers in Artificial Intelligence and Applications*, Vol. 172, pp. 134-146, IOS Press, May 2008.

Phan Minh Dung, Phan Minh Thang and Nguyen Duy Hung, *Argument-based Decision Making and Negotiation in E-business: Contracting a Land Lease for a Computer Assembly Plant*. *CLIMA IX (9th International Workshop on Computational Logic in Multi-Agent Systems)*, Sept 2008, Dresden, Germany, Springer Verlag.

Rittammanart, N., Wongyued, W., and Dailey, M.N., 2008. ERP Application Development Frameworks: Case Study and Evaluation. *Proceedings of ECTI-CON 2008*, May 14-17, 2008, Krabi, Thailand.

Samphaiboon, N. and Dailey, M.N., 2008. Steganography in Thai Text. *Proceedings of ECTI-CON 2008*, May 14-17, 2008, Krabi, Thailand.

Shakya, A., Takeda, H. and Wuwongse, V., 2008. Consolidating User-Defined Concepts with StYLiD. *Proc. 3rd Asian Semantic Web Conference (ASWC 2008)*, Bangkok, Thailand, December 8-11, 2008, *Lecture Notes in Computer Science* 5367, Springer, pp. 287-301.

Shakya, A., Takeda, H. and Wuwongse, V., 2008. StYLiD: Social Information Sharing with Free Creation of Structured Linked Data. *Proc. WWW 2008 Workshop on Social Web and Knowledge Management*, Beijing, China, April 22, 2008.

Shakya, A., Takeda, H. and Wuwongse, V., 2008: Consolidating User-defined Concepts with StYLiD, *Proc. the Poster and Demonstration Session at the 7th International Semantic Web Conference (ISWC2008)*, Karlsruhe, Germany, October 28, 2008.

Sopharak, A., Thet Nwe, K., Moe, Y.A., Dailey, M.N., and Uyyanonvara, B., 2008. Automatic exudate detection with a naive Bayes classifier. *International Conference on Embedded Systems and Intelligent Technology (ICESIT 2008)*, pages 139-142, February 27-29, 2008, Bangkok, Thailand.

Uddin, Z., Sheikh and Dailey, M.N., 2008. Iris recognition performance enhancement using weighted majority voting. *International Conference on Image Processing (ICIP 2008)*, October 12-15, 2008, San Diego, CA, USA.

3.7 Doctoral Students' Dissertation

Information Management

A Unified Representation Framework for the Modelbase and the Database of a Web-based Decision Support System

By Thadthong Bhrammaanee
Supervisor: Prof. Vilas Wuwongse

3.8 Masters Students' Theses and Research Studies

Computer Science

A Decision Support System for Evaluation of Educational Management: A Case Study of Vietnam National University Hanoi
By Pham Van Hai
Supervisor: Dr. Vatcharaporn Esichaikul

A Genetic Algorithm Based Approach for the Course Timetabling Problem
By Nguyen Thi Thanh Thuy
Supervisor: Dr. Paul Janecek

A Model for Evaluation of Open Source Software: A Case Study of Content Management Systems
By Richa Dhungel
Supervisor: Dr. Paul Janecek

An Aspect-Oriented Architecture for Handling Variation across Mobile Platforms
By Chokchai Phatharamalai
Supervisor: Dr. Paul Janecek

An Ontology Based Model for Trust Negotiation in Open Systems
By Sher Muhammad Doudpota
Supervisor: Prof. Phan Minh Dung

A Support Information System for Tourism Investment
By Vo Duc Thuan
Supervisor: Prof. Phan Minh Dung

Customer Modeling for E-Commerce Based on Means-End Chain Approach and Logic Programming
By Le Nhan Tam
Supervisor: Prof. Phan Minh Dung

Developing 3-D Models from CT Images
By Ngo Cao Dinh
Supervisor: Prof. Peter Haddawy

Enterprise Application Integration Platform for Corporate Fixed-Asset Management
By Nattanicha Rittammanart
Supervisor: Dr. Matthew Dailey

Guiding Construction of Personal Preferences to Influence Customer Choice
By Nguyen Ngoc Minh
Supervisor: Prof. Peter Haddawy

Hospital Emergency Response System Using Internet GIS, Vehicle Tracking System and RFID
By Irum Memon
Supervisor: Dr. Matthew Dailey

Human Behavior Profiling for a Video Surveillance System
By Kan Ouivirach
Supervisor: Dr. Matthew Dailey

Hybrid Cache-Based Physics Engine for Real-Time Inelastic Deformations and Shadows in 3D Simulations for Mobile Platform
By Thammathip Piumsomboon
Supervisor: Dr. Sumanta Guha

Indoor Surface Model Estimation and Visualization Using a Monocular Camera
By Ran Zask
Supervisor: Dr. Matthew Dailey

Integrated Planning Systems and Testing the Dominance Problem in TCP-NETS
By Nguyen Danh Duoc
Supervisor: Prof. Phan Minh Dung

Logic Programming Based Matching
By Nguyen Trung Lap
Supervisor: Prof. Phan Minh Dung

Research Study: Abnormal Behavior Detection Using Star Skeleton
By Do Tuan Anh
Supervisor: Dr. Matthew Dailey

Research Study: A Method for Blocking Reverse Engineering
By Nguyen Van Sinh
Supervisor: Prof. Phan Minh Dung

Research Study: An Implementation of Merging in Subversion for the Eclipse IDE
By San May Khin
Supervisor: Dr. Paul Janecek

Research Study: "Intelligent Walking Tour System": A System that Enhances the Services for Mobile Tourism
By Samrat Shakti Maskey
Supervisor: Dr. Sumanta Guha

Research Study: Relative Movement to Support Stock Forecasting of the Thai Market Using the Neural Network
By Pongsak Srithongnopawong
Supervisor: Dr. Vatcharaporn Esichaikul

Information Management

A Centralized Domestic Violence Information System for Thailand
By Sawitri Inwang
Supervisor: Dr. Paul Janecek

An Environment for Creating Decision Trees to Model Financial Aid Allocation Decisions
By Nguyen Nam Trung
Supervisor: Prof. Peter Haddawy

A Semantics-Based and Flexible Framework for Web Services Composition
By Krissada Chalermsook
Supervisor: Prof. Vilas Wuwongse

Determinants of Software Piracy in Thailand
By Chatwalai Taechaensiri
Supervisor: Dr. Vatcharaporn Esichaikul

Factors Influencing Trust in Mobile Commerce

By Jarumon Charoensatayatham
Supervisor: Dr. Paul Janecek

OLAP Tool for Comparing Time-Based Data

By Pimolmas Ponchaisakuldee
Supervisor: Dr. Paul Janecek

Pedestrian Detection and Tracking

By Prina Bajracharya
Supervisor: Dr. Matthew Dailey

Student Modeling and Adaptive Hypermedia for E-Learning Systems

By Supaporn Lamnoi
Supervisor: Dr. Vatcharaporn Esichaikul

Success Factors for Information Technology Service-Level Management

By Sakchai Tiyanichakul
Supervisor: Dr. Paul Janecek

Using Goal-Directed Reasoning and the Means-End Chain in Keyword-Based Advertising

By Nguyen Tran Diem Hanh
Supervisor: Prof. Phan Minh Dung

Research Study: Customer Behaviors for Supporting Customer Retention Strategies

By Sukit Vangtan
Supervisor: Dr. Vatcharaporn Esichaikul

Research Study: How to Implement Enterprise Resource Planning in the Electricity of Vietnam

By Pham Thi Thu Huong
Supervisor: Dr. Vatcharaporn Esichaikul

Research Study: Support Planning, Coordination and Group Awareness in Multiplayer Online Games

By Yin Khwin Oo
Supervisor: Dr. Paul Janecek

Chapter 4: SET – CONSTRUCTION, ENGINEERING AND INFRASTRUCTURE MANAGEMENT FIELD OF STUDY

4.1 Introduction

The Construction, Engineering and Infrastructure Management field trains professionals to play leading roles in the international construction industry and in infrastructure development and management. It offers courses in four levels - operations, project, strategic issues and corporate issues. It prepares students to become effective managers and decision-makers familiar with modern techniques of construction management, engineering management and infrastructure management.

The field's courses are delivered based on a hierarchical knowledge scale that considers principles and fundamentals, applications (tools and techniques), and emerging issues. In offering courses spanning fundamentals to advanced, the emphasis is on shifting from classical to innovative knowledge.

4.2 Faculty and Research Staff

CHOTCHAI CHAROENNGAM, BEng, King Mongkut's Inst of Tech, Thonburi, Thailand; MS, Univ of Kansas; PhD, Univ of Texas at Austin, USA

Associate Professor (Project Planning, Scheduling, and Controls; Construction Productivity Improvement; Information Technology in Construction Management; Public Private Partnership Project; Project Financing; Construction Disputes and Litigation)

BONAVENTURA H W HADIKUSUMO, BEng, Univ of Diponegoro, Indonesia; MEng, AIT; PhD, Univ of Hong Kong.

Associate Professor (Construction Information Technology; Construction Project Management; Construction Site Safety, Virtual

Reality application in construction; Web-based project design and management; System Dynamic Simulation in Construction; Construction site safety)

4.3 Grants and Sponsored Research Completed in 2008

Development Strategy for Professional Resources of Hong Kong's Construction and Related Engineering Service Sector

Duration 15-Nov-07 31-Dec-08
Project Investigator B.H.W. Hadikusumo
Sponsor Hong Kong University (HKU)
Total Contracted Amount (Baht) 250,000

Professional Masters in Project Management in Construction

Duration 23-Jul-07 20-Dec-08
Project Investigator B.H.W. Hadikusumo, Chotchai C, Stephen Ogunlana
Sponsor PetroVietnam Company, Vietnam
Total Contracted Amount (Baht) 11,856,100

The Strategic Portfolio Program Management

Duration 1-Oct-05 31-Jul-08
Project Investigator Chotchai Charoenngam, B.H.W. Hadikusumo
Sponsor Ministry of Foreign Affairs, Thailand
Total Contracted Amount (Baht) 4,978,000

4.4 On-going Grants and Sponsored Research

Advanced Techniques for Budgeting of Capital Investment Projects

Duration 14-Mar-08 14-Sep-09
Project Investigator Chotchai Charoenngam
Sponsor Chulalongkorn University
Total Contracted Amount (Baht) 600,000

Professional Master in Project Management Hanoi August 2008 (10 MPM students)

Duration 1-Sep-08 31-Dec-09
Project Investigator B.H.W. Hadikusumo (63.5%); Chotchai Charoenngam (36.5%)
Sponsor PetroVietnam and Corporations in Vietnam
Total Contracted Amount (Baht) 3,802,900

Professional Master in Project Management Vung Tau August 2008 (16 MPM students)

Duration 1-Sep-08 31-Dec-09
Project Investigator B.H.W. Hadikusumo (62%); Chotchai Charoenngam (38%)
Sponsor PetroVietnam and Corporations in Vietnam
Total Contracted Amount (Baht) 6,964,900

Professional Master in Project Management Ho Chi Minh August 2008

Duration 1-Sep-08 31-Dec-09
Project Investigator B.H.W. Hadikusumo (62%); Chotchai Charoenngam (38%)
Sponsor PetroVietnam and Corporations in Vietnam
Total Contracted Amount (Baht) 10,301,728

4.5 Publications

Refereed Journals

Aksorn, T., and Hadikusumo, B.H.W. (2008), Measuring effectiveness of safety programmes in the Thai construction industry, *Journal of Construction Management and Economics*, Vol. 26 pp. 409-421, Routledge, Taylor and Francis.

Dey, P. K., Ho, W., Charoenngam, C., and Deewong, W. (2008) "Relationship Characteristics within the Supply Chain of Small and Medium-Sized Construction Enterprises in Thailand" *International Journal of Manufacturing Technology and Management*, Vol. 15 (1), pp. 102-118.

Prasertrungruang, T. and Hadikusumo, B.H.W. (2008), System dynamics modeling of machine downtime for small to medium highway contractors, *Journal of Engineering, Construction and Architectural Management*, Vol. 15 No. 6, pp. 540-561.

Teerajetgul, W., and Charoenngam, C. (2008) "Tacit Knowledge Utilization in Thai Construction Projects" *Journal of Knowledge Management*, Vol. 12 (1), pp. 165-174.

Conference Proceedings

Charoenngam, C. and Megawati, V. "Financing Decisions of Construction SMEs," *Proceedings of the Eleventh East Asia-Pacific Conference on Structural Engineering and Construction*, November 2008, Taipei, Taiwan.

Posayanant, S. and Charoenngam, C. "Strategic management of Thai rural infrastructure development," *Proceedings of the Eleventh East Asia-Pacific Conference on Structural Engineering and Construction*, November 2008, Taipei, Taiwan.

Suksuwan, N., Hadikusumo, B.H.W. "Conceptual Framework for the Development of Computer Applications in Bridge Maintenance Management System (BMMS)," *Proceedings of the sixth Regional Symposium on Infrastructure Development*, December 2008, Bangkok, Thailand.

Teerajetgul, W., Charoenngam, C. and Vorasubin, P. "Knowledge management practices in Thai construction projects," *Proceedings of the Eleventh East Asia-Pacific Conference on Structural Engineering and Construction*, November 2008, Taipei, Taiwan.

4.6 Doctoral Students' Dissertation

Modeling the Dynamics of Highway Construction Equipment Downtime
By Thanapun Praserttrunguang
Supervisor: Dr. B. Harimurti W. Hadikusumo

4.7 Masters Students' Theses and Projects

A Study of Project Management Personnel Needs for Infrastructure Development in Dong Nai
By Truong Vinh Hiep
Supervisor: Dr. B. Harimurti W. Hadikusumo

A Study of the Hotel Renovation Project Management Process in Thailand
By Atcharaporn Suwan
Supervisor: Dr. B. Harimurti W. Hadikusumo

Conflict Dynamics in Dam Construction Projects: A Case Study of Middle Marsyangdi Hydroelectric Project, Nepal
By Braj Kishor Mahato
Supervisor: Dr. B. Harimurti W. Hadikusumo

Corporate Social Responsibility in Construction Companies in Thailand: The Case Study of Preuksa Real Estate Public Company Limited
By Jirachai Thaewthiang
Supervisor: Dr. Chotchai Charoenngam

Corporate Social Responsibility in the Vietnamese Construction Industry
By Tran Huong Quang
Supervisor: Dr. Chotchai Charoenngam

Cost Control System in Vietnam Construction Company
By Le Hai Son
Supervisor: Dr. B. Harimurti W. Hadikusumo

Criteria for Infrastructure Project Selection: A Case Study in Cantho City, Vietnam
By Nguyen Thi Xuan Dan
Supervisor: Dr. B. Harimurti W. Hadikusumo

EPC Project Management and Problems: A Case Study of International and Local EPC Contractors of Oil Gas and Petrochemical Projects in Vietnam
By Nguyen Khoa
Supervisor: Dr. B. Harimurti W. Hadikusumo

Factors Affecting Project Delivery Time Delays and Cost Overruns of Project

Development at the Royal Irrigation Department of Thailand
By Rathsayam Tiyarathtagarn
Supervisor: Dr. B. Harimurti W. Hadikusumo

Financial Management for Small and Medium-Sized Enterprises in Construction: Case Study in Thailand and Indonesia
By Vivi Megawati
Supervisor: Dr. Chotchai Charoenngam

Framework Implementation of Reduce, Reuse, Recycle, and Residual Management for Thai Building Construction Industry
By Pakawat Pormmoon
Supervisor: Dr. B. Harimurti W. Hadikusumo

High-End Residential Property Project Development Process: A Case Study of High-End Residential Property Projects in Bangkok
By Surangkana Trangkanont
Supervisor: Dr. Chotchai Charoenngam

Motivation of Construction Engineers in Ho Chi Minh City, Vietnam
By Nguyen Duy
Supervisor: Dr. B. Harimurti W. Hadikusumo

Private Participation in Developing Transportation Infrastructure: A Case of Ben Tre Province
By Pham Hoang Anh
Supervisor: Dr. Chotchai Charoenngam

Project Time and Cost Management in Water Supply Pipeline Construction in Dong Nai Province, Vietnam: A System Dynamics Approach
By Tran Minh Tung
Supervisor: Dr. B. Harimurti W. Hadikusumo

Public Private Partnership Models for Low-Income Housing Development of Cantho City, Vietnam
By Tran Quang Ninh
Supervisor: Dr. Chotchai Charoenngam

<p><i>Quantitative Risk Assessment for Offshore Platforms in Vietsovpetro Joint Venture</i> By Dang The Phuong Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: A Conceptual Approach to Green Building Development: Practicalities and Prospects</i> By Nguyen Le Hoai Tam Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: Delay Causations in Construction: A Case Study of Pipeline Projects</i> By Nguyen Anh Dao Supervisor: Dr. B. Harimurti W. Hadikusumo</p>
<p><i>Safety Rules and Procedures Development and Implementation: A Study on Construction Industries in Thailand</i> By Andreas Adihartanto Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: An Evaluation of Problems in International Construction Contract Conditions: A Case Study of the Third Provincial Towns Water Supply and Sanitation Project</i> By Bui Quang Luong Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: Delay Causations in Water Supply Projects in Dong Nai Province, Vietnam: A Lesson Learned from Nhon Trach Water Supply Project</i> By Vo Hoang Phuong Supervisor: Dr. B. Harimurti W. Hadikusumo</p>
<p><i>Strategic Planning for Multimodal Transportation Hub: A Case Study of Chiang Saen Port 2 and Pakbara Deep Seaport Project</i> By Suphitcha Phoemphoonthanyakit Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: An Owner's Project Cost Control Strategy for Building Projects</i> By Nguyen Dang Thong Nhat Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: Fast-Track Project Delivery Strategy for Civil Engineering and Architectural High-Rise Building Projects</i> By Mai Do Thuy Dung Supervisor: Dr. Chotchai Charoenngam</p>
<p><i>Sustainable Construction Development Framework for the Tourism Industry in Phu Quoc Island in Kien Giang Province, Vietnam</i> By Pham Thi Cam Tien Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: An Owner's Project Planning Approach for High Rise Building in Design and Construction: A Case Study of PetroVietnam Commercial and Financial Centre</i> By Nguyen Hoang Loc Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: Lessons Learned from International Oil and Gas Projects: How PV Engineering can Improve the Safety Management System</i> By Phan Minh Nhut Supervisor: Dr. B. Harimurti W. Hadikusumo</p>
<p><i>The Adoption of Sustainable Construction Principles in the Design Phase in Vietnam</i> By Tran Ngoc Tuyen Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: Assessment and Improvement of a Safety Management System: A Case Study of a Diving Contractor in Vietnam</i> By Dao Manh Tuong Supervisor: Dr. Chotchai Charoenngam</p>	<p><i>Project: Managing Subcontractor Schedule Performance in an EPC Contract</i> By Nguyen Tan Hoang Supervisor: Dr. B. Harimurti W. Hadikusumo</p>
<p><i>The Role of Lao Government on ADB Operation of Partnership Financing Strategy: Case Study in Vientiane Urban Infrastructure Services Project</i> By Phouthasen Sinthavong Supervisor: Dr. Chotchai Charoenngam</p>	<p><i>Project: Claim and Conflict Management in International Oil and Gas Projects</i> By Dang Huu Trinh Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: Owner's Project Scope Development for Seaport Projects: A Case Study of Sao Mai Ben Dinh Project in Vietnam</i> By Tran Duch Hanh Supervisor: Dr. B. Harimurti W. Hadikusumo</p>
<p><i>Workers Participation in Safety Management System in Construction Projects in Thailand</i> By Alvin Agustinus Gahari Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: Client's Project Management Strategy for Fast Track EPC Oil and Gas Project</i> By Nguyen Quoc Hanh Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: Project Management Competency Development: A Case Study of Vietnamese Small and Medium-Sized Construction Firms</i> By Chu Bien Cuong Supervisor: Dr. B. Harimurti W. Hadikusumo</p>
	<p><i>Project: Contract Clauses in EPC Oil and Gas Projects: A Case Study of the Pearl Development Project</i> By Nguyen Van Diep Supervisor: Dr. B. Harimurti W. Hadikusumo</p>	<p><i>Project: Public Private Partnership Models for a Water Supply Project in Dongnai Province, Vietnam</i> By Mai Phong Phu Supervisor: Dr. B. Harimurti W. Hadikusumo</p>

Project: Quality Management System for Consultant Supervision in Managing the Performance of Highway Contractors in Vietnam

By Lu Dinh Vu

Supervisor: Dr. B. Harimurti W.

Hadikusumo

Project: Quality Management System for Consultant Supervision Used in Managing the Performance of Building Contractors in Vietnam

By Bao Bui Van

Supervisor: Dr. B. Harimurti W.

Hadikusumo

Project: Quantitative Risk Assessment for the Process System on an Offshore Platform: A Case Study of QRA for Process System of Platform RP-3 of J.V.

VIETSOVPETRO

By Nguyen Van Thanh

Supervisor: Dr. Chotchai Charoenngam

Project: Risk Management in an Offshore Fabrication Project: A Case Study of "Ca Ngu Vang" Project

By Nguyen Van Thang

Supervisor: Dr. B. Harimurti W.

Hadikusumo

Project: Risk Management in Offshore Platform Installation Project: A Case Study of PTSC Offshore Services

By Do Hong Hai

Supervisor: Dr. B. Harimurti W.

Hadikusumo

Project: Risk Management in the Pre-Commissioning Phase of an Oil and Gas Pipeline Project

By Khuong Minh Dat

Supervisor: Dr. Chotchai Charoenngam

Project: Safety Audit in Oil and Gas Exploration Projects

By Nguyen Quang Hung

Supervisor: Dr. Chotchai Charoenngam

Project: Safety Improvement Programs in an Oil and Gas Construction Company: A Study of PetroVietnam Technical Services Company (PTSC Production)

By Pham Van Tuan

Supervisor: Dr. Chotchai Charoenngam

Project: Subcontractor Claims and Management in EPC Pipeline Projects: A Case Study of PM3 - Ca Mau Gas Pipeline Project

By Nguyen Manh Hung

Supervisor: Dr. B. Harimurti W.

Hadikusumo

Chapter 5: SET – INDUSTRIAL AND MANUFACTURING ENGINEERING

FIELD OF STUDY

5.1 Introduction

Industrial and Manufacturing Engineering field of study prepares students for manufacturing management and decision support positions in industry and public sector, by equipping them with a broad range of decision making skills for a variety of applications. The IME curriculum reflects the objective of imparting fundamental knowledge to develop the ability to address complex industrial issues, emphasizing on how to design, operate, control, and optimize the production systems.

5.2 Research Facilities and Laboratories

IME field shares all the laboratory facilities with Mechatronics and Microelectronics fields of study. There are several well equipped laboratories with the primary function of supporting the students and faculty for teaching and research and to conduct outreach programs.

Computer Integrated Manufacturing (CIM) Laboratory

The Computer Integrated Manufacturing (CIM) laboratory was officially inaugurated on September 23, 1991. It provides the hardware and software support for Industrial Systems Engineering. Many research activities have been carried out in close collaboration with industry and government sectors in the areas of Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Computer Numerical Control (CNC), Rapid Prototyping (RP) and Medical Technology. The CIM Laboratory also provides specialized training and consultancy services in CAD, CAM, CNC Machining, Reverse Engineering, Rapid Prototyping, Packaging Technology,

Flexible Manufacturing Systems [FMS], and Development of Postprocessor for 5-axis CNC.

The CIM Laboratory is equipped with production and training CNC machines including EMCO TURN242 industrial production CNC lathe, EMCO VMC200 CNC vertical machining center for universal production, MAHO MH600E2 5-axis universal milling and boring machine, an EMCO compact 5 CNC, an EMCO F1 CNC, a LVD CNC press brake, a LVD water-jet cutting CNC, ZOLLER tool presetting system, and a Mondiale Gallic G-420 Industrial CNC lathe, EMCO CNC training system. The available CAD/CAM software includes UNIGRAPHICS NX4, Master CAM 9.1, Mechanical Desktop 6, AutoCAD Inventor Series, SolidWorks 2005, CAM 2000, Mimics 6.3 & Magic 5.4.

Metrology Laboratory

Metrology Laboratory provides the hardware and software support for teaching and research activities in Industrial Systems Engineering. Metrology Laboratory is equipped with Measuring Instruments (Zeiss CMM, Mitutoyo Profile Projector, Taylor Hobson Surface Roughness Tester, Lab View Hardware & Software).

Simulation Laboratory

This lab is equipped with networks of Pentium PC for general applications and internet access, high end CAD/CAM & Simulation software such as ARENA and AutoMOD. In addition, a high performance computer facility with parallel cluster is also available for research use.

5.3 Faculty and Research Staff

Full-time Faculty

MARIO T TABUCANON, BSEE, BSME, Cebu Inst of Tech, Philippines; MEng, DEng, AIT, Thailand.

Professor (*Multiple Criteria Decision Making; Operations and Production Management; Operations Research; Project Management; Systems Modeling*)

ERIK L J BOHEZ, Burgerlijk WerktuigKundig Electro- Technisch Ingenieur, Rijks Universiteit Gent (State University Ghent, Belgium); Kandidatuur Burgerlijk Ingenieur, Rijks Universiteit Gent (State University Ghent, Belgium); Technisch Ingenieur Electro-Mechanica, Hoger Technisch Instituut Sint Antonius Gent, (High Technical Institute Saint Antonius Ghent; Belgium).

Associate Professor (*Computer Aided Design; Computer Aided Manufacturing; Computer Graphics; Computer Numerical Control; Five Axis Machining; Fractal and Holistic Manufacturing; Robust Control; Simulation of Metal Removal; Virtual Axis Machine*) [CNC/CAD/CAM; Five Axis Machining; Holonic and Fractal Manufacturing; Mold and Die Design, Eco-Design]

HUYNH TRUNG LUONG, BEng, Ho Chi Minh City Univ of Tech, Vietnam; MEng; DEng, AIT, Thailand.

Associate Professor [*Emergency inventory policies and inventory policies for perishable products; Supply chain design; Measures of bullwhip effect in supply chains; Availability-based and*

reliability-based maintenance; Fuzzy quality control charts; Statistical design of experiments; Network flows related problems]

VORATAS KACHITVICHYANUKUL, BS, Natl Taiwan Univ; MEng, AIT, Thailand; PhD, Purdue Univ, Indiana, USA.

Associate Professor (*Simulation; ERP; Scheduling, Metaheuristics; Parallel Computing*) [*Planning and Scheduling Systems; Enterprise Resource Planning Systems; Supply Chain Modeling and Analysis; Discrete Event Simulation Software Development; Manufacturing System Simulation; Manufacturing Decision Support Systems; Just-in-Time Manufacturing System*]

PISUT KOOMSAP, BEng, Thammasat Univ, Thailand; MSc, Univ of Louisville; PhD, Pennsylvania State Univ, USA

Assistant Professor (*Sensing and Control for Manufacturing Processes and Systems; Laser Applications in Manufacturing; Rapid Prototyping; Condition-Based Maintenance; Continuous Improvement*) [*Rapid Prototyping; Sensing and Control for Manufacturing Processes and Systems; Laser Applications in Manufacturing; Condition-Based Maintenance; Continuous Improvement*]

Visiting Faculty

DAH-CHUAN GONG, B.E. (1979), Chung Yuan Christian University, Taiwan; M.S. (1983), Nebraska-Lincoln; M.S. (1988), and Ph.D. (1991), Georgia Institute of Technology, USA. Professor, Department of Industrial Engineering, Chung Yuan Christian University, Chung-Li, Taiwan.

Visiting Professor [*Global Logistics Management; e-Supply Chain and Collaborative Management; Manufacturing Planning and Control System;*

Linear Programming; Location Theory]

R. VENKATA RAO, B.Tech. (1988), Nagarjuna University, A.P.; M.Tech. (1991), Banaras Hindu Univ.; and Ph.D. (2002), B.I.T.S., Pilani, Rajasthan, India. Professor and Head, Dept. of Mechanical Engineering, S.V. National Institute of Technology, Gujarat State, India.

Visiting Professor [*Production and Operations Management, Advanced Manufacturing Technology, Design of Manufacturing Systems, CAD/CAM/CIMS, Fuzzy Multiple Attribute Decision Making Methods, Non-Traditional Optimization Methods*].

AKASPU NEELAKANTESWARA RAO, B.Tech. (1985), S.V. University, Tipupathi; M.Tech. (1989); Ph.D. (1998), IIT Kharagpur, India.

Assistant Professor, Department of Mechanical Engineering, NIT Warangal, AP, India.

Visiting Assistant Professor [*Operations Management; Supply Chain Management; Quality Engineering; Theory of Constraints*].

SHYAM SREENIVASA KAMATH, B.Sc. (1984); M.Sc. (1986), P.G. Diploma (1987); and Ph.D. (1991), Karnatak University, Dharwad, India. Assistant Professor, Dept of Mathematical and Computational Sciences, NIT Karnataka, Mangalore, India.

Visiting Assistant Professor [*Graph Theory & Optimization Models*].

5.4 Grants and Sponsored Research Completed in 2008

Asia-Pacific Industrial Engineering and Management Systems Conference 2006

Duration 1-Jul-05 30-Jun-08
Project Investigator Voratas Kachitvichyanukul
Sponsor Asia Pacific Industrial Engineering and Management Society
Total Contracted Amount (Baht) 8,200,000

Design and Development of Operator Training Simulator for Cement Mill Process

Duration 1-Apr-08 31-Dec-08
Project Investigator Pisut Koomsap
Sponsor SCG Cement Co Ltd
Total Contracted Amount (Baht) 1,000,000

Hot End and Cold End Online Monitoring and Communication System

Duration 1-Jun-07 31-May-08
Project Investigator Erik Bohez
Sponsor RTG and BKK Glass
Total Contracted Amount (Baht) 2,000,000

Product Design and Development for SCG Building Materials

Duration 1-Jul-08 31-Dec-08
Project Investigator Pisut Koomsap
Sponsor SCG Building Materials Co Ltd
Total Contracted Amount (Baht) 486,850

Product Design and Development for Thai Acrylic Fibre Co. Ltd

Duration 1-Jun-07 30-Apr-08
Project Investigator Pisut Koomsap
Sponsor Thai Acrylic Fibre Co. Ltd
Total Contracted Amount (Baht) 235,400

PET-Recycling

Duration 20-Aug-07 20-Feb-08
Project Investigator Erik Bohez, Sudip Rakshit
Sponsor Indorama Thailand
Total Contracted Amount (Baht) 200,000

Thai 5-Axis Open Architecture Small CnC

Duration 1-May-07 31-Dec-08
Project Investigator Erik Bohez
Sponsor RTG and Spar Comp
Total Contracted Amount (Baht) 1,400,000

5.5 On-going Grants and Sponsored Research

Decision Support System for Beverage Industry

Duration 1-Jul-07 31-Jul-09
Project Investigator Voratas Kachitvichyanukul
Sponsor RTG and Green Spot Company Ltd.
Total Contracted Amount (Baht) 900,000

Design and Construction of Online Biochemical Oxygen Demand Sensors as Rapid BOD Assay Devices for Monitoring the Quality of Natural Waters and Wastewater Effluents

Duration 1-May-07 30-Apr-08
Project Investigator Pisut Koomsap
Sponsor RTG
Total Contracted Amount (Baht) 900,000

Development of Rapid Prototyping System for Sanitary Ware Product

Duration 1-Jun-07 30-Jun-09
Project Investigator Pisut Koomsap
Sponsor RTG and Siam Sanitary Ware Industry
Total Contracted Amount (Baht) 2,500,000

Life Cycle Assessment Fine Paper

Duration 1-Jun-08 31-Dec-09
Project Investigator Erik Bohez, Esa Viljakainen
Sponsor Double A
Total Contracted Amount (Baht) 1,275,000

Project on Human Resource Development in Multi-Axis CNC Machine for EGAT

Duration 1-Feb-07 30-Apr-09
Project Investigator Erik Bohez
Sponsor EGAT Public Company, Thailand
Total Contracted Amount (Baht) 750,000

The 4th International Congress on Logistic and SCM Systems

Duration 1-Jul-08 31-Dec-09
Project Investigator Voratas Kachitvichyanukul
Sponsor Participants
Total Contracted Amount (Baht) 3,000,000

5.6 Publications

Refereed Books/Chapters

Kasemset, C., and Kachitvichyanukul, V., "Simulation-based Procedure for Bottleneck Identification", in Communications in Computer and Information Science, Vol. 5, Park, J.W., Kim, T-G, Kim, Y-B (eds.), Springer Berlin Heidelberg, DOI:10.1007/978-3-540-77600-0_6, pp. 46-55, 2008.

Trinh, T.H., and Kachitvichyanukul, V., "Event Graph Models for Generic Manufacturing Systems with Push and Pull Policies", Communications in Computer and Information Science, Vol. 5, Park, J.W., Kim, T-G, Kim, Y-B (eds.), Springer Berlin Heidelberg, DOI:10.1007/978-3-540-77600-0_1, pp.1-11, 2008.

Udomsakdigool, A., and Kachitvichyanukul, V., "Multiple-Colony Ant Algorithm with Forward-Backward Scheduling Approach for Job-Shop Scheduling Problem", Advances in Industrial Engineering and Operations Research, Series:

Lecture Notes Electrical Engineering, Vol. 5, Chan, Alan H.S.; Ao, Sio-long (eds.), pp. 39-54, Springer, March 2008. (ISBN: 978-0-387-74903-7)

Refereed Journals

Ai, T.J., and Kachitvichyanukul, V., "A Particle Swarm Optimization for the Vehicle Routing Problem with Simultaneous Pickup and Delivery", Computers & Operations Research, doi:10.1016/j.cor.2008.04.003, April 2008.

Ai, T.J., and Kachitvichyanukul, V., "Particle Swarm Optimization and Two Solution Representations for Solving the Capacitated Vehicle Routing Problem", Computers & Industrial Engineering, doi:10.1016/j.cie.2008.06.012, June 2008.

Astanti, R.D., and Luong, H.T., "A Heuristic Technique for Inventory Replenishment Policy with Increasing Demand Pattern and Shortage Allowance", International Journal of Advanced Manufacturing Technology, 2008, Vol. 41(11-12), pp. 1199-1207.

Hou, T.C., Gong, D-C, Wang, K.J., Jha, V.S., and Chiu, C-C, "Knowledge Management Genetic Intelligent Manufacturing Systems for Semiconductor Manufacturing Services Industry", Journal of Chinese Institute of Industrial Engineers, Vol. 25, No. 6, pp. 510-518, 2008. (EI, TSSCI).

Ma, W-N, Lan, P-T, and Gong, D-C, "The Construction of a Leg-Based Integrated Crew Scheduling Decision Support System", Journal of Management & Systems, , 2008. (TSSCI)

Soonanon, P., and Koomsap, P., "Towards Direct Transformation of Orthographic-View Drawing into a Prototype", Virtual and Physical Prototyping, , 2008.

Sriprateep, K., and Bohez, E.L.J., "A New Computer Geometric Modeling Approach of Yarn Structures for Conventional Ring Spinning Process", The Journal of the Textile Institute, DOI: 10.1080/00405000701757958, . First published, 1754-2340, Vol. 100, Issue 3, , pp. 223-236.

Sung, J-C, and Gong, D-C, "An Integrated Production-Inventory Model for Deteriorating Production with Defective Item Rework and Joint Material Replenishment Policy," Journal of Chinese Institute of Industrial Engineers, Vol. 25, No. 4, pp. 326-336, 2008. (EI, TSSCI)

Sung, J-C, Lin, G.C., and Gong, D-C, "Extended Research on an Imperfect Process Production-Inventory Model with Deteriorating Items Under Two Dispatching Policies", Journal of Management & Systems, , 2008. (TSSCI = Taiwan Social Science Citation Index)

Tang, T.D., Bohez E.L.J., and Koomsap, P., "The Sweep Plane Algorithm for Global Collision Detection with Workpiece Geometry Update for Five-axis NC Machining", Computer-Aided Design, Vol. 39, Issue 11, pp.1012-1024, 2008. Top 25 most downloaded paper in Science Direct for period Jan-Sept 2008

Udomsakdigool, A., and Kachitvichyanukul, V., "Multiple Colony Ant Algorithm for Job Shop Scheduling Problems", International Journal of Production Research, Vol. http://www.informaworld.com/gate.6.inist.fr/smpp/title~content=t713696255~db=all~tab=issueslist~branche_s=46-v4646, Issue 15, pp. 4155-4175, August 2008.

Ullah, H., and Bohez, E.L.J., "A Petri Net Model for Sequence Optimization and Performance Analysis of Flexible Assembly Systems", Journal of Manufacturing Technology Management (JMTM), Vol. 19, No. 8, pp. 985-1003, 2008.

Ullah, H., and Bohez, E.L.J., "A Petri Net Model for the Design and Performance Evaluation of a Flexible Assembly System", Assembly Automation, 28 (4), pp. 325-339, 2008.

Ullah, H., and Bohez, E.L.J., "Mathematical Modeling of Feature Conversion", International Journal of Industrial and Systems Engineering, , DOI: 10.1504, Published IJISE..021690.

Waiyagan, K., Bohez, E.L.J., "Intelligent Feature Based Process Planning for Mill-Turn Parts", Computers in Industry, 2008, , doi:10.1016/j.compind.2008.09.009. First published, Vol. 60, Issue 5, pp. 296-316, .

Wang, K-J, Jha, V.S., Gong, D-C, Hou, T.C., and Chiuva, C-C, "Agent based Knowledge Management System with APQP: Implementation of Semiconductor Manufacturing Services Industry," International Journal of Production Research, , 2008. (SCI)

Wannarumon, S., Bohez, E.L.J., and Annanon, K., "Aesthetic Evolutionary Algorithm for Fractal-based User-centered Jewelry Design", Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM 22 (1), pp. 19-39, 2008, Cambridge University Press, 0890-0604/08. *Top 10 Most Read Article.*

Conference Proceedings

Ai, T.J., and Kachitvichyanukul, V., "A Particle Swarm Optimization for the Heterogeneous Fleet Vehicle Routing Problem", Proceedings of the 4th International Congress on Logistics and SCM Systems, Bangkok, Thailand, November 2008.

Ai, T.J., and Kachitvichyanukul, V., "A Study on Adaptive Particle Swarm Optimization for Solving Vehicle Routing Problems", Proceedings of the 9th Asia Pacific Industrial Engineering and Management

Systems Conference (APIEMS 2008), Bali, Indonesia, December 2008.

Ai, T.J., and Kachitvichyanukul, V., "Adaptive Particle Swarm Optimization Algorithms", Proceedings of the 4th International Conference on Intelligent Logistics Systems (ILS 2008), Shanghai, China, August 2008.

Ai, T.J., and Kachitvichyanukul, V., "Recent Advances in Adaptive Particle Swarm Optimization Algorithms", Proceedings of the Korea Institute of Industrial Engineering Conference, Seoul, Korea, November 2008.

Astanti, R.D., and Luong, H.T., "A Heuristic Based on a Reduction Cost Concept for SFI Policy with Nonlinear Increasing Demand Pattern", Proceedings of the 9th Asia Pacific Industrial Engineering and Management Conference (APIEMS 2008), Indonesia, 2008.

Astanti, R.D., and Luong, H.T., "A Heuristic Method for SFI Policy with Increasing Power-Form Demand Pattern", Proceedings of the 4th International Congress on Logistics and SCM Systems (ICLS 2008), Thailand, 2008.

Chansri, N., and Koomsap, P., "Identifying Single Line Drawing from Paper-Based Overtraced Freehand Sketch", the 9th Asia Pacific Industrial Engineering & Management Systems Conference, (APIEMS 2008), Indonesia, 2008.

Gong, D-C, and Chen, J-L, "Functional Module Development of Supplier Management for RoHS," Proceedings of the SKIMA 2008, Kathmandu, Nepal, March 18-21, 2008.

Gong, D-C, Hsiao, W-C, and Ho, P-S, "Information Integration Architecture of Risk Management for RoHS," Proceedings of the International Conference on Computer Science and Software

Engineering (CSSE 2008), Wuhan, China, December 12-14, 2008. (EI)

Kachitvichyanukul, V., and Sitthitham, S., "A Two-Stage Multi-objective Genetic Algorithm for Job Shop Scheduling Problems", Proceedings of the Asia Conference on Intelligent Manufacturing & Logistics Systems (IML 2008), Kitakyushu, Japan, February 2008.

Kasemset, C., and Kachitvichyanukul, V., "Simulation-based Procedure for Implementing Theory of Constraints: Extension for Cases with Multiple Bottlenecks", Proceedings of the 9th Asia Pacific Industrial Engineering and Management Systems Conference (APIEMS 2008), Bali, Indonesia, December 2008.

Lin, T., Lee, J-W, and Bohez, E.L.J., "New Curvature matching and Optimal Tool Based 5-axis Machining Algorithm", CAD08 Conference Proceedings, Caribe Royale Resort and Convention Center, Orlando, Florida, United States, June 23-27, 2008.

Luong, H.T., and Gia, H., "Inventory Control Policy with Two Replenishment Modes", Proceedings of the 9th Asia Pacific Industrial Engineering and Management Conference (APIEMS 2008), Indonesia, 2008.

Luong, H.T., and Watcharathiansakul, M., "Genetic Algorithms for the Multi-Objective Vehicle Routing Problem with Time-Window Constraint", Proceedings of the 9th Asia Pacific Industrial Engineering and Management Conference (APIEMS 2008), Indonesia, 2008.

Luong, H.T., Porn-Apirat, K., and Kengpol, A., "Integrated Production and Inventory Policy in a Supply Chain", Proceedings of the 9th Asia Pacific Industrial Engineering and Management Conference (APIEMS 2008), Indonesia, 2008.

Naowapadiwat, W., Gong, D-C, and Kachitvichyanukul, V., "Recent Trends in Research on Collaborative Planning, Forecasting, and Replenishment," Proceedings of the 4th International Congress on Logistics and SCM Systems (ICLS), Bangkok, Thailand, November 26-28, 2008.

Pisutpaisal, N., and Koomsap, P., "Generation of Electricity from Wastewater under Acidic Conditions", 4th International Conference on Environmental Science and Technology, 2008.

Prachayaborirak, T., and Kachitvichyanukul, V., "A Comparison of GA and PSO Algorithm for Multi-objective Job Shop Scheduling Problem", Proceedings of the 4th International Conference on Intelligent Logistics Systems (ILS2008), Shanghai, China, August 2008.

Rianmora, S., and Koomsap, P., "Investigating the Influence of Color Light in Data Acquisition", the 9th Asia Pacific Industrial Engineering & Management Systems Conference, (APIEMS 2008), Indonesia, 2008.

Rianmora, S., Koomsap, P., and Van Hai, D.P., "Selective Data Acquisition for Direct RE-RP Interface", the 9th Asia Pacific Industrial Engineering & Management Systems Conference, (APIEMS 2008), Indonesia, 2008.

Truc, N.T.N., Koomsap, P., and Luong, H.T., "Improving Quality Function Deployment to Better Support Technology Roadmapping", Proceedings of the 9th Asia Pacific Industrial Engineering and Management Conference (APIEMS 2008), Indonesia, 2008.

Yiangkamolsing, C., and Bohez, E.L.J., "Priority Arrangement for Product Design Assessment", 19th International DAAAM Symposium, Slovakia, October 22-25, 2008.

Yiangkamolsing, C., Bohez, E.L.J., Jirapinyo, O., and Bueren, I., "Universal Design in Plastic Pouch Packaging", Proceedings of 16th IAPRI World Conference on Packaging, Bangkok, Thailand, June 8-12, 2008.

Other Publications

Book Edited

Kachitvichyanukul, V., Yenradee, P., and Gong, D-C (eds.), Proceedings of the 4th International Congress on Logistics and SCM Systems 2008: Effective Supply Chain & Logistic Management for Sustainable Development, ISBN: 978-974-8257-56-3, Asian Institute of Technology, Bangkok Thailand, November 2008.

International Recognition

Kachitvichyanukul, V., Program Chair and Proceedings editor of The Fourth International Congress on Logistics and SCM Systems, November 2008, Bangkok, Thailand. Sponsored by the International Federation of Logistics and SCM Systems, Japan.

Conference/Training/Seminar Presentation, Organization, Invited Keynote Speaker

Ai, T.J., and Kachitvichyanukul, V., "Recent Advances in Adaptive Particle Swarm Optimization", presented at Global session, The Annual Conference of the Korean Institute of Industrial Engineers, Hanyang University, Seoul, Korea, November 2008.

Bohez, E.L.J., "AIT's Programs: Master and Ph.D. Research under E. Bohez", presented at AIT Promotional Seminars, IBA, Sukkur MUET, Hyderabad, UAF, Faisalabad NUST, Islamabad, Pakistan, August 17-24, 2008.

Bohez, E.L.J., "Eco-Design, UNU-IAS", invited Commentator/Facilitator at ASEAN Leadership Training Program: Sustainable Production and Consumption, Cha-am, Thailand, July 18-19, 2008.

Bohez, E.L.J., "Energy Green Industry, Innovative Products, Intelligent Manufacturing Systems", presented at SCG-AIT Seminar, AIT, April 4, 2008.

Bohez, E.L.J., "Open Architecture 5-axis CNC Machine and Teachware", Organizer/ Speaker/Moderator at New Small 5-axis CNC Machine for Educational and Industrial Training, AIT & SPAR Mechatronics Co., Ltd., March 5, 2008.

Bohez, E.L.J., "Sustainable Products and Processes, LCA's Approach", presented at Asia Centre for Corporate Social and Environmental Responsibility (ACCSER): A Joint Initiative of United Nations University Institute for Advanced Studies, Asian Institute of Technology and CSR Asia, Consultative Forum, AIT, February 11, 2008.

Bohez, E.L.J., invited keynote speaker, "New Trends in CAD/CAM for Jewelry Design & Manufacturing", TEKNOIN 2008, Yogyakarta, Indonesia, November 22, 2008.

Bohez, E.L.J., invited resource person for one day seminar, "Eco-Design and Manufacturing System", Cleaner Production Technologies and Management, AIT, August 20-Sep 12, 2008.

Gong, D-C, and Chiang, A., "The Green Plan to Comply with the RoHS in Taiwan", presented at the IERC, Vancouver, Canada, May 17-21, 2008.

Kachitvichyanukul, V., “A Comparison of GA and PSO Algorithm for Multi-objective Job Shop Scheduling Problems”, presented at POMS 19th Annual Conference, La Jolla, California, May 2008.

Kachitvichyanukul, V., and Su, N.P.B., “Decision Support System Framework for Order Review/Release based on Workload”, presented at POMS 19th Annual Conference, La Jolla, California, May, 2008.

Kachitvichyanukul, V., invited speaker of a seminar, Particle Swarm Optimization and its Engineering Applications, Pohang University of Science and Technology, Pohang, Korea, May 2008.

Kachitvichyanukul, V., invited speaker of a seminar, Particle Swarm Optimization and its Engineering Applications, Shanghai Maritime University, Shanghai, China, April 2008.

Kachitvichyanukul, V., invited speaker of a seminar, Particle Swarm Optimization and its Engineering Applications, Xian Jiao Tong University, Xian, China, April 2008.

Kachitvichyanukul, V., invited speaker of a seminar, Particle Swarm Optimization and its Engineering Applications, Sichuan University, Chengdu, China, April 2008.

Kachitvichyanukul, V., invited speaker of a seminar, Particle Swarm Optimization and its Engineering Applications, Sun Yat Sen University, Guangzhou, China, January 2008.

Kachitvichyanukul, V., invited speaker of a seminar, Recent Advances in Adaptive Particle Swarm Optimization, Pusan

National University, Pusan, Korea, November 2008.

Kachitvichyanukul, V., invited speaker of a seminar, Recent Advances in Adaptive Particle Swarm Optimization, Pohang University of Science and Technology, Pohang, Korea, November 2008.

Kachitvichyanukul, V., Program Chair, The Fourth International Congress on Logistics and SCM Systems, November 2008, Bangkok, Thailand. Sponsored by the International Federation of Logistics and SCM Systems, Japan.

Lin, G.C., and Gong, D-C, “On an Economic Lot Scheduling Problem with Random Machine Breakdowns,” presented at the IERC, Vancouver, Canada, May 17-21, 2008.

Patent

Title: Procedimento per l’identificazione e la compensazione degli errori sistematici in macchine utensili multi-asse a controllo numerico e relativo sistema.
(Procedure for Systematic Error Identification in Multi-axis CNC Machine Tools)

Application number: N. TO2008A000512 (Italy); date: 30-06-2008
Patent holder: Politecnico di Torino.
Inventors: Gustavo Belforte, Erik L. J. Bohez

5.7 Doctoral Students’ Dissertation

Design and Manufacturing Engineering

Design, Analysis and Fabrication of MEMS Based Microfluidic Devices for Drug Delivery Systems
By Asim Nisar
Supervisor: Dr. Nitin V. Afzulpurkar / Prof. Banchong Mahaisavariya

Industrial Engineering and Management

Inventory Policy with Non-Linear Increasing Demand Pattern and Shortage Allowance
By Ririn Diar Astanti
Supervisor: Dr. Huynh Trung Luong

Particle Swarm Optimization Algorithms and their Applications to Scheduling Problems
By Pisut Pongchairerks
Supervisor: Dr. Voratas Kachitvichyanukul

Particle Swarm Optimization for Generalized Vehicle Routing Problem
By The Jin Ai
Supervisor: Dr. Voratas Kachitvichyanukul

5.8 Masters Students Theses

Design and Manufacturing Engineering

Design and Development of Material Handling Unit for Rapid Prototyping System
By Thittikorn Phattanaphibul
Supervisor: Dr. Pisut Koomsap

Development of PLA Based Scaffold Structure Using SVM Technique
By Irwansyah
Supervisor: Dr. Pisut Koomsap

Investigation of Waterjet-Based Rapid Prototyping System
By Viboon Tangwarodomnukun
Supervisor: Dr. Pisut Koomsap

Reverse Engineering and 5-Axis Machining of a Fuel Gas Nozzle
By R. Senthil Ganapathy
Supervisor: Assoc. Prof. Erik L. J. Bohez

A Simulation Study of Hybrid CONWIP/PUSH and DEWIP/PUSH Control Policies
By Kedsiri Pomchiangpin
Supervisor: Dr. Voratas Kachitvichyanukul

Measure of Bullwhip Effect in Supply Chains: The Case of Independently and Normally Distributed Demand Process with (Q, R) Inventory Policy
By Kanda Boonsothonsatit
Supervisor: Dr. Huynh Trung Luong

Industrial Engineering and Management

A Case Study of Performance Evaluation of FMS by Using PETRI NET Model
By Rajib Ahmed
Supervisor: Assoc. Prof. Erik L. J. Bohez

Decision Support System for Order Review/Release
By Nguyen Phan Bach Su
Supervisor: Dr. Voratas Kachitvichyanukul

Production Planning and Scheduling for a Cardboard Packaging Production System
By Ho Le Hong Chau
Supervisor: Dr. Voratas Kachitvichyanukul

Age-Dependent Selective Maintenance Policy
By Truong Ba Huy
Supervisor: Dr. Huynh Trung Luong

Development of a Hybrid Backlog-Lost Sales Inventory Control Policy
By Phundharux Yuvasavee
Supervisor: Dr. Huynh Trung Luong

Robust Quality Function Deployment for Supporting Technology Roadmapping
By Nguyen Thi Ngoc Truc
Supervisor: Dr. Pisut Koomsap

A Periodic Review Inventory Policy with Poisson Demand and Two Supply Modes
By Nguyen Quang Trung
Supervisor: Dr. Huynh Trung Luong

Genetic Algorithm for Production Planning in Oil Refinery
By Tran Viet Cuong
Supervisor: Dr. Voratas Kachitvichyanukul

Supply Chain in a Poultry Processing Factory
By Tran Ngoc Anh Khoa
Supervisor: Dr. Voratas Kachitvichyanukul

Integrated Production and Inventory Policy in a Supply Chain
By Huynh Tri
Supervisor: Dr. Huynh Trung Luong

Chapter 6: SET – GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING FIELD OF STUDY

6.1 Introduction

Besides the traditional areas of engineering geology and soil engineering such as foundation engineering, earth structures, underground excavations, land subsidence, and landslide mitigations, geotechnical engineers and researchers are increasingly involved in new and dynamic areas of ground improvement, geosynthetic engineering, land reclamation, lightweight materials, forensic engineering and the effective recycling of waste materials.

Furthermore, geotechnical engineers are increasingly challenged to solve environmental problems related to the reduction of construction wastes, provision of efficient waste disposal facilities, clean-up of contaminated sites as well as geological related hazards such as landslides and soil erosion. The GGE field of study also opens new programs for training and education in onshore and offshore exploration of oil and gas. In accommodating these requirements, the courses in the field have been enhanced to equip geotechnical and exploration engineers not only with traditional knowledge of soil mechanics and geology but also with skills in hydrogeology, geochemistry, biological processes, petroleum engineering, resource exploration, and geophysics. Students in the field are exposed to geomaterials, continuum mechanics and particulate/discontinuous media. Since 2008 the field had successfully opened and operated professional programs in Geoexploration & Petroleum Geoengineering and Geotechnical Engineering and Management in HCM City to meet the increasing demands of Vietnam in these areas.

6.2 Research Facilities and Laboratories

The Geotechnical and Geoenvironmental Laboratory can be boasted as one of the most equipped geotechnical laboratories in the region with more than 30 years of experience in both soil and rock testing. The laboratory, which offer technical services on testing and research on the engineering behavior and properties of soil and rock; geologic mapping; environmental geophysical surveys; and testing of geosynthetic materials conducted by ACSIG, consists of five (5) sections - Soil Mechanics, Rock Mechanics, Engineering Geology, Geophysics, and Geoenvironmental Engineering.

Soil Mechanics Laboratory

The Soil Mechanics Laboratory has facilities for testing and research on the engineering behavior and fundamental properties of soil. It is equipped to test compaction, seepage, compressibility, deformation and shear strength, soil dynamics, and ground improvement.

Among other equipment, it has an automatic Central Data Acquisition System (CDAS) and two temperature-controlled rooms that house triaxial and consolidation equipment. Its field operation unit has a full range of tools for sampling soils and rocks and field test equipments for vane tests, Dutch cone tests, piezocone tests, pressuremeter tests, screw plate tests, electric logging, and vibration measurements.

Rock Mechanics Laboratory

The Rock Mechanics Laboratory has facilities to determine a variety of the physical and mechanical

properties of rocks and rock aggregates required for research and practice.

Moreover, the laboratory is capable of determining hardness, swelling and slake durability index properties of weak rocks. The laboratory has provided testing services to a large number of infrastructure projects in the region.

Engineering Geology Laboratory

The Engineering Geology Laboratory has facilities for research on the engineering behavior and fundamental properties of rocks and minerals.

It provides classification and characterization tests for rock and minerals including petrographic and X-ray diffraction studies. It has stereoscopes, radial line planimetric plotter, stereo-sketch and sketch masters for analysis and interpretation of airphotos as applied to mineral explorations, transportation route studies, forestry, and civil engineering.

Geophysics Laboratory

The Geophysics Laboratory is being developed for training and researches in Geosystem Exploration and Petroleum Geoengineering. It has a number of seismic, electric, magnetic and radiometric instruments, including some of the most advanced equipment such as DAS-1 (OYO), a multipurpose high-performance seismic data acquisition system, or SYSCAL R1 Plus (IRIS Instruments), an all-in-one multi-electrode resistivity and induced polarization (IP) imaging system.

The Laboratory is capable of conducting and assisting in geophysical field surveys for engineering, environmental, mineral resources, oil and gas exploration as well as in performing analysis, interpretation and visualization of geophysical data acquired.

Geoexploration and Petroleum Geoenvironmenting Laboratory

This new laboratory unit hosts high-capacity computers installed with very specialized software used in the upstream sector of petroleum E&P industry, notably with the well-known software for subsurface exploration, petrophysical characterization and reservoir simulation such as Petrel, Interactive Petrophysics, Eclipse etc. which are worth 1.6 million USD and were donated by Schlumberger to AIT.

Geoenvironmental Laboratory

The Geoenvironmental Laboratory provides a variety of equipment for geoenvironmental engineering research. It has equipment for geotechnical and chemical analysis that supports research in fundamental processes related to soil, water and chemical interactions that are applied to site and risk assessment, waste containment systems, and remedial technology. The chemical analysis equipment, spectrophotometer, from which the ion concentration can be determined with good accuracy and precision, enables research on soil-contaminant interaction.

Flexible wall permeameter, rigid wall permeameter and consolidation cell with permeameter are used to analyze water and chemical migration through waste containment systems. While the electrokinetic cell with advanced monitoring and controlled system is utilized for research in site reclamation and site remediation.

6.3 Faculty and Research Staff

DENNES T BERGADO, BSCE, Mindanao State Univ, Philippines; MEng, AIT, Thailand; PhD, Utah State Univ, USA

Professor [*Ground improvement techniques and geosynthetics, In-situ testing, Geotechnical disaster mitigation, and Probabilistic/numerical methods in geotechnical engineering*]

NOPPADOL PHIEN-WEJ, BEng, Chulalongkorn Univ, Thailand; MS, PhD, Illinois at Urbana-Champaign, USA.

Associate Professor [*Tunneling and other underground excavations in rocks and soils; Slope stability and retaining structures; Landslides; Earth structures and dams; Pile foundations; Buried pipes and culverts*] [*Soft ground tunneling; Underground excavations in rock; Deep excavations; Land subsidence from deep well pumping; Rock properties*]

KYUNG-HO PARK, BEng, MEng, Korea Univ; DEng, SUNY at Buffalo, USA.

Assistant Professor [*Geotechnical Engineering; Geomechanics; Computational Mechanics; Boundary Element Methods*]

PHAM HUY GIAO, DEng, MEng, Asian Institute of Technology, Thailand; Dipl Ing (MSc), Bucharest University, Romania

Assistant Professor [*Exploration and Engineering Geophysics; Geotechnical Engineering; Computer-Aided Analysis in Geoenvironmenting*]

6.4 Grants and Sponsored Research Completed in 2008

An Engineering Geophysical Study on Ground Penetration Radar (GPR) and Electric Imaging (EI) Responses to Detect of Voids Beneath and/or Inside a Concrete Pavement Model with reference to Roadways Maintenance

Duration 1-Sep-06 30-Apr-08
Project Investigator Pham Huy Giao

Sponsor Bureau of Road Research and Development, Department of Highways, Thailand
Total Contracted Amount (Baht) 199,919

Construction Supervision for Mechanically Stabilized Earth of Bridge Approach Project

Duration 1-Oct-07 30-Sep-08
Project Investigator Dennes T. Bergado/ACSIG
Sponsor Nawarat Pattakarn Public Co Ltd Thailand
Total Contracted Amount (Baht) 1,400,000

Geotechnical Study Hutgyi Hydropower Project

Duration 1-Apr-06 30-Nov-08
Project Investigator Noppadol Phien-wej
Sponsor EGAT Public Company, Thailand
Total Contracted Amount (Baht) 749,000

GEPG Training Course on "Application of Geophysical Technology for Solving Engineering Problems"

Duration 1-Aug-08 30-Sep-08
Project Investigator Pham Huy Giao
Sponsor IEC Company Limited, Thailand
Total Contracted Amount (Baht) 144,000

Preliminary survey of overseas projects in environment-friendly geo-space development

Duration 1-Mar-08 31-Dec-08
Project Investigator Kyung-Ho Park
Sponsor Korea Institute of Construction Technology (KICT)
Total Contracted Amount (Baht) 319,045

6.5 On-going Grants and Sponsored Research

Building Human Resources in the Development of Academic Programs in Sustainable Geosystem Exploration and Engineering

Duration 1-Nov-05 30-Aug-09
Project Investigator Pham Huy Giao
Sponsor Asia Link / European Commission
Total Contracted Amount (Baht) 238,706

Development of software tool for frame analysis and design of high strength steel bolted beam column joints

Duration 1-Nov-08 01-Nov-10
Project Investigator Kyung Ho Park
Sponsor RTG, SYS, D&I ENG
Total Contracted Amount (Baht) 2,000,000

Engineering analysis for flood fences structure management at Pathumthani province

Duration 12-Oct-08 11-Oct-09
Project Investigator Noppadol Phien-wej

Sponsor RTG
Total Contracted Amount (Baht) 900,000

Geotechnical Advice in Construction Supervision on Foundation and Tunnel, Kawenoi Dam Project

Duration 1-Mar-06 28-Feb-09
Project Investigator Noppadol Phien-wej
Sponsor P&C Management, Co., Ltd., Thailand
Total Contracted Amount (Baht) 321,000

Ground deformations and effects on adjacent structures caused by subway tunneling in Bangkok

Duration 25-Apr-07 31-Dec-09
Project Investigator Kyung-Ho Park
Sponsor RTG
Total Contracted Amount (Baht) 900,000

Impact of pumping on water level change and bank erosion in Bang Pakong River project

Duration 1-Jun-08 31-Jul-09
Project Investigator Noppadol Phien-wej
Sponsor EastWater Resources Development and Management Public Company Limited
Total Contracted Amount (Baht) 1,712,000

Initial Near-surface Geophysical Investigation of the Suvarnabhumi International Airport (SBIA)

Duration 1-Sep-07 30-Mar-09
Project Investigator Pham Huy Giao
Sponsor IMMS Company Limited Thailand
Total Contracted Amount (Baht) 1,343,381

Professional Masters in Geoproduction & Petroleum Geoenvironmental Engineering, HCMC

Duration 1-Sep-08 31-Dec-09
Project Investigator Pham Huy Giao, Noppadol Phien-wej
Sponsor Oil and Gas Company, Vietnam
Total Contracted Amount (Baht) 3,233,400

Research on the damages on the north east reef of Male, The Maldives

Duration 1-May-06 30-Apr-09
Project Investigator Ulrich Glawe / Kyung-Ho Park
Sponsor Environment Research Center Male, MV
Total Contracted Amount (Baht) 1,563,109

Safe and sustainable management of municipal solid waste in Bangladesh through the practical application of WasteSafe proposal – WasteSafe II

Duration 1-Jan-07 31-Dec-09
Project Investigator Ulrich Glawe / Kyung-Ho Park
Sponsor European Commission
Total Contracted Amount (Baht) 2,996,884

Volume Change and Smear Zone Characteristics of PVD Improvement with Vacuum Preloading

Duration 1-Aug-08 31-Jul-09
Project Investigator Dennes T. Bergado
Sponsor Maruyama Industry Co. Ltd / RTG
Total Contracted Amount (Baht) 1,400,000

6.6 Publications

Refereed Journals

A. Weller, D.H. Hien and P. H. Giao (2008), An Approach to Construct The Weathering Profile in a Hilly Granitic Terrain Based on Electrical Imaging, Journal of Applied Geophysics, 65, pp. 30-38.

Abuel-Naga, H.M., Bergado, D.T. and Bouazza, M. (2008), Thermal Conductivity Evolution of Saturated Clay under Consolidation Process, ASCE Journal of Geomechanics, Vol. 8, No. 2, pp. 114-122.

Bergado, D.T. and Teerawattanasuk, C. (2008), 2D and 3D Numerical Simulations of Reinforced Embankments on Soft Ground, Geotextile and Geomembranes, Vol. 26, pp. 39-55.

Chai, J.C., Miura, N. and Bergado, D.T. (2008), Preloading Clayey Deposit by Vacuum Pressure with Cap-Drain: Analysis versus Performance, Geotextiles and Geomembranes, Vol. 26, No. 3, pp. 220-230.

Giao P. H., A. Weller and D.H. Hien and (2008), An Approach to Construct The Weathering Profile in a Hilly Granitic Terrain Based on Electrical Imaging, Journal of Applied Geophysics, 65, pp. 30-38.

Giao P. H., N. T. Dung and P. V. Long (2008), An Integrated Geotechnical-Geophysical Investigation of Soft Clay at a Coastal Site in the Mekong Delta for Oil and Gas Infrastructure Development, Canadian Geotechnical Journal, 11, Vol. 45, pp. 1525-1537.

Jamsawang, P., Bergado, D.T., Bandari, A., and Voottipruex, P. (2008), Investigation and Simulation

of Stiffened Deep Cement Mixing (SDCM) Pile, Int'l Journal of Geotech. Eng'g, Vol. 2, No. 3, pp. 229-246.

Lee, J.G., Owatsiriwong, A. and Park, K. H. (2008), Analytical Solution for Steady-State Groundwater Inflow into a Drained Circular Tunnel in a Semi-Infinite Aquifer: A Revisit, Tunneling and Underground Space Technology, 23, pp. 206-209.

Lee, J.G., Owatsiriwong, A. and Park, K. H. (2008), Seepage Force in a Drained Circular Tunnel: An Analytical Approach, Canadian Geotechnical Journal, 45(3), pp.432-436.

Lee, J.G., Park, K. H. and Tontavanich, B. (2008), A Simple Procedure for Ground Response Curve of Circular Tunnel in Elastic-Strain Softening Rock Masses, Tunneling and Underground Space Technology, 23, pp. 151-159.

Owatsiriwong, A. and Park, K. H. (2008), A BEM Formulation for Transient Dynamic Elastoplastic Analysis via Particular Integrals, International Journal of Solids and Structures, 45(9), pp.2561-2582.

Owatsiriwong, A., Phansri, B. and Park, K. H. (2008), A Cell-Less BEM Formulation for 2D and 3D Elastoplastic Problems using Particular Integrals, CMES: Computer Modeling in Engineering & Sciences, 31(1), pp. 37-59.

Pothiraksanun, C., Saowapakpiboon, J., Bergado, D.T., and Than, N.Y. (2008), Reduction of Smear Effects Around PVD using Thermo-PVD, Ground Improvement Journal, Vol. 161, G 14, pp 179-187.

Saowapakpiboon, J. Bergado, D.T., Hayashi, S., Chai, J.C., Kovittayon, N. and de Zwart, T.P. (2008), CeTeau PVD Vacuum System in Soft Bangkok Clay: A Case Study of the Suvarnabhumi Airport Project, Lowland Technology International, Vol. 10, No. 1, pp. 42-53.

Tanchaisawat, T, Bergado, D.T. and Vootipruex, P. (2008), Numerical Simulation and Sensitivity Analysis of Full Scale Test Embankment with Reinforced Lightweight Geomaterials on Soft Bangkok Clay, Geotextiles and Geomembranes, Vol. 26, No. 6, pp. 498-511.

Tanchaisawat, T, Vootipruex, P., Bergado, D.T. and Hayashi, S. (2008), Performance of Full Scale Test Embankment with Reinforced Lightweight Geomaterials on Soft Ground, Lowland Technology International, Vol. 10, No. 1, pp. 84-92.

Vootipruex, P., Bergado, D.T., Saowapakpiboon, J., Mairaeng, W., Modmoltin, C. and Chucheeepsakul, S. (2008), Soil Reinforcement with Combination Roots System: A Case Study of Vetiver Grass and Acacia Manguim Wild, Lowland Technology International, Vol. 10, No. 2, pp. 56-67.

Conference Proceedings

Bergado, D.T. and Jamsawang, P. (2008), Stiffened Deep Cement Mixing (SDCM) Method under Embankment Loading, Invited Guest Lecture, Civil, Architectural and Environmental Dept., University of Kansas, USA.

Bergado, D.T., Balasubramaniam, A.S., Fannin, R.J. and Holtz, R.D. (2008), Prefabricated Vertical Drains in Soft Bangkok Clay: A Case Study of the New Bangkok Int'l Airport Project, Plenary Lecture, Indian Geotechnical Conference, IGC-2008, Bangalore, India.

Bergado, D.T., Jamsawang, P., Tanchaisawat, T. and Lai, Y.P. (2008), Performance of Reinforced Load Transfer Platforms for Deep Cement Mixing Piles, Proc. ASCE Geo Congress 2008: Geosustainability and Geohazard Mitigation, Geotech Special Publ. No. 178, pp. 628-637.

Bergado, D.T., Long, P.V., Abuel-Naga, H.M. Piyaboon, S. and Tanchaisawat T. (2008), Geosynthetics Reinforcement Application for Tsunami Reconstruction: Evaluation of Interface Parameters with Silty Sand and Weathered Clay, Proc. 1st Pan American Geosynthetics Conference, Cancun, Mexico, pp. 1616-1625.

Bergado, D.T., Long, P.V., Saowapakpiboon, J. and Vootipruex, V. (2008), Evaluation of Interface Parameters from Pullout Test in Silty Sand and Weathered Clay, Invited Lecture, Proc. Of the 4th Asian Regional Geosynthetics Conference, Shanghai, China.

Bergado, D.T., Lorenzo, G.A. and Lai, Y.P. (2008), Analytical and Numerical Analysis of Full Scale Reinforced Embankment on Deep Mixing Improved Soft Clay, Proc. 1st Pan American Geosynthetics Conf., Cancun, Mexico, pp. 1342-1351.

Giao P. H. and T. T. Thoang (2008), Characterization of Some Vietnamese Marine Clay Deposits with Reference to the Effect of Sea Level Change and Correction of the Sediment Accumulation Curve, Proc. 6th Intl. Asian Marine Geology, September, Kochi, Japan.

Giao P. H., Prinya P. (2008) An Exploration and Engineering Study of Some Hot Spring Systems in Western Thailand for Local Tourism Development, Proc. 8th Asian Geothermal Symposium, December, Hanoi, Vietnam.

Jamsawang, P., Bergado, D.T., and Vootipruex, P. (2008) Behavior of Stiffened Deep Mixing Pile under Full Scale Embankment Loading, Proc. Int'l. Symp. on Lowland Technology, ISLT 2008, Busan, Korea.

Jones, C.J.F.P., Lamont-Black, J., Glendinning, S. Bergado, D.T., Eng, T. Fourie, A., Hu, L.M., Pugh, C., Romantuk, M., Simpanen, S. and Zhuang, Y.F. (2008), Recent Research

and Applications in the Use of Electro-Kinetic Geosynthetics, Keynote Paper, Proc. 4th European Geosynthetics Conference., Edinburg, U.K.

Phienwej, N. (2008), Curriculum of Professional Master Program for Engineering Practice, 6th Symposium on Engineering Education, Association of Faculty of Engineering of Thailand, May, Cha-am, Petchaburi, Thailand.

Phienwej, N., (2008), Problem from Weak Rock Behavior in Operation of a Cut-and-Fill Pond of a Pumped Storage Scheme, Proceedings of 4th Asian Rock Mechanics Symposium, Teheran, Iran, November.

Phienwej, N., (2008), Roles of Numerical Analysis in Design of High CFRD Dams, Proceeding International Symposium Monitoring and Modeling in Geo-Engineering, EIT-JSCE Joint Symposium, September 15-16, Bangkok, Thailand.

Phienwej, N., and Hooi Kah Yeng (2008), Ground Movements in Station Excavation of Bangkok First MRT Line, Proceedings of 6th International Symposium on Geotechnical Aspects of Underground Construction in Soft Ground-IS Shanghai 2008, Shanghai, China, April 10-12, pp. 103-108.

Saowapakpiboon. J., Bergado, D.T., Chai J.C., Kovittayanon, N., and de Zwart, T.P. (2008), Vacuum-PVD Combination with Embankment Loading Consolidation in Soft Bangkok Clay: A Case Study of Suvarnabhumi Airport Project, Proc. 4th Asian Regional Geosynthetics Conference, Shanghai, China.

Saowapakpiboon. J., Bergado, D.T., Wanthong, P., Chai, J.C., Kovittayanon, N. and de Zwart, T.P. (2008) Comparison of Vacuum PVD and Conventional Systems in Soft Bangkok Clay of the Suvarnabhumi

Airport, Proc. Int'l. Symp. on Lowland Technology, ISLT 2008, Busan, Korea.

Tanchaisawat T., Bergado, D.T., Piyaboon, S. and Lai, Y.P. (2008), Performance of Rubber Tire Chip-Sand Backfill with Geogrid Reinforced Embankment on Soft Ground, Proc. 1st Pan American Geosynthetics Conference, Cancun, Mexico, pp. 328-337.

Tanchaisawat, T., Bergado, D.T., Lai, Y.P. Piyaboon, S. and Anujorn, P. (2008), Numerical Simulation of Geogrid Reinforced Lightweight Geomaterials on Soft Ground, Proc. 4th Asian Regional Geosynthetics Conference., Shanghai, China.

Other Publications (*Local Journals, Research Report, Newspapers, etc*)

Ali, M., Kan, H., Park, K. H. and Riyza M. (2008), Combined Effect of Island Topography and Reef Morphology in Dissipating Tsunami Wave Energy in Maldives, Proceedings of Conference on Marine Problems and Specific Solutions, COMPASS 2008, June 15-18, Maldives, pp. 71-77.

Arjnoi, P., Kim J.S., Lee, J.G. and Park, K. H. (2008), Effect of Drainage Condition on Lining Stresses: A Case Study of Bangkok South Blue Line Extension Subway Tunnel, Eleventh East Asia-Pacific Conference on Structural Engineering & Construction (EASEC-11), November 19-21, Taipei, Taiwan, pp. 84-85.

Arjnoi, P., Owatsiriwong A., and Park, K. H. (2008), Porewater Pressure Prediction in a Drained Circular Tunnel and Analytical Approach, Proceedings of 13th National Convention on Civil Engineering.

Bergado, D.T. (2008), International Geosynthetics Society-Thailand Newsletters (2 Issues).

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Kim, J.S. Owatsiriwong, A. and Park, K. H. (2008), Inelastic Transient Dynamic Analysis of Two-and-Three-Dimensional Stress Problems by Particular Integral Boundary Element Method, Journal of Computational Structural Engineering Institute of Korea, 21(4), pp. 375-382.

Lee, J.G., Park, K. H., Suwansawat, S. and Tran, D.V. (2008), Single Tunnel Analysis in Bangkok Blue Line Subway by 3D Numerical Simulation, Proceedings of 34th KSCE Conference & Civil Expo, October 29-31, Daejeon, Korea, pp. 1038-1041.

Owatsiriwong, A., Phansir, B., Park, K. H. (2008), Dynamic Nonlinear Stress Analysis by BEM using Particular Integrals, Proceedings of 13th National Convention on Civil Engineering.

Owatsiriwong, A., Phansir, B., Park, K. H. (2008), Elastodynamic Analysis by BEM using Domain Decomposition Method and Particular Integrals, Joint Student Seminar on Civil Infrastructures, July 3, Thailand.

Owatsiriwong, A., Phansir, B., Park, K. H. (2008), Multi-Region Elastoplastic Analysis by BEM using Iterative Domain Decomposition Method, Eleventh East Asia-Pacific Conference on Structural Engineering & Construction (EASEC-11), November 19-21, Taipei, Taiwan, pp. 500-501.

P. H. Giao (2008), Benefiting from Case Studies Related to E&P of Fractured Granite Basement Offshore of Vietnam, Invited Lecture at World Engineering Congress, Upstream (E&P) Oil and Gas Forum, Bangkok 18-19 June.

Park, K. H. and Riyaz, M (2008), Reef Slope Failure in the Northeastern Corner of Male, Maldives, 11th International Coral Reef Symposium, July 7-11, Florida, USA.

Park, K. H. and Riyaz, M (2008), Safer Island Concept Developed After the 2004 Indian Ocean Tsunami: A Case Study of Maldives, International Symposium on the Restoration Program from Giant Earthquakes and Tsunamis, Phuket, Thailand, pp. 221-226.

Park, K. H. and Tran, D. V. (2008), A Simplified 3D Numerical Simulation for Bangkok MRT Subway Tunnel, Joint Student Seminar on Civil Infrastructures, July 3, Thailand.

Phienwej, N. (2008), 1. Overview of Land Subsidence from Deep Well Pumping in Bangkok 2. Prediction of Differential Settlement of Structures in Sinking Bangkok Ground, Workshop on Geotechnical Engineering in Urban Areas Affects by Land Subsidence-Mexico City, Bangkok and other Large Cities, Invited Speaker, Organized by ISSMGE TC36, Institute of Engineering, National University of Mexico and Mexican Society of Soil Mechanics, 9 October, Mexico City, Mexico.

Phienwej, N. (2008), Challenges in High Concrete Faced Rock Fill Dams (CFRD), Proceedings of Seminar in Dam Engineering Griffith University, Gold Coast, March, Australia.

Phienwej, N. (2008), Earth Pressure Theory and Retaining Walls, Proceedings of Workshop on Analysis and Design of Earth Retaining Structures and Slope Stability, Engineering Institute of Thailand, Chiangmai, 19-21 March, pp. 1-51.

Phienwej, N. (2008), Experiences in Underground Construction in Bangkok Soft Ground, Cantho University, Vietnam, March.

Phienwej, N. (2008), Methods of Slope Stabilization for Highways, Workshop on Highways Slope Engineering, Department of Highways, May.

Phienwej, N. (2008), Performance of Asphalt-faced Rockfill Embankment at Lam Ta Khong Pumped Storage Project, Thailand, Proceedings of Seminar in Dam Engineering Griffith University, Gold Coast, March, Australia.

Phienwej, N. (2008), Problem of Soft Ground in Construction, Annual Seminar RTH Construction Co., Ltd., Prachuabkhirikan, April.

Phienwej, N. (2008), Soft Soil and Land Subsidence-Their Effects on Foundation Engineering, Civil Engineering Magazine, Engineering Institute of Thailand, March.

Phienwej, N. (2008), Water Diversion Tunnel Projects in Thailand, Special Seminar on What is Hydro-shields? Engineering Institute of Thailand, Bangkok, June.

6.7 Doctoral Students' Dissertation

Development of BEM Formulation for Multi-Region Transient Dynamic Elastoplastic Problems via Particular Integrals
By Adisorn Owatsiriwong
Supervisor: Dr. Kyung-Ho Park

Interactions and Performances of Geogrid Reinforced Tire Chips-Sand Lightweight Embankment on Soft Ground
By Tawatchai Tanchaisawat
Supervisor: Prof. Dennes T. Bergado

6.8 Masters Students' Theses and Research Studies

3D Analysis of Cut Slope in Soft Soil Reinforced with Soil-Cement Columns
By Thanyakorn Unphanvas
Supervisor: Dr. Noppadol Phien-wej

A GIS-Based Study on Hanoi Land Subsidence, Including a Review of the Monitoring Technique INSAR
By Nguyen Thi Tam

Supervisor: Dr. Pham Huy Giao / Prof. Freek van Der Meer

Analysis of Clay Microstructure Using Scanning Electron Microscope and Image Analysis Techniques
By Dang Thi Minh Hue
Supervisor: Dr. Noppadol Phien-wej/Dr. Pham Huy Giao

An Experimental Study to Monitor the Chemical Permeation Grouting in Sandy Soils by Electrical Resistivity Tomography (ERT)
By Nguyen Quoc Cuong
Supervisor: Dr. Pham Huy Giao

Application of Electrical Resistivity Measurement to Monitor and Assess Oil Well Cement Strength Development
By Suphot Kheawlee
Supervisor: Dr. Pham Huy Giao

Characterization on Soft Clays in Major Deltas of Vietnam with Reference to Infrastructure Development
By Ta Thi Thoang
Supervisor: Dr. Pham Huy Giao

Comparison of Thermal and Vacuum PVD Soft Clay Improvement Including Sem Investigation
By Yin Min Thann
Supervisor: Prof. Dennes T. Bergado

Determination of Geopressure Based on Geophysical Exploration Data
By Surapol Praditthao
Supervisor: Dr. Pham Huy Giao / Dr. Noppadol Phien-wej

Effect of Drainage Conditions on Porewater Pressure Distributions and Lining Stresses in Drained Tunnels
By Ponlawich Arjnoi
Supervisor: Dr. Kyung-Ho Park

Full Scale Behavior of SDCM Piles under Axial and Lateral Loading with Simulations
By Weeraphol Shinwuttiwong
Supervisor: Prof. Dennes T. Bergado

Interactions between Geogrid and Sand with/without Tire Chips Including Sensitivity Analyses and Simulations
By Khurram Shehzad

Supervisor: Prof. Dennes T. Bergado

Prediction and Performance of Using PVD under Preloading with and without Vacuum Preloading
By Prapas Wanthong
Supervisor: Prof. Dennes T. Bergado

Landslide Hazard Zonation and Risk Assessment Using GIS for Bac Kan, Vietnam
By Nguyen Hong Son
Supervisor: Dr. Noppadol Phien-wej/Dr. Pham Huy Giao

Mapping of Mineral Potential Zones of Au-Cu Deposit at Sepon Mine District, Laos P.D.R.
By Khambane Inthipunya
Supervisor: Dr. Pham Huy Giao

Numerical Simulation by ECLIPSE on Polymer Injection in the Benchamas Oilfield as an EOR Method using the High-Performance Computing Cluster
By Kittipol Noianusontigul
Supervisor: Dr. Pham Huy Giao

Prediction and Performance of using PVD under Preloading with and without Vacuum
By Prapas Wanthong
Supervisor: Dr. Kyung-Ho Park

Simplified 3D Numerical Simulation for Subway Tunnel Construction in Bangkok
By Tran Viet Dung
Supervisor: Dr. Kyung-Ho Park

Study on Land Subsidence Due to Ground Water Exploitation in Ho Chi Minh City
By Pham Thi Viet Nga
Supervisor: Dr. Pham Huy Giao

Three-Dimensional Analysis of Pile Response to Ground Movements from Deep Excavation in Bangkok Subsoil
By Wittaya Uchukosolkan
Supervisor: Dr. Noppadol Phien-wej

Research Study: Integrated Geophysical-GIS Study on Exploration of Gold and Copper Deposits in Sepon, Savannakhet Province, Lao PDR
By Soulixay Inthasone
Supervisor: Dr. Pham Huy Giao

Chapter 7: SET – MECHATRONICS and MICROELECTRONICS

FIELDS OF STUDY

7.1 Introduction

Mechatronics

At present, most academic institutions and industries in the Asian region are only system integrators. Components are procured from more developed countries (e.g. computer numerically controlled machines, robots, and automated guided vehicles) and are integrated as a system (e.g. flexible manufacturing system). To support the growth of the region's economy, expertise not only as system integrators but also as builders of components of advanced technologies must be developed. The growing number of electronic devices and the strong interactions between mechanical and electronic parts no longer permit separate investigations of these components.

Mechatronics provides new insights through an integrated consideration of mechanics, electronics and information technology. The curriculum is designed to provide multidisciplinary knowledge and to develop the ability to design mechatronics systems.

Microelectronics

The region's growing industrial sector and the increasing demand for high technologies have brought the need for expertise in microelectronics to a critical level. The students are prepared to cope with the needs of the electronics industry in the region. The curriculum is equally balanced between the analog and digital design of circuits as well as the processing related topics including failure analysis, suitable for this electronics industrial sector in the region. The curriculum has been designed and constantly adapted in partnership with microelectronics industries and collaborating universities overseas. Miniaturisation of IC and the possibilities

of completely new technologies like nanotechnology have also been introduced.

7.2 Research Facilities and Laboratories

Mechatronics and Microelectronics fields of study share all the laboratory facilities with the Industrial & Manufacturing Engineering field of study. There are several well equipped laboratories with the primary function of supporting the students and faculty for teaching and research and to conduct outreach programs.

Mechatronics and Automation Laboratory

The Mechatronics and Automation laboratory is well equipped with many PLC systems (S5, S7200/300/400, INDRAMAT, BOSCH), distributed control systems (PCS7), operator panels (OP5, OP17/DP and OP35), a PC-based human machine interface package (WINCC) and networked field buses (PROFIBUS, INTERBUS and SERCOS). The lab has mobile robots (NOMAD, PIONEER 2), robot arms (CRS), an industrial robot (KUKAKR15), a self-made open architecture CNC machine, CNC control systems (MTC200, SINUMERIK 8100/8400), image processing systems (DVT, MATROX) and FPGA's (XILINX-1i VIRTEX PRO, ALTERA). Software such as SYNOPSIS IC Design, ANYSIM, ANSYS, ADAMS and many types of special sensors and actuators are also available for research use.

The Integrated Circuit Design laboratory gives students access to a wide variety of professional software applications including ANSYS, Orcad, ModelSim SE, Xilinx ISE, Synopsys, Leonardo Spectrum LS and Tanner (S-Edit for Schematic Capture, T-Spice and W-Edit for Simulation and LEdit for Physical Layout).The laboratory's facilities are

used for analog and digital circuit design, microchip design and fabrication, MEMS, microactuators and micro-sensors design, computational electronics, and so on. Fabrication facilities are available through the National Electronics Technology Center and the National Science and Technology Development Administration located in nearby Science Park.

Mechatronics faculty and students work in close collaboration with industry and government sectors in the areas of industrial automation, robotics, control, system design and integration. Some examples of ongoing projects include a medical tele-analyzer, automated visual inspection systems, MEMS design, an autonomous flying robot, automating centrifuge machines, an autonomous underwater robot and automating crystallization processes.

Simulation Laboratory

This lab is equipped with networks of Pentium PC for general applications and internet access, high end CAD/CAM & Simulation software such as ARENA and AutoMOD. In addition, a high performance computer facility with parallel cluster is also available for research use.

IC Design Laboratory

The Integrated Circuit Design laboratory gives students access to a wide variety of professional software applications including ANSYS, Orcad, ModelSim SE, Xilinx ISE, Synopsys, Leonardo Spectrum LS and Tanner (S-Edit for Schematic Capture, T-Spice and W-Edit for Simulation and LEdit for Physical Layout).The laboratory's facilities are used for analog and digital circuit design, microchip design and fabrication, MEMS, microactuators and micro-sensors design, computational electronics, and so on. Fabrication facilities are available

through the National Electronics Technology Center and the National Science and Technology Development Administration located in nearby Science Park.

Nanotechnology Center of Excellence (CoEN)

The Center of Excellence in Nanotechnology addresses the creation of knowledge in areas relevant to industries. Activities include joint research with other local and international universities and institutes, education and training personnel in the field of nanotechnology, technology transfer and promotion of public and industrial awareness of nanotechnology. This center provides international platform for academicians and researchers from the region, AIT and our partnered universities worldwide to work together with the industries. Current research activities at the CoEN is based on a unifying concept of using inexpensive wet chemical methods and self-organisation processes to fabricate innovative materials, develop diagnostic tools, and apply nanoparticles to environmental issues amongst others. Activities of the CoEN at AIT include, but not exclusively, research and development focused on the application of nanoparticles, nanomaterials, devices and sensors. The CoEN will support innovative research suited to the region, education and training of highly qualified personnel and in increasing public and industrial awareness of nanotechnology, amongst other activities like arranging conferences, workshops etc.

7.3 Faculty and Research Staff

Full-time Faculty

JOYDEEP DUTTA, BSc (Hons), St Edmund's College; MSc (Physics), North Eastern Hill Univ; PhD, IACS, Calcutta Univ, India.

Professor [*Functional materials, nanomaterials, Nanoparticles, selforganisation, Biomimetic*

processes, Polyelectrolyte deposition, Gas sensors, Biosensors, optoelectronic devices]

MANUKID PARNICHKUN, BEng, Chulalongkorn Univ, Thailand; MEng, PhD, Univ of Tokyo, Japan

Associate Professor [*Robotics, control, and measurement (involves with design and development of hardware and software of mechatronics devices); New robot mechanism, novel control algorithm, and innovative measurement concept are investigated]*

NITIN V AFZULPURKAR, BEng, Univ of Poona, India; PhD, Univ of Canterbury, New Zealand

Associate Professor [*Computer vision (pattern recognition and image processing); MEMS design, fabrication for electronic and bio medical applications; Soft computing algorithms for robotics and automation applications; Mechatronics applications for industrial use]*

Visiting Faculty

TARAPRASAD CHATTOPADHYAY, B.Sc. (1977); M.Sc. (1979); and Ph.D. (1988), Burdwan University, W.B., India. Currently, Professor, Department of Physics, Visva-Bharati, Santiniketan, W. Bengal, India.

Visiting Professor [*Microwave/Millimeterwave/Su bmm Wave / Optical Communication Systems]*

DEVENDRA SONA CHAUDHARI, B.Eng. (1987); M.Eng. (1990), SGGs College of Engineering & Technology, Nanded, Marathwada University, Aurangabad, India; Ph.D. (2000), IIT Bombay, India. Currently, Assistant Professor, Head, Dept. of Electronics and Telecommunication Engineering, Government College of Engineering, Jalgaon, India.

Visiting Assistant Professor [*Linear (Analog) Integrated*

Circuits; Biomedical Engineering, Signal Processing]

7.4 Grants and Sponsored Research Completed in 2008

Automated Inline Foam Sheet Placement and Adhesion

Duration 1-Jun-07 31-May-08
Project Investigator Nitin Afzulpurkar
Sponsor RTG-CPAC Roof Tile Co. Ltd
Total Contracted Amount (Baht) 1,500,000

Development of a Medical Tele-Analyzer by Force-Displacement-Hybrid Tactile Sensor and Actuator for Abdominal Mass Analysis (Phase 2)

Duration 1-Aug-04 31-Dec-08
Project Investigator Manukid Parnichkun
Sponsor National Electronic and Computer Technology Center, National Science and Technology Development Agency, Thailand
Total Contracted Amount (Baht) 1,674,200

Development of Generic Smart MEMS based Control System

Duration 23-Feb-04 30-Jun-08
Project Investigator Nitin Afzulpurkar
Sponsor National Electronic and Computer Technology Center, Thailand
Total Contracted Amount (Baht) 3,880,800

Fabrication and Properties of nanoparticles array

Duration 11-Jan-06 31-Aug-08
Project Investigator Joydeep Dutta
Sponsor KIST
Total Contracted Amount (Baht) 1,117,138

IEEE International Conference on Robotics and Biomimetics

Duration 1-Mar-08 01-Dec-08
Project Investigator Manukid Parnichkun
Sponsor Conference Participants
Total Contracted Amount (Baht) 3,000,000

Inorganic Particle Polymer Nanocomposites for Sensor Applications

Duration 1-May-05 30-Apr-08
Project Investigator Joydeep Dutta
Sponsor SIDA-Swedish Research Council
Total Contracted Amount (Baht) 2,018,500

Training Program on IC Packaging Testing and Assembly

Duration 1-Oct-07 31-Aug-08
Project Investigator Nitin Afzulpurkar
Sponsor Manpower Department, Ministry of Human Resources, RTG
Total Contracted Amount (Baht) 1,772,703

7.5 On-going Grants and Sponsored Research

Automated Pick and Place of Concrete Roof Tile at the Pressing Machine Operation

Duration 1-Jun-06 31-Dec-09
Project Investigator Nitin Afzulpurkar
Sponsor CPAC Roof Tile Co. Ltd, Thailand
Total Contracted Amount (Baht) 1,350,000

Development of an Automatic Steering Cruise Control System for Passenger Cars

Duration 1-Nov-07 31-Oct-10
Project Investigator Manukid Parnichkun
Sponsor National Electronics and Computer Technology Center, Thailand
Total Contracted Amount (Baht) 1,988,000

Development of an Exoskeleton Robot for Handicapped People Project

Duration 1-Jul-06 30-Jun-09
Project Investigator Manukid Parnichkun
Sponsor National Electronics and Computer Technology Center, Thailand
Total Contracted Amount (Baht) 2,043,100

Development of Force Feedback Exoskeleton system for Virtual Reality

Duration 1-Nov-08 31-Oct-09
Project Investigator Manukid Parnichkun
Sponsor RTG
Total Contracted Amount (Baht) 952,000

Development of Robot Controller

Duration 1-Nov-08 31-Oct-11
Project Investigator Manukid Parnichkun
Sponsor Aerofluid Co Ltd/RTG
Total Contracted Amount (Baht) 2,000,000

Disk Drive Automated Test Operation Modeling for Throughput Predicting Controlling and Monitoring

Duration 15-Sep-08 15-Sep-10
Project Investigator Nitin Afzulpurkar
Sponsor Seagate Technology Th Ltd/RTG
Total Contracted Amount (Baht) 900,000

Master Degree in HDD Engineering Technology

Duration 1-Jul-07 01-Jul-09
Project Investigator Nitin Afzulpurkar, Worsak K, Huynh Trung Luong, Joydeep Dutta, Lertsak L, Manukid P
Sponsor Western Digital Co. Ltd.
Total Contracted Amount (Baht) 10,528,000

Master Degree in HDD Engineering Technology-Batch 2

Duration 1-Jul-08 01-Jul-10

Project Investigator Nitin Afzulpurkar
Sponsor Western Digital Co. Ltd.
Total Contracted Amount (Baht) 10,528,000

Nanotechnology Center of Excellence on Application of nanoparticles

Duration 1-May-06 30-Apr-11
Project Investigator Joydeep Dutta
Sponsor NANOTEC (NSTDA)/ AIT
Total Contracted Amount (Baht) 50,000,000

New Raw Material Development for Filters in Hard Disk Drives

Duration 16-Jun-08 30-Jun-09
Project Investigator Joydeep Dutta
Sponsor RTG-AIT/Donaldson
Total Contracted Amount (Baht) 3,000,000

Photocatalytic thin film coating technology

Duration 16-Jun-08 30-Jun-09
Project Investigator Joydeep Dutta
Sponsor National Electronic and Computer Technology Center, National Science and Technology Development Agency, Thailand
Total Contracted Amount (Baht) 1,870,940

Printed Electronics using Direct Writing Technology

Duration 8-Mar-05 31-Dec-09
Project Investigator Joydeep Dutta
Sponsor NSTDA
Total Contracted Amount (Baht) 2,498,776

7.6 Publications

Refereed Books/Chapters

Baruah, S., Rafique, R.F., and Dutta, J., "Nanotechnology in Agriculture and Food Systems", DAIRY & INDUSTRY Magazine, Ukraine, Vol. 3(46), pp. 56-61, 2008.

Renugopalakrishnan, V., Kannan, A.M., Srinivasan, S., Thavasi, V., Ramakrishna, S., Li, P., Mershin, A., Filipek, S., Kumar, A., Dutta, J., Jaya, A., Munukutla, L., Velumani, S., and Audette, G.F., "Nanomaterials for Energy Conversion Applications", Nanomaterials for Energy Storage Applications, H.S. Nalwa (ed.), American Scientific Publishers, Stevens Ranch, CA, USA, Ch. 5, pp. 155-178, 2008.

Sugunan, A., and Dutta, J., "Pollution Treatment, Remediation, and Sensing", Nanotechnology,

Environmental Aspects, Vol. 2 (2008), H. Krug (ed.), Wiley-VCH, Weinheim, Germany - ISBN-13: 978-3-527-31735-6, pp. 125-146.

Refereed Journals

Baruah, S., Rafique, R.F., and Dutta, J., "Visible Light Photocatalysis by Tailoring Crystal Defects in Zinc Oxide Nanostructures", Nano 3, pp. 1–9, 2008.

Baruah, S., Thanachayanont, C., and Dutta, J., "Growth of Zinc Oxide Nanowires on Nonwoven Polyethylene Fibers", Science & Technology of Advanced Materials 9, 025009, 2008.

Baruah, S., Tumcharern, G., and Dutta, J., "Chitosan Clad Manganese Doped Zinc Sulphide Nanocrystallites for Biolabelling", Advanced Materials Research 55-57, pp. 589-592, 2008.

Baruah, S., Warad, H.C., Chindaduang, A., Tumcharern, G., and Dutta, J., "Studies on Chitosan Stabilised ZnS:Mn²⁺ Nanoparticles", Journal of BioNanoScience 2, pp. 42–48, 2008.

Chatchanayuenyong, T., and Parnichkun, M., "Time Optimal Hybrid Sliding Mode-PI Control for an Autonomous Underwater Robot", International Journal of Advanced Robotic Systems, Vol. 5, No. 1, March, 2008.

Deelertpaiboon, D., and Parnichkun, M., "Fusion of GPS, Compass, and Camera for Localization of an Intelligent Vehicle", International Journal of Advanced Robotic Systems, Vol. 5, No. 4, pp. 315-326, 2008.

Dumsong, E., Afzulpurkar, N.V., and Tuantranont, A., "Design, Analytical Modeling and Simulation of Wire-Free, Walking Scratch-Drive Micro-Robot", IEEE Transaction on Industrial Electronics, 2008 (In Press). (Impact Factor: 2.24).

Kaitwanidvilai, S. and Parnichkun, M., "Design of Structured Controller Satisfying H_{∞} Loop Shaping Using Evolutionary Optimization: Application to a Pneumatic Robot Arm", Engineering Letters, International Association of Engineers, Vol. 16, Issue 2, pp. 193-201, 2008.

Kaitwanidvilai, S., Jangwanitlert, A., and Parnichkun, M., "Structured Robust Loop Shaping Control for HIMAT System Using PSO", IAENG Transactions on Engineering Technologies, Vol. 1, pp. 23-34, 2008.

Kitsomboonloha, R., Bera, T., and Dutta, J., "Direct Synthesis of Anisotropic Metal Particles by Ink-jet Printing Technique", Advanced Materials Research 55-57, pp. 585-58, 2008.

Nisar A., Afzulpurkar, N.V., Mahaisavariya, B., and Tuantranont, A., "MEMS Based Micropumps in Drug Delivery and Biomedical Applications", Sensors and Actuators, B (130) 917-942, 2008. (Impact Factor: 2.94). *Top 25 articles on science direct in sensors and actuators journal for the period April-June 2008 and July-Sept 2008.*

Nisar, A., Afzulpurkar, N.V., Mahaisavariya, B., and Tuantranont, A., "Three Dimensional, Multifield Analysis of a Piezoelectric Micropump for Drug Delivery System for Treatment of Hemodynamic Dysfunction", International Journal of Cardiovascular Engineering, (Springer, US), December 2008, DOI: 10.1007/s10558-008-9060-1.

Nisar, A., Afzulpurkar, N.V., Mahaisavariya, B., and Tuantranont, A., "Multifield Analysis of a Piezoelectrically Actuated Valveless Micropump", Sensors & Transducers, (94) 7,176-195, 2008.

Promnimit, S., Jafri, S.H.M., Sweatman, D., and Dutta, J., "Conduction Properties of Layer-by-

layer Self-assembled Multilayer Nanoparticulate Structures", Journal of Nanoelectronics and Optoelectronics 3, pp. 184-189, 2008.

Promnimit, S., Cavelius, C., Mathur, S., and Dutta, J., "Growth of Gold/Zinc Sulphide Multilayer Films Using Layer-by-layer Assembly of Colloidal Nanoparticles", Physica E 41, pp. 285-291, 2008.

Rao, R., and Parnichkun, M., "Flexible Manufacturing System Selection Using a Combinatorial Mathematics Based Decision Making Method", International Journal of Production Research, 2008.

Thanh, B.T., and Parnichkun, M., "Balancing Control of Bicyrobo by Particle Swarm Optimization-based Structure Specified Mixed H_2/H_{∞} Control", International Journal of Advanced Robotic Systems, December 2008.

Tongsomporn, D., Afzulpurkar, N.V., Bargmann, B., Lekawat, L., and Siritaratiwat, A., "An experimental study of head instabilities in TMR sensors for Magnetic Recording Heads with Adaptive Flying Height", IEICE Transactions on Electronics, (In Press), Vol. E91-C, No.12, December 2008. (Impact Factor: 0.64).

Ullah, R., and Dutta, J., "Photocatalytic Degradation of Organic Dyes with Manganese Doped ZnO Nanoparticles", J. Hazardous Materials, 156, pp. 194-200, 2008.

Conference Proceedings

Abbasi, A.R., Afzulpurkar, N.V., Dailey, M.N., and Uno, T., "Obtaining Self-Reports for Affective System Design", NordiCHI2008 Workshop on Research Goals & Strategies for Studying User Experience and Emotion, October 19-22, 2008, Lund, Sweden.

Abbasi, A.R., Dailey, M.N., Afzulpurkar, N.V., and Uno, T., "Probabilistic Prediction of Student Affect from Hand Gestures", Proc. Intl. Conf. Automation, Robotics and Control Systems (ARCS08), July 7-10, 2008, pp. 58-63, Orlando, FL, USA.

Abid, M.I., Promnimit, S., and Dutta, J., "Multilayer Thin Film Devices Fabricated by Brick-by-brick Assembly of Nanoparticles", Proceedings of the 1st Biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand, pp. 322-321.

Ameritachot, S., Bera, T., and Dutta, J., "Colorimetric Sensors for Copper Ion Detection in Water", Proceedings of the 1st Biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand, pp. 64-65.

Ameritachot, S., Bera, T., and Dutta, J., "Detection of Heavy Metal Ions in Water using Nanoparticles", 2nd Thailand Nanotechnology Conference, August 13-15, 2008, Phuket, Thailand.

Aphiratsakul, N., Chirungsarpsook, K., and Parnichkun, M., "Design and Balancing Control of AIT Leg Exoskeleton – I (ALEX-I)", Proceedings of the 2008 International Conference on Informatics in Control, Automation and Robotics, ICINCO 2008, Funchal, Madeira, Portugal, pp.151-158, 2008.

Baruah, S., and Dutta, J., "Enhanced Photocatalysis Using Zinc Oxide Nanowires", 2nd Thailand Nanotechnology Conference, August 13-15, 2008, Phuket, Thailand.

Baruah, S., Shipin, O., and Dutta, J., "Fluorescence Imaging of Bacteria by Manganese-doped Zinc Sulfide Quantum Dots Cesar Ortinero", Proceedings of the 1st Biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand, pp. 313-315.

- Baruah, S., Sinha, S.S., Pal, S.K., Saha, B.G., Raychaudhuri, A.K., and Dutta, J., "ZnO Nanoparticles: Cleaner Environment through Photocatalysis", Proceedings of the 1st Biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand, pp. 295-296.
- Bera, T., Kitsomboonloha, R., and Dutta, J., "Synthesis of Silver Nanoparticles for Optical and Bio-Engineering Applications", Proceedings of the 1st Biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand, pp. 250-251.
- Bera, T., Kitsomboonloha, R., and Dutta, J., "Synthesis of Silver Nanoparticles for Electronic and Bio-engineering Applications", 2nd Thailand Nanotechnology Conference, August 13-15, 2008, Phuket, Thailand.
- Dakua, I., and Dutta, J., "Biomimetic Self-assembly of Gold Nanoparticles by Growing Fungi", Proceedings of the 1st Biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand, pp. 169-171.
- Dakua, I., Sugunan, A., and Dutta, J., "Gold Nanoparticle Synthesis from Chloroauric Acid Reduction by Monosodium Glutamate", 2nd Thailand Nanotechnology Conference, August 13-15, 2008, Phuket, Thailand.
- Dumsong, E., Afzulpurkar, N.V., Tuantranont, A., and Punyasai, C., "Design and Simulation of Wireless, Walking Scratch-Drive Micro-Robot", 10th International Conference on Control, Automation, Robotics and Vision, 2008, (In Press).
- Dumsong, E., Afzulpurkar, N.V., Tuantranont, A., and Punyasai, C., "A Finite State Machine for Controlling Untethered Scratch-Drive Micro-Robot", IEEE International Conference on Robotics and Biomimetics, (In Press).
- Khoung, D.B., Hornyak, G.L., and Dutta, J., "Maxwell-Garnett Formulation for Colloidal Multilayer Thin Films", Proceedings of the 1st Biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand, pp. 189-190.
- Kitsomboonloha, R., Myint, M.T.Z., Baruah, S., and Dutta, J., "A Custom Made Ink-jet Printer for Patterned Growth of Zinc Oxide Nanorods", Proceedings of the 1st Biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand, pp. 162-163.
- Kitsomboonloha, R., Myint, M.T.Z., Baruah, S., and Dutta, J., "Ink-jetting for Patterned Growth of Zinc Oxide Nanorods", 2nd Thailand Nanotechnology Conference, August 13-15, 2008, Phuket, Thailand.
- Landrea, F., Dutta, J., Hodgson, K., and Nazhad, M.M., "Nanoparticles for Enhancing the Strength Properties of Old Corrugated Container (OCC)", PAPTAC, 94th Annual Meeting of the Pulp and Paper Technical Association of Canada in Montreal, Quebec, February 5-7, 2008.
- Nisar, A., Afzulpurkar, N.V., Mahaisavariya, B., and Tuantranont, A., "Multi-field Analysis Using Multiple Code Coupling of a MEMS Based Micropump with Biocompatible Membrane Materials for Biomedical Applications", International Conference on BioMedical Engineering and Informatics BMEI, pp. 531-535, 2008.
- Ortiner, Cesar, Baruah, Sunandan, Shipin, Oleg and Dutta, Joydeep. Fluorescence imaging of bacteria by manganese-doped zinc sulfide quantum dots, Proceedings of the 1st biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand, Page 313-315.
- Parnichkun, M., Najjit, A., and Pichitpornchai, C., "Vision-Feedback based Motion Control of a Sprague-Dawley Rat by Brain Stimulation", Proceedings of the 2008 Thailand Research Fund Conference, Petchburi, pp. 200, 2008.
- Poyai, M., Limprasert, W., and Dutta, J., "Zinc Oxide Nanorod Dye Sensitized Solar Cell", 2nd Thailand Nanotechnology Conference, August 13-15, 2008, Phuket, Thailand.
- Promnimit, S., Abid, M.I., and Dutta, J., "Electrostatically Assembled Controlled Multilayer Films of Colloidal Nanoparticles", 2nd Thailand Nanotechnology Conference, August 13-15, 2008, Phuket, Thailand.
- Sadek, M.A.A., Jayasuriya, H.P.W., and Dutta, J., "Tillage Efficiency through Tools Coated with Nanosurfaces", Proceedings of the 1st Biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand, pp. 330-332.
- Sansomboonsuk, S., and Afzulpurkar, N.V., "Machine vision for Rice Quality Evaluation", The 2nd Technology and Innovation for Sustainable Development Conference, January 28-29, 2008, Thailand.
- Wimonrat, N., Kitsomboonloha, R., and Dutta, J., "Liquid Petroleum Gas Sensors using Zinc Oxide Nanorods", Proceedings of the 1st Biannual NanoThailand Symposium (NTS), November 6-8, 2008, Bangkok, Thailand.

Other Publications

Nanoscience and Nanotechnology Textbooks

- Hornyak, G.L., Dutta, J., Tibbals, H.F., and Rao, A.K., Introduction to NanoScience, (CRC Press of Taylor and Francis Group LLC),

May 2008, 856pp, ISBN-13: 9781420048056.

Hornyak, G.L., Moore, J.J., Tibbals, H.F., and Dutta, J., Fundamentals of Nanotechnology, (CRC Press of Taylor and Francis Group LLC), December 2008, 832pp, ISBN-13: 9781420048032.

Hornyak, G.L., Tibbals, H.F., Dutta, J., and Moore, J.J., Introduction to Nanoscience and NanoTechnology, (CRC Press of Taylor and Francis Group LLC), December 2008, 1200pp, ISBN-13: 9781420047790.

7.7 Doctoral Students' Dissertation

Mechatronics

Balancing Control of Bicycle Robot by Particle Swarm Optimization-Based Structure- Specified H2/H-infinity Control
By Bui Trung Thanh
Supervisor: Dr. Manukid Parnichkun

Microelectronics

Studies on Thin Film Properties and Application of Self Organized Nanoparticles
By Sujira Promnimit
Supervisor: Prof. Joydeep Dutta

The Effect of Heater-Induced Head Protrusion on Read/Write Ability and Instability of Perpendicular Recording Systems
By Damrongsak Tongsonporn
Supervisor: Dr. Nitin V. Afzulpurkar

7.8 Masters Students' Theses

Mechatronics

A Dynamic Model for Stress Analysis in Universal Feed System
By Witthaya Kleebmek
Supervisor: Dr. Nitin V. Afzulpurkar

Balancing Control of AIT's Leg Exoskeleton Under Unknown External Perturbations
By Choopong Chauypen
Supervisor: Dr. Manukid Parnichkun

Determination of Body Posture Invariant Relationships for Identifying and Tracking Humans
By Arunav Dutta
Supervisor: Dr. Nitin V. Afzulpurkar

Development of Adaptive Cruise Control for an Intelligent Vehicle
By Worrawut Pananurak
Supervisor: Dr. Manukid Parnichkun

Development of an Underwater Remotely Operated Vehicle
By Wirat Wongsawai
Supervisor: Dr. Manukid Parnichkun

Development of a Two-Wheeled Balancing Scooter
By Petrus Sutyasadi
Supervisor: Dr. Manukid Parnichkun

Gait Generation and Determination of ZMP Trajectory of AIT's Leg Exoskeleton
By Kittipat Chirungsarpsook
Supervisor: Dr. Manukid Parnichkun

Image Processing Techniques for Hard Disk Drive Suspension Defects Detection
By Sutipong Kiatpanichgij
Supervisor: Dr. Nitin V. Afzulpurkar

Marked Road Tracking for an Intelligent Vehicle
By Ho Hoai Nam
Supervisor: Dr. Manukid Parnichkun

Navigation and Control of an Intelligent Vehicle in a Racing Field with Randomly Placed Obstacles
By Chairit Wuthishuwong
Supervisor: Dr. Manukid Parnichkun

Path Planning for a Mobile Robot in a Dynamic Environment
By Dhananjay Bodhale
Supervisor: Dr. Nitin V. Afzulpurkar / Dr. Manukid Parnichkun

Sensor Fusion Based Localization of an Intelligent Vehicle
By Preeda Tungnapakorn
Supervisor: Dr. Manukid Parnichkun

Stainless Steel-Polyimide/Copper Residual Stress during Forming Process
By Siwakorn Srisawat
Supervisor: Dr. Nitin V. Afzulpurkar

Using S60 Mobile Platform for Remote Monitoring with Image Processing and Camera Control
By Kittinut Khumkiatkul
Supervisor: Dr. Nitin V. Afzulpurkar

Vision Based Direction and Speed Determination of a Vehicle
By Yuttachai Inpa
Supervisor: Dr. Manukid Parnichkun

Microelectronics

A Study of the Electrical and Optical Characteristics of Layer-by-Layer Devices Fabricated from Colloidal Nano Particles
By Muhammad Irfan Abid
Supervisor: Dr. Joydeep Dutta

Biomimetic Self Assembly of Gold Microwires and its Application in the Fabrication of a Piezoelectric Power Source Using ZnO Nanorods
By Indrani Dakua
Supervisor: Dr. Joydeep Dutta

Cycle-Invariant Difference Sets Based LDPC Decoder for the Third Generation (3G) Mobile Systems
By Paul Polpat Sikangwan
Supervisor: Dr. Nitin V. Afzulpurkar

*Developing Plasmon Resonance
Sensor for Heavy Metal Ion Detection*
By Siriphun Ameritachot
Supervisor: Dr. Joydeep Dutta

*Studies on Gas Sensors Based on Zinc
Oxide Nanorods*
By Niti Wiromrat
Supervisor: Dr. Joydeep Dutta

*Zinc Oxide Nanorods Dye Sensitized
Solar Cell*
By Mana Poyai
Supervisor: Dr. Joydeep Dutta

*Optical Modeling and Simulation of
Multilayer Thin Films*
By Dinh Ba Khuong
Supervisor: Dr. Joydeep Dutta

*Studies on Superhydrophobic
Surfaces of ZnO Nanorods Grown on
Artificially Ink-Jetted Microstructures*
By Myo Tay Zar Myint
Supervisor: Dr. Joydeep Dutta

Chapter 8: SET – REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEMS FIELD OF STUDY

8.1 Introduction

Geoinformatics comprising Remote Sensing (RS), Geographic Information System (GIS) and Global Positioning System (GPS) provides extremely useful tools for environmental and natural resources management. They are widely recognized as supporting tools for the planning, monitoring, and management of the appropriate utilization of resources at the country, regional and global levels.

While they represent multidisciplinary backgrounds, students in RS&GIS share a common interest, that is, to use remote sensing, GIS, GPS and other space technologies as tools in pursuing their academic work as well as in developing new technologies that are applicable to the region. Because of the complexity of the technologies together with the heavy dependence on advanced computer skills, application specialists need to have a sound knowledge of the theoretical aspects and practical approaches to integrate many resources of information that address different applications.

Furthermore, scientists, planners or engineers interested in these technologies should be familiar with past, present and future satellite systems, their appropriate usage, data acquisition and handling and integration with other data sources.

The curriculum well covers the theoretical aspects and application of space technology, especially in Remote Sensing and GIS. It provides students ample time to gain application know-how through laboratory sessions. Students are free to use satellite data received by the NOAA, AVHRR and MODIS Satellite Receiving Stations for their theses or research studies.

The demand for RS&GIS graduates is very high as there is lack of professionals in

these disciplines, particularly those with a vast knowledge of the practical utilization of these technologies. Employment opportunities are available in a wide range of areas, including agriculture, forestry, coastal development and management, urban planning and development, medical technology, mapping and planning, disaster mitigation and environmental management.

Major areas covered in the coursework are fundamentals of remote sensing and GIS, earth energy interaction, atmospheric correction, application potential in various disciplines, GIS data sources, map projection, geostatistics, spatial modeling, automated mapping, digital terrain model, GPS data acquisition, and integration of GIS, remote sensing and GPS.

8.2 Research Facilities and Laboratories

The RS&GIS field of study provides excellent facilities for learning, research and projects which consists of the Digital Image Processing laboratory, Institute-wide GIS laboratory, Asia e-learning project experiment room, meeting rooms, and the Geoinformatics Center laboratory. The RS&GIS field of study has a policy of maintaining the best working environment for students, staff and faculty. Apart from the Institute-provided access to the Internet and electronic mail, each student of the RS&GIS field of study is allocated computer space for individual use of about 1-2 Gb (extendible). The space for personal web pages to be hosted on RS&GIS network can also be provided upon request.

The RS&GIS LAN Network can also be monitored in real time. Besides, it has a very good archive of satellite imagery of SPOT, Landsat-TM, MODIS, NOAA,

ADEOS, ERSSAR, and JERS-SAR to serve the students in their research and thesis studies. Other data, such as topographic, landuse, soil, geology maps of Thailand and some aerial photographs, ALOS data, are also available. The RS&GIS library also provides students with more specialized books, journals, and computer manuals. Some equipment in its laboratory available for academic activities include: Total Station; ERDAS; Trimble geoexplorer; Garmin GPS Series III and V; laptop computer; digital camera; wireless hub/switch; wireless USB; network switch; network hub; black/white and color laser printers; A4 and A0 scanners; table and personal stereoscopes; and an LCD projector.

8.3 Faculty and Research Staff

Full Full-time Faculty

KIYOSHI HONDA, BAg, DEng, Tokyo Univ, Japan

Associate Professor (*Image Processing, Erosion control, Terrain modeling*)

NITIN KUMAR TRIPATHI, BTech, National Institute of Technology, Warangal, India; MTech, IIT; PhD, IIT, Kanpur, India.

Associate Professor (*GIS, Remote Sensing, Environment, Socioeconomic Impact, Agriculture, Health, Applications*)

XIAOYONG CHEN, BS, MS, PhD, Wuhan Technical Univ of Survey and Mapping, People's Republic of China.

Associate Professor (*Automated Mapping, GIS, Photogrammetry, Remote Sensing, Mathematical Morphology and Database Management System*)

Visiting Faculty

MARC SOURIS, PhD, Université de La Rochelle, France

Visiting Professor

(Computational geometry and algorithms, GIS development, Spatial analysis, GIS and Remote Sensing for Epidemiology)

MICHIRO KUSANAGI, BS, MS, Univ of Tokyo, Japan; MS, PhD, Univ of California, USA.

Visiting Professor *(Aerospace System Engineering, Space System Engineering)*

SEISHIRO KIBE, BEng, MEng, DEng, University of Tokyo, Japan

Visiting Professor *(Aerospace System Engineering, GPS, Microwave Remote Sensing)*

WATARU TAKEUCHI, Doctor of Engineering, University of Tokyo, Japan

Visiting Faculty *(Remote Sensing of Environment and Disaster, Data and Information Processing)*

Adjunct Faculty

SURAT LERTLUM, BS, Norwich University; MS, The George Washington University, USA; DTechSc Computer Science, Asian Institute of Technology, Thailand

Adjunct Faculty *(GIS, RS, Digital Image Processing, Surveying, Mapping)*

VENKATESH RAGHAVAN, BS, MS, Univ of Poona, India; Ph.D., Univ. of Osaka City, Japan

Adjunct Faculty *(Spatial Information Science and Geoinformatics)*

Affiliated Faculty and Research Staff

LAL SAMARAKOON, PhD

Visiting Senior Scientist; Director, GIC *(GIS, RS, Digital Image Processing, Surveying, Mapping)*

MANZUL KUMAR HAZARIKA, PhD, University of Tokyo, Japan; MEng, Asian Institute of Technology, Bangkok, Thailand; MTech, Indian Institute of Technology, Kharagpur; BTech, J N Krishi Vishwa Vidyalyaya (J. N. Agriculture University), India

Senior Research and Training Specialist *(RS and GIS Applications to Global Environment, Terrestrial Carbon Cycle and NPP)*

SURAT LERTLUM, BS, Norwich University; MS, The George Washington University, USA; DTechSc Computer Science, Asian Institute of Technology, Thailand

Research Scientist *(GIS, RS, Digital Image Processing, Surveying, Mapping)*

TARAVUDH TIPDECHO, BSc, MSc, Chiangmai Univ, Thailand; DTechSc, Remote Sensing & GIS, Asian Institute of Technology, Thailand

Research Specialist I *(Advanced Mapping, Terrestrial Scanning)*

VIVARAD PHONEKEO, MSc, DTechSc, Asian Institute of Technology, Thailand

Project Researcher *(Remote Sensing and GIS, [NOAA AVHRR](#) & [Terra/Aqua MODIS receiving and processing system](#), Digital Image Processing, Computer Graphics, Spatial Data Visualization, MODIS Fire Product Development)*

8.4 Grants and Sponsored Research Completed in 2008

An Innovative Capacity Development Program for Extreme Flood Risk Assessment

Duration 1-Oct-07 31-Dec-08
Project Investigator Lal Samarakoon
Sponsor United Nations University (UNU)
Total Contracted Amount (Baht) 2,040,000

Human Network Project 2008

Duration 1-Jan-08 31-May-08
Project Investigator Lal Samarakoon
Sponsor Japan Aerospace Exploration Agency
Total Contracted Amount (Baht) 360,840

JAXA Capacity Building 2007-2008

Duration 29-Aug-07 28-Aug-08
Project Investigator Lal Samarakoon
Sponsor Japan Aerospace Exploration Agency
Total Contracted Amount (Baht) 8,700,000

Poverty Mapping and Reduction Strategies

Duration 1-Aug-08 30-Nov-08
Project Investigator Lal Samarakoon
Sponsor Government of India
Total Contracted Amount (Baht) 2,438,818

Strengthening Capacity on Multi-Hazard Risk Assessment in Tsunami

Duration 15-Aug-06 30-Apr-08
Project Investigator Manzul Hazarika
Sponsor USAID
Total Contracted Amount (Baht) 3,604,702

8.5 On-going Grants and Sponsored Research

Application of Remote Sensing (Professional Development Training Program)

Duration 1-Aug-08 30-Jun-09
Project Investigator Lal Samarakoon
Sponsor Surveyor Association of Malaysia
Total Contracted Amount (Baht) 879,872

Capacity Building in Poverty Mapping in ASEAN

Duration 1-Jan-07 30-Apr-09
Project Investigator Lal Samarakoon
Sponsor ASEAN Foundation
Total Contracted Amount (Baht) 9,519,545

Digital Asian Network 2006-2009

Duration 1-Mar-06 31-Mar-09
Project Investigator Lal Samarakoon
Sponsor Keio Research Institute at SFC, Keio University, Japan
Total Contracted Amount (Baht) 362,835

JAXA Capacity Building 2008-2009

Duration 12-Sep-08 31-Mar-09
Project Investigator Lal Samarakoon
Sponsor Japan Aerospace Exploration Agency
Total Contracted Amount (Baht) 9,793,039

NOAA AVHRR and Terra/ Aqua MODIS

Duration 1-Apr-07 31-Mar-11
Project Investigator Lal Samarakoon
Sponsor Vision Tech/Japan
Total Contracted Amount (Baht) 783,000

Thailand GIS Development for Research on Ontology

Duration 1-Jan-08 31-Mar-09
 Project Investigator Lal Samarakoon
 Sponsor Center for Spatial Information Science, University of Tokyo
 Total Contracted Amount (Baht) 1,050,000

Training Programs in Poverty Mapping

Duration 1-Oct-08 31-Oct-11
 Project Investigator Lal Samarakoon
 Sponsor Multi-donors
 Total Contracted Amount (Baht) 576,000

World Health Organization Project

Duration 1-Dec-08 01-Dec-09
 Project Investigator Lal Samarakoon
 Sponsor WHO
 Total Contracted Amount (Baht) 612,000

8.6 Publications

Refereed Journals:

A. Charoenpanyanet and **X. Chen**, Satellite-based Modeling of Anopheles Mosquito Densities on Heterogeneous Land Cover in Western Thailand, *Journal of Geographic Information Sciences*, 2008.

Anujit Vansarochana, **Nitin. K. Tripathi** and Roberto Clemente, 2008. Finding Appropriate Interpolation Techniques for Topographic Surface Generation for Mudslide Risk Zonation, *Geocarto International*, Taylor & Francis.

C. Pawattana, **N. K. Tripathi** and S. Weesakul, 2008. Water Storage Development by Floodwater Retention in the Chi River Basin, Thailand, *Asia Pacific Journal of Rural Development*. Vol. XVIII, No. 2, 2008, ISSN 1018-5291, PP 45-62.

Chalermchai, P., and **Tripathi, N.K.**, 2008, AHP based Flood Water Retention Planning in the Chi River Basin, Thailand, *GIScience & Remote Sensing*, 2008, 45, No. 3, p. 1–13.

Hossain, M. Z., **Tripathi, N.K.**, and Gallardo, W., 2008., Land Use Dynamics Due to Natural and Human Induced Factors in a Marine

Protected Area System During 1976 - 2005 in Lower Andaman Coast of Thailand, *Journal of Coastal Research*.

Hung, N. Q., Babel, M. S., and **Tripathi, N.K.**, 2008. An artificial neural network model for rainfall forecasting in Bangkok, Thailand, *Hydrol. Earth Syst. Sci.*, 5, 183-218.

Muttitanon, W., **Tripathi, N.K.**, and Souris, M. 2008. An Indoor Positioning System (IPS) using Grid Model, *Journal of Computer Science*, 3 (12): 907-913; ISSN 1549-3636

Ramli, F., M., **Tripathi, Nitin**; Yusof, Nurhakim; Shafri, Helmi; Ali Rahman, Zulfahmi 2008. Lineament mapping in tropical environment utilizing Landsat imagery, *International Journal of Remote Sensing*, pp 1-41. (Accepted).

Tripathi, N. K., Minh T. B, Berg H., Noumi Y. 2008. Mapping Changes in the Benthic Community of the Marine Environment of Phu Quoc Island, Viet Nam, *International Journal of Geoinformatics*, Vol. 4, No. 2, 1-11.

Y. P. Yu, **X. Chen**, J. Liu and J. Du, State Extension of Cellular Automata and its Applications in Spatial-temporal Data Mining, *Journal of Wuhan University (Information Technology)*, Vol. 36(6): pp. 592-595, 2008.

Y. Yu, **X. Chen**, J. Liu and J. Du, Dynamic Visualization of Land Use based on Mathematical Morphology, *Journal of Geodesy and Geodynamics*, Vo. 28(1): 11-15, 2008.

Refereed Books/Chapters:

Jeefoo, P., **Tripathi, N.K.**, and Souris, M., 2008. Exploring geospatial factors contribution to Malaria prevalence in Kanchanaburi, Thailand, *Geoinformation Technology for Better Health*, Published by: Geoinformatics

International, ISBN: 978-974-1369-768, P. 130-133.

Nakarin, C., **Tripathi, N.K.**, and Souris, M., 2008. Point pattern analysis of Malaria Incidence in Chiang Mai, Thailand, *Geoinformation Technology for Better Health*, Published by: Geoinformatics International, ISBN: 978-974-1369-768, P. 137-140.

Conference Proceedings:

Aadit Shrestha, Rassarin Chinnachodteeranun, **Honda Kiyoshi**, Apichon Witayangkurn and Hiroshi Shimamura, 2008. [Fieldservers as Real-time Monitoring Tools for Ubiquitous Sensor Networks: Workshop Sensing a Changing World, Proceedings Workshop, November 19-21, 2008, CENTRE FOR GEO-INFORMATION WAGENINGEN, THE NETHERLANDS, pp.24-27, 2008.](#)

C. Arisara and **X. Chen**, Satellite-based Modeling of Anopheles Mosquito Densities on Heterogeneous Land Cover in Western Thailand, *The XXI Congress of ISPRS, BEIJING*, Vol. XXXVII (Part B8): pp. 159-164, 2008.

Chomchid Imvitthaya and **Honda Kiyoshi**, 2008. [Evaluation of BIOME-BGC Model for Estimating NPP and LAI of Teak Plantation of Thailand Using SPOT-Data As Reference: Proceedings of the 29th Asian Conference on Remote Sensing \(ACRS\) 2008, November, Sri Lanka.](#)

D. Thilantha L., S. Chalermchon and **S. Kibe**, Wavelet Transform Application to C/A Code Multipath Mitigation at GPS Reference Stations for Improved Differential GPS Correction, *GPS/GNSS-2008 Symposium*, Tokyo, Japan, Nov 2008.

Daroonwan Kamthonkiat, **Honda Kiyoshi**, Rushikesh P. Kulkarni, Sujittra Charoenhirunyngyos, Khun San Aung, 2008. [Development of a Near Real-Time Drought Monitoring](#)

[System in Ubon Ratchathani, Northeastern Thailand: World Conference on Agricultural Information and IT / IAALD AFITA WCCA 2008, Tokyo Japan 24-27 August, 322891-1.](#)

Daroonwan Kamthonkiat, **Honda Kiyoshi**, Sujittra Charoenhirunyngyos and Khun San Aung, 2008. [Near Real-Time Decision Support System for Drought Monitoring and Impact Assessment on Rice in Ubon Ratchathani, Northeastern Thailand: Proceedings of the 29th Asian Conference on Remote Sensing \(ACRS\) 2008, November, Sri Lanka.](#)

Honda Kiyoshi, Aadit Shrestha, Rassarin Chinnachodteeranun, Masaru Mizoguchi, Hiroshi Shimamura, Takaharu Kameoka, 2008. [Spinach Field Monitoring for bridging Thai Producer and Japanese Consumer under Sensor Asia: SICE Annual Conference 2008 August 20-22, 2008, The University Electro-Communications, Japan, pp.2582-2585.](#)

Honda Kiyoshi, Aadit Shrestha, Rassarin Chinnachodteeranun, Apichon Witayangkurn, Nguyen Duy Hung, Hiroshi Shimamura, 2008. Sensor Asia Initiative and its application to Landslide Early Warning System: Forum on Disaster risk management in mountainous areas – How to reduce vulnerability to flash floods and other related phenomena, 15-17, Hanoi, Vietnam, 2008.

Honda Kiyoshi, Aadit Shrestha, Rassarin Chinnachodteeranun, Nguyen Duy Hung, Hiroshi Shimamura, Teuku Faisal Fathani, Dwikorita karnawati, Kyoji Sassa, 2008. [Landslide Early Warning System for Rural Community as an Application of Sensor Asia: World Conference on Agricultural Information and IT / IAALD AFITA WCCA 2008, Tokyo Japan 24-27 August, 322860-1.](#)

Honda Kiyoshi, Rassarin Chinnachodteeranun, Aadit Shrestha, Apichon Witayangkurn, Hung Nguyen Duy, Hiroshi Shimamura, 2008. [Field Sensor Network for Environmental Monitoring - Sensor Asia Initiative and Applications – Proceedings of Geoinformatics for Spatial-Infrastructure Development in Earth & Allied Sciences \(GIS-IDEAS\), Hanoi, Vietnam, 4-6 December 2008.](#)

Irum Memon, **Nitin K. Tripathi**, Saksin Chongolnee, 2008. Hospital Emergency Response System using Internet GIS, Vehicle Tracking System and RFID, Location Asia 2.0, Kuala Lumpur, Malaysia, 14-16 June, 2008.

M. Chayakrit and **X. Chen**, Interoperable Three-dimensional GIS City Modeling with Geo-informatics Techniques and 3D Modeling Software, *The XXI Congress of ISPRS, Beijing*, Vol. XXXVII (Part B2): pp. 975-980, 2008.

M. Poonsak and **S. Kibe**, Support Vector Machine Based – Image Classification for an Individual Tree Crown Detection and Delineation, Proceedings of the 27th International Symposium on Space Technology and Science, Hamamatsu, Japan, July 2008.

Nakarin Chaikaew and **Nitin K. Tripathi**, 2008. Exploring spatial and spatio-temporal clusters of malaria in Chiang Mai, Thailand, Proc. of GIS Ideas Conf., Dec. 4-5, 2008, Hanoi, Vietnam.

Nguyen K. Thanh, **Nitin K. Tripathi** and Gallardo, W., 2008. GIS-based Planning for Sustainable Shrimp Farming in Thanh Phu District, Ben Tre Province, Vietnam. Proc. of GIS Ideas Conf., Dec. 4-5, 2008, Hanoi, Vietnam, ISBN: 978-4-901668-37-8, 225-229.

Phaisarn Jeefoo, **Nitin Kumar Tripathi**, and Shoichiro Hara, 2008. Analytical hierarchy process modeling for malaria risk zonation in

Kanchanaburi, Thailand, Proc. of GIS Ideas Conf., Dec. 4-5, 2008, Hanoi, Vietnam.

S.J. Jinda and **X. Chen** and D. Phuong, Error Propagation Modeling in GIS Overlay, *The XXI Congress of ISPRS, Beijing*, Vol. XXXVII (Part B2): pp. 825-836, 2008.

Ton Binh Minh, **Nitin K. Tripathi**, Seishiro Kibe and Wenresti Gallardo, 2008. Mapping Changes in Marine Environment of Phu Quoc Island, Viet Nam., Proc. of 7th Annual Map Asia 2008, Kuala Lumpur, 18-20 August, 2008.

Tripathi, N.K., Arthit, L. and Perera, R. 2008. Geospatial modeling of urban growth pattern in Pathumthani, Thailand. Proc. International Conf. on Sustainable Urban Environmental Practices, Oct. 28-31, 2008, Chiang Mai, Thailand.

Wataru Ohira, Naoki Mitsuzuka, **Honda Kiyoshi** and Kenji Harada, 2008. [Estimation of The Tsunami Inundation Flow Momentum Mitigation Effect of The Coastal Forest Using A Numeric Model Case of Hambantota District, Sri Lanka, Proceedings of the 29th Asian Conference on Remote Sensing \(ACRS\) 2008, November, Sri Lanka.](#)

X. Chen and S. Murai, Universal Error propagation Law, *The XXI Congress of ISPRS, Beijing*, Vol. XXXVII (Part B2): pp. 1125-1131, 2008.

Other Publications:

F. CANISIUS, **K. HONDA** and M. TOKUNAGA, 2008. Updating Geomorphic Features of the Watersheds and Their Boundaries in Hazardous Areas Using Satellite Synthetic Aperture Radar: International Journal of Remote Sensing, Accepted.

Invited Presentations/Lectures

Honda Kiyoshi, Aadit Shrestha, Rassarin Chinnachodteeranun, Apichon Witayangkurn, Nguyen Duy Hung, Hiroshi Shimamura, 2008. Sensor Asia Initiative and its application to Landslide Early Warning System: Forum on Disaster risk management in mountainous areas – How to reduce vulnerability to flash floods and other related phenomena, 15-17, Hanoi, Vietnam Organized by MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT, 15 December.

Honda Kiyoshi, 2008. Field Sensor Net Development in Asia Pacific - Sensor Asia Initiative and Applications -. Greater Ngoya Initiative Ubiquitous Seminar in Tsu 2008, 1 February.

8.7 Doctoral Students' Dissertation

An Indoor Positioning System (IPS) Using Wireless LAN (WLAN)
By Wutjanun Muttitanon
Supervisor: Dr. Nitin K. Tripathi

A Remote Sensing and GIS Approach for Mudslide Modeling in Mae Cham Basin, Thailand
By Anujit Vansarochana
Supervisor: Dr. Nitin K. Tripathi

Remote Sensing and GIS-Based Sustainable Water Management Modeling in the Chi River Basin
By Chalermchai Pawattana
Supervisor: Dr. Nitin K. Tripathi

8.8 Masters Students' Theses

Application of GIS for Better Management of Urban Solid Waste: A Case Study for Maharagama Urban Council Area, Sri Lanka
By I.A.K.S. Illeperuma
Supervisor: Dr. Lal Samarakoon

Development of Mobile Field Server Using Open GIS Sensor Observation Service and Instant Messaging
By Pratik Shrestha Dhauvadel
Supervisor: Dr. Kiyoshi Honda

Habitat Change and Impact on Deforestation (Forest Management Approach using Remote Sensing and GIS) Kaghan valley, Pakistan
By Muhammad Tahir Majeed
Supervisor: Dr. Xiaoyong Chen

Land Sustainability Modeling and Mapping using Geoinformatics for Afforestation, Savannakhet, Lao PDR
By Phokham Latthachack
Supervisor: Dr. Nitin K. Tripathi

Mapping Changes in Marine Environment of Phu Quoc Island, Vietnam
By Ton Binh Minh
Supervisor: Dr. Nitin K. Tripathi

Soil Moisture Estimation Using Polarimetric SAR Data
By Laddawan Rianthakool
Supervisor: Prof. Seishiro Kibe

Spectrum Analysis of Distance Relationship Between 2D Spatial Objects
By Shi Liang
Supervisor: Dr. Xiaoyong Chen

Study on the Generation of Digital Elevation Model Using High Resolution Satellite Images
By Yottanut Paluang
Supervisor: Dr. Xiaoyong Chen

Support Vector Machine Based-Image Classification for an Individual Tree Crown Detection and Delineation
By Poonsak Miphokasap
Supervisor: Prof. Seishiro Kibe

Use of Remote Sensing and GIS for Flood Hazard Mapping in Chiang Mai Province, Northern Thailand
By Aekkapol Aekakkarakarungroj
Supervisor: Prof. Michiro Kusanagi / Prof. Seishiro Kibe

Using Sensing Technology to Detect Automatically Traffic Flow Parameters for I.T.S. - A Case Study in Ho Chi Minh City
By Truong Hung Phuong
Supervisor: Dr. Xiaoyong Chen / Dr. Ho Dinh Duan

Chapter 9: SET – STRUCTURAL ENGINEERING FIELD OF STUDY

9.1 Introduction

Structural engineering has always been seen as one of the few fields of study where one can combine real technical skills with artistic flair. Structural engineers are known to be people who enjoy innovation, opportunities, responsibility and excitement, whilst working within a creative profession. Structural engineers plan and design various structures such as buildings, bridges, sport stadiums, towers, and underground structures.

The built environment which is designed and constructed by structural engineers has an enormous impact on our everyday lives. In order to design and construct safe and economic structures, they need to keep abreast with the latest methods of structural analysis, modeling concepts for computation, advanced design, material technology, and improved knowledge in structural loadings. The field educates professionals who will be at the forefront of advanced research in Structural Engineering. They are trained to respond creatively to the industrial requirements of infrastructure development.

9.2 Research Facilities and Laboratories

Structural Engineering Laboratory

The Structural Engineering Laboratory (SE Lab) has long history of excellence in advanced structural and material research. The SE Lab is equipped with instruments for scientific research, which provide excellent experimental environment for scholars and experts in

the Asian region to enhance academic cooperation and development. Completed in 1975 and renovated in 2000, the structural testing area of the laboratory is a versatile area with a two-storey clear height that can be used to carry out a wide range of tests of building materials, components, structural assemblies and models.

One of principal elements of SE Lab is a strong floor system. The strong floor is a 1.5 meter deep heavily reinforced concrete mat, covering an area of 380 square meters, with anchorage slots spaced 1 meter apart and cluster points with a capacity of 1,000 kN per cluster. This arrangement provides versatility in the mounting of experiments, and full-size members of completer structures can be loaded to destruction. A test control room and the hydraulic power supply area are located adjacent to the test floor. The laboratory is equipped with a series of hydraulic actuators of various load (100 up to 500 kN), stroke (+100 up to +250 mm.) and servo-value capacities for static, dynamic and fatigue testing. Standard structure laboratory instrumentation is available e.g., extensometer, universal testing machine,



ultrasonic pulse velocity and strain gauge preparation, impulse force test hammer, etc.

Set up in 2001, the Seismic Load Simulation Facility is basically composed of (1) a rigid, A-shape, steel reaction wall, (2) a 50-ton force generating capacity, 1000-mm piston stroke, hydraulic actuator that operates under precision closed-loop servovalve control, and (3) the existing strong reinforced concrete floor of the SE Lab. The facility has the capability to perform various experimental seismic tests on near-full-scale structural models, such as quasi-static tests, cyclic loading tests, and pseudodynamic tests. The facility has been used intensively by many master and doctoral students in STE Field of Study.



Seismic Load Simulation Facility



Boundary Layer Wind Tunnel Laboratory

This wind tunnel laboratory is a state-of-the-art research facility for the study of wind loads and several complex wind-induced effects on buildings and structures. The laboratory was developed by a joint effort between Faculty of Engineering at Thammasat University and School of Civil Engineering at AIT. The laboratory, located in Thammasat, is the longest and largest wind tunnel in Thailand. It is capable of simulating atmospheric boundary layer wind as well as smooth and uniform wind in its 2.5m x 2.5m tunnel section with wind speeds varying from 0.5 m/s to 20 m/s. The wind tunnel is well equipped with hot-wire anemometers, pressure transducers with rotary scanning system, multi-component dynamic force sensors, dynamic motion sensors, turn tables, rotary side frames, and several other instruments. With this facility, various types of advanced experimental research study, student training, and industrial aerodynamic tests can be realized. The construction of the wind tunnel was completed in 2003, and it has been used intensively since then by master students of AIT and Thammasat University.

9.3 Faculty and Research Staff

Full-time Faculty

WORSAK KANOK-NUKULCHAI, PhD,
Univ of California (Berkeley), USA. ;

MEng, AIT, Thailand; BEng (Hon),
Chulalongkorn Univ, Thailand.

Professor [*Computational Mechanics; Finite Element Methods; Tall Building Static and Seismic Analysis; Bridge Engineering; Microcomputer Software for Structural Engineering; Genetic Algorithms; Nonlinear Analysis of Structures and Continua; Plate/Shell Structures; Engineering Education; Nanomechanics*]

PENNUNG WARNITCHAI, DEng,
MEng, University of Tokyo, Japan;
BEng (Hon), Chulalongkorn Univ,
Thailand.

Associate Professor [*Structural Dynamics; Earthquake Engineering; Wind Effects of Structures; Bridge Engineering and Control of Structural Vibration*]

Emeritus Professor

PISIDHI KARASUDHI, PhD,
Northwestern Univ., USA; MEng, AIT,
Thailand; BEng, Chulalongkorn Univ.
Thailand. [*Solid Mechanics*]

Adjunct/Affiliated Faculty

THANAKORN PHEERAPHAN, PhD and
MSc, Massachusetts Institute of
Technology, USA., BSc., Virginia
Military Institute, USA.

Adjunct Assistant Professor
[*Concrete Technology; Structural
Analysis; Engineering Materials;
Composite Materials; Advanced*

*Concrete Technology; Mechanics
of Materials*]

RAKTIPONG SAHAMITMONGKOL,
DEng, MEng, University of Tokyo,
Japan; BEng, Sirindhorn International
Institute of Technology, Thailand.

Adjunct Instructor [*Cracking
Resistance of Expansive
Concrete; Chemically Prestressed
Concrete; Inspection on Concrete
Structures & Performance Based
Design; Non-Destructive Testings
for Concrete Structures; Tension
Stiffening Effect and Bonding
Characteristic of Reinforced
Concrete*]

PRUETTHA NANAKORN, DEng,
University of Tokyo, Japan; MEng,
AIT, Thailand; BEng (Hon),
Chulalongkorn Univ, Thailand.

Adjunct Faculty [*Computational
Mechanics; Finite Element
Analysis; Meshless Methods;
Structural Optimization*]

SONGKIAT MATUPAYONT, PhD,
Saitama University, Japan; MEng,
AIT, Thailand; BEng, Chulalongkorn
Univ, Thailand.

Adjunct Faculty [*Bridge
Engineering; Prestressed
Concrete; Structural Analysis
and Design*]

BUI THANH TAM, DEng, MEng, AIT,
Thailand; BEng, HoChiMinh City
University of Technology, Vietnam.

**Affiliated Faculty and Research
Engineer** [*Computational
Mechanics; Finite Element
Analysis; Structural Analysis;
Fluid-Structure Interaction;
Parallel Computing; Software
Development*]

NAVEED ANWAR, DEng, MEng, AIT,
Thailand; BScEng, Univ. of
Engineering & Tech., Lahore,
Pakistan.

Affiliated Faculty [*Structural
Analysis and Design;
Computational Mechanics;
Computer Application; Bridge
Engineering; Tall Buildings;
Software Development*]

SUN SAYAMIPIUK, DEng, MEng, AIT, Thailand; BEng, Kasetsart Univ., Thailand.

Affiliated Faculty and Senior Laboratory Supervisor [*Low cost housing materials, Construction materials and its durability, Supplementary cementitious materials, Experimental behavior of structural systems, Field testing of structures*]

9.4 Grants and Sponsored Research Completed in 2008

Analysis and Design of a 135-m-Tall Stack

Duration: 1 Jan 2008 – 30 Dec 2008
Project Investigator: Dr. Pennung Warnitchai
Sponsor: Patkol Co. Ltd.
Total Contracted Amount (Baht): 1,450,000

Finite Element Modeling of Tsunami Propagation on the Coast of Thailand

Duration: 1 Nov 2005 – 31 Oct 2008
Project Investigator: Prof. Worsak Kanok-Nukulchai
Sponsor: RTG Joint Research Project FY 2005
Total Contracted Amount (Baht): 875,000

Vocational and Education Project with Institut Teknologi Bandung

Duration: 01 Sep 1999 – 31 Dec 2008
Project Investigator: Prof. Worsak Kanok-Nukulchai/
Prof. Ashim Das Gupta
Sponsor: Ministry of Education & Culture, Indonesia
Total Contracted Amount (Baht): 7,775,920

9.5 On-going Grants and Sponsored Research

Adjustment to the Building Energy Code

Project Description: Development of Energy Development and Promotion (DEDP) is implementing a project entitled "Adjustment to the Building Energy Code" with assistance from the Danish Cooperation for Environment and Development (DANCED). The main purpose of the project is to update the Building Codes relate to energy. The existing codes and standards relates to energy will be adjusted or updated according to the latest available knowledge. Comprehensive and valuable knowledge on energy issues related to building already exists in Thailand. To emphasis the sustainability of the project it is obvious to utilize this national resource.

Duration: 1 Jan 2001 – 30 Jun 2009
Project Investigator: Prof. Worsak Kanok-Nukulchai
Sponsor: Dansk Energi Management A/S
Total Contracted Amount (Baht): 14,040,000

Application of the State-of-the Art Seismic Design and Modeling to Major Dams in Southeast Asia

Project Description: This research attempts to study the state-of-the-art design consideration and modeling i.e. the shaking model test, centrifuge model test and advanced numerical simulation using strong earthquake to aid the safe design and construction of dams in Southeast Asia.
Duration: 1 Apr 2007 – 31 December 2009
Project Investigator: Dr. Pennung Warnitchai/ Dr. Noppadol Phienwej/ Dr. Kyung-Ho Park
Sponsor: Royal Thai Government (RTG), K-Water, Dodam E&C
Total Contracted Amount (Baht): 2,000,000

Collapse Modeling of Soft-Storey Buildings

Project Description: The aim of the proposed research project is to investigate the seismic displacement demand and drift capacity of soft storey buildings such that the gravity load carrying capacity of the individual ground floor columns is not compromised. The proposed research involves a quasi-static testing and analytical modeling of soft story columns.

Duration: 15 Nov 2008 – 15 Nov 2009
Project Investigator: Dr. Pennung Warnitchai/ Dr. Kittipoom Rodsin
Sponsor: Royal Thai Government (RTG)
Total Contracted Amount (Baht): 957,500

Creep and Shrinkage of High Strength Concrete of Asia Center Project

Duration: 1 March 2008 – 30 May 2009
Project Investigator: Dr. Sun Sayamipuk
Sponsor: PBL Group Company Limited
Total Contracted Amount (Baht): 240,000

Development of Building Inventory Databases for Estimating Potential Earthquake Losses in Thailand

Project Description: To develop building inventory database for Estimating Potential Earthquake Losses in Thailand. The database will be input to HAZUS-MH MR1 to estimate potential damages by earthquakes in Thailand.

Duration: 1 Aug 2007 – 31 Aug 2009
Project Investigator: Dr. Pennung Warnitchai/ Dr. Kiyoshi Honda
Sponsor: Chula Unisearch, Chulalongkorn University
Total Contracted Amount (Baht): 2,411,667

Development of Precast Concrete Frame Buildings for Seismic Regions

Project Description: An innovative precast concrete building system, for seismic regions will be studied. Four types of standard buildings for construction in seismic risk zone of Thailand will be designed using the precast concrete system. Their seismic performance will be evaluated through both experimental testing and numerical analysis.

Duration: 20 Aug 07 – 31 May 2009
Project Investigator: Dr. Pennung Warnitchai
Sponsor: National Housing Authority, Thailand
Total Contracted Amount (Baht): 3,090,000

Development of Seismic Design Code for Buildings and Structures in Thailand

Project Description: Department of Public works and Town & Country Planning of Thailand (DPT) has entrusted a consultant team comprised of experts from Sirindhorn Institute of Technology (SIIT), King Mongkut's University of Technology Thonburi (KMUTT), and Asian Institute of Technology (AIT) to develop a national building design code of Thailand. As the leading party, SIIT has signed the contract agreement with DPT to execute the work. Based on the agreement between SIIT and AIT, AIT will be responsible for the development of new seismic design code for Buildings and Structures in Thailand, and SIIT will provide a supporting fund to AIT for the code development.

Duration: 19 Sep 2007 – 31 August 2009
Project Investigator: Dr. Pennung Warnitchai
Sponsor: Sirinthorn Institute of Technology (SIIT)
Total Contracted Amount (Baht): 2,380,000

Independent Inspection and Testing Agency for Concrete Sleeper Manufacturing

Duration: 1 Nov 2007 – 31 Jun 2009
Project Investigator: Dr. Sun Sayamipuk
Sponsor: Italian Thai Development Public Company Limited
Total Contracted Amount (Baht): 1,355,430.00

Investigation Design and Construction Supervision for Rehabilitation of Wat Borvornives Chedi

Project Description: Conduct geotechnical and structural investigation and design for rehabilitation of the run-down Chedi of Wat Borvorniveswiharn, Bangkok. FEM analysis is to be used to evaluate the stress and strain condition in the Chedi structure.

Duration: 1 Jan 2007 – 30 June 2009
Project Investigator: Prof. Worsak Kanok-Nukulchai/ Dr. Noppadol Phienwej
Subcontractors: Stonehenge Co., Ltd. and Kudakarn Co., Ltd.
Sponsor: Wat Borvorniveswiharn, Bangkok
Total Contracted Amount (Baht): 2,550,000

Master Plan for Earthquake Disaster Mitigation in Thailand

Project Description: The department of Disaster Prevention and Mitigation (DDPM), Ministry of Interior, Thailand has engaged an International consulting team consisting of two parties, Panya Consultants Ltd. and AIT, to develop a national Master Plan of Earthquake Disaster Mitigation (phase 1). As the leading party, Panya consultants Co., Ltd. has already signed a contract agreement with DDPM, and is now ready to provide supporting funds to its partner (AIT) to execute the project works. The scope of works for AIT includes: (a) developing new probabilistic seismic hazard maps of Thailand, (b) developing seismic microzonation maps of Bangkok, Chiang Mai and Kanchanaburi and (c) developing comprehensive GIS databases of buildings and lifeline systems in the 3 cities for seismic risk assessment.

Duration: 29 Jul 2008 – 31 August 2009

Project Investigator: Dr. Pennung Warnitchai/ Dr. Kawin Worakanchana
 Sponsor: Panya Consultants Co., Ltd.
 Total Contracted Amount (Baht): 1,600,000

Mix Design of Roller Compacted Concrete for Nam Ngum 3 Dam

Duration: 1 Nov 2006 – 31 Dec 2009
 Project Investigator: Dr. Sun Sayamipuk
 Sponsor: MDX Lao Company Limited
 Total Contracted Amount (Baht): 695,328

Nigeria Crossing Bridge

Duration: 25 Aug 2008 – 28 Feb 2009
 Project Investigator: Dr. Naveed Anwar
 Sponsor: Advance Engineering Consultants, Lagos, Nigeria
 Total Contracted Amount (Baht): 1,020,000

Preparation of the Structural Assessment Guideline for Offshore Petroleum Platform and Pipeline

Duration: 29 Dec 2007 – 01 Jul 2009
 Project Investigator: Prof. Worsak Kanok-Nukulchai/ Dr. Joko Widjaja
 Sponsor: Department of Mineral Fuel, Thailand
 Total Contracted Amount (Baht): 3,774,000

Seismic Evaluation and Retrofitting of Existing Buildings in Thailand

Project Description: Many existing buildings were designed before the introduction of modern seismic code and are thus vulnerable to collapse in the event of an earthquake. The Thailand Research Fund (TRF) hence has granted the research fund led by AIT to evaluate and study the retrofitting method for these buildings.
 Duration: **1 April 2008 – 1 April 2010**
 Project Investigator: Dr. Pennung Warnitchai
 Sponsor: Thailand Research Fund (TRF)
 Total Contracted Amount (Baht): 3,850,000

Seismic Performance Evaluation of Preuksa Precast Bearing Wall Building System

Project Description: Preuksa Real Estate Company Ltd. has recognized the need to ensure the safety of buildings against the action of earthquake in Thailand. They would like AIT to carry out an investigation on the seismic resistant capacity of their standard precast concrete bearing wall system, which has been applied to 2 story residential buildings. The investigation will be made through a combination of comprehensive cyclic loading tests of several structural specimens and advanced non-linear computer analysis.
 Duration: 15 May 2008 – **31 May 2009**
 Project Investigator: Dr. Pennung Warnitchai/ Dr. Naveed Anwar
 Sponsor: Preuksa Real Estate Public Co Ltd
 Total Contracted Amount (Baht): 950,000

Seismic Vulnerability and Risk Assessment of Dhaka, Chittagong and Sylhet City Corporation Areas

Project Description: This project is a part of the Comprehensive Disaster Management Program (CDMP) of the Government of Bangladesh, supported by UNDP, DFID-B, and the European Commission (EC). CDMP has engaged an international consulting team to conduct seismic hazard and vulnerability assessment of 3 major cities in Bangladesh - Dhaka, Chittagong, and Sylhet. The international team is comprised of ADPC, Oyo International Corporation (OIC), AIT, National Society for Earthquake Tech. (NSET) - Nepal, University of Dhaka, Chittagong University of Eng. & Tech. (CUET), Shahjalal University of Eng. & Tech. (SUST). While ADPC is playing the leading role, OIC is responsible for the seismic hazard assessment of three cities, and AIT is responsible for the seismic vulnerability and risk assessment of the three cities. The scope of work for AIT includes: supervising field survey of more than 20,000 buildings, identify dynamic characteristics of more than 100 representative buildings, assessing the seismic vulnerability of typical buildings and lifelines by numerical analyses, and estimating potential losses (casualties, economic losses, etc.) from possible earthquake scenarios using a GIS based software package named "HAZUS".

Duration: 6 Jan 2008 – **31 July 2009**
 Project Investigator: Dr. Pennung Warnitchai/ Dr. Kawin Worakanchana
 Sponsor: Asian Disaster Preparedness Centre (ADPC)
 Total Contracted Amount (Baht): 4,250,000

Structural Design Review of Concrete Silos

Duration: 1 May 2008 – 30 May 2009
 Project Investigator: Dr. Naveed Anwar/ Keerati Tunthasuwatana
 Sponsor: Siam City Cement Public Co Ltd
 Total Contracted Amount (Baht): 480,000

9.6 Publications

Refereed Journals

Hoang, N., Fujino, Y., and Warnitchai, P. (2008), "Optimal Tuned Mass Damper for Seismic Applications and Practical Design Formulas", *Engineering Structures*, Vol. 30, pp. 707-715.

S.C. Han, H.D. Ham, and W. KANOK-NUKULCHAI, Geometrically Non-linear Analysis of Arbitrary Elastic Supported Plates and Shells using an Element-Based Lagrangian Shell Element, *International Journal of Non-linear Mechanics*, 43 (2008), pp. 53-64.

Conference Proceedings

Choopool, N., Boonyapinyo, V. and Warnitchai, P. , "Nonlinear Static Pushover versus Nonlinear Dynamic Analysis for Seismic Performance Evaluation of Reinforced Concrete Buildings", *Proc. of 13th National Convention on Civil Engineering*, May 14-16, 2008, Pattaya, Thailand, pp. STR 366-373.

Srechai, J., Leelataviwat, S. and Warnitchai, P. , "Dynamic Behavior of Knee-braced Moment Frames designed by Current Standards", *Proc. of 13th National Convention on Civil Engineering*, May 14-16, 2008, Pattaya, Thailand, pp. STR 440-445.

W. KANOK-NUKULCHAI and F.T. Wong, A Rethinking of Shape Functions Establishment in FEM, The First Nishino Memorial Lecture. *Proceedings of the Eleven East Asia and Pacific Conference on Structural Engineering and Construction (EASEC-11)*, 19-21 November 2008, Taipei, Taiwan, pp. 128-129.

W. KANOK-NUKULCHAI and V. Vimuktayon, Suvarnabhumi Airport, *Proceedings of the Conference on Iconic Structures in Singapore and Asia*, 25-26 July 2008, Singapore, pp. 35-54.

W. KANOK-NUKULCHAI, Advances in Kriging-Based Finite Element Method, Next 20 Years of Computational Structural Engineering, *Proceedings of the International Symposium Commemorating the 20th Anniversary of Computational Structural Engineering Institute of Korea*, Seoul, April 17, 2008, pp. 29-44.

W. KANOK-NUKULCHAI, C. Wicaksana, and T.B. Thanh, A New Kriging-based Finite Element Method for Highly Accurate Dynamic Analysis, *Proceedings of the 7th International Symposium on New Technologies for Urban Safety of*

Mega Cities in Asia, Tsinghua University, Beijing, October 21-22, 2008, pp.513-524.

Other Publications

Supaviriyakit, T., Pimanmas, A., and Warnitchai, P. (2008), "Nonlinear Finite Element Analysis of Non-Seismically Detailed Interior Reinforced Concrete Beam-Column Connection under Reversed Cyclic Load", *Science Asia*, Vol. 34, pp. 49-58.

W. KANOK-NUKULCHAI and F.T. Wong, Enhancement of FEM using Node-based Kriging Interpolation, *IACM Expression 23* (2008), pp. 24-29.

9.7 Doctoral Students' Dissertation

Development of an Intelligent System for Optimal Design of High Strength and Durable Concrete Mix Proportion
By: Rattapoohm Parichatprecha
Supervisor: Prof. Worsak Kanok-Nukulchai/Dr. Pichai Nimityongskul

9.8 Masters Students' Theses

Comparative Parametric Study of Reinforced Concrete Column Cross-Section for Strength and Ductility
By: Mohammad Qaasim
Supervisor: Dr. Pennung Warnitchai / Dr. Naveed Anwar

Design and Test of Bombsled for Military Applications
By: Sichanok Fowong
Supervisor: Dr. Pennung Warnitchai

Development of a Fiber Modeling and Analysis Framework for Complex Composite Cross-Sections
By: Jereme Elico Mula
Supervisor: Dr. Pennung Warnitchai

Development of Lightweight Aggregate Concrete Containing Pulverized Fly Ash and Bottom Ash
By: Theradej Litsomboon
Supervisor: Prof. Worsak Kanok-Nukulchai

Development of Precast Beam-Column Frame Buildings for Moderate to High Seismicity Regions
By: Krit Laohakulvetit
Supervisor: Dr. Pennung Warnitchai

Effects of Configuration Irregularities on Seismic Performance of Typical Multi-story Buildings in Low to Moderate Seismicity Regions
By: Saw Marlar
Supervisor: Dr. Pennung Warnitchai

Extraction of Strut-and-Tie Models from Finite Element Analysis Using Shell Elements
By: Jason Caya Rigon
Supervisor: Dr. Pennung Warnitchai / Dr. Naveed Anwar

Study and Development of Performance Tests for Plastering Mortar
By: Wichet Sittikaew
Supervisor: Dr. Pennung Warnitchai

The Preliminary Design Investigation on the Use of Offshore Concrete Gravity Base Platform in the Gulf of Thailand
By: Poplarp Soongsawang
Supervisor: Dr. Pennung Warnitchai

Chapter 10: SET – TELECOMMUNICATIONS FIELD OF STUDY

10.1 Introduction

The Telecommunications program offers areas of specialization in transmission systems; switching systems; telematics; network planning, and in collaboration with the School of Management, telecommunications management.

The courses offered emphasize modern telecommunications skills in systems planning and engineering, telecommunications software development, and administrative and financial aspects of telecommunications management.

Graduates from the master's program form the nucleus for effective high-level technical planning and management operations at their employer organizations. Some of the graduates are engaged in planning, development, and service activities leading to the installation, commissioning, management, design etc. of value-added systems. Given the important role of our graduates in the development of the telecommunications sector, the learning is of significant benefit to the users of telecommunications services within the region. Graduates of the doctoral program play key roles in enhancing the level of education and research in the national universities of the region, and promote and strengthen the R&D potential of emerging regional manufacturing industries. Research covers a wide variety of topics at the cutting edge of research and development. Specific issues addressed in the broad fields of transmission and switching systems are, for example, coherent optical communications, multiple access strategies for cellular mobile and cabled networks, as well as questions of congestion control and new services in ISDN and future B-ISDN networks.

10.2 Research Facilities and Laboratories

Today's fast-booming world of Telecommunications and Computer networking plays a significant leadership role. To support this achievement the Telecommunications field of study puts the effort to continue the development of telecommunications technologies and systems. It covers a wide variety of research in telecommunications ranging from modeling, analysis wire line and wireless systems to application and protocol development. Its research subjects are in coherent optical communications; congestion control, ATM, and B-ISDN networks; error correction and detection methods; mobile and Internet traffic studies; multiple access strategies for cellular mobile, satellite systems, and cabled networks; network performance analysis, planning and design; and speech processing. Its research specializations are in broadband networks; network planning; Switching systems; telecommunications management in collaboration with the School of Management; telematics; and transmission systems.

Transmission and Switching Lab (TSL)

The Transmission and Switching lab is equipped with Nokia Digital Switching Exchange DX200 (DX220, DX210) that supports PSTN and ISDN. There are also several telephone switches, traffic simulators, protocol analyzer, PDH/SDH (STM1 & STM4) transmission systems, fiber optic line equipment, transmission line analyzer, error rate meter which are available for experiment in switching, transmission and internetworking. The switching and transmission systems are integrated as real telecommunications network. Among the applications whose study has been made possible by these systems are Operation and Maintenance, performance measurements of real

narrowband and broadband telecommunication networks, as well as new services.

Network Planning Lab (NPL)

High performance computer aided network planning tools are supported by several workstations at the Network Planning lab. This lab provides hands-on experience design and optimization in radio network, fixed network and fiber optical network.

Wireless Lab (WL)

The main purpose of the Wireless laboratory is for measurement and performance analysis. It is equipped with Modulation and Error rate measurement meters, Simulation software like SATSIM, which was developed by the students, is a simulation package to calculate the sub-satellite points of a LEO/ MEO/GEO and its orbital parameters. It also displays graphically on a two-dimensional earth map the instantaneous position and path traced by the satellite (Multi orbit and Multi satellite). Another is NMS/X, is a measurement system for GSM, DCS and NMT networks tracing, capable of measuring up to four networks simultaneously. The results are used for benchmarking service quality of operational cellular networks. These results can be analyzed and can be used for tuning the network parameters in NPS/X.

Communications Labs (CL)

The Communications lab is used to perform experiments courses under Signal and Systems, Communications Electronics, Digital Transmission Technology and Digital Signal Processing. Test bench equipment includes analog and digital oscilloscopes, function generators, analog and digital Spectrum analyzers, Digital sampling oscilloscopes and DSP cards and workstations which

have simulation applications like MATLAB.

Computer Laboratory (PCL)

There are two Computer Laboratories in Telecommunications Program. One is for Senior students and one is for Junior Students. All computers are latest powerful computers.

TC Library

In Telecommunications Program, there is a small library, from where students can borrow telecommunication related journals, manuals and reference books.

10.3 Faculty and Research Staff

Full-time Faculty

KAZI MOHIUDDIN AHMED, MSc, Inst of Communications, Leningrad, USSR; PhD, Univ of Newcastle, Australia.

Professor (*Telecommunication Networks; Digital Modulation Techniques; Satellite Communications; Cellular Mobile Communications; Digital Transmission and Communications*)

R M A P RAJATHEVA, B.Sc. Hons. (Eng), Moratuwa Univ, Sri Lanka; M.Sc., Ph.D. (Electrical and Computer Eng), Univ of Manitoba, Canada.

Associate Professor (*Digital and Mobile Communications, Cooperative Diversity, Relay Systems, OFDMA Resource Allocation, Cognitive Radio: Detection/Estimation Techniques, Space Time Processing-MIMO Systems, Distributed Video Coding (DVC)*)

TEERAPAT SANGUANKOTCHAKORN, BEng, Chulalongkorn Univ, Thailand; MEng, DEng, Tokyo Institute of Technology, Japan.

Associate Professor (*Data Communications; Broadband Integrated Services Digital Networks; Multimedia Communications and Systems; Network Quality of Service*)

POOMPAT SAENGUDOMLERT, BSE, Princeton Univ; MS, PhD, Massachusetts Inst of Tech, USA

Assistant Professor [*Communication theory, optical networks, resource allocation problems, and array processing; Recent research activities have focused on optical network designs based on existing infrastructure networks and communications for disaster management*]

Visiting Faculty

TAPIO J ERKE, MSc, Helsinki Univ of Tech, Finland.

Visiting Associate Professor [*Traffic measurements, modeling, and performance in various telecommunication networks, PSTN, Cellular, Internet, ATM, and optical networks; Resource allocation for different services, network dimensioning and optimization, and switching structures*]

10.4 Grants and Sponsored Research Completed in 2008

Professional Masters in Telecommunications

Duration 23-Jul-07 20-Dec-08
Project Investigator R.M.A.P. Rajatheva, Kazi Ahmed, Tapio Erke, Teerapat S, Mikko Kovalainen, Poompat S
Sponsor EVN Telecom, Vietnam
Total Contracted Amount (Baht) 8,534,000

10.5 On-going Grants and Sponsored Research

AIT Nokia Workshop on Mobile Internet and Applications

Duration 7-Dec-07 30-Jun-09

Project Investigator R.M.A.P. Rajatheva
Sponsor Nokia Corporation, Finland
Total Contracted Amount (Baht) 500,000

Cognitive Radio and Adaptive Frequency Selection Techniques for Wireless Local Area Networks

Duration 25-Feb-08 30-Jun-09
Project Investigator R.M.A.P. Rajatheva
Sponsor Asia Pacific Telecommunity
Total Contracted Amount (Baht) 729,600

10.6 Publications

Refereed Journals

C. Kotchasarn and **P. Saengudomlert**, "Joint transmitter and receiver power allocation under minimax MSE criterion with perfect and imperfect CSI for MC-CDMA transmissions," *IEICE Transactions on Communications*, vol. E91-B, no. 6, pp. 1970-1979, June 2008.

Dharmawansa, P.; **Rajatheva, R.M.A.P.**; Tellambura, C., "On the Trivariate Rician Distribution", *IEEE Transactions on Communications*, Volume 56, Issue 12, pp. 1993-1997, December 2008.

Li, Y.; Minn, H.; **Rajatheva, R.M.A.P.**, "Synchronization, Channel Estimation and Equalization in MB-OFDM Systems", *IEEE Transactions on Wireless Communications*, Volume 7, Issue 11, Part 1, pp. 4341-4352, November 2008.

Shahid, I.; **Rajatheva, R.M.A.P.**, "Asymptotic BER Bounds for Iteratively Decoded Bit-Interleaved Space-Time Coded Modulation Under Correlated Rayleigh and Rician Fading Channels", *IEEE Communications Letters*, Volume 12, Issue 10, pp. 770-772, October 2008.

Sonia Majid and **Kazi Ahmed**, "Communications through a Self-organizing Network in Immediate Post-disaster Scenario", *International Journal of Security and Communication Networks*, 2008

Sonia Majid and **Kazi Ahmed**, “Mobile Handsets as Sensing Nodes in an Auto-configured Hierarchical Cognitive Radio Network Scheme for Immediate Post-disaster Communications”, in Special Issue on Emerging Technologies for Practical Ubiquitous and Sensor Networks, IEICE Transactions on Communications, 2008
Sripetch and **P. Saengudomlert**, “Optimization for optical network designs based on existing power grids,” *IEICE Transactions on Communications*, vol. E91-B, no. 3, pp. 689-699, March 2008.

Conference Proceedings

Atapattu, S.; **Rajatheva, R.M.A.P.**, “Analysis of Alamouti Code Transmission over TDMA-Based Cooperative Protocol”, IEEE 67th Vehicular Technology Conference (VTC 2008-Spring), 11-14 May 2008, Singapore.

Gunawardena, S.; **Rajatheva, R.M.A.P.**, “SEP Formula for Single Relay Selection in a Multiple Relay Environment Over Rayleigh Fading Channels”, 21st Canadian Conference on Electrical and Computer Engineering (CCECE 2008), 04-07 May 2008, Ontario, Canada.

Herath, S.P.; **Rajatheva, R.M.A.P.**, “Analysis of Equal Gain Combining in Energy Detection for Cognitive Radio Over Nakagami Channels”, IEEE Global Telecommunications Conference (GLOBECOM 2008), New Orleans, U.S.A. Nov. 30 2008-Dec. 4 2008

Ines Slama, Bharat Shrestha, Badii Jouaber, Djamel Zeghlache and **Tapio J. Erke**, “DNIB: Distributed Neighborhood Information Based TDMA Scheduling for Wireless Sensor Networks”, 68th IEEE Vehicular Technology Conference, Calgary, Canada, September 2008.

L. Simon, **P. Saengudomlert**, and U. Ketprom, “Speed adjustment algorithm for an RFID reader and

conveyor belt system performing Dynamic Framed Slotted Aloha,” *Proceedings of IEEE RFID 2008*, USA, 16-17 April 2008.

R. Ahmed, A. Noymai, J. Wisanmongkol, **P. Saengudomlert**, and U. Ketprom, “Memory-efficient anti-collision algorithm based on ISO 15693,” *Proceedings of Electrical Engineering Conference (EECON)*, Thailand, 29-31 October 2008.

Sanguankotchakorn T. and Preeda Jaiton: *Effect of Triangular Routing in Mixed IPv4/IPv6 Networks*, The 7th International Conference on Networking (ICN2008), Cancun, Mexico, April 13-18, 2008.

Sonia Majid and **Kazi Ahmed**, “Cooperative Deployment of WRAN Groups for Post-disaster Scenario”, submitted to the 11th International Symposium on Wireless Personal Multimedia Communications (WPMC 2008), Lapland, Finland, September 8-11, 2008

Sonia Majid and **Kazi Ahmed**, “A Novel Scheme for Hierarchical Network for Immediate Post-disaster Communications”, submitted to the 11th International Symposium on Wireless Personal Multimedia Communications (WPMC 2008), Lapland, Finland, September 8-11, 2008.

Sonia Majid and **Kazi Ahmed**, “Post-disaster Communications: A Cognitive Agent Approach”, The Seventh International Conference on Networking (ICN 2008), Cancun, Mexico, April 13-18, 2008

Weeraddana, P.C.; **Rajatheva, R.M.A.P.**, Hlaing Minn, “Probability of Error Analysis of 4-QAM OFDM Systems with Random Residual Frequency Offset”, IEEE 68th Vehicular Technology Conference (VTC 2008-Fall), 21-24 September 2008, Alberta, Canada

10.7 Doctoral Students’ Dissertation

Robust Joint Transmitter and Receiver Power Allocations for Multi-User Communications
By Chirawat Kotchasarn
Supervisor: Dr. Poompat Saengudomlert

10.8 Masters Students’ Theses and Research Studies

An Adaptive Decentralized Congestion Control Algorithm for Multi-Link MIMO Interference Systems with the BER Constraint
By Mirza Tayyab Mehmood
Supervisor: Dr. Poompat Saengudomlert / Prof. Djamel Zeghlache

Analysis of MIMO - OFDM Cooperative Diversity Systems
By Dao Anh Quan
Supervisor: Dr. R.M.A.P. Rajatheva

Diversity Selection in Amplify-Forward Cooperative Communication Systems with TDMA- Based Protocols over Fading Channels
By Subodha Hettiachchi Gunawardena
Supervisor: Dr. R.M.A.P. Rajatheva

Efficient Tag Estimation Technique for Mobile RFID Readers
By Suman Singh
Supervisor: Dr. Poompat Saengudomlert

Fairness Study in a Multicellular System with Distributed Power Control and Scheduling
By Reny Bajracharya
Supervisor: Prof. Kazi Mohiuddin Ahmed

Joint Flow Control, Routing and Medium Access Control in Random Access Multi-hop Wireless Networks
By Sucha Supittayapornpong
Supervisor: Dr. Poompat Saengudomlert

Optimal Reference Symbol Design for Channel Estimation in 4G Mobile System with MIMO- OFDM
By Nguyen Viet Anh
Supervisor: Prof. Kazi Mohiuddin Ahmed

Performance of Coherent Optical OFDM Transmission through Dispersive Optical Fibers with Four-Wave Mixing
By Phan Bach Khoa
Supervisor: Dr. Poompat Saengudomlert

Performance Study of Licensed Users in the Presence of Malicious Nodes in Cognitive Radio Environment
By Manya Gautam
Supervisor: Prof. Kazi Mohiuddin Ahmed

RFID-Assisted Vehicular Communication System for Co-operative Routing of Post-Accident Warning Messages
By Abdullah Al Masud
Supervisor: Prof. Kazi Mohiuddin Ahmed

Study of QoS Provisioning in the Core-Based Tree Multicast Technique
By Phung Van Luong
Supervisor: Dr. Teerapat Sanguankotchakorn

Research Study: Comparison of Peer-to-Peer Certificate Exchange between PGP and Crypto Contact
By Phruetthirat Promcharoen
Supervisor: Dr. R.M.A.P. Rajatheva

Research Study: Effect of Complex User Network Configurations on Telephone Traffic
By Wai Lwin Lwin Aung
Supervisor: Assoc. Prof. Tapio J. Erke

Research Study: Modeling and Analysis of Power Line Communications as an ICT Infrastructure for Rural Development: A Case Study of a Rural Area in Bangladesh
By Mohammad Kamrul Hasan
Supervisor: Prof. Kazi Mohiuddin Ahmed

Research Study: Optimization Strategies for Routing and Wavelength Assignment with Protection for Multicast Traffic in Multi-Fiber Optical WDM Networks
By Matthieu Philippe Guyot
Supervisor: Dr. Poompat Saengudomlert

Research Study: WIMAX Technology for Disaster Relief: A Case Study in Mozambique
By Julien Le Gall
Supervisor: Prof. Kazi Mohiuddin Ahmed

Chapter 11: SET – TRANSPORTATION ENGINEERING FIELD OF STUDY

11.1 Introduction

Industrialization and population growth have tremendous impacts in the movement of people and goods. Every day, movement is hampered by congestion, insufficiency of public transport facilities, traffic accidents, and other conditions. Moreover, as manufacturing expands globally, businesses want to reduce transportation costs by limiting the number of distribution nodes. Concerns over congestion on highways, increasing pollution and hazardous materials all emphasize the need to effectively maximize transportation systems. Thus, the issue of transportation is obviously crucial, not only now but in the future.

The **Transportation Engineering** field exposes students to the process of alleviating transportation problems. The coursework and research in the area provide advanced knowledge in transportation planning and economics, traffic engineering and safety, and the design of highways/pavements and other transportation facilities. Transportation Engineering students acquire advanced skills concerning the planning, design, operations, maintenance, rehabilitation, performance, and evaluation of transportation systems, including their economic and public policy aspects. The field imbues in each student the development of analytic, problem-solving, design, and management skills suitable for public and private sector professional work.

11.2 Faculty and Research Staff

Emeritus Professor

JOHN HUGH JONES, B.S., B.Eng.,
University of California, USA
(*Highway Engineering,
Transportation Engineering*)

Full-time Faculty

HYUNMYUNG KIM, PhD, University of California, Irvine, USA; MSc, BEng, Seoul National University, Korea.

Assistant Professor

[Transportation demand modeling, transportation network analysis, dynamic traffic simulation, activity-based travel analysis, dynamic OD estimation problem, public transportation planning, sustainable transportation planning problem]

KUNNAWEE KANITPONG, PhD, University of Wisconsin- Madison; MS, University of Maryland at College Park, USA; BS, Chulalongkorn University, Thailand.

Assistant Professor [*Highway pavements with emphasis on several major aspects including: highway materials and construction, pavement design and analysis, pavement management system, asphalt rheology, and asphalt concrete mixture design*]

Visiting Faculty

HIRONORI KATO, D.Eng., M.Eng., B.Eng. University of Tokyo, Japan

Visiting Associate Professor

(*Transportation planning and policy; travel behavioral analysis; transportation project evaluation*)

PICHAJ TANEERANANON, BE, University of Western Australia; M Eng and PhD, University of New South Wales, Australia.

Visiting Associate Professor

[**Transportation Systems:** *Development of transportation systems, the invention of the wheel, the silk road, the railroad, the first car, the airplane, the*

*Panama canal, Suez canal, the container; Function of transport; Transport system elements and their characteristics; Design of land transport facilities; Transportation system management: US Transport Vision, Guidelines for transport system management; Transportation problems and impacts on the environment. **Traffic Engineering:** Human vehicular and traffic characteristics, driver's PIEV time, visual factors; pedestrian walking speed, flow rate, vehicle operational elements; Traffic studies, volume, speed, travel time, delay, accidents; Traffic control devices, types and functions of traffic control devices, traffic sign, marking, intersection control, priority, signal, roundabout, design of signal timing, SIDRA program for design of optimal signal timing; Highway Capacity determination of highway capacity, levels of service]*

SHINYA HANAOKA, D Info Sc, M Info Sc, BEng, Tohoku University; Japan.

Visiting Associate Professor

[*Transport planning and logistics; air transport, which includes evaluation of the air traffic distribution policies in multiple-airport region and the activity of low-cost carriers in Asia; transport logistics, which includes city logistics, intermodal logistics, maritime transport, air cargo and so on; Public transport market and the environmental impact of transport, such as air pollution and noise*]

TAKASHI NAKATSUJI, D. Eng., M. Eng., B. Eng., Hokkaido University; Japan.

Visiting Associate Professor
(Traffic Engineering, Traffic Flow Simulation, Winter Maintenance, Traffic Accident Reconstruction)

SHINJI TANAKA, D.Eng., M.Eng., B.Eng. University of Tokyo, Japan

Visiting Assistant Professor
(Traffic Engineering; Traffic Control and Management; Intelligent Transport Systems)

Adjunct Faculty

SRISOOK CHANDRANGSU, PhD, Ohio State University, USA; M.Eng., Asian Institute of Technology, B.Eng. (Honours), Chulalongkorn University, Thailand.

Affiliated Faculty

DJOEN SAN SANTOSO, PhD, Saitama University, Japan; M.Eng., Asian Institute of Technology, B.Eng., Parahyangan Catholic University, Bandung, Indonesia.

Research Staff

CHANIDA ANURAKAMOLKUL, M.Eng. (Transportation Engineering), Asian Institute of Technology; B. Eng. (Civil Engineering); B. Eng. (Civil Engineering), Sirindhorn International Institute of Technology, Thammasat University, Thailand

Research Associate (TARC Project)

NUTTAPONG BOONTOB, M. Eng. (Transportation Engineering), Asian Institute of Technology; B. Eng. (Civil Engineering), King Mongkut's Institute of Technology Ladkrabang, Thailand.

Research Associate (TARC Project)

PAKORN ANIWATTAKULCHAI, M. Eng. (Transportation Engineering), Asian Institute of Technology; B. Eng. (Civil Engineering), King Mongkut's Institute of Technology Ladkrabang, Thailand.

Research Associate (TARC Project)

SATTRAWUT PONBOON, M. Eng. (Transportation Engineering), Asian Institute of Technology, Thailand; B.Eng. (Transportation Engineering), Suranaree University of Tech., Nakhon Ratchasima, Thailand.

Research Associate (TARC Project)

SUPATTRA KACHATHONG, M.A. (Library and Information Science), Ramkhamhaeng University; B.A. (Communication Arts) Bangkok University.

Research Associate (TARC Project)

11.3 Grants and Sponsored Research Completed in 2008

Dual Degree Master Program in Transportation Engineering in Indonesia

Duration 1-Dec-07 31-Dec-08
Project Investigator Kunnawee Kanitpong, Pichai T.
Sponsor MPW-Indonesia
Total Contracted Amount (Baht) 4,888,000

Road Safety Audit Project on Hazardous Locations in National Highways

Duration 1-Jul-07 30-Jun-08
Project Investigator Kunnawee Kanitpong
Sponsor Toyota Motor Company (Thailand) Ltd.
Total Contracted Amount (Baht) 1,958,100

Road Safety Improvement on Vibhavadi Rangsit Road (Don Muang Airport Route)

Duration 15-May-07 31-Mar-08
Project Investigator Kunnawee Kanitpong
Sponsor Toyota Motor Company (Thailand) Ltd.
Total Contracted Amount (Baht) 729,312

Thailand Accident Research Center

Duration 1-Jul-05 31-Dec-08
Project Investigator Kunnawee Kanitpong
Sponsor Department of Highways, Thailand
Total Contracted Amount (Baht) 14,000,000

11.4 On-going Grants and Sponsored Research

Evaluation of Performance of Porous Asphalt Pavement

Duration 1-May-07 31-May-09
Project Investigator Kunnawee Kanitpong
Sponsor RTG Visiting Scholar
Total Contracted Amount (Baht) 765,000

Improving Road Traffic safety in Thailand: A common challenge for European and Thai Universities

Duration 24-Dec-08 23-Jun-10
Project Investigator Kunnawee Kanitpong
Sponsor Commission of the European Communities
Total Contracted Amount (Baht) 8,317,938

Knowledge Dissemination to Improve Road Safety for Rural Community

Duration 1-Sep-08 31-Aug-09
Project Investigator Kunnawee Kanitpong
Sponsor Toyota Motor Thailand Co., Ltd.
Total Contracted Amount (Baht) 1,605,000

Promoting Cool Pavements to Mitigate the Urban Heat Island effect in Bangkok

Duration 15-Oct-08 15-Oct-09
Project Investigator Kunnawee Kanitpong
Sponsor RTG
Total Contracted Amount (Baht) 980,000

Road Safety Knowledge Development and Dissemination

Duration 1-Jun-08 31-December-09
Project Investigator Kunnawee Kanitpong
Sponsor Department of Highways, Thailand
Total Contracted Amount (Baht) 7,756,000

Safety Driving Speed

Duration 15-Feb-08 31-Mar-09
Project Investigator Kunnawee Kanitpong, Pichai T.
Sponsor National Health Foundation
Total Contracted Amount (Baht) 973,980

Study on Analysis of DOH Pavement Defects

Duration 1-Jan-08 31-Mar-09
Project Investigator Kunnawee Kanitpong
Sponsor Prince Songkla University
Total Contracted Amount (Baht) 300,000

11.5 Publications

Refereed Journals

Islam, M.B. and Kanitpong, K., "Identification of Factors in Road Accidents through In-Depth Accident

Analysis," the International Association of Traffic and Safety Sciences (IATSS) Research, Vol.32, No.2, 2008.

Kanitpong, K., Boontob, N., and Tanaboriboon, Y., "Helmet Use and Effectiveness in Reducing the Severity of Head Injuries in Thailand," Transportation Research Record 2048, Journal of the Transportation Research Board, 2008, pp. 66-76

Kanitpong, K., Nam, K., Martono, W., and Bahia, H.U., "Evaluation on Warm Mix Asphalt Additives," the International Journal of Construction Materials, Vol. 161, issue CM1, 2008, pp. 1-46.

Conference Proceedings

Aniwattakulchai, P., Islam, M.B., and **Kanitpong, K.**, "Injury Mechanism Analysis of Occupants in Road Crashes," The 87th Annual Meeting of the Transportation Research Board, Washington, D.C., 2008

Borleo, M.B., **Kanitpong, K.**, and Charoentham, N., "Performance Evaluation of Warm Mix Asphalt Produced with Sasobit Additive," the 6th International Conference on Road and Airfield Pavement Technology, Sapporo, Japan, 2008

Kim H., R. Jayakrishnan, Lim Y. (2008) Forecasting a dynamic future traffic pattern by an activity-based traffic simulator, Proceedings of the 13th international conference of Hong Kong society for transportation studies, Dec. 13-15, Hong Kong.

Ponboon, S., Tanaboriboon, Y., **Kanitpong, K.**, Islam, M.B., and Boontob, N., "Contributing Factors of Road Crashes in Thailand: Evidence from an Accident In-Depth Study," The 87th Annual Meeting of the

Transportation Research Board, Washington, D.C., 2008
Rungruangvirojn, P. and **Kanitpong, K.**, "Quantitative Measurement of Visibility due to Splash and Spray on Asphalt Pavement," the 6th International Conference on Road and Airfield Pavement Technology, Sapporo, Japan, 2008

11.6 Doctoral Students' Dissertation

Developing a Continuous Flow Intersection in Thailand
By Jumrus Pitaksringkarn
Supervisor: Dr. Pichai Taneerananon/Dr. Shinya Hanaoka

Development of a Provincial Road Safety Management System in Thailand
By Chatchawal Simaskul
Supervisor: Prof. Pichai Taneerananon

Development of a Reverse Logistics Model in the Construction Industry
By Sanjeev Sinha
Supervisor: Dr. Pichai Taneerananon

Development of Routing Management Model to Support Hazardous Materials Transportation by Roadway -Case Study: Gasoline Logistics in Rayong, Thailand
By Watchara Sattayaprasert
Supervisor: Dr. Pichai Taneerananon / Dr. Shinya Hanaoka

The Development of Ship Routing and Location Models for Hub Port Policy
By Sakarathorn Boontaveeyuwat
Supervisor: Dr. Kunnawee Kanitpong / Dr. Shinya Hanaoka

11.7 Masters Students' Theses and Research Studies

A Fuzzy Logic Ramp Metering Control with Multi-Objectives Genetic Algorithm Optimization
By Nguyen Minh Ha

Supervisor: Dr. Kunnawee Kanitpong / Dr. Ponlathep Lertworawanich

Analysis of Pedestrian Accidents in Bangkok

By Amornchai Leelakajonjit
Supervisor: Dr. Pichai Taneerananon

Bus Fleet Management using Bluetooth and GPRS

By Mohammed Khalandar Khan
Supervisor: Dr. Pichai Taneerananon / Dr. Shinji Tanaka

Derivation of Pavement Performance Index for Thailand's Department of Highways

By Sompratana Jiamtrakarn
Supervisor: Dr. Kunnawee Kanitpong

Development of Accident Prediction Models for the Highways of Thailand

By Lalita Thakali
Supervisor: Dr. Kunnawee Kanitpong

Driver's Attitudes Towards Speed Management

By Woottichai Yaktawong
Supervisor: Dr. Kunnawee Kanitpong

Effects of Speed Cameras on Speed Profile: An Evaluation of Highway Route Number 347 (Pathumthani to Bangkok) from 14+000 km. to 9+000 km.

By Pichet Kumpeeranon
Supervisor: Dr. Pichai Taneerananon

Intermodal Mode Choice between Japan and Russia

By Tomoya Kawasaki
Supervisor: Dr. Pichai Taneerananon / Dr. Shinya Hanaoka

Under-Reporting of Road Accident Data: A Case Study of Highways in Nakhon Ratchasima, Thailand

By Piyapong Srirat
Supervisor: Dr. Kunnawee Kanitpong

Utilization of Industrial By-Product in Superpave Asphalt Mixture

By Kitsumate Pummarin
Supervisor: Dr. Kunnawee Kanitpong

Chapter 12: SET – WATER ENGINEERING AND MANAGEMENT

FIELD OF STUDY

12.1 Introduction

Today's major challenges for water engineers and managers include securing water for people and for food production; protecting vital ecosystems; and dealing with variability and uncertainty of water in space and time. The Water Engineering and Management (WEM) field imparts education and training toward an understanding of the complexity of water cycle utilization and management. It offers a balanced curriculum, covering both engineering and management aspects of water resources. Students are trained to acquire knowledge and hands-on practice in tools and techniques to come up with viable and sustainable solutions within the framework of the integrated water resources management at the river basin scale.

The WEM field of study covers five focal areas: Agricultural Water, Coastal Water, Urban Water, Water Resources, and Extreme Events and Risk Management. The courses are designed in such a way that students can specialize according to their interests. Courses on Watershed Hydrology, Hydrodynamics, Water Resources Systems, and Concepts in Water Modeling provide the solid foundation to the advanced courses. The curriculum emphasizes tools and techniques in water resources planning and management.

Agricultural Water courses impart knowledge and skills necessary for the development and management of water resources for agriculture. They address various multi-disciplinary issues in the planning, design, implementation, operation and maintenance of irrigation and drainage projects and land and water conservation programs. Current researches in the area include irrigation and drainage system management, cropping systems, erosion and water quality problems, soil conservation and

land-use, and watershed management. The management and design of sound engineering works for the control and effective use of coastal zones require in-depth knowledge of hydrodynamics and the understanding of coastal zone phenomena. Coursework and research in Coastal Water cover studies of wave characteristics and their action on beaches, coastal sedimentation, estuarine hydraulics and the applied aspects of coastal zone engineering and management.

Urban Water courses relate to water supply and sanitation, storm water, and domestic wastewater and urban drainage for sustainable management of urban areas. The research in relation to urban water focuses on application of state-of-the-art theory in water demand forecasting and management, design and management of water distribution systems in urban and rural areas, real-time hydrological information systems for urban flooding and drainage. Given the ever-growing importance of water quality, an integrated water quantity-quality approach is essential. Courses in Water Resources focus on techniques to assess the occurrence and availability of surface and groundwater. Students acquire a sound understanding of basic principles in river engineering and modeling, water resources planning, conjunctive use of surface and groundwater; integrated water resources management and social and environmental impact assessment of water resources projects. In-depth knowledge and hands-on practice on mathematical modeling of water resources systems is provided. Flooding is a natural phenomenon and various human activities as well as climatic changes have aggravated the problem causing economic losses. Students are exposed to an understanding of the behavior of rivers, and to design appropriate structural and non-structural alternatives for the effective

management of rivers and waterways. Research in the area of Extreme Events and Risk Management includes river flow analysis, and flood control and mitigation, flood modeling and forecasting, flood plain development and management.

12.2 Faculty and Research Staff

Full-time Faculty

MUKAND S BABEL, BEng, Rajasthan Agr Univ, India; MEng, DEng, AIT.

Associate Professor [Hydrologic and water resources modeling as applied to integrated water resources management; watershed modeling and management; water resources allocation and management; water resources and socio-economic development; water supply system and management; and climate change impact and adaptation; groundwater resources management; and drought analysis, forecasting and management]

ROBERTO CLEMENTE, BSAE, Univ of the Philippines at Los Baños; MEng, AIT, Thailand; PhD, McGill Univ, Canada.

Associate Professor [Focal areas related to irrigation/ drainage, and land and water resource assessment and management; Studies on the impacts of fertigation on water quality, modeling surface/subsurface transport of water and solutes, performance evaluation of irrigation and drainage systems, and assessment of soil erosion hazard and soil quality dynamics in agricultural watersheds; Joint research on water harvesting]

and management and soil hydraulic characterization in sloping agricultural lands; Future research focuses on evaluation and optimization of soil, water, chemical and crop management schemes to enhance agricultural productivity without jeopardizing environmental quality]

Visiting Faculty

ASHIM DAS GUPTA, BEng, Gauhati Univ, India; MEng, DEng, AIT, Thailand.

Visiting Professor (*Integrated Water Resources Management; Groundwater Development and management; Modeling and monitoring*)

TAWATCHAI TINGSANCHALI, BEng, Chulalongkorn Univ, Thailand; MEng, DEng, AIT, Thailand.

Visiting Professor (*Flood Control Engineering and Management; Flood Forecasting, Warning and Flood Disaster Management; River Engineering and Hydropower; Water Resources Project System Optimization*)

SYLVAIN PERRET, MS and PhD, University of Montpellier II, France; DSc, Ecole Polytechnique de Lorraine, Nancy, France.

Visiting Associate Professor (*Water economics and governance, with special interest onto valuation approaches of rural and environmental water uses, irrigation systems' performances and evaluation, environmental assessment of production systems, governance in irrigation systems, integrated water resource management and governance at the river basin level, social participation in the water sector*)

MARIELE EVERS, MS Multi Media Informatics, University of Applied Sciences of North East Lower Saxony, Luneburg, Germany; PhD, University of Hanover, Germany.

Visiting Associate Professor (*Environmental/sustainable management and integrated river basin management*)

MYSORE KASHIPATHY NAGARAJ, BEng, Mysore University, India; MS, IIT Kanpur; PhD, IISc. Bangalore, India.

Visiting Assistant Professor (*Ground water engineering, water resources systems, optimization, inverse modeling*)

Affiliated Faculty

SUTAT WEESAKUL, DEng, MEng, Asian Institute of Technology; BEng, Chulalongkorn University, Thailand
[Numerical computation in sea and coastal area including flood propagation using developed computer programs; Application in solving urban drainage problem using both engineering and management approaches; the on-line urban flood warning system at Sukhumvit , Bangkok , Thailand providing useful information in daily life during rainy season are disseminated in <http://www.wap.ait.ac.th>; Improvement of hydraulic design using physical hydraulic model test in hydropower; hydropower development projects in Lao and Myanmar and improvement in design of intake, diversion tunnel, riparian outlet, energy dissipater, spillway and head pond]

12.3 Grants and Sponsored Research Completed in 2008

AIT Regional Network Office for Center of Excellence of University of Yamanashi
 Duration 15-Jun-05 30-Sep-08
 Project Investigators Tawatchai Tingsanchali and Dr. Mukand S. Babel
 Sponsor University of Yamanashi, Japan
 Total Contracted Amount (Baht) 347,500

Development of River Basin Flood Management System by Optimal Reservoir Operation and Real Time Flood Forecasting and Warning: A Case Study of Pasak River Basin

Duration 1-Aug-06 31-Mar-08
 Project Investigator Tawatchai Tingsanchali
 Sponsor National Research Council of Thailand
 Total Contracted Amount (Baht) 2,000,000

E-learning Program on IWRM

Duration 6-Sep-06 30-Aug-08
 Project Investigator Mukand S. Babel
 Sponsor Self Pay Students
 Total Contracted Amount (Baht) 190,000

Hydraulic Concept Model Tests - La Confluencia Hydroelectric Power Plant Project

Duration: 1-Jan-08 30-June-08
 Project Investigator: Mr. Arturo G. Roa
 Sponsor: Pöyry Energy Ltd (Zurich, Switzerland)
 Total Contracted Amount (Baht): 1,033,200.00

12.4 On-going Grants and Sponsored Research

Asian Infrastructure Research Center (AIRC) Phase I

Duration 1-Jan-07 31-Dec-09
 Project Investigator Mukand S. Babel, Noppadol Phienwej, Kyung-Ho Park, BHW Hadikusumo, Kunnawee Kanitpong
 Sponsor Konkuk University, South Korea
 Total Contracted Amount (Baht) 4,472,153

Climate Change impact and Adaptation Study for Bangkok Metropolitan region

Duration 1-Dec-08 30-Nov-09
 Project Investigator Mukand S. Babel
 Sponsor Panya Consultants Co., Ltd.
 Total Contracted Amount (Baht) 686,940

Development of Flood Forecasting and Management System in Chao Phraya Tachin River Basins

Duration 1-Oct-07 31-Jul-09
 Project Investigator Sutat Weesakul
 Sponsor Royal Irrigation Department (RID)
 Total Contracted Amount (Baht) 17,769,706

Development of Operational Flood Forecasting System Case Study: Chao Phraya River Basin

Duration 1-Jul-04 31-Jul-09
 Project Investigator Sutat Weesakul
 Sponsor National Electronic and Computer Technology Center
 Total Contracted Amount (Baht) 5,027,400

E-learning Program on IWRM for UCC-Water

Duration 1-Sep-06 30-Jun-09
 Project Investigator Mukand S. Babel
 Sponsor UCC-Water, Denmark
 Total Contracted Amount (Baht) 1,242,500

3rd Batch of E-learning Program on Integrated Water Resource Management

Duration 1-Mar-08 31-Dec-10
 Project Investigator Mukand S. Babel
 Sponsor UNU-INWEH and participants
 Total Contracted Amount (Baht) 936,000

EWRI -AIT An International Perspective on Environmental and Water Resources Conference 2009 (UNESCO Side Event)

Duration 1-Dec-08 30-Nov-09
 Project Investigator Mukand S. Babel
 Sponsor UNESCO
 Total Contracted Amount (Baht) 735,200

EWRI -AIT An International Perspective on environmental and Water Resources Conference 2009 (Promotion and Participants)

Duration 1-Dec-08 30-Nov-09
 Project Investigator Mukand S. Babel
 Sponsor Participants
 Total Contracted Amount (Baht) 1,943,350

Groundwater Quality Management Research in Bangkok

Duration 1-Aug-07 31-Mar-09
 Project Investigator Mukand S. Babel
 Sponsor Institute for Global Environmental Strategies (IGES), Japan
 Total Contracted Amount (Baht) 1,094,931

Investigation of Flow Dynamics in Mahachai Sanamchai Canal Network by Physical and Mathematical Models

Duration 1-Nov-08 31-Jul-09
 Project Investigator Sutat Weesakul
 Sponsor RTG
 Total Contracted Amount (Baht) 930,000

Participatory Irrigation Management and Development in Cambodia

Duration 1-Feb-08 31-Dec-09
 Project Investigator Roberto S. Clemente/
 Mukand S. Babel
 Sponsor Food and Agriculture Organization (FAO)
 Total Contracted Amount (Baht) 496,952

Physical Model for Monkey Cheeks in the Mahachai-Sanamchai Canals Project: The King of Thailand's Initiative

Duration 1-Jul-08 30-Apr-09
 Project Investigator Sutat Weesakul
 Sponsor Hydro and Agro Informatics Institute (HAII)
 Total Contracted Amount (Baht) 2,164,182

Regional Center of the UN Water Virtual Learning Center (WVLC) Project

Duration 1-Nov-04 31-Dec-09
 Project Investigator Mukand S. Babel, A. Das
 Gupta
 Sponsor UNU-INWEH, Canada
 Total Contracted Amount (Baht) 2,346,000

Spillway Hydraulic Model Tests Nam Ngum 3 Hydropower Project

Duration 1-Dec-07 31-Jan-09
 Project Investigator Sutat Weesakul
 Sponsor GMS Lao Company Ltd
 Total Contracted Amount (Baht) 4,800,000

Support to Capacity Building at the Water Resources University, Hanoi, Vietnam

Duration 1-Sep-01 31-Aug-10
 Project Investigator Mukand S. Babel, Ashim Das
 Gupta
 Sponsor Danish International Development Assistance (Danida)
 Total Contracted Amount (Baht) 3,801,000

Tha Chin River Basin Development Project: The King of Thailand's Initiative

Duration 1-Aug-07 31-Jul-09
 Project Investigator Sutat Weesakul
 Sponsor Royal Irrigation Department (RID)
 Total Contracted Amount (Baht) 17,388,570

Training Course on IWRM: Principle and Practices

Duration 1-Oct-08 30-Sep-09
 Project Investigator Mukand S. Babel
 Sponsor DWI, BAPPENAS (State Ministry of National Development Planning/National Development Planning Agency), Indonesia
 Total Contracted Amount (Baht) 6,232,347

UNEP Water Vulnerability Assessment in South and South East Asia

Duration 1-Jan-06 30-Jun-09
 Project Investigator Mukand S. Babel
 Sponsor UNEP
 Total Contracted Amount (Baht) 3,600,000

UNEP Water Vulnerability Assessment in South and South East Asia: Sub-regional synthesis for Africa-Asia Report Phase II

Duration 1-Sep-07 30-Jun-09
 Project Investigator Mukand S. Babel
 Sponsor UNEP
 Total Contracted Amount (Baht) 1,650,000

Verification of ATTA System with Laboratory Tsunami Waves

Duration 1-Apr-07 30-Apr-09
 Project Investigator Sutat Weesakul
 Sponsor RTG
 Total Contracted Amount (Baht) 1,000,000

Water Supply Study and Flood Study for Nong Saeng, Saraburi Province and Samet Tai Project, Chachoengsao Province

Duration 1-Mar-08 31-Dec-09
 Project Investigator Mukand S. Babel
 Sponsor Gulf JP Company Limited
 Total Contracted Amount (Baht) 806,452

12.5 Publications

Refereed Journals

A. Vansarochana, N.K. Tripathi, and **R.S. Clemente**. 2008. Finding appropriate interpolation techniques for topographic surface generation for mudslide risk zonation. Paper accepted for publication at GEOCARTA International.

Donjadee, S., **Clemente, R.S.**, Tingsanchali, T., and Chinnarasri, C. 2008. Effects of vertical hedge interval of vetiver grass on erosion on steep agricultural lands. *Land Degradation and Development* (19) pp 1-12 (2008)

Hung, N. Q., **Babel, M. S.**, Weesakul, S. and N. K. Tripathi (2008). An Artificial Neural Network Model for Rainfall Forecasting in Bangkok, Thailand, *Hydrology and Earth System Sciences Discussions*, Vol. 5(1), 183-218. Publisher: Copernicus Publications, Impact factor: 2.270 (2007).

Kaewrueng, S., **Babel, M. S.**, Das Gupta, A. and S. Md. Wahid (2008). Assessment of Groundwater Potential in the Lower Chao Phraya River Basin, Thailand, Accepted in *Asia Pacific Journal of Rural Development*. Publisher: Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP), Impact factor: -.

Mark, O., J. O. Lacoursiere, L. B-M. Vought, Amena, Z., and **M. S. Babel** (2008). The Application of Hydroinformatics Tools for Water Quality Modeling and Management in Vientiane, Lao P.D.R., Accepted in

Journal of Hydroinformatics.

Publisher: IWA Publishing, Impact factor: 0.452 (2006).

Shrestha, S., Kazama, F., Newham, L. T. H., **Babel, M. S.** and R. S. Clemente (2008). Catchment Scale Modeling of Point Source and Non-point Source Pollution Loads Using Pollutant Export Coefficients Determined from Long-term In-stream Monitoring Data, *Journal of Hydro-environment Research*, Vol. 2(3), 134-147. Publisher: Elsevier, Impact factor: -.

Speelman, S., Farolfi, S., **Perret, S.R.**, D'Haese, L. & D'Haese, M. (2008) Irrigation Water Value at Small-scale Schemes: Evidence from the North West Province, South Africa. *International Journal of Water Resources Development*, 24(4): 621-633 (Impact Factor: 0.444 in 2007)

Wahid, S. M., **Babel, M. S.**, Das Gupta, A., Routray J.K. and R.S. Clemente (2008). Land degradation-environment-society Spiral: A Spatio Auto-logistic Model in Thailand, *Natural Resources Forum*, Vol. 32(4), 290-304. Publisher: Blackwell, Impact factor: 0.709 (2007).

Wahid, S. Md. and **M. S. Babel** (2008). Evaluating Landscape Predictors with Reference to Watershed Hydrology: A Case Study from Lam Phra Phloeng Watershed, Northeast Thailand, *Asia Pacific Journal of Rural Development*, Vol. XVII (1), 41-56. Publisher: Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP), Impact factor: -.

Conference/ Workshop Proceedings

Babel, M. S. (2008). Integrated Water Resources Management Masters Programme at AIT. A paper presented at the Integrated Water Resources Management (IWRM) Master's Programme Strategic Workshop, Pretoria, South Africa, 17-19 June 2008.

Babel, M. S., Grover, V. I., Sharma, D. and S. Md. Wahid (2008). Capacity Development in IWRM through E-learning – Experiences of Water Virtual Learning Centre at AIT, Thailand. Proceedings of the XIII World Water Congress of IWRA, Montpellier, France, 1-4 September (CD-ROM).

Babel, M. S., Wichakul, S., Wahid, S. Md. and A. Das Gupta (2008). Estimation of Safe Yield Using Groundwater Level and Pumping Data of the Bangkok Aquifer System, Proceedings of International Groundwater Conference, Jaipur, India, 19-22 March.

Caloza, D., **Clemente R.**, Ventura, E., and Peralta, G. 2008. Water resources assessment and management in Panglao island, Bohol. Proc. International Conference on Hydrology and Water Resources Management for Hazard Reduction and Sustainable Development Manila Philippines. Nov. 19-23 2007.

Hung N. Q. and **M. S. Babel** (2008). An Artificial Neural Network Model for Rainfall Forecasting In Bangkok, Thailand. 2nd International Workshop on Numerical Simulation for Disastrous Phenomena organized by SET/AIT and GSIC/TOKYO TECH, Asian Institute of Technology, Thailand, 31 January.

Perret, S.R. & Geysler, M. (2008) Can smallholder farmers meet the financial costs of irrigation services? A case study on economic efficiency and social equity in South Africa. In: Proceedings of IWRA Conference, XIIIth World Water Congress, Montpellier, Sept 1-4 2008. Oral and paper presentation, 14p.

Wahid, S. Md. and **M. S. Babel** (2008). Water Vulnerability and Cooperation in the Ganges-Brahmaputra-Meghna River Basin, Proceedings of the 10th Summer Institute of the Pacific Regional Science Conference Organization,

Dhaka, Bangladesh, 15-16 May (CD-ROM).

Other Publications

Babel, M. S. (2008). Climate Change Impact and Adaptation Study for Coastal Aquifers in Selected Asian Cities, A paper presented at the Asian Science and Technology Seminar (ASTS) in Thailand, held at Nai Lert Park Swisshotel, Bangkok, 9-11 March.

Babel, M. S. (2008). Downscaling Data to the City Level to Determine the Hotspots Profile and City Typology, Invited Lecture at the Green Cities Workshop and Launch Event: A Primer on Climate Change Impacts and Disaster Risk Management in Urban Areas in East Asia, organized by UN-ISDR, GFDRR, WB and UCLG-ASPAC, Pattaya, Thailand, 14 July 2008.

Babel, M. S. (2008). Vulnerability Assessment of Freshwater Resources in the Mekong River Basin, Invited Seminars at the Faculty of Engineering and Faculty of Agriculture, Utsunomiya University, Japan, 12 August 2008.

Pandey V.P., **Babel M.S.** and F. Kazama (2008). Analysis of a Nepalese Water Resources System: Stress, Adaptive Capacity and Vulnerability. Proceeding of the 1st IWA Asia-Pacific Young Water Professionals Conference "Meeting Water Challenges in Asia-Pacific Region", December 08-10, 2008, GIST, Gwangju, Korea, pp-28-29.

Pandey, V. P., **Babel, M. S.**, Shrestha, S. and F. Kazama (2008). Water Resources Reconstruction: Adaptive Capacity Approach, A paper for the poster session of Western Pacific Geophysics Meeting (WPGM), 29 July - 1 August 2008, Cairns, Australia.

Panigrahi, B., **Babel, M. S.**, Parkpian, P., Webb, J., Koottatep, T. and Dacera, D. (eds.) (2008). Abstracts.

EWRI-AIT International Conference on “An International Perspective on Environmental and Water Resources” held at AIT Conference Center from 5-7 January 2009, 157p.

Panigrahi, B., **Babel, M. S.**, Parkpian, P., Webb, J., Koottatep, T. and Dacera, D. (eds.) (2008). Proceedings of the EWRI-AIT International Conference on “An International Perspective on Environmental and Water Resources” held at AIT Conference Center from 5-7 January 2009, CD-ROM.

R. Clemente 2008. Completion Report for Balik Scientist project on Modeling NPS Pollutant Loadings to Surface and Ground Water under different Land use and Management Systems in the Laguna Lake Basin, Philippines, under the DOST/BSP Program, Manila

R. Clemente, M.S. Babel and S. Perret. 2008 Completion report for Cambodia Training course on participatory Irrigation Management and Development held at MOWRAM Phnom Penh, Cambodia from May 26-June 6 2008

12.6 Doctoral Students' Dissertation

Integrated Water Resources Management

Assessment of Groundwater and its Contribution to Agricultural Productivity in the Lower Chao Phraya River Basin, Thailand
By Sudsaisin Kaewrung
Supervisor: Dr. Mukand S. Babel

Hydrological Effects of Land Use from a Socio-Economic Perspective: The Case of Lam Phra Phloeng Watershed, Thailand
By Shahriar Md. Wahid
Supervisor: Dr. Mukand S. Babel

Water Engineering and Management

Reservoir Optimization-Simulation with Sediment Evacuation Model: A Case Study of the Tarbela Dam, Pakistan

By Noor Muhammad Khan
Supervisor: Dr. Mukand S. Babel

12.7 Masters Students' Theses

Analysis of Water Demand and Allocation in Ma River Basin, Viet Nam
By Vu Van Kieu
Supervisor: Dr. Roberto S. Clemente

An Investigation of Urban Water Economics and the Role of Pricing in Demand Management and Cost Recovery: Dhaka City, Bangladesh
By Sk. Naureen Laila
Supervisor: Dr. Sylvain Perret / Dr. Mukand S. Babel

Assessment of Fishery Harbor for Livelihood Improvement: A Case Study of Hikkaduwa Harbor, Sri Lanka
By D.P.C. Lankath
Supervisor: Mukand S. Babel/ Dr. Sutat Weesakul

Assessment of Water Sensitive Infrastructure for Managing the Urban Hydrologic Cycle
By Mukta Sapkota
Supervisor: Dr. Mukand S. Babel

Drought Forecasting and Mitigation in Cai River Basin, Vietnam
By Pham Tran Minh
Supervisor: Dr. Roberto S. Clemente

Evaluation of Some Structural Measures for Urban Flood Mitigation in Thepkrasatti, Phuket, Thailand
By Elizabeth Ciin Lian Mang
Supervisor: Dr. Roberto S. Clemente/ Dr. Sutat Weesakul

Flood Alleviation in Chao Phraya River Basin
By Kwansirinapa Saratis

Supervisor: Dr. Sutat Weesakul / Dr. Mukand S. Babel

Flood Forecasting in Stung Sen River, Cambodia
By Khan Ra

Supervisor: Prof. Tawatchai Tingsanchali / Dr. Sutat Weesakul

Forecasting Rice Yield under Climate Scenarios and Evaluation of Agro-Adaption Measures for Mekong Basin Region: A Simulation Study

By Anshul Agarwal
Supervisor: Dr. Mukand S. Babel

GIS Application for Water Infrastructure Inventory and Assessment of Water Resources in the Upper Srepok Basin, Central Highlands, Vietnam

By Tran Van Ty
Supervisor: Dr. Mukand S. Babel

Improvement and Application of a Computer Model for Water Hammer
By Nguyen Minh Quang
Supervisor: Dr. Mukand S. Babel / Dr. Sutat Weesakul

Integrated Analysis of Smallholder Irrigation Sustainability in Nepal: A Case Study of the Interplay between Individual Performances and Collective Action
By Krishna Prasad Neupane
Supervisor: Dr. Sylvain Perret / Dr. Mukand S. Babel

Modeling of Urban Flood Drainage of Jati and Surrounding Area, Padang City, West Sumatra, Indonesia
By Aguskomar Aguskomar
Supervisor: Prof. Tawatchai Tingsanchali / Dr. Sutat Weesakul

Performance Evaluation of Water Supply Services in Metro Manila
By Destine Ponferrada
Supervisor: Dr. Roberto S. Clemente

Study of Surface Water and Groundwater Drainage of Suvarnabhumi Airport, Thailand
By Somsak Songsaengchant
Supervisor: Prof. Tawatchai Tingsanchali / Dr. Sutat Weesakul

Chapter 13: SET – INFORMATION AND COMMUNICATIONS TECHNOLOGIES AREA OF STUDY

13.1. Introduction

Information and Communications Technologies field is a newly established area of study in response to the needs for the offering of a curriculum selectively drawn from the curricula of Telecommunications (TC), Computer Science, and Information Management (CSIM). With strong emphasis on communications aspects - rather than on the aggregation of hardware, software, networks, equipment and related industries - ICT recognizes the important role of information services and applications in the creation of a complete ICT infrastructure.

13.2. Research Facilities and Laboratories

There is a rapidly growing and constantly evolving interest in ICT throughout the academia and society. To support this, the evolution and the benefits of ICT in our lives, the ICT field of study at AIT continues to research and develop of ICT. The field of study covers a wide variety of research supported by the body of faculty consisting of a multi-professional team of international experts in telecommunication, computer science, educational technology and related fields.

The faculty has a strong academic background ranging from wireless and optical networks, through hardware and software, to web education and other e-services.

Research subjects include those on ICT applications (e-services such as e-learning, e-health, e-governance, rural development, knowledge creation and knowledge dissemination); on the information technologies (e.g. operating systems, programming languages, information storage and retrieval); on the

communication infrastructure (e.g. networks, transmission technologies, switching and routing). Research specializations are in adaptive technologies; computer-supported collaboration; Home networking; ICT security; online communities; and voice over IP.

The ICT area of study shares the research facilities and laboratories of the Telecommunications field of study.

13.3. Faculty and Research Staff

The ICT Field of Study draws from the faculty and research staff of the Computer Science, Information Management, Remote Sensing & Geographic Information Systems, and Telecommunications Fields of Study.

Faculty Members

From ICT Area of Study

MIKKO KOVALAINEN, Ph.D.,
M.Econ., University of Jyväskylä,
Finland

Visiting Senior Researcher

From Telecommunications Field of Study

KAZI MOHIUDDIN AHMED,
Professor
R M A P RAJATHEVA, **Associate
Professor, ICT-Joint Coordinator**
TEERAPAT

SANGUANKOTCHAKORN,
Associate Professor
POOMPAT SAENGUDOMLERT,
Assistant Professor
TAPIO ERKE, **Visiting Associate
Professor**

From Computer Science and Information Management Fields of Study

KANCHANA KANCHANASUT,
Professor
PETER HADDAWY, **Professor**
PHAN MINH DUNG, **Professor**
VILAS WUWONGSE, **Professor**
SUMANTA GUHA, **Associate
Professor & ICT Joint
Coordinator**
VATCHARAPORN ESICHAIKUL,
Associate Professor
MATTHEW N. DAILEY, **Assistant
Professor**
PAUL JANECECEK, **Assistant
Professor**

From Remote Sensing and Geographic Information Systems Field of Study

KIYOSHI HONDA, **Associate
Professor**
NITIN KUMAR TRIPATHI,
Associate Professor
XIAOYONG CHEN, **Associate
Professor and ICT Joint
Coordinator**

13.4. Masters Students' Theses and Research Studies

A Distributed TDMA Slot Allocation Algorithm and a Hybrid MAC Protocol with Prioritization for Wireless Sensor Network

By Bharat Shrestha

Supervisor: Assoc. Prof. Tapio J. Erke

A GIS Approach for Better Coverage Area for GSM Mobile Networks in Kathmandu Valley

By Prakash Gupta

Supervisor: Dr. Nitin K. Tripathi

Analysis of Orientation Effect of Antenna on Linear Polarized Electromagnetic Wave for Localization
By Kyaw Htein Linn
Supervisor: Prof. Kazi Mohiuddin Ahmed

A Semantic Web Based Framework for the Discovery and Composition of Web Services Satisfying Temporal Properties
Abha Baidya
Prof. Vilas Wuwongse

Channel Assignment in Wireless Mesh Networks-Emended Election Based Transmission Timing Mechanism for Coordinated Distributed Scheduling in IEEE 802.16 Mesh Networks
By Kanthaiyah Sivapragasam Vijayalayan
Supervisor: Prof. Kazi Mohiuddin Ahmed

Cooperative Communication over Multicarrier CDMA System with Decode and Forward Relays in Frequency Selective Channels
By O.A. Udesch Sanjika Oruthota
Supervisor: Dr. R.M.A.P. Rajatheva

Distributed Cooperative and Opportunistic Scheduling in Ad Hoc Networks with Power Management
By Sunaj Lal Pradhan
Supervisor: Prof. Kazi Mohiuddin Ahmed

Evaluation of Usability Requirements for Designing Mobile Applications: A Case Study of Newstalk
By Sangita Sharma

Supervisor: Assoc. Prof. Tapio J. Erke
Haptic Feedback Model for Simulation of Cylindrical Cutting Tools Interacting with Arbitrary 3D Objects
By Prabal Khanal
Supervisor: Dr. Matthew Dailey

Packet Delay Analysis and Performance Evaluation of Dynamic Bandwidth Allocation Algorithms in Ethernet Passive Optical Networks
By Sailesh Bharati
Supervisor: Dr. Poompat Saengudomlert

Performance and Fairness Study of Overlay Spectrum Sharing in a Cognitive Radio Environment
By Nipendra Kayastha
Supervisor: Assoc. Prof. Tapio J. Erke

Practical Approach towards LDPC based DVC
By Dinusha R. Gamage
Supervisor: Dr. R.M.A.P. Rajatheva

Proactive Recommender Mechanism for Online Report Generation: A Feasibility Study at AIT
By Itesh Dash
Supervisor: Prof. Kazi Mohiuddin Ahmed / Dr. Jaakko Kurhila

Real-Time Video Streaming Using a Peer-to-Peer over Mobile Ad Hoc Network
By Nobal Bikram Niraula
Supervisor: Prof. Kanchana Kanchanasut

Toward User-Driven Service Composition and Aggregation
By Shanmugalingam Sivasothy
Supervisor: Dr. Paul Janecek

Research Study: Analysis of Key Quality Indicator in a Cellular Mobile Network
By Rifat Hossain
Supervisor: Prof. Kazi Mohiuddin Ahmed

Research Study: Automatic Electricity Meter Reading from Photos
By Warissara Nakprasong
Supervisor: Dr. Matthew Dailey

Research Study: Downlink Traffic Modeling and Analysis for Push to Talk Over Cellular
By Khandakar Rashedul Arefin
Supervisor: Assoc. Prof. Tapio J. Erke

Research Study: Maximization of System Lifetime in Body Sensor Networks
By Md. Nazrul Islam Mondal
Supervisor: Prof. Kazi Mohiuddin Ahmed

Research Study: Modeling and Fitting of the Holding Time Distribution using Multi- Exponential Distributions
By Khin Sandi Lynn
Supervisor: Assoc. Prof. Tapio J. Erke

Research Study: Satellite Emitter Location System
By May Hnin Oo
Supervisor: Dr. R.M.A.P. Rajatheva

Chapter 14: SET – OFFSHORE TECHNOLOGY AND MANAGEMENT PROGRAM

14.1 Introduction

Rationale

Oil and Gas resources in the Southeast Asian region have been explored for several decades, especially after the production slump of oil and gas in the US during the early 1970's. Since then, the region has become one of the most productive oil and gas areas in the world. Yet, the demand for skilled human resources of the upstream oil and gas industry still exceeds the supply after more than three decades of E&P activity in the region. The shortage of skilled manpower has recently become critical due to the tremendously high level of oil and gas exploration and production activity around the world that has occurred to meet the increasing global demand for energy, especially since China's becoming the 'world's factory'.

Mission Statement

AIT's Offshore and Technology & Management Program (OTM) is the first of its kind to provide regional post-graduate study in upstream oil and gas education, and is designed to combine application-oriented course work, field studies and internships into a curriculum from which graduates are equipped with the skills and knowledge-and-practice-readiness to mitigate the shortages of skilled manpower in the upstream sector of oil and gas industry. As an industrial application-oriented program, OTM's unique characteristics offer a flexible study structure which allows students to build their own area of specialization in addition to the areas formally offered in the program, those areas being: Subsurface Engineering (SSE),

Offshore Structural Design and Construction (OSDC) and Oil and Gas Management (OGM). With the available teaching expertise; library and laboratory facilities; multitude of courses from AIT's different schools; skilled and professional faculty members and staff; strong collaborations with overseas partner universities in Europe, Asia, Australia and North America; and strongly supported by oil and gas industries, AIT's OTM post-graduate program has become one of the most suitable post-graduate study for engineers and young managers to pursue higher professional careers in both the oil and gas industry and government bodies.

14.2 Faculty and Research Staff

JOKO HARSONO WIDJAJA, BEng, University of Indonesia, Jakarta, Indonesia; MEng, AIT; PhD. University of Technology, Sydney-NSW, Australia

Visiting Associate Professor (*Matrix Structural Analysis and Finite Element Method, Structural Analysis, Offshore Structural Engineering, Design of Fixed Offshore Structures, Fabrication and Marine Operation Engineering, Dynamics of Offshore Structures*)

14.3 Ongoing / In Progress Grant and Sponsored Research

Preparation of the structural assessment guideline for offshore petroleum platform and pipeline

Project Description: Process of the preliminary study and analysis, there are 3 tasks to perform: 1. the legislation aspect that focuses on the prescriptive and the performance based regimes; 2 the technical aspect concerning the historical data and the future trend of the development of the code of practice; 3 the stakeholders analysis

which deals with the strategic implementation plan for each group of the stakeholders.
Duration December 2007 to July 2009
Project Investigator Prof. Worsak Kanok-Nukulchai
Sponsors Department of Mineral Fuel
Total Contracted Amount (Baht) 3,774,000

14.2 Masters Students' Theses

Drilling Fluids Selection Criteria Based on Formation Conditions in Pattani Basin

By Tanabut Taksinavongskul
Supervisor: Dr. Joko Harsono Widjaja

Preliminary Investigation of Vortex Shedding Induced Vibration (VIV) on Minimum Offshore Structures

By Sitthipong Angkapunyadej
Supervisor: Dr. Joko Harsono Widjaja

Structural Assessment of Existing Wellhead Platforms in the Gulf of Thailand

By Sukit Nualchanchy
Supervisor: Dr. Joko Harsono Widjaja

Internships

Applications of Nodal Analysis for Production Optimization in Fang Oil Fields

By: Mr. Montri Jeennakorn
Supervisor: Dr. Pham Huy Giao

A Study on Shale Gas Drilling in the North East Thailand with Reference to Exploration of a New Energy Source

By: Mr. Sungkom Bunboon
Supervisor: Dr. Pham Huy Giao

Deepwater Field Development: Deepwater Platform Comparison and FPSO Technology

By: Mr. Passakorn Kulavong
Supervisor: Prof. Worsak Kanok-Nukulchai

Fire Impact Assessment for Offshore Structures

By: Mr. Chonlawit Khaytong
Supervisor: Prof. Worsak Kanok-Nukulchai

Guideline of HSE Concerned and Risk Associated with FPSO Operations

By: Mr. Teradej Vaitayaporn
Supervisor: Prof. Worsak Kanok-Nukulchai

Simplified Blast Wall Design of Offshore Platforms

By: Mr. Muang Lertpiroon
Supervisor: Prof. Worsak Kanok-Nukulchai

FPSO Technology and Management

By: Mr. Seree Mengchuay
Supervisor: Prof. Worsak Kanok-Nukulchai

Measuring Sheave Box and Stand Design for a Pipelaying System

By: Mr. Kittipong Dumweangkum
Supervisor: Dr. Joko Harsono Widjaja

Guideline for Deepwater Field Development: Subsea Production Technology

By: Ms. Patharawan Vathananond
Supervisor: Prof. Worsak Kanok-Nukulchai

Ocean Engineering and Ocean Energy Conversion

By: Mr. Nipon Phuaphromyod
Supervisor: Prof. Worsak Kanok-Nukulchai

Chapter 15: SCHOOL OF ENVIRONMENT, RESOURCE AND DEVELOPMENT

15.1 Mission, Vision, and Core Values

SERD Mission

The School of Environment, Resources and Development is committed to excellence in graduate education as well as research and outreach activities. Through its academic programs and outreach units, SERD has been working towards capacity building and human resource development in the areas of resource management, development studies, and energy and environmental management.

SERD responds to regional needs by mobilizing and enhancing capacities for socially, economically and environmentally sound development in partnerships with public and private sectors. The School's interdisciplinary approach integrates technological, natural and social sciences.

SERD Vision

SERD will continue its leadership role in offering excellent academic programs relevant to regional needs.

SERD research will be concentrated toward focal areas and are to be conducted by core teams.

SERD outreach will be community service oriented.

SERD Programs will be consolidated and financially viable. The School activities including the students, staff, faculty and curricula, will be subject to quality assessment.

SERD Core Values

- Interdisciplinarity

- Innovativeness
- Excellence
- Responsiveness

15.2 Field of Study and Multidisciplinary Programs

Fields of Study

- Agricultural Systems and Engineering
- Aquaculture and Aquatic Resources Management
- Energy
- Environmental Engineering and Management
- Food Engineering and Bioprocess Technology
- Gender and Development Studies
- Natural Resources Management
- Pulp and Paper Technology
- Regional and Rural Development Planning
- Urban Environmental Management

Inter-university Program

- Environmental Toxicology, Technology and Management

Interdisciplinary Programs

- Cleaner Production
- Agri Business Management
- Sustainable Development
- Disaster Prevention, Mitigation and Management
- Gender, Transportation and Development

15.3 Research Facilities and Laboratories

SERD provides laboratory, computer and information technology (IT) facilities for education and learning for graduate students, and research activities of graduate students, faculty, and sponsored and contracted projects.

SERD has six research laboratories in Agricultural Systems and Engineering, Aquaculture and Aquatic Resources Management, Food Engineering and Bioprocess Technology, Environmental Engineering and Management,

Energy, and Pulp and Paper Technology, and each laboratory is unique with modern equipments, excellent guidance and assistance, and provides safe working facilities and environments to carry out experimental studies and research.

IT facilities are provided for everyone to attend their academic and research related activities. There are three computer centers maintained by the SERD at the SERD Main building (two computer laboratories), Agriculture and Food Engineering building and Energy Building which provides convenient working environment, with all the necessary facilities. These are open twenty four hours a day for use by students, staff and faculty. Full internet access is available to these PCs through a high speed network backbone which connects all academic buildings including the residence halls. A large number of PC software packages for applications such as word-processing, spreadsheets, network communications, multimedia and file transfer utilities are available. High quality laser printers, scanning and CD writing facilities are available for students' uses.

Furthermore, laboratories also have computer facilities, which enhance the productivity of the teaching and research activities of the school.

15.4 School Governance

Dean of School

SIVANAPPAN KUMAR, BE, Univ of Madras, India; MEng, AIT, Thailand; PhD, Inst Natl Polytechnique, Toulouse, France.

Professor [*Solar Energy (Radiation, Thermal and Photovoltaics); Green house gas mitigation and climate change, Cleaner Production; energy and sustainable development*]

Associate Dean

KYOKO KUSAKABE, BA, Sophia Univ, Tokyo, Japan; MSc, PhD, AIT, Thailand.

Associate Professor [*Women's employment under macro-economic changes; Gender issues in trade and migration; Women and microvendors/informal sector; Borderland studies, Gender issues in organizations, Gender and development policy and planning*]

Chapter 16: SERD – AGRICULTURAL SYSTEMS AND ENGINEERING

FIELD OF STUDY

16.1 Introduction

This field of study emphasizes on sustainable agricultural and related technologies development through holistic approach for efficient food production from small holder agriculture.

16.2 Research Facilities and Laboratories

Agricultural Systems and Engineering (ASE) Laboratory caters to researchers, which address sustainability in agricultural production. The facilities are capable for implementing excellent agronomic and engineering researches on soils, water and plant, such as, plant growth, soil fertility and management, integrated pest management, plant water requirement, etc. Facilities to conduct researches on terramechanics, ergonomics and tillage are also available. The engineering aspects of agricultural production are dealt with through innovations and development of machines and equipment to enhance productivity and reduce human drudgery. These innovations are constructed at the ASE workshop.

Major laboratory equipment include a Spectro UV- VIS double PC double beam (scanning) flame photo meter; Digestion block; Trinocular Microscope MBL 2100; Stereo zoom microscope Model MSZ 5400; Porometer type AP4 Light meter WP4 Dewpoint Potential Meter; Mini-disk Infiltrometer Soil hydraulic conductivity; Tensio Meter; Soil bin carriage system; Sony CXC- 390 1/3" 3 CCD Camera; Spider 8 data logger; National Instrument DAQ; NI Vision Module; Dynamic strain amplifier; and an SC-900 Soil compaction meter.

The SERD Computer Lab III in the Agricultural and Food Engineering Building has various kinds of software

packages for system analysis and simulation, including DSSAT (Decision Support System for Agrotechnology Transfer), ArcView etc. A Computer-Aided Design (CAD) workstation is also available for training the design of agricultural equipment. There is a machine workshop with facilities for fabricating various types of laboratory and experimental apparatus and models. Consultation and fabrication of different types of transducers can be provided. About 20 high-end PCs connected to the campus-wide Ethernet and ATM network and a high quality laser printer, scanning and CD writing facilities are available for students' uses.

16.3 Faculty and Professional Staff

Full-time Faculty

VILAS M SALOKHE, BTech, Mahatma Phule Agricultural Univ., India; MEng, Univ of Sukhadia, India; DEng, AIT, Thailand.

Professor (*Agricultural Machinery; Controlled Environment Agriculture; Terramechanics; Agricultural Systems Analysis; Human Factors Engineering*)

GANESH P SHIVAKOTI, BS, MS, Udaipur Univ, India; PhD, Michigan State Univ, USA.

Professor (*Agricultural Development and Policy Analysis; Resource Development; Farming Systems; Natural Resources Management*)

S L RANAMUKHAARACHCHI, BSc, Univ of Peradeniya, Sri Lanka; MSc, PhD, Pennsylvania State Univ, USA.

Associate Professor (*Agronomy; Crop Eco-physiology; Cropping Systems; Pest Management; Soil*

Fertility Management; Organic Farming; Stress Physiology)

HEMANTHA P W JAYASURIYA, BScEng, Univ of Peradeniya, Sri Lanka; MEng, DEng, AIT, Thailand.

Assistant Professor (*Design & Development of Agricultural Machinery; Precision Agriculture; Agricultural Systems Analysis; Instrumentation & Data Acquisition*)

Visiting and Adjunct Faculty

LAI PO-YUNG; PhD

Visiting Faculty (*Sustainable Agriculture; Integrated Pest Management; Insect-Chemical Entomology; Insect Pathology*)

CHAIYAPHOL

KAEWPRAKAISAEKUL; PhD

Adjunct Faculty (*Agricultural Machinery Design & Testing; Instrumentation & Measurement; Quality Control & Assurance*)

PETER AUN-CHUAN OOI, PhD

Adjunct Faculty (*Crop Protection; Integrated Pest Management; Agricultural Systems*)

ROONGRUANG KALSIRISILP; PhD

Adjunct Faculty (*Agricultural Machinery Design & Testing; Agricultural Power & Machinery Management; Agricultural Systems Engineering*)

Professional Staff

PEEYUSH SONI; DEng

Affiliated Faculty and Laboratory Supervisor (*Controlled Environment Agriculture; Agricultural Systems Analysis; Energy in Agriculture; Aquacultural Engineering*)

WATTANAPORN MESKUNTAVON,
DTEchSc

Senior Laboratory Supervisor
(Crop Modeling; Farm
Management; Laboratory
Analyses of Soil and Plants)

16.4 Grants and Sponsored Research Completed in 2008

Assessment of the Risk of Climate Change on Rain-Fed Rice Cropping in the Northeast of Thailand

Duration 15-Oct-07 15-Aug-08
Project Investigator H.P.W. Jayasuriya, K.C. Swain
Sponsor Provention Consortium, ADPC
Total Contracted Amount (Baht) 119,000

16.5 On-going Grants and Sponsored Research

Development of an Efficient Sugarcane Transportation System for Sugar Mill

Duration 1-Jun-07 30-Apr-09
Project Investigator V. M. Salokhe
Sponsor RTG and Buriram Sugar
Total Contracted Amount (Baht) 2,000,000

Development of a Small Rice Combine Harvested

Duration 1-May-07 31-Mar-09
Project Investigator V. M. Salokhe
Sponsor RTG Visiting Scholar
Total Contracted Amount (Baht) 900,000

Eco-friendly Household Biodegradable Waste Recycling and Utilization Through Peri-Urban and Urban Agriculture for Amelioration of the City Environment

Duration 30-Jun-08 29-Jun-09
Project Investigator S.L. Ranamukhaarachchi
Sponsor CIDA/SEA-UEMA
Total Contracted Amount (Baht) 576,000

Increasing Water use Efficiency by using Mulch under SRI

Duration 1-Jan-06 31-Mar-09
Project Investigator V. M. Salokhe
Sponsor IWMI
Total Contracted Amount (Baht) 2,925,000

Protected cultivation- An Approach to Sustainable Vegetable Production in Humid Tropics- Phase II

Duration 1-Aug-04 31-Dec-09
Project Investigator V. M. Salokhe
Sponsor Hannover University, Germany
Total Contracted Amount (Baht) 10,000,000

Training of Officers and Training of Manual Preparation for Department of Agrarian Development-Sri Lanka

Duration 19-Aug-07 31-Dec-09
Project Investigator S.L. Ranamukhaarachchi
Sponsor Department of Agrarian Development-Sri
Lanka
Total Contracted Amount (Baht) 763,000

16.6 Publications

Refereed Journals

Ahadiyat, Y.R. and S.L.
Ranamukhaarachchi. 2008. Effects of
Tillage and Intercropping with Grass
on Soil Properties and Yield of
Rainfed Maize. *International J. of
Agriculture and Biology*, 10(2):133-
139.

Brahmanage, U. Kaluhetti and S.L.
Ranamukhaarachchi. 2008. Rice
Yield in Minor Irrigation Schemes: A
Case Study of Sri Lanka. *Asia Pacific
Journal of Rural Development*, Vol
XVIII (2):1-22.

Chimchana, D., Salokhe, V.M. and
Soni, P. (2008). Development of an
Unequal Speed Co-axial Split-Rotor
Thresher for Rice. Manuscript BC 08
017. Vol. X. October, 2008.
*Agricultural Engineering
International: CIGR Journal of
Scientific Research and
Development.*

Cochard R., S.L. Ranamukhaarachchi,
G.P. Shivakoti, Oleg V. Shipin, P.J.
Edwards & K.T. Seeland. 2008. The
2004 tsunami in Aceh and Southern
Thailand: a review on coastal
ecosystems, wave hazards and
vulnerability. *Perspectives in Plant
Ecology, Evolution and Systematics*,
10:3-40.

Doi, R. and S.L. Ranamukhaarachchi.
2008. Soil dehydrogenase in a land
degradation-rehabilitation gradient:
Observations from a savanna site
with a wet/dry seasonal cycle.
Accepted for publication by *Revista
de Biologia Tropical (International
Journal Tropical Biology)*

Khot, L.R., Salokhe, V.M.,
Jayasuriya, H.P.W. and Nakashima,
H. (2008). Experimental validation of
distinct element simulation for
dynamic wheel-soil interaction.
Journal of Terramechanics,
44(6):429-437.

Mishra, A. and Salokhe, V. M.
(2008). Seedling characteristics and
the early growth of transplanted rice
under different water regimes.
Experimental Agriculture. 44 (3),
365-383.

Nalawade, P.P., Salokhe, V.M.,
Jayasuriya, H.P.W. and Nakashima,
H. (2008). Development of a wide
tractor mounted spray boom for
increased efficiency. *Journal of Food,
Agriculture and Environment*,
6(2):164-169.

Niyamapa, T. and Salokhe, V.M.
(2008). Study on the characteristics
of torque acting on a rotary shaft of
the three types of the rotary blades.
Thai Agricultural Research Journal,
26:146-163.

Patil, S.L., Tantau, H.J. and Salokhe,
V.M. (2008). Modeling of tropical
greenhouse temperature by auto
regressive and neural network
models. *Bio-systems Engineering*,
99(3):423-431.

Pattanapant, Arpaphan and Ganesh
P. Shivakoti . 2008 (in press).
"Opportunities and constraints of
organic agriculture in Chiang Mai
Province, Thailand." *Asia Pacific
Journal of Rural Development*.

Tongwongkit, B., Tongwongkit, R.,
Salokhe, V.M., Jayasuriya, H.P.W.
and Nakashima, H. (2008). Field
evaluation of a variable rate
herbicide applicator. *Agricultural
Information Research*, 17(1):1-5.

Yonariza and Ganesh Shivakoti.
2008. Decentralization and Co-
management of Protected Areas in
Indonesia. *Journal of Legal Pluralism*.
No. 57:1-26.

Refereed Books/Chapters

Baruah, S., H. C. Warad, S. L. Ranamukhaarachchi and J. Dutta (2008). *Nanotechnology for Agriculture, Food Systems and the Environment. The Age of Nanotechnology* (2008) 2nd edition, ed. Nirmala Rao Khadpekar, The ICFAI University Press, Hyderabad, India (ISBN: 81-314-0828-0), in press

Mishra, A. and Salokhe, V. M. (2008) "Growing More Rice with Less Water in Asia: Identifying and Exploring Opportunities through System of Rice Intensification". In: *Agricultural Systems: Economics, Technology and Diversity*, Oliver W. Castalongo (Eds). ISBN 978-1-0692-025-1, Nova Science Publishers, Hauppauge, NY (in press).

Salokhe, V.M., Gholkar, M.D., Soni, P. and Nakashima, H. (2008). "Vibration Characteristics of Tractors and Power-tillers: An Ergonomics Perspective". Book chapter no. 13 in: Scott, P. A. (Editor) "ERGONOMICS IN DEVELOPING REGIONS: NEEDS AND APPLICATIONS", section four: Application in Specific Industries. Published by Taylor & Francis Group LLC, USA. pp. 203-233.

Soni, P., V.M. Salokhe and Nakashima H. (2008). "Traction and Trafficability of Off-road Operations in Soft Terrains". Chapter-15. In Book "ADVANCES IN SOIL AND TILLAGE RESEARCH (2008)" Andrea Formato (Ed.), Transworld Research Network Publisher. ISBN: 978-81-7895-353-3. pp. 219-267.

Other Publications

Soni, P. (2008). "Challenges to Agricultural Engineering for a Sustainable Future". From the Editor's Desk. AAAE Newsletter, 17(3-4).

Soni, P. (2008). "Food and Fuel: Supporting or Competing?". From

the Editor's Desk. AAAE Newsletter, 17(2).

16.7 Doctoral Students' Dissertation

Effects of Water Regimes and Plant Densities on Rice (Oryza Sativa L.) Growth under System of Rice Intensification (SRI) Management

By Abha Mishra

Supervisor: Prof. Vilas M. Salokhe

16.8 Masters Students' Theses

Analysis of a Vegetable Seed Production System with Special Reference to Quality Assurance: A Case Study of Radish Seed Growers in Surkhet District, Nepal

By Shila Thapa Swar

Supervisor: Prof. Ganesh P. Shivakoti

Analysis with Queuing Theory of a Sugarcane Unloading System at Buriram Sugar Factory

By Pattamawan Khongnim

Supervisor: Prof. Vilas M. Salokhe

Development of a Tractor Operated High-Speed Rotavator

By Pawin Thanpattranon

Supervisor: Prof. Vilas M. Salokhe

Effects of Soilless Substrates on Greenhouse Tomato Yield in the Tropics

By Ancy Rabalson Johnson

Supervisor: Prof. Vilas M. Salokhe

Effects of Yield Promoting Inputs on Tomato Production in Tropical Greenhouses

By Shahnaz Parvin

Supervisor: Prof. Vilas M. Salokhe

Feasibility of Improving Tillage Performance by Using Nanosurfaces on Tillage Tools

By Mohammad Al-Amin Sadek

Supervisor: Dr. Hemantha P. Jayasuriya

Flower Inducement of Dendrobium Sonia Using Combination of Nutrients, Growth Hormone and Retardant

By Sureewan Sukontharos
Supervisor: Dr. S. L. Ranamukhaarachchi

Modeling the Tractive Performance of Pneumatic tyres under Wetland Conditions

By Gholkar Madhav Dwarkanath

Supervisor: Prof. Vilas M. Salokhe

Optimization of Farming Systems Integration with Farms Ponds for Moisture Conservation under Rainfed Conditions: A Case Study in Northeast of Thailand

By Dolores Mae Gicana

Supervisor: Dr. Hemantha P. Jayasuriya

Production and Marketing of Mushrooms in Nepal: A Case Study of Balambu Village Development Committee of Kathmandu District

By Sapana Pariyar

Supervisor: Prof. Ganesh P. Shivakoti

Status and Potential of Agricultural Mechanization in Lao P.D.R.: A Case Study in Xiengkhouang Province

By Khamla Chanthavone

Supervisor: Dr. Hemantha P. Jayasuriya

Status and Potential of Improving Agro-production in Mongolia

By Batjavkhlán Dashdondog

Supervisor: Dr. Hemantha P. Jayasuriya

The Potentials of Agricultural Residue Utilization in Cambodia: A Case Study in Kampong Cham Province

By Kun Pichratana

Supervisor: Dr. Hemantha P. Jayasuriya

Vibration and Noise Characteristics of a Power Tiller Mounted on a Rotary Cultivator

By Pilaiwan Prungpaopan

Supervisor: Dr. Hemantha P. Jayasuriya

Chapter 17: SERD – AQUACULTURE AND AQUATIC RESOURCES MANAGEMENT FIELD OF STUDY

17.1 Introduction

AARM promotes research and development through aquaculture and small-scale capture fisheries. The Field of Study has a wide spectrum of activities enabling it to address poverty, constraints facing the promotion of sustainable management and utilization of aquatic resources. The central theme is capacity building: the advancement of individuals and institutions creating indigenous capacity in education, research and development within the region.

17.2 Research Facilities and Laboratories

Aquaculture Laboratory serves the academic and research programs of aquaculture and aquatic resources management (AARM) field of study. It is equipped with modern equipment to analyze water quality, nutrients in food and feedstuffs, and soil classification and their problems identification. Some of its major laboratory equipment includes a Distillation Unit; Extraction Unit; Incubator; UV/Vis Spectrophotometer; Soxtec, Fibertec and Kjelttec system, microscope with camera, etc. The field facilities include a hatchery, outdoor tanks and earthen ponds for field research.

The SERD Computer Lab III in the Agricultural and Food Engineering Building has various kinds of software packages for system analysis and simulation, including DSSAT (Decision Support System for Agrotechnology Transfer), ArcView etc. A Computer-Aided Design (CAD) workstation is also available for training the design of agricultural equipment. There is a machine workshop with facilities for fabricating various types of laboratory and experimental apparatus and models.

Consultation and fabrication of different types of transducers can be provided. About 20 high-end PCs connected to the campus-wide Ethernet and ATM network and a high quality laser printer, scanning and CD writing facilities are available for students' uses.

17.3 Faculty and Research Staff

Emeritus Professor

PETER EDWARDS, BSc, University of Liverpool, UK; PhD, University of Texas, USA.

(General aquaculture with emphasis on recycling organic wastes (human, animal, agro-industrial); small-scale aquaculture; integrated farming; aquaculture for poverty alleviation; and systems approaches to education, research and development; curriculum development; project formulation, management and evaluation)

Full-time Faculty

AMARARATNE YAKUPITIYAGE, BSc, Univ of Kelaniya, Sri Lanka; MSc, AIT, Thailand; PhD, Univ of Stirling, Scotland.

Associate Professor
(Aquaculture, Bioenergetics, Fish Nutrition, Statistics, Database Systems Development)

AMRIT BART, BA Earlham College, USA; MA, MS, PhD, Auburn Univ, USA.

Associate Professor (Aquatic Resource Management, Cryopreservation, Reproductive Physiology, Seed Production)

WENRESTI G GALLARDO, BSc, Master of Aquaculture, University of the

Philippines; MSc, PhD, Nagasaki University, Japan;

Assistant Professor
(Aquaculture - Seed Production and Grow-out, Fisheries Management, Integrated Coastal Management)

Research Staff and Affiliated Faculty

DHIRENDRA P. THAKUR, BFSc, Rajendra Agricultural University, India; MSc, AIT, Thailand; MSc, Kochi University, Japan; PhD, Ehime University, Japan;

Senior Research Specialist and Affiliated Faculty *(Intensive aquaculture, Water quality and nutrient dynamics, Environmental impacts of aquaculture; Integrated Coastal Management, Aquatic product quality and certification)*

RAM C. BHUJEL, BSc, Institute of Agriculture and Animal Sciences, IAAS, Chitwan, Nepal; MSc and PhD, AIT, Thailand;

Senior Research Scientist and Affiliated Faculty *(Biostatistics and Research Design, Curriculum Development, Women in Aquaculture, Broodstock Nutrition/Management and Fry Production, Technology Transfer/ Extension)*

17.4 Grants and Sponsored Research Completed in 2008

Capacity building of small-scale shrimp farmers on adoption of best management practices (BMPs) to promote Thai Shrimp export to the EU.

Duration 1-Sep-06 31-Mar-08
Project Investigator Dharendra Prasad Thakur
Sponsor European Commission
Total Contracted Amount (Baht) 7,797,583

Development of Release Strategies for Stock Enhancement of the Tropical Abalone *Haliotis Asinina*

Duration 1-Oct-05 30-Jun-08
 Project Investigator Wenresti Gallardo
 Sponsor International Foundation for Science
 Total Contracted Amount (Baht) 239,663

Improving Master’s Education in Aquaculture and Aquatic Resources Management in Cambodia, Nepal and Vietnam (Asia-Link Curriculum Development)

Duration 1-Sep-05 31-Aug-08
 Project Investigator: Amrit N. Bart, Ram C. Bhujel
 Sponsor European Commission
 Total Contracted Amount (Baht) 14,425,150

National Capacity and Training Needs Assessments for Different Stakeholder Groups in order to Identify Gaps, Needs, Strengths and Opportunities for Building Capacity in Integrated Coastal Zone Management (ICM)

Duration 15-Jul-07 30-Sep-08
 Project Investigator "Amararatne Yakupitiyage, Mokbul Morshed Ahmad, Dharendra P Thakur, Tawatchai Tingsanchali, Rajendra Shrestha, S L Ranamukhaarachchi, Jayant K Routray, Vilas Nitivattananon, Oleg Shipin (0.045)"
 Sponsor IUCN
 Total Contracted Amount (Baht) 5,288,250

Perturbation and Coastal Zone Systems in Asia Pacific Region: Holistic Approaches and Tools for Vulnerability Assessment and Sustainability Management Strategy

Duration 1-Sep-07 31-Aug-08
 Project Investigator Dharendra Prasad Thakur
 Sponsor Asia Pacific Network (APN) for Global Change Research, Monash University
 Total Contracted Amount (Baht) 60,390

Testing of Pond Aerators- Brackish water Shrimp Pond Aerators- Comparative Testing of Efficiency of Oxygen Transfer Performance and Pond Water Body Mixing

Duration 1-Jul-07 30-Sep-08
 Project Investigator A. Yakupitiyage
 Sponsor GTZ
 Total Contracted Amount (Baht) 1,031,600

17.5 On-going Grants and Sponsored Research

AARM Training and Consultancy Services in Aquaculture

Duration 1-Nov-07 31-Dec-09

Project Investigator Amararatne Yakupitiyage
 Sponsor Multi donors
 Total Contracted Amount (Baht) 1,388,130

Feasibility Study for Adoption of oxygen injection technology in intensive shrimp culture pond

Duration 1-Jan-08 31-Jul-09
 Project Investigator Dharendra Prasad Thakur
 Sponsor OxSeaVision (Thailand) Co. Ltd
 Total Contracted Amount (Baht) 500,000

Linking the Post-graduate Education in Aquaculture and Aquatic Resources Management with its Industry Through Internship

Duration 1-Sep-07 31-Aug-10
 Project Investigator Ram C. Bhujel
 Sponsor European Commission
 Total Contracted Amount (Baht) 31,939,965

Sustainable Aquaculture Research Networks in Sub-Saharan Africa

Duration 1-Feb-08 31-Jan-11
 Project Investigator Ram C. Bhujel
 Sponsor European Commission through University of Stirling, UK
 Total Contracted Amount (Baht) 3,000,010

17.6 Publications

Books

Bhujel, R.C. (2008). Statistics for Aquaculture. Wiley-Blackwell Publishing 224 pages. ISBN: 978-0-8138-1587-9.

Refereed Journals

Bhujel, R.C., Shrestha, M.K., Pant, J., and Buranrom, S. (2008). Ethnic Women in Aquaculture in Nepal. *Development*, 51: 259-264.

Cao, Y. G., Wang, Y.W.M., **Yakupitiyage, A.** and Diana, J.N. (2008). Effects of pretreatment with microbial phytase on phosphorous utilization and growth performance of Nile tilapia (*Oreochromis niloticus*). *Aquaculture Nutrition*, 14; 99–109

Chavan, B.R., **Yakupitiyage, A.** and Kumar, S. (2008). Mathematical modeling of drying characteristics of Indian mackerel (*Rastrilliger kangurta*) in solar-biomass hybrid

cabinet dryer. *Drying Technology* 26 (12):1552-1562

Chavan, B.R., **Yakupitiyage, A.**, and Rakshit, S.K. (2008). Experimental investigation on biochemical, microbial and sensory properties of mackerel (*Rastrilliger kangurta*) dried by solar-biomass hybrid cabinet dryer *Journal of Food, Agriculture and Environment* 6 (3-4): 167-171

Domingues, I., Satapornvanit, K., **Yakupitiyage, A.**, Amadeu, M.V.M., Soares A., and Nogueira, J.A. (2008). In situ assay with the midge *Kiefferulus calligaster* for contamination evaluation in aquatic agro-systems in central Thailand. *Chemosphere* 71 (2008) 1877–1887.

Kaewnern, M and **Yakupitiyage, A.** (2008) Shrimp and mollusc culture in Bandon Bay in Thailand: A situation analysis, *Journal of Asian Fisheries Society*, Vol 21(1): 35-54

Kawanton, S. and **Bart A.N.** (2008). Fertilization Efficiency of cryopreserved sperm from striped catfish, *Pangasinodon hypophthalmus* (Sauvage). *Aquaculture Research*. 16 (doi:101111/J.1365.

Okuzawa K., Maliao R.J., Quinitio E.T., Buen-Ursua S.M.A, Leбата M.J.H.L. **Gallardo W.G.**, Garcia L.M.B. and Primavera, J.H. 2008. Stock enhancement of threatened species in Southeast Asia. **Reviews in Fisheries Science** 16(1-3): 394-402.

Rai, S., Yi, Y., Wahab, A., **Bart, A.N.** and Diana J.A. (2008). Comparison of rice straw and bamboo stick substrates in periphyton-based carp polyculture systems. *Aquaculture Research*. Doi:101111/j.1365 (on-line pub) 1-10.

Saengsupavanich, C., Seenprachawong U., **Gallardo W.G.**, Shivakoti G.P. 2008. Port-induced erosion prediction and valuation of a local recreational beach. **Ecological Economics** 67: 93-103.

Subuntith, N., **Bart, A.N.**, Keatsaksit, A. and Vutiphandchai, V. (2008). Microbial flora of spermatophores from black tiger shrimp, *Penaeus monodon* declines over long-term cryostorage. *Aquaculture*. 274: 247-253.

Yen, P.T. and **Bart A.N.** (2008). Salinity effects on giant freshwater prawn, *Macrobrachium rosenbergii* (De Man). *Aquaculture*. 280:124-128.

Edited Conference Proceedings

Bart, A.N. and Tobey, J. (2008). Lessons from post-tsunami sustainable coastal environmental and livelihoods rehabilitation – case study. Scientific and Technical Symposium on Sustainable Mangrove Ecosystem Management, 22-25 November.

Bhujel, R.C. (2008). The role of the Asian Institute of Technology in the promotion of tilapia for aquaculture. In 8th International symposium on Tilapia in Aquaculture (ISTAVIII), Editors, Elghobashy, H. Fitzsimmons, K. and Diab, A.S. vol. 1, 12-14 Oct 2008. Cairo, Egypt.

Chavan, B.R, Yakupitiyage, A., Bhujel, R.C. and **Thakur D.P.** (2008). Introduction of Tilapia in India: lesson to be learned from Mekong countries. Paper presented at International symposium on “sustainable fish diversity, fisheries and aquaculture in the Mekong basin”, 3-5 September 2008, Ubon Ratchathani, Thailand.

Yakupitiyage, A. (2008). The potential for the development of eco-tourism as a means to support mangrove conservation effort Mangroves for the Future Programme of IUCN, Scientific and Technical Symposium on Sustainable Mangrove Ecosystem Management, 22-25 November.

Conference Abstracts

B. R. Chavan, **A. Yakupitiyage, R. C. Bhujel, D. P. Thakur.** 2008. Introduction of tilapia culture in India: lesson to be learned from Mekong countries. International Symposium on Sustainable Fish Biodiversity, Fisheries and Aquaculture in the Mekong Basin. Sept 3-5, 2008. Ubonrachathani, Thailand (Second Best Student Paper Award).

Bart, A. and **Bhujel, R.** (2008). Academic curriculum improvement to meet the changing needs of higher education in aquaculture and fisheries. Supplementary Session on Education and Research Activities, International Institute of Fisheries Economics and Trade (IIFET), Nha Trang, Vietnam, July 22-25, 2008.

Bhujel R.C. and **Bart, A.N.** (2008). Improving aquaculture and fisheries education in the Mekong region. International Symposium in Sustainable Fish Biodiversity, Fisheries and Aquaculture in the Mekong Basin. Sept 3-5, 2008. Ubonrachathani, Thailand.

Bhujel, R. and **Bart, A.N.** (2008). Aquainternship: helping aquaculture-fisheries graduates in finding jobs. Supplementary Session on Education and Research Activities, International Institute of Fisheries Economics and Trade (IIFET), Nha Trang, Vietnam, July 23, 2008.

Bhujel, R.C. and Nepal, A. (2008). African catfish in Nepal: problems and prospects. Catfish Aquaculture in Asia – present status and challenges for sustainable development, Can Tho University, 5-7 Dec 2008.

Chavan, B.R., **Yakupitiyage, A., Bhujel, R.C.** and **Thakur, D.P.** (2008). Introduction of tilapia culture in India: lesson to be learned from Mekong countries. International Symposium in Sustainable Fish Biodiversity, Fisheries and Aquaculture in the Mekong Basin. Sept 3-5, 2008. Ubonrachathani,

Thailand (Second Best Student Paper Award).

Jha, D.K. and **Bhujel, R.C.** (2008). Fish bio-diversity in the Narayani river system of central Nepal. International Symposium on Sustainable Fish Biodiversity, Fisheries and Aquaculture in the Mekong Basin. Sept 3-5, 2008. Ubon Ratchathani, Thailand.

Minh, T.H., **Gallardo, W.G.**, Phuong, N.T. (2008). Fishery and aquaculture of juvenile mudskipper *Pseudapocryptes elongates* in the coastal zone of Mekong Delta, Vietnam. International Symposium on Sustainable Fish Biodiversity, Fisheries and Aquaculture in the Mekong Basin. Sept 3-5, 2008. Ubon Ratchathani, Thailand (*Best Student Paper Award*).

Nepal, A. and **Bhujel, R.C.** (2008). Exotic catfish and tilapia in Phewa Lake: a problem or solution? International Symposium in Sustainable Fish Biodiversity, Fisheries and Aquaculture in the Mekong Basin. Sept 3-5, 2008. Ubon Ratchathani, Thailand.

Other Publications

Crawford, B., Shrestha, R., Bengen, D., **Yakupitiyage, A.**, Nitivattananon, V., and Tingsanchali, T. (2008). An Assessment of Capacity for Effective Coastal Management - Indonesia Country Assessment, Mangroves for the Future (MFF) Programme; Programme of Work #7.1; National capacity and training needs assessments for different stakeholder groups in order to identify gaps, needs, and strengths and opportunities for building capacity in Integrated Coastal Management (ICM), 42 pp.

Gamucci, O.D. and **Yakupitiyage, A.** (2008). An Assessment of Capacity for Effective Coastal Management: Compendium of ICM Training Providers Mangroves for the Future (MFF) Programme; Programme of

Work #7.1; National capacity and training needs assessments for different stakeholder groups in order to identify gaps, needs, and strengths and opportunities for building capacity in Integrated Coastal Management (ICM), 24 pp.

Lowry, K., **Yakupitiyage, A.**, S.L. Ranamukhaarachhi, S.L. and Ricci, G. (2008). An Assessment of Capacity for Effective Coastal Management - Sri Lanka Country Assessment, Mangroves for the Future (MFF) Programme; Programme of Work #7.1; National capacity and training needs assessments for different stakeholder groups in order to identify gaps, needs, and strengths and opportunities for building capacity in Integrated Coastal Management (ICM), 38 pp.

Thakur D.P and Bergheim A, (2008). Liquid oxygen injection system for intensive shrimp culture system. Project Report-AIT-OxSeavision collaborative study, July 2008, 32 pp.

Thakur, D.P., Gamucci, O.D. and **Yakupitiyage, A.** (2008). An Assessment of Capacity for Effective Coastal Management – Thailand Desktop Review, Mangroves for the Future (MFF) Programme; Programme of Work #7.1; National capacity and training needs assessments for different stakeholder groups in order to identify gaps, needs, and strengths and opportunities for building capacity in Integrated Coastal Management (ICM), pp 52-60.

Yakupitiyage A. (2008). An Assessment of Capacity for Effective Coastal Management - Seychelles Country Assessment, Mangroves for the Future (MFF) Programme; Programme of Work #7.1; National capacity and training needs assessments for different stakeholder groups in order to identify gaps, needs, and strengths and opportunities for building capacity in Integrated Coastal Management (ICM), 22 pp.

Yakupitiyage A., Routray, J.K. and Ahmed, M.M. (2008). An Assessment of Capacity for Effective Coastal Management - India Country Assessment, Mangroves for the Future (MFF) Programme; Programme of Work #7.1; National capacity and training needs assessments for different stakeholder groups in order to identify gaps, needs, and strengths and opportunities for building capacity in Integrated Coastal Management (ICM), 60 pp.

Yakupitiyage, A. (2008). Assessing Capacity for Effective Coastal Management in the MFF countries. Final Report. Mangroves for the Future (MFF) Programme; Programme of Work #7.1; National capacity and training needs assessments for different stakeholder groups in order to identify gaps, needs, and strengths and opportunities for building capacity in Integrated Coastal Management (ICM), 28 pp.

Yakupitiyage, A. and Ranamukhaarachhi, S.L. (2008). An Assessment of Capacity for Effective Coastal Management - The Maldives Country Assessment, Mangroves for the Future (MFF) Programme; Programme of Work #7.1; National capacity and training needs assessments for different stakeholder groups in order to identify gaps, needs, and strengths and opportunities for building capacity in Integrated Coastal Management (ICM), 24 pp.

Yakupitiyage, A., Nitivattananon, V., Shipin, O., **Thakur, D.P.** and Bhatiyasevi, U. (2008). An Assessment of Capacity for Effective Coastal Management - Thailand Country Assessment, Mangroves for the Future (MFF) Programme; Programme of Work #7.1; National capacity and training needs assessments for different stakeholder groups in order to identify gaps, needs, and strengths and opportunities for building

capacity in Integrated Coastal Management (ICM), 31 pp.

17.7 Doctoral Students' Dissertation

Co-Management Institutions for Sustainable Inland Fisheries Management: A Case Study of the Lower Songkhram River Basin, Thailand
By Malasri Khumsri
Supervisor: Prof. Ganesh P. Shivakoti / Dr. Wenresti Gallardo

*Improvement of Quality Characteristics of Indian Mackerel (*Rastrelliger kanagaruta*) by Solar Drying*
By Chavan Balu Ramdas
Supervisor: Dr. Amaratne Yakupitiyage

*Salinity, Source of Broodstock and Male Morphotypes on Growth and Survival of *Macrobrachium rosenbergii* Larvae*
By Pham Truong Yen
Supervisor: Dr. Amrit Bart

*Seed Production of Indigenous Fish, *Spinibarbus denticulatus* in North Vietnam*
By Dinh Van Trung
Supervisor: Dr. Amrit Bart

17.8 Masters Students' Theses

*An Evaluation of the Effect of Fixed Station and Mobile Blower Feeding in Commercial Nile Tilapia (*Oreochromis niloticus*) Farming*
By Jaruwat Songphatkaew
Supervisor: Dr. Amaratne Yakupitiyage / Dr. Ram C. Bhujel

An Evaluation of the Inter-Relationship Between Changing Livelihood and Land Use Patterns in Bang Khunthian District, Bangkok Province, Thailand
By Rattana Tiaye
Supervisor: Dr. Wenresti Gallardo

<p><i>Assessing the Role of "Jalari" Women in Livelihoods and Aquatic Resources Management in Phewa Lake, Pokhara, Nepal</i> By Agni Prasad Nepal Supervisor: Dr. Wenresti Gallardo</p>	<p><i>Effect of Wastewater from Cassava Factories on Water Quality, Growth and Survival of Nile Tilapia (Oreochromis Niloticus)</i> By Vo Van Vinh Supervisor: Dr. Amaratne Yakupitiyage</p>	<p><i>Evaluation of Potential for Water Hyacinth Leaf Protein Concentrate as a Protein Source in Tilapia Feeds: A Case Study in Pak-Phanang Southern Thailand</i> By Ong Moc Quy Supervisor: Dr. Amaratne Yakupitiyage</p>
<p><i>Assessment of Community-Based Fishery Management Impacts on Rural Households within the Stung Treng Ramsar Site, Cambodia</i> By Nuon Vanna Supervisor: Dr. Wenresti Gallardo</p>	<p><i>Effects of Feeding Regimes and Stocking Density on Survival and Growth of Whisker Catfish Fry (Micronema bleekeri, Gunther)</i> By Bui Chau Truc Dan Supervisor: Dr. Amaratne Yakupitiyage</p>	<p><i>Evaluation of Suitable Weaning Methods for Wild-Caught Striped Snakehead Fry (Channa Striatus Bloch) to Pelleted Feeds</i> By Aonanong Khundeck Supervisor: Dr. Amaratne Yakupitiyage</p>
<p><i>Assessment of Policies and Practices of Wetlands and Aquatic Resources Management in Lao PDR</i> By Nguyen Thi Bich Supervisor: Dr. Amaratne Yakupitiyage</p>	<p><i>Effects of Varying Dietary Protein and Ingredient Composition on Growth, Survival and Feed Efficiency of Early Juvenile Spotted Babylon (Babylonia Areolata Link 1807)</i> By Niyom Wongyai Supervisor: Dr. Amaratne Yakupitiyage</p>	<p><i>Integrated Culture of the Spiny Lobster (Panulirus Ornatus), the Green Mussel (Perna Viridis) and Seaweed (Kappaphycus Alvarezii) in Vab Ninh District, Khan Hoa Province, Vietnam</i> By Vo Chi Dung Supervisor: Dr. Amaratne Yakupitiyage</p>
<p><i>Economic Analysis of Pangasius Catfish Farming in the Mekong Delta of Vietnam: A Case Study in Vinh Long and Can Tho Provinces</i> By Luu Tuong Ngoc Hieu Supervisor: Dr. Amaratne Yakupitiyage</p>	<p><i>Evaluating Coastal Community Resilience Assessment Methods: A Case Study of Tsunami Impacted Ranong, Thailand</i> By Fareedali F.H.J. Kanji Supervisor: Dr. Amrit Bart</p>	<p><i>Local and Scientific Knowledge on Improvement of Criteria for Establishing Fish Conservation Zones in Man-Made Reservoirs: A Case Study in Southern Laos</i> By Sinsamout Ounboundisane Supervisor: Dr. Wenresti Gallardo</p>
<p><i>Ecotourism Development Potential of the Sirindhorn International Environmental Park, Petchaburi, Thailand</i> By Jidapa Taweteekul Supervisor: Dr. Wenresti Gallardo</p>	<p><i>Evaluation of Pesticides Use in Rice and Rice Fish Farming and its Effect on Zooplankton, Benthic Invertebrate and Farmed Fish</i> By Nguyen Thanh Tam Supervisor: Dr. Amaratne Yakupitiyage</p>	<p><i>Willingness to Pay for Environmental Services in the Sirindhorn International Environmental Park, Petchaburi, Thailand</i> By Sajee Homtua Supervisor: Dr. Wenresti Gallardo</p>

Chapter 18: SERD – ENERGY FIELD OF STUDY

18.1 Introduction

Energy related academic program at AIT was established in 1979. So far, over 1,000 students have graduated in the Energy related studies. As of December 2008, about eighty students are enrolled in Energy Field of Study. About thirty percent of the current students are at doctoral level. Apart from regular teaching and student research, faculty at Energy FoS carry out a larger number research projects. Some of the current research focuses of Energy FoS are Energy, environment and climate change, Energy for sustainable development, Renewable Energy and Energy efficiency, Electric power system management, and Energy economics and planning.

Student admitted to Energy Field of Study can specialize in one of the three areas.

- Electric Power System Management (EPSM)
- Energy Technology (ET)
- Energy Economics and Planning (EEP)

Details regarding Energy field of study activities are available at www.serd.ait.ac.th/ep/ep.html

18.2 Research Facilities and Laboratories

Energy Laboratory serves as a facility for course experiments, research, testing and hands-on training in the Energy Field of Study. Laboratory functions are focused mainly on solar thermal energy, photovoltaics, biomass energy, energy management, thermodynamics and heat transfer, and electrical measurement and analysis. The laboratory facilities include two indoor laboratories, an energy park and a meteorological station. The indoor laboratories are equipped with experiment setups, testing apparatus and

measuring equipment for thermal and electrical management studies, thermodynamics, fluid mechanics and heat transfer, and electrical power supply management. Energy Park covers 3980-m² outdoor research and demonstration facility equipped with photovoltaic systems, solar thermal (air and water) systems, biomass research and daylighting setups. The meteorological station measures and records different solar radiation and other meteorological data. Energy laboratory continues to carry out testing services such as fuel quality tests, gas composition tests, tests for heating value of fuels, solar thermal collector performance tests, solar water heater system performance tests and stove efficiency tests.

Among its major equipment include a Gas Analyzer; Campbell data logger; Ultrasonic flow-meter; Bomb colorimeter; and a Gas chromatography.

The SERD Computer Lab IV in the Energy Building has a large number of computer modeling software for energy planning and policy analysis. These include Model for Analysis of Energy Demand and Environmental Impacts (MAED, MEDEE-S/ENV, LEAP), Electricity System Planning (WASP-III Plus, ENPEP, DECPAC), Energy-Environmental Flow Optimization Model (EFOM-ENV), Wood Energy Planning Models, Energy-Environmental Models for estimation of impacts of energy externalities, air pollution emission and dispersion and climate change (CO₂ DB, RAINS, TEMIC, ECOSENS, ISC) and Energy-Environmental Database Management Software (DBAVOID). An energy-environment database for Asia is maintained in this computer lab. About 20 highend PCs connected to the campus-wide Ethernet and ATM network and a high quality laser printer, scanning and CD writing facilities are available for students' uses.

18.3 Faculty and Research Staff

Full-time Faculty

RAM M SHRESTHA, BE, Univ of Baroda; LL Tribhuvan Univ, Nepal; MEng, DEng, AIT, Thailand.

Professor (*Energy and Environmental Policy; Energy Economics*)

SAID IRANDOUST, MSc, PhD, Chalmers University of Technology, Sweden

Professor (*Chemical reaction engineering*)

SIVANAPPAN KUMAR, BE, Univ of Madras, India; MEng, AIT, Thailand; PhD, Inst Natl Polytechnique, Toulouse, France.

Professor (*Solar Energy (Radiation, Thermal and Photovoltaics); Green house gas mitigation and climate change, Cleaner Production; energy and sustainable development*)

WEERAKORN ONGSAKUL, BEng, Chulalongkorn Univ, Thailand; MS, PhD, Texas A&M Univ, USA.

Associate Professor (*Artificial Intelligence Applications to Power Systems; Parallel Processing Applications; Power System Operation & Control; Power System Deregulation & Restructuring*)

MITHULANANTHAN NADARAJAH, BScEng, MEng, Univ of Peradeniya, Sri Lanka; PhD, Univ of Waterloo, Canada.

Assistant Professor (*Application of FACTS controllers; Controller Interactions; Power System Oscillation; Voltage Stability*)

Visiting Faculty

SHINSUKE KATO, Ph.D., The University of Tokyo

Visiting Professor [*Airflow and Temperature Distributions in Room*]

YAW-JUEN WANG, PhD Electrical Engineering, National Grenoble Polytechnique Institute, France; Dipl-Ing, Power Engineering, National Grenoble Electrical Engineer's School, France; MEng Energy Technology, AIT, Thailand.

Visiting Professor [*Electric Power Quality and Solar electricity*]

BRAHMANAND MOHANTY, BSc, SAICE, India; MSc, AIT, Thailand; PhD, Institut National Polytechnique of Toulouse, France

Visiting Associate Professor [*Energy Efficiency and Management, Cleaner Production, Resource Conservation and Management*]

CHARLES MARPAUNG, Ms.c, Statistics, Bogor Agricultural University, Indonesia; D. Eng, AIT

Visiting Faculty [*Energy Planning: Energy, Economy and Environmental Modelling*]

RABIN SHRESTHA, MSc. Energy Economic, Surrey University, England; D. Eng, AIT.

Visiting Faculty [*Electricity in Generation Planning*]

18.4 Grants and Sponsored Research Completed in 2008

Analyses of Energy related Environment Emissions in ASEAN and South Asian Countries

Duration 13-Nov-06 28-Feb-08
Project Investigator Ram M. Shrestha
Sponsor Mizuho Information and Research Institution, Inc., Japan
Total Contracted Amount (Baht) 1,950,000

Coordination Energy Security and Energy Efficiency Theme

Duration 1-Jan-07 01-Jan-08
Project Investigator Ram M. Shrestha, S. Kumar
Sponsor Global Network on Energy for Sustainable Development (GNESD)-UNEP RISO
Total Contracted Amount (Baht) 320,000

Database on Driving Forces of Global Warming

Duration 1-Dec-07 31-Dec-08
Project Investigator Ram M. Shrestha
Sponsor Mizuho Information and Research Institution, Inc., Japan
Total Contracted Amount (Baht) 1,200,000

Electricity and Cooling Load Estimate for Outreach Building

Duration 7-Sep-07 01-Feb-08
Project Investigator Animesh Dutta, S. Kumar
Sponsor UNEP RRC.AP
Total Contracted Amount (Baht) 66,800

Energy Consumption and Air Pollution

Duration 1-Aug-07 30-Sep-08
Project Investigator Ram M. Shrestha
Sponsor Nies, Japan
Total Contracted Amount (Baht) 705,000

Energy Security and Energy Efficiency Theme

Duration 1-Jul-07 31-Aug-08
Project Investigator Ram M. Shrestha, S. Kumar
Sponsor Global Network on Energy for Sustainable Development (GNESD)-UNEP RISO
Total Contracted Amount (Baht) 850,000

International Conference on Energy Security and Climate Change: Issues, Strategies and Options

Duration 1-Feb-08 31-Dec-08
Project Investigator N. Mithulanathan, Weerakon Ongsakul, S Kumar, Ram Shrestha
Sponsor Participants
Total Contracted Amount (Baht) 877,895

MPG-CAPS Testing for Fuel Freedom International

Duration 1-Jun-08 31-Dec-08
Project Investigator N. Mithulanathan, H. P. W. Jayasuriya, Peeyush Soni, A Bishnu
Sponsor Fuel Freedom International
Total Contracted Amount (Baht) 220,000

Technical Officer Training, Unviersity of Moratuwan Sri Lanka

Duration 1-Feb-08 31-Dec-08
Project Investigator N. Mithulanathan
Sponsor University of Moratuwa, Sri Lanka
Total Contracted Amount (Baht) 126,500

The Potential for Transferring and Implementing Renewable Energy Technologies through the Clean Development Mechanism of the Kyoto Protocol

Duration 1-Feb-06 31-Jan-08
Project Investigator Mithulanathan N., Animesh Dutta
Sponsor European Commission
Total Contracted Amount (Baht) 1,646,570

Urban and Peri-Urban Energy Access Phase 2

Duration 15-Aug-07 31-May-08
Project Investigator Ram M. Shrestha, S. Kumar
Sponsor Global Network on Energy for Sustainable Development (GNESD)-UNEP RISO
Total Contracted Amount (Baht) 595,000

Workshop on Renewable Energy in Mekong River Area (MOFA-Finland)

Duration 1-Oct-08 31-Dec-08
Project Investigator "Weerakorn Ongsakul, Nadarajah Mithulanathan, Sivanappan Kumar, Ram Shrestha
Sponsor Ministry of Foreign Affairs (MOFA) Finland
Total Contracted Amount (Baht) 1,039,100

18.5 On-going Grants and Sponsored Research

Development of Methodology Database for ABC Emissions Inventory of Selected Countries

Duration 1-Jan-08 31-Jul-09
Project Investigator Ram M Shrestha, Kim Oahn, Rajendra Shrestha
Sponsor UNEP RRC.AP
Total Contracted Amount (Baht) 4,235,945

Energy Field of Studies Publications

Duration 1-Jan-04 31-Dec-09
Project Investigator N. Mithulanathan
Sponsor membership fees, AIT
Total Contracted Amount (Baht) 1,521,149

Networking with Norwegian and Regional Institutions in Energy Issues (South-South-North Networking): 2006-2009

Duration 1-Aug-06 31-Dec-09
Project Investigator N. Mithulanathan, S Kumar, Ram Shrestha,
Sponsor Norwegian Ministry of Foreign Affairs
Total Contracted Amount (Baht) 4,140,000

18.6 Publications

Refereed Journals

- Adhikari, S., N. Mitulananthan, A. Dutta and A.J. Mathias “Potential of sustainable energy technologies under CDM in Thailand: Opportunities and barriers” *Renewable Energy*, (in press) 2008.
- Augustus L. M. and Kumar, S., Design and performance evaluation of a solar assisted biomass drying system with storage, *Drying Technology*, Vol. 26, Issue 7, pp. 936 – 947, July 2008.
- Boonchiam, P. and N. Mithulananthan, “Diode-Clamped Multi Level Voltage Source Converter based Medium Voltage DVR,” *International Journal of Electrical Power and Energy System Engineering*, World Academy of Science and Technology, November 2008.
- Chavan, B. R, A. Yakupitiyage, S. Kumar, “Mathematical Modeling of Drying and Quality Characteristics of Indian Mackerel (*Rastrilliger kangurta*) in Solar-Biomass Hybrid Cabinet Dryer”, *Drying Technology*, Vol. 26 Issue 12, pp. 1552-1562, 2008.
- Chavan, B. R., A. Yakupitiyage, S. Kumar and S. K. Rakshit, “Experimental investigation on biochemical, microbial and sensory properties of mackerel” (*Rastrilliger kangurta*) dried by solar-biomass hybrid cabinet dryer, *Journal of Food, Agriculture and Environment*, Vol. 6, Issue (3 and 4), pp. 167- 172, 2008.
- Chinsuwan, A. and A. Dutta, “Empirical model for predicting cross-sectional averaged suspension density in commercial circulating fluidized bed boilers” *Journal of the Energy Institute*, Vol. 81, No. 2, pp. 69-75, 2008.
- Dieu, V.N. and W. Ongsakul, “Enhanced Merit Order and Augmented Lagrange Hopfield Network for Hydrothermal Scheduling”, *International Journal of Electrical Power and Energy Systems*, Vol. 30, Issue 2, pp. 93-101, February 2008.
- Dieu, V.N. and W. Ongsakul, “Ramp Rate Constrained Unit Commitment by Improved Priority List and Augmented Lagrange Hopfield Network”, *Electric Power Systems Research*, Vol. 78, Issue 3, pp. 291-301, March 2008.
- Govinda Timilsina and Ram M. Shrestha “Energy Sector Management: A general equilibrium analysis of potential demand side management programs in the household sector in Thailand” Vol. 2, No. 4, pp. 570-592, 2008.
- Jarungthammachote, S. and A. Dutta “Equilibrium modeling of gasification: Gibbs free energy minimization approach and its application to spouted bed and spout-fluid bed gasifiers” *Energy Conversion & Management*, (in press) 2008.
- Kerdchuen, T. and W. Ongsakul, Optimal Measurement Placement with Contingencies for Power System State Estimation Using Hybrid Genetic Algorithm and Simulated Annealing, *European Transaction on Electrical Power*, 2008
- Kumar, S., G. Anadarajah and C. Visvanathan, Techno-economic Analysis of Energy Efficient and Environmentally Sound Technologies in the Asian Small and Medium Industry Sector, *Tech Monitor*, 17-23, Jan-Feb 2008.
- Maitri Thamavithya and Animesh Dutta, “An investigation of MSW gasification in a spout-fluid bed reactor” *Fuel Process ding Technology*, Vol. x, No. x, pp. 1-9, 2008.
- Ongsakul, W. and P. Jirapong, Optimal Placement of Multi-Type FACTS Devices to Enhance Total Transfer Capability using Improved Evolutionary Programming? *International Journal of Energy Technology and Policy*, 2008.
- Permana A.S, R. Perera, S. Kumar, Understanding energy consumption pattern of households in different urban development forms: A comparative study in Bandung City, Indonesia, *Energy Policy*, Vol. 36, Issue 11, November 2008, 4287 -. 4297.
- Sarina Adhikari, N. Mithulananthan, A. Dutta and A. J. Mathias, “Potential of sustainable energy technologies under CDM in Thailand: Opportunities and Barriers,” *REJ*, Elsevier, Vol. 33, No. 9, pp. 2122-2133, 2008.
- Ram M. Shrestha, S. Kumar, Samuel Martin and Arjun Dhakal, 2008, Modern Energy Use by the Urban Poor in Thailand: A Study of Slum Households in Two Cities, *Energy for Sustainable Development*, Vol. 12, No.3, pp. 5-13.
- Ram M. Shrestha**, Shreekar Pradhan, Migara H. Liyanage, **2008**, Effects of carbon tax on greenhouse gas mitigation in Thailand, *Climate Policy*, Vol. 8, pp. S140-S155.
- Govinda R. Timilsina and Ram M. Shrestha, 2008, A General Equilibrium Analysis of Potential Demand Side Management Programs in the Household Sector in Thailand, *International Journal of Energy Sector Management*, Vol. 2, No. 4, pp.570-593.
- Thosapon Katejanekarn, and S. Kumar, "Performance of a solar-regenerated liquid desiccant ventilation pre-conditioning system" *Energy and Buildings*, 40, 7, 1252-1267, 2008.

Books

Ram M. Shrestha, 2008, Compendium of Good Practices on Control and Prevention of Transboundary Air pollution, UNEP-RRC.AP, Bangkok.

Conference Proceedings

Chavan, B. R., A. Yakupitiyage, S. Kumar, Mathematical Modeling of Drying and Quality Characteristics of Indian Mackerel (*Rastrilliger kangurta*) in Solar- Cabinet Dryer, International conference on Innovations on Food processing Technology and Engineering" 2-4 Dec.2008, Bangkok.

Kumar, S. and Bishnu Acharya, Global Alternative and Renewable Energy Outlook, ASEAN Energy Business Forum, 5-8 August 2008, Bangkok.

International Conference

Boonchuay, C. and W. Ongsakul, "An Optimal Bidding Strategy Algorithm for Uniform Price Spot Market by Improved Particle Swarm Optimization", Proceedings of Third GMSARN International Conference, Kunming, Nov. 12-14, 2008.

Chalermchaiarbha, S. and W. Ongsakul, "A Fuzzy Multi-Attribute Decision Making Approach for Multi-Objective Thermal Power Dispatch", Proceedings of Third GMSARN International Conference, Kunming, Nov. 12-14, 2008.

Dieu, V.N and W. Ongsakul, "Combined Heat and Power Economic Dispatch by Augmented Lagrange Hopfield Network", Proceedings of PSCC, Glasglow, July 14-18. 2008.

Dieu, V.N and W. Ongsakul, "Economic Dispatch with Multiple Fuels by Enhanced Augmented Lagrange Hopfield Network", Proceedings of IEEE PES Conference

POWERCON2008, Dehli, Oct. 12-15, 2008.

Kerdchuen, T. and W. Ongsakul, "Optimal Placement of PMU and RTU by Hybrid Genetic Algorithm and Simulated Annealing for Multi-Area Power System State Estimation", Proceedings of Third GMSARN International Conference, Kunming, Nov. 12-14, 2008.

Polprasert, J. and W. Ongsakul, "A Profit-Based Unit Commitment by Using Augmented Lagrange Augmented Hopfield Network in Deregulated Environment", Proceedings of Third GMSARN International Conference, Kunming, Nov. 12-14, 2008.

Prommee, W. and W. Ongsakul, "Optimal Multi-Distributed Generation Placement by Adaptive Weight Particle Swarm Optimization", Proceedings of International Conference on Control, Automation and Systems 2008 (ICCAS 2008), Seoul, Oct 14-17, 2008.

Ram M. Shrestha and Shreekar Pradhan, 2008, Effects of Carbon tax on GHG Emissions and Use of Emerging Technologies in Thailand, in "Bridging Energy Supply and Demand: Logistics, Competition and Environment", Proceedings of 31st IAEE International Conference, June 18-20, 2008, Istanbul, Turkey.

Other Publications

Kumar, S., Taking solar energy research to new heights, The Solar Quarterly, Vol. 1, Issue 1, Oct 2008, 49-51.

18.7 Doctoral Students' Dissertation

A Liquid Desiccant Air Conditioning System for Buildings in Hot and Humid Climates
By Thosapon Katejanekarn
Supervisor: Prof. Sivanappan Kumar

Equilibrium Models, Thermodynamic Analyses and Experimental Investigations of Multi-Stage Air- Steam Downdraft Gasifier

By Sompop Jarungthammachote
Supervisor: Prof. Sivanappan Kumar / Dr. Animesh Dutta

Numerical and Experimental Studies on Heat Transfer in Circulating Fluidized Bed Boilers

By Anusorn Chinsuwan
Supervisor: Prof. Sivanappan Kumar / Dr. Animesh Dutta

Optimal Measurement and RTU Placement for Power System State Estimation

By Thawatch Kerdchuen
Supervisor: Dr. Weerakorn Ongsakul

Optimal Placement of Multi-Type FACTS Devices for Available Transfer Capability Enhancement using Hybrid Evolutionary Algorithm

By Peerapol Jirapong
Supervisor: Dr. Weerakorn Ongsakul

18.8 Masters Students' Theses and Research Studies

Adaptive Particle Swarm Optimization for Economic Dispatch Considering Non-Smooth Cost Functions

By Itti Mangkornthong
Supervisor: Dr. Weerakorn Ongsakul

Analyses of Selected Energy Policy Options to Improve Energy Security: The Case of Sri Lanka

By Ganehi Kankanamalage Chandrabhanu Opathella
Supervisor: Prof. Ram M. Shrestha

Analysis of Energy Use Patterns and Implications of CO2 Reduction Targets and Carbon Tax in the Urban Residential Sector

By Sithisakdi Apichatthanapath
Supervisor: Prof. Ram M. Shrestha

An Investigation of Air-Steam Multi-Stage Gasifier-Engine System

By Jakkapong Udomsirichakorn

Supervisor: Prof. Sivanappan Kumar / Dr. Animesh Dutta	Supervisor: Dr. Weerakorn Ongsakul	<i>Optimal SVC Placement for Voltage Enhancement in the Vietnamese Power System</i>
<i>Contingency Analysis: A Case Study of Electric Power Transmission System in Phnom Penh, Cambodia</i>	<i>Future Power Grid: Challenges and Technological Options</i>	By Le Cong Doanh
By Piseth Sean	By Tin Zar Lin	Supervisor: Dr. Weerakorn Ongsakul
Supervisor: Dr. Weerakorn Ongsakul	Supervisor: Dr. Mithulananthan Nadarajah	<i>Policy Options for Energy Resource Diversification in Bangladesh</i>
<i>Design of Transmission System by Electromagnetic Transient Simulation: A Case Study of Son La-Hoa Binh-Nho Quan 500KV Transmission Lines and Substations</i>	<i>Greenhouse Gas Emission Mitigation through Amine Based Carbon Dioxide Capture in Coal Fired Electricity Generation Plants</i>	By Md. Anwarul Islam
By Le Xuan Hoa	By Tanuja Bhattacharjee	Supervisor: Prof. Ram M. Shrestha
Supervisor: Dr. Mithulananthan Nadarajah	Supervisor: Prof. Sivanappan Kumar / Dr. Animesh Dutta	<i>Static Security Assessment of Power System: A Case Study of Bhutan Power System</i>
<i>Distributed Generators, Reconfiguration and Capacitors for Loss Reduction in Primary Distribution Systems</i>	<i>Hydrogen Enriched Gas Production Using Fluidized Bed Steam Gasifier with In-Process Carbon-Di-Oxide Capture</i>	By Karma Phuntsho
By Duong Quoc Hung	By Bishnu Acharya	Supervisor: Dr. Mithulananthan Nadarajah
Supervisor: Dr. Mithulananthan Nadarajah	Supervisor: Prof. Sivanappan Kumar / Dr. Animesh Dutta	<i>Steady State Analysis of a Microgrid Connected to a Power System</i>
<i>Distribution Network Expansion Planning: The Case of Phan Thiet City, Vietnam</i>	<i>Implementation of Electricity Saving Strategies for Academic Buildings to Mitigate Green House Gas Emissions</i>	By Ramesh Paudel
By Nguyen Minh Duc	By Pinnukarn Kosonkarn	Supervisor: Dr. Mithulananthan Nadarajah
Supervisor: Dr. Weerakorn Ongsakul	Supervisor: Prof. Sivanappan Kumar	<i>Towards a Low-Carbon Society for Vietnam: Selected Long-Term Energy Strategies</i>
<i>Distribution Network Reinforcement Planning Incorporating Capacitor and Distributed Generator: A Case Study of Punakha District in Bhutan</i>	<i>Implications of Selected Strategies for Urban Air Quality: An Energy-Environmental Modeling Study of Kathmandu Valley</i>	By Nguyen Hoang Lan
By Drukchu Dorji	By Salony Rajbhandari	Supervisor: Prof. Ram M. Shrestha
Supervisor: Dr. Mithulananthan Nadarajah	Supervisor: Prof. Ram M. Shrestha	<i>Transfer Capability of Power Transmission Lines with New Power Plant: A Case Study of EVN Grid with Nuclear Power Plant</i>
<i>Electric Power Interconnection in the Greater Mekong Sub-Region</i>	<i>Implications of Using Electricity in Passenger Transport and Cooking for Energy System Development in Bhutan</i>	By Nguyen The Bac
By Tran Thi Dieu Linh	By Dorji Yangka	Supervisor: Dr. Mithulananthan Nadarajah
Supervisor: Dr. Mithulananthan Nadarajah	Supervisor: Prof. Ram M. Shrestha	<i>Research Study: Analysis of a Minihydropower Plant as a Clean Development Mechanism Project in Siem Reap Province, Cambodia</i>
<i>Embodied Energy of Thai Urban Low-Income Construction (Housing) Systems</i>	<i>Influence of Distributed Generation on Voltage Sag in Primary Distribution System</i>	By Sok Chandavy
By Tayaporn Poonkasame	By Mayura Watananont	Supervisor: Prof. Ram Shrestha
Supervisor: Prof. Sivanappan Kumar	Supervisor: Dr. Mithulananthan Nadarajah	<i>Research Study: A Study on Energy Efficient Building with Case Study of Habitech Building Materials</i>
<i>Energy and Water Use in a Hotel: A Case Study at AITCC</i>	<i>Jatropha Oil for Diesel Engine Application: Estimation of Its Potential in Suphanburi Province Using GIS & RS</i>	By Henry Caspers
By Ahmed Ali	By Vijitra Chalatlou	Supervisor: Prof. Sivanappan Kumar
Supervisor: Prof. Sivanappan Kumar / Dr. Animesh Dutta	Supervisor: Prof. Sivanappan Kumar / Dr. Animesh Dutta	<i>Research Study: Thermal Performance of Insulation and Reflective Coating on Cooling Load Reduction</i>
<i>Expansion Planning of the Distribution System in Daknong Province, Vietnam</i>		By Kittisak Sripinproh
By Hoang Tung		Supervisor: Prof. Sivanappan Kumar

Chapter 19: SERD – ENVIRONMENTAL ENGINEERING AND MANAGEMENT FIELD OF STUDY

19.1 Introduction

Environmental Engineering at AIT began in 1964 with the need for sanitary engineering to address the problems of providing adequate water supplies and sanitation facilities. This pioneering environmental engineering program has grown into a range of fields needed to tackle the environmental issues facing Asia today.

Environmental Engineering and Management Field of Study is part of the School of Environment, Resources and Development. The overall program looks for solutions to environmental problems, water supply and sanitation, wastewater treatment and disposal systems, air pollution, solid and hazardous wastes, waste minimization, and life cycle assessment, environmental impact assessment and management and environmental toxicology. The three major focal areas are Environmental Technology and Management, Environmental Toxicology, Technology and Management, and Water and Wastewater Engineering

19.2 Research Facilities and Laboratories

The Environmental Engineering (EE) Laboratory is housed with facilities to handle a wide range of knowledge and skills in problem solving for industrial needs and analytical works for physical, chemical, microbiological, and environmental parameters such as water and wastewater quality, air pollutants and noise level, and solid waste. For teaching, training and research purposes, the EE laboratory is categorized into three sub-laboratories namely, research, ambient, and environmental research station. The research laboratory is equipped with many sophisticated

instruments such as GC-IRD-MSD, HPLC, UV-Vis spectrophotometers, atomic absorption analyzer with flame, graphite and cold vapor operations, and gas and liquid chromatographs. For lab and pilot scale testing purposes, the ambient laboratory has furnished with facility to conduct experiments for treating sludge, sewage and industrial wastes. It is also housed with advanced water and wastewater treatment units such different membrane bioreactors, and high rate anaerobic treatment processes with methane gas recovery. The Environmental Research Station consists of pilot scale aerobic and anaerobic biological wastewater treatment units, constructed wetlands, waste stabilization ponds, a lysimeters for solid waste treatment, a hazardous wastewater treatment plant and ambient air monitoring station.

Among its major equipment include Gas Chromatograph; High Performance Liquid Chromatograph; Atomic Absorption Spectrometer; Total Organic Carbon Analyzer; Ion Chromatograph, Induced Couple Plasma, UV Spectrophotometer; Supercritical Fluid Extractor; Microwave Digestion System ; Primus Thermal Cyclers ; Universal Mutation Detection System; Microscope; Microbalance; Microcentrifuge.

19.3 Faculty and Research Staff

Full-time Faculty

AJIT P ANNACHHATRE, BTech, PhD, Indian Inst of Tech, Kanpur, India.
Professor (*Anaerobic Wastewater Treatment; Biofilm Processes; Environmental Biotechnology; Environmental Impact Assessment; Mathematical Modeling*)

CHONGRAK POLPRASERT, BEng, Chulalongkorn Univ, Thailand; MEng, AIT, Thailand; PhD, Univ of Washington, USA.

Professor (*Hazardous Waste Engineering; Resources Recovery; Sanitation*)

CHETTIYAPPAN VISVANATHAN, BTech, IIT, Madras, India; MEng, AIT, Thailand; PhD, Inst Natl Polytech, Toulouse, France.

Professor (*Cleaner production; Industrial Environment Management; Membrane Technology for Water and Wastewater Treatment and, Solid Waste Management*)

SAID IRANDOUST, MSc, PhD, Chalmers University of Technology, Sweden.

Professor (*Chemical Reaction Engineering*)

NGUYEN THI KIM OANH, DipEng, Odessa Hydrometeorology Inst, Ukraine; MEng, DEng, AIT, Thailand.

Associate Professor (*Air Pollution Engineering and Management, Transboundary pollution, Air Pollution and Climate Interaction, Environmental Monitoring and Modelling, Exposure Assessment, Integrated Industrial Environment Management*)

OLEG V SHIPIN, PhD, Inst of Biochemistry and Physiology of Microorganisms, Moscow, Russia.

Associate Professor (*Anaerobic and Aerobic Wastewater Treatment; Environmental Impact Assessment; Microbial biotechnology (production of commercially important metabolites); Natural systems (ponds and wetlands) as*)

Wastewater treatment systems;
Microbial aspects of
Environmental Engineering;
Molecular Microbiology, Health
and Ecological Risk assessment,
Ecological Engineering)

PREEDA PARKPIAN, BSc, Kasetsart
Univ, Thailand; MSc, Mississippi
State Univ; PhD, Texas A&M Univ,
USA.

Associate Professor
(Ecotoxicology; POPs; Heavy
Metals; Micronutrient
Chemistry; Remediation of
Polluted Soil and Water)

THAMMARAT KOOTATEP, BEng,
Chiangmai Univ; MEng, DEng, AIT,
Thailand.

Assistant Professor
(Decentralized Waste and
Wastewater Treatment Systems;
Eco-engineering Technology for
Waste and Wastewater
Treatment and Management;
Environmental Health and
Sanitation)

Visiting and Affiliated Faculty

JUTAMAAD SATAYAVIVAD, PhD,
Mahidol University, Thailand.

Affiliated Faculty
(Pharmacology)

KARE HELGE KARSTENSEN, BS, MS,
University of Oslo; MBA, Heriott
Watt University, UK; MLaw,
University of Oslo; Dr.Sc, Norwegian
University of Science and
Technology, Trondheim, Norway.

Visiting Faculty (Sustainable
Management of Industrial and
Hazardous Wastes;
Management of Hazardous
Chemicals, POPs and Obsolete
Pesticides; Sustainable
Production of Cement and Co-
Processing of Alternative Fuel
and Raw Materials and
Hazardous Wastes; Control and
Minimization of unintentionally
produced POPs (dioxins, furans,
PCBs and HCB) and application
of Best Available Technologies &

Best Environmental Practices
(BAT/BEP)

KHUNYING MATHUROS
RUCHIRAWAT, PhD, Massachusetts
Institute of Technology, USA.

Affiliated Faculty (Nutrition
Biochemistry and Metabolism)

PHILIP HOPKE, MA and PhD,
Chemistry, Princeton University,
USA.

Visiting Professor (Chemical and
Biomolecular Engineering)

SHINICHI OKAMOTO, BEng, MEng,
DEng, Waseda Univ, Japan.

Visiting Professor (Statistics and
Environmental Management
Systems)

SKORN MONGKOLSUK, PhD,
University of Maryland, USA.

Affiliated Professor (Biological
Science)

Research Staff

ACHARA TAWEESARN, MSc

Research Associate (Manages
research projects, prepares
technical reports and
presentations)

AJAYA SAPKOTA, BSc

Research Assistant (Conducts
lab experiments and assist
students in their lab activities;
assist project leader with
research project, training
activity)

ANGKANA PUNYAONG, BEng

Research Assistant (Laboratory
operating and sample analysis,
prepares technical reports and
presentations, collaborating
with research partners)

ANTOINE MOREL, MEng

Senior Research Associate
(Assists in project coordination,
prepares project reports,
prepares project budgets and
manages project finances,
support project leader in
supervision of AIT and NCCR

master and doctoral students
and trainees in the field of
environmental sanitation)

ARMY MAY M. TORRECHILLA, MSc
Research Associate (Manages
research projects, prepares
technical reports and
presentations)

AUNG ZAW NAING LIN, MSc
Research Associate (Actively
involve in Asian Regional
Research Programme on
Environmental Technology
Program (ARRPET) research
activities)

BAL KRISHNA K.C., M Eng
Research Associate (Manages
research projects, prepares
technical reports and
presentations)

BINOD KUMAR CHAUDHARY, MEng
Research Associate (Manages
research projects, prepares
technical reports and
presentations)

BOONTAWEE TEAMVAN, MSc
Research Associate (Manages
research projects, prepares
technical reports and
presentations)

CHAIYAPORN IMSAPSANGWORN,
BSc
Laboratory Technician II (Assess
laboratory routine testing and
analysis, maintain the operation
of the laboratories, instruments
and equipment, chemical and
lab preparation for EEM
laboratories sessions, data
collection and fieldwork
assistance to students and
research staff)

D.F.S. DE F. GOONEWARDENE, MEng
Research Associate (Manages
research projects, prepares
technical reports and
presentations)

DO THI THANH CANH, MSc
Research Associate (Manages

research projects, prepares technical reports and presentations)

JAVKHLAN ARIUNBAATAR, MSc
Research Associate (Manages research projects, prepares technical reports and presentations)

KANOKWAN SASWATTECHA, MSc
Research Associate (Manages research projects on diesel particulate matter and air pollutants analysis; prepares technical reports and presentations)

KYAN DYNE AUN, MSc
Research Associate (Manages research projects, prepares technical reports and presentations)

MADDALA PADMASRI, ME
Research Associate (Project report writing and technical presentations)

MANOJ YOMJINDA, MSc
Research Laboratory Supervisor (Supervises instrumentation and data acquisition, calibration and maintenance of analytical instruments, assistant to senior laboratory supervisor for such as teaching, lab management)

MARICEL F. BERMEJO, BSc
Program Associate (Manages research projects, financial management, prepares technical reports and presentations)

NARISSARA KAEWPHAN, BSc
Research Assistant (Conducts lab experiments and assist students in their lab activities; assist project leader with research project, training activity)

NARONGKORN WAEW-NGAM, BTech (Mech)
Lab Technician I (Assists students in laboratory

experimental work and experimental set-up, carry out routine maintenance and repair of laboratory equipment and facilities)

NIRANCHANA AUTHAYANRAKSA, MSc
Research Associate (Manages research projects, prepares technical reports and presentations)

ORATHAI KLUBBARNKOH, BSc
Laboratory Technician II (Chemistry and environmental analysis for environmental samples as well as prepare for chemical and glassware for laboratory courses and research projects)

PANITCHA KHAMMAMONG, BEng
Research Assistant (Laboratory operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

PANUPONG BOONYANUN, BTech (Mech.)
Laboratory Technician II (Responsible for the repair and maintenance of related machines, assists students in laboratory experimental work and experimental set-up, carry out routine maintenance and repair of laboratory equipment and facilities)

PRAPAT PONGKIATKUL, DEng
Senior Research Engineer, (Manages research projects on air pollution; assists in project coordination, prepares project reports, prepares project budgets and manages project finances; assist team leader in training activities)

PRASHANTHINI VIJAYALAYAN, MEng
Research Associate (Manages research projects, prepares technical reports and presentations)

PREM ANANTH ANIYARANGAN, MEng
Research Associate (Manages research projects, prepares technical reports and presentations)

RAHMAN F. FAFIQUE, MSc
Research Associate (Manages research projects, prepares technical reports and presentations)

RAQUEL P. PEDRAJAS, MEng
Senior Research Associate (Assists in project coordination, prepares project reports, prepares project budgets and manages project finances, assists in maintenance of project websites, organizes international workshops, a conference, training programs and seminars, prepares project brochures, posters, etc., assists formulation of research proposal, co-edits project newsletters, assists evaluation of reports from National Research Institutions involved in the project, performs other duties as assigned)

ROBERT DONGOL, MSc.
Research Associate (Manages research projects, prepares technical reports and presentations)

SALAYA PHUNSIRI, MSc
Senior Laboratory Supervisor (Administrative for Environmental Engineering Laboratory as well as supervise for experimental and research projects on water, wastewater, air pollution, and solid wastes analysis)

SAWANYA LAOHAPRAPANON, MSc
Research Associate (Manages research projects, prepares technical reports and presentations)

SIRILAK SAENGPENG, BEng
Research Assistant (Laboratory

operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

SOMCHAI AREMSUM-ANG, BSc
Research Assistant (*Wastewater and soil analysis, field survey and data collection, testing and other laboratory sessions*)

SUKON HADSOI, MSc
Research Associate (*Laboratory operating and sample analysis, report writing, project management and collaborating with research partners*)

SUPATTRA JIAWKOK, MSc
Research associate (*Manages research projects, prepares technical reports and presentations*)

SUSAN JACOB, BTech
Research Assistant (*Financial management and assist the team in regular research project and training activities*)

SUTHIRAT KITTIPONGVISES, MSc
Research Associate (*Manages research projects on hazardous chemical management; assist the project leader in training activities; prepares technical reports and presentations*)

THANUN POONSAWAT, MEng
Research Associate (*Manages research projects, prepares technical reports and presentations*)

THAR THAR ZAN, M Tech Sc
Research Assistant (*Provides technical support to project's computer system, develop and maintenance of project website*)

TRAN THU TRANG, MSc
Research Associate (*Manages research projects, prepares technical reports and presentations*)

UNCHULEE LUALON, MSc
Research Associate (*Manages research projects, prepares technical reports and presentations*), Project: Enhanced Urban Water Pollution (January 2008 – June 2008)

WIJITTRA SANSUD, BSc
Laboratory Technician II (*Manages laboratory chemical and equipment inventory; issue chemical and equipments for students; conduct water analysis; assist in organizing laboratory sessions*)

WORRARAT THIANSAHIT, MEng
Research Associate (*Manages researches on diesel particulate matter and other air pollutants analysis*)

YOLANDA F. DIAZ. BSc.
Research Assistant (*Assists in financial management and assist the team in regular research project and training activities*)

19.4 Grants and Sponsored Research Completed in 2008

Application of Constructed Wetlands for Wastewater Treatment of Chulachomklao Royal Military Academy
Duration: 1 May 2007 to 31 October 2008
Project Investigators: Prof. Chongrak Polprasert, Dr. Thammarat Koottatep
Sponsor: RTG Visiting Scholar
Total Contracted Amount: (Baht) 1,000,000

Application of Electrochemical Process for Color Removal in Wastewater from Textile Industries in Thailand
Duration: 1 May 2007 to 31 August 2008
Project Investigator: Dr. Thammarat Koottatep
Sponsor: RTG Visiting Scholar
Total Contracted Amount: (Baht) 800,000

Application of Filtration Technologies for Piggery And Industrial Wastewater Treatment/Reuse and Resource Recovery under Tropical Conditions
Duration: 1 November 2003 to 16 April 2008
Project Investigator: Dr. Oleg Shipin
Sponsor: Kumoh National Institute of Technology, Korea, and Environmental Management Corporation, Incheon
Total Contracted Amount: (Baht) 1,827,081

Application of UAFF (Upflow Anaerobic Floating Filter)
Duration: 1 November 2008 to 16 April 2008
Project Investigator: Dr. Oleg Shipin
Sponsor: Kumoh National Institute of Technology (KIT), Korea
Total Contracted Amount: (Baht) 798,013

Biowaste Reuse in Southeast Asian Cities
Duration: 30 November 2005 to 31 December 2008
Project Investigator: Dr. Thammarat Koottatep
Sponsor: European Commission / Asia Pro-Eco Programme
Total Contracted Amount: (Baht) 1,650,000

Development of Nanoparticle-based technologies for environmental purposes
Duration: 15 June 2007 to 14 May 2008
Project Investigator: Dr. Oleg Shipin
Sponsor: Center of Excellence in Nanotechnology, NSTDA
Total Contracted Amount: (Baht) 500,000

Eco-Industrial Clusters in Rural Urban Fringe Areas of China, Indonesia and Sri Lanka
Duration: 1 December 2007 to 31 December 2008
Project Investigator: Prof. C. Visvanathan
Sponsor: Institute for Global Environmental Strategies, Japan
Total Contracted Amount: (Baht) 753,000

Effective Sanitation Systems through Stakeholder Involvement: A Case Study of Fecal Sludge Management in Thailand
Duration: 1 July 2007 to 30 September 2008
Project Investigator: Dr. Thammarat Koottatep
Sponsor: National Center for Competence in Research (NCCR), Switzerland
Total Contracted Amount: (Baht) 1,350,000

Enhanced Urban Water Pollution Abatement Function of Bang Pu Nature Reserve through multiple approach
Duration: 1 July 2007 to 30 June 2008
Project Investigator: Dr. Oleg Shipin
Sponsor: SEA-UEMA / CIDA Project
Total Contracted Amount: (Baht) 636,400

Industrial and Hazardous Waste Treatment and Management Project

Duration: 1 January 2004 to 30 June 2008
 Project Investigator: Prof. Ajit P. Annachatre
 Collaborating Institutes: Agharkar Research Institute, India; Center for Pulp and Paper, Indonesia; Universiti Kebangsaan Malaysia, Malaysia; De la Salle University, Manila, Philippines; University of Moratuwa, Sri Lanka
 Sponsor: Sida

Industrial Environmental Management at Thai

Duration: 1 July 2007 to 31 July 2008
 Project Investigator: Prof. C. Visvanathan
 Sponsor: Thai Ambrica Chemicals Co. Ltd
 Total Contracted Amount: (Baht) 575,000

Industrial Wastewater Reuse and Reclamation

Duration: 15 June 2007 to 14 June 2008
 Project Investigator: Prof. C. Visvanathan
 Sponsor: Kumoh National Institute of Technology (KIT), Korea
 Total Contracted Amount: (Baht) 87,375

Inter Laboratory Comparison for Implementing Phase III of the Male Declaration

Duration: 1 June 2007 to 31 December 2008
 Project Investigator: Dr. Nguyen Thi Kim Oanh
 Sponsor: UNEP RRC.AP
 Total Contracted Amount: (Baht) 703,020

Low-Cost Treatment of Septage by Constructed Wetlands and Pond Systems in Tropical Regions

Duration: 1 August 1996 to 31 December 2008
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: Swiss Federal Institute for Environmental Science and Technology (SANDEC)
 Total Contracted Amount: (Baht) 6,993,981

MIRI-AIT Inventory Profiling on 3R Good Practices

Duration: 18 February 2008 to 20 November 2008
 Project Investigator: Prof. C. Visvanathan
 Sponsor: Mitsubishi Research Institute (MIRI)
 Total Contracted Amount: (Baht) 638,155

Rapid Assessment of drinking water quality in the BCI Pilot Site, Yunnan, PRC

Duration: March to November 2008
 Project Investigators: Prof. Ajit P. Annachatre
 Sponsor: Asian Development Bank (ADB)
 Total Contracted Amount: (USD) 27,000

Swedish Resource Persons under ARRPETII

Duration: 1 January 2004 to 30 June 2008
 Project Investigator: Prof. Ajit P. Annachatre
 Sponsor: Sida
 Total Contracted Amount: (SEK) 681,000

Water Supply and Waste Disposal project of the WHO Collaborating Centre at AIT

Duration: 6 January 2005 to 6 October 2008
 Project Investigators: Dr. Oleg Shipin, Dr. Preeda Parkpian (Co-PI)
 Sponsor: World Health Organization (WHO)
 Total Contracted Amount: (Baht) 1,160,061

19.5 On-going Grants and Sponsored Research

3R Knowledge Hub

Duration: 10 October 2006 to 31 December 2009
 Project Investigator: Prof. C. Visvanathan
 Sponsor: Asian Development Bank
 Total Contracted Amount: (Baht) 4,681,000

A Euro-Asia Partnership for the Development of Human Resource Capacity for Engineering in Afghanistan

Duration: 15 September 2008 to 31 December 2010
 Project Investigator: Dr. Oleg Shipin
 Sponsor: European Commission
 Total Contracted Amount: (Baht) 4,231,730

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II - Coordination

Duration: 1 January 2004 to 31 March 2010
 Project Investigator: Prof. Ajit P. Annachatre
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 8,999,735

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II – Swedish Resource Persons

Duration: 1 January 2004 to 31 March 2010
 Project Investigator: Prof. Ajit P. Annachatre
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 3,405,000

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II - Workshops

Duration: 1 January 2004 to 31 March 2010
 Project Investigator: Prof. Ajit P. Annachatre
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 8,827,225

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II – AIT Air Pollution

Duration: 1 January 2004 to 31 March 2010
 Project Investigators: Dr. Nguyen Thi Kim Oanh, Prof. Chongrak Polprasert
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 10,012,643

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II – NRI Air Pollution

Duration: 1 January 2004 to 31 March 2010
 Project Investigators: Dr. Nguyen Thi Kim Oanh, Prof. Chongrak Polprasert
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 28,262,965

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II – AIT Hazardous Waste

Duration: 1 January 2004 to 31 March 2010
 Project Investigator: Prof. Ajit P. Annachatre
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 9,327,400

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II – NRI Hazardous Waste

Duration: 1 January 2004 to 31 March 2010
 Project Investigator: Prof. Ajit P. Annachatre
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 29,492,630

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II – AIT Solid Waste

Duration: 1 January 2004 to 31 March 2010
 Project Investigator: Prof. C. Visvanathan
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 8,258,700

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II – NRI Solid Waste

Duration: 1 January 2004 to 31 March 2010
 Project Investigator: Prof. C. Visvanathan
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 20,498,695

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II – AIT Wastewater

Duration: 1 January 2004 to 31 March 2010
 Project Investigator: Prof. Ajit P. Annachatre
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 8,599,710

Asian Regional Research Programme on Environmental Technology (ARRPET): Phase II – NRI Wastewater

Duration: 1 January 2004 to 31 March 2010
 Project Investigator: Prof. Ajit P. Annachatre
 Sponsor: Swedish International Development Cooperation Agency, Sweden
 Total Contracted Amount: (Baht) 24,641,185

Capacity Strengthening on Hazardous Chemicals Management

Duration: 1 January 2007 to 31 December 2009
 Project Investigators: Dr. Nguyen Thi Kim Oanh, Prof. Chongrak Polprasert
 Sponsor: The Norwegian Ministry of Foreign Affairs
 Total Contracted Amount: (Baht) 23,732,687

Determination of Greenhouse Gases Emission from Anaerobic Digester Treating Fecal Sludge

Duration: 1 August 2008 to 31 March 2009
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: Department of Health, Ministry of Public Health, Thailand
 Total Contracted Amount: (Baht) 200,000

Determining Factors of Groundwater use and Its Quality in Nakomprathom and Samutsakorn Provinces

Duration: February 2009 to December 2009
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: Thai Tap Water Supply Public Company Ltd., Thailand
 Total Contracted Amount: (Baht) 1,952,200

Effective Sanitation Systems through Stakeholder Involvement: A Case Study of Faecal Sludge Management in Thailand

Duration: 2007 to 2009
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: Partnership Action for Mitigating Syndromes (PAMS) project through the Swiss Federal Institute for Environmental Science and Technology (EAWAG), Switzerland
 Total Contracted Amount: (CHF) 50,000

Environmental Sanitation and Urban Agriculture

Duration: 25 September 2002 to 31 December 2009
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: Department of Water and Environmental Sanitation in Developing Countries (SANDEC), Switzerland
 Total Contracted Amount: (Baht) 21,329,791

Investigation on the Impacts of Urban-Rural Air Pollution on Air Quality and Climate in Southeast Asia

Duration: 1 December 2006 to 31 December 2009
 Project Investigator: Dr. Nguyen Thi Kim Oanh
 Sponsor: Asia Pacific Network (APN) for Global Change Research
 Total Contracted Amount: (Baht) 2,134,800

Management and Reuse of Oil and Grease Wastes

Duration: 28 January 2008 to 31 May 2009
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: Pollution Control Department, Ministry of Natural Resources and Environment, Thailand
 Total Contracted Amount: (Baht) 1,493,827

Membrane Hybrid System for Removal of PFOS and PFOA in Industrial Wastewater: Application of Conventional Adsorbents and Nano Particles

Duration: 1 October 2008 to 31 May 2009
 Project Investigator: Prof. C. Visvanathan
 Sponsor: New Energy and Industrial Technology Development Organization (NEDO), Mahidol University, Thailand
 Total Contracted Amount: (Baht) 700,000

National Center of Competence in Research North-South: IP3 Environmental Sanitation and Urban Agriculture

Duration: 2005 to 2009
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: Swiss Federal Institute for Environmental Science and Technology (EAWAG), Switzerland
 Total Contracted Amount: (CHF) 365,000

Phyto-Bioremediation for VOCs at Contaminated Site

Duration: 1 November 2007 to 30 April 2010
 Project Investigators: Prof. Chongrak Polprasert, Dr. Preeda Parkpian
 Sponsor: NEDO/ Shimizu Corporation Japan
 Total Contracted Amount: (Baht) 1,080,000

R+D in Fecal Sludge (FS) Treatment – Technology Development and Capacity Building for Improved Excreta Disposal in Developing Countries

Duration: 2005 to 2009
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: Velux Foundation, Switzerland, in collaboration with the Swiss Federal Institute for Environmental Science and Technology (EAWAG), Switzerland
 Total Contracted Amount: (CHF) 62,800

Real Time PCR Diagnostic Kit for Giardia and Cryptosporidium parasites

Duration: 1 August 2008 to 31 July 2009
 Project Investigator: Dr. Oleg Shipin
 Sponsor: NIH USA
 Total Contracted Amount: (Baht) 2,207,700

Reuse Potentials and Management of Oil and Grease Wastes

Duration: 1 January 2008 to 31 March 2009
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: Pollution Control Department, Ministry of Natural Resources and Environment, Thailand
 Total Contracted Amount: (Baht) 1,500,000

Septage Treatment in Constructed Wetlands and Attached-Growth Waste Stabilisation Ponds

Duration: 2006 to 2009
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: Swiss Federal Institute for Environmental Science and Technology (EAWAG), Switzerland (Phase 6)

Total Contracted Amount: (CHF) 35,330

Sustainable Wastewater Management in Tsunami-Hit Area through People Participation: A Case Study at Phi Phi Island

Duration: 15 January 2008 to 31 March 2009
 Project Investigator: Dr. Thammarat Koottatep
 Sponsor: SEA-UEMA / CIDA Project
 Total Contracted Amount: (USD) 14,995

SWOP Analysis of Eco-industrial Clusters in China, Indonesia and Sri Lanka

Duration: 1 August 2008 to 31 December 2009
 Project Investigator: Prof. C. Visvanathan
 Sponsor: Institute for Global Environmental Strategies, Japan
 Total Contracted Amount: (Baht) 1,500,000

Wastewater Reuse and Recycling for Industrial, Domestic and Agricultural Sectors in Thailand

Duration: 1 May 2007 to 31 March 2009
 Investigator: Dr. Thammarat Koottatep
 Sponsor: Pollution Control Department, Ministry of Natural Resources and Environment, Thailand
 Total Contracted Amount: (Baht) 9,500,000

19.6 Publications

Refereed Journals:

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- Dinh Thi Hai Van and **N.T. Kim Oanh**, “Open top chamber experiment study to assess effects of ground level ozone on local peanut cultivar in Vietnam”, *International Journal for Environmental Studies*, (in press), 2008.
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- Hai-Lin Wang, Ya-Hui Zhuang, Zheng-Ping Hao, Mei-Qiu Cao, Jin-Xian Zhong, Xiao-Ke Wang and **N.T. Kim Oanh**, “Polycyclic aromatic hydrocarbons from rural household biomass burning in a typical Chinese village”, *Science in China Series D: Earth Sciences*. V 51, No. 7, 1-8, 2008.
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- Jegatheesan, V., Weragoda, S. and **C. Visvanathan**, “Rapid Water Quality Characterization for Chlorine Demand and THM formation in Drinking Water”, *Journal of Water Supply: Research and Technology – AQUA*, 57 (4), 259-272, 2008.
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Bui Xuan Thanh, Spérandio, M., Guigui, C., Ben Aim, R., Junfeng Wan and **C. Visvanathan**, “Coupling sequencing batch airlift reactor (SBAR) and membrane filtration: Influence of nitrate removal on sludge characteristics, effluent quality and filterability”, *Conference on Membranes in Drinking Water Production and Wastewater Treatment*, 20-22 October 2008, Toulouse, France.

Clasen T.F., Thao Do Hoang, Boisson S. and **Shipin O.** “Microbiological Effectiveness and Cost of Boiling to Disinfect Drinking Water in Rural Vietnam: Ascertaining the Benchmark in Household Water Treatment”, Presented at the 2008 International Symposium on Household Water Management and the Fourth Annual Global Meeting of the International Network to Promote Household Water Treatment and Safe Storage, 2-5 June 2008, Accra, Ghana.

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Conferences, Seminars and Workshops

A.P. Annachhatre, Alexander von Humboldt Colloquium, Workshop on “University versus Industry – Cooperation or Competition”, New Delhi, India, 1-2 November 2008.

A.P. Annachhatre, Workshop I (Project Inception) for the project, “*Environmental Pollution and Waste Management in the BCI Pilot Site in Yunnan, PRC: Rapid Assessment with focus on Drinking Water Safety and Rural Livestock Waste Management*” project, Yunnan Environmental

Protection Bureau, Yunnan, People’s Republic of China, 16-17 June 2008.

A.P. Annachhatre, Workshop II (Discussion on Findings from field visit) for the project, “*Environmental Pollution and Waste Management in the BCI Pilot Site in Yunnan, PRC: Rapid Assessment with focus on Drinking Water Safety and Rural Livestock Waste Management*”, Asian Institute of Technology, Thailand, 20 September 2008.

A.P. Annachhatre, Workshop III (Dissemination Workshop) for the project, “*Environmental Pollution and Waste Management in the BCI Pilot Site in Yunnan, PRC: Rapid Assessment with focus on Drinking Water Safety and Rural Livestock Waste Management*”, Jing Hong City, Xishuangbanna, Yunnan Province, PR China, 30 October 2008.

C. Polprasert and N.T. Kim Oanh, co-organized within the “Capacity strengthening for hazardous chemical project” a 1 week international training course on “Hazardous chemical management”, Ho Chi Minh City, Vietnam, 27-31 October 2008.

N.T. Kim Oanh, co-organized (with China counterpart of AIRPET, within the framework of AIRPET project) the “AIRPET regional workshop” in Beijing and Shanghai, People’s Republic of China, 13-17 May 2008.

N.T. Kim Oanh, co-organized the APN data workshop for the project “Investigation on the impacts of urban-rural air pollution on air quality and climate in Southeast Asia” Halong, Vietnam, 10-12 October 2008 (in cooperation with the Vietnam Partner).

N.T. Kim Oanh, co-organized the international workshop on “ABC Emission Inventory”, Asian Institute of Technology, Thailand, 17-18 November 2008 (together with Prof. R.M. Shrestha and Dr. R.P. Shrestha).

N.T. Kim Oanh, organized 2 week training course on “Air pollution and deposition monitoring” for Bangladesh participants, Asian Institute of Technology, Thailand, under the UNEP-Male’s Declaration, 11-25 March 2008.

N.T. Kim Oanh, organized a sub-workshop “Black carbon - an air quality and climate change issue” within the BAQ08, Bangkok, Thailand, 12-14 November 2008.

N.T. Kim Oanh, organized international workshop “Near-Roadway and On-Road Exposures to Air Pollution: Risk Communication and Decision Making” (collaborated with the East-West Center, Hawaii), Asian Institute of Technology, Thailand, 9-11 November 2008.

T. Koottatep, Member of Program Committee, “An International Perspective on Environmental and Water Resources” in collaboration with the Environmental & Water Resources Institute, American Society of Civil Engineers (ASCE), Bangkok, Thailand, 5-7 January 2009.

T. Koottatep, Member of the Scientific Committee, 8th IWA Specialist Group Conference on Waste Stabilization Ponds, Belo Horizonte, Brazil, 26-30 April 2009.

19.7 Doctoral Students' Dissertation

Environmental Engineering & Management

Comparative Study of Integrated Constructed Wetland Systems Employing Oyster Shells and Alum Sludge as the Filter Media for Phosphorus Removal
By Woo Ha Park
Supervisor: Prof. Chongrak Polprasert / Prof. Chettiyappan Visvanathan

Engineering Conditions of Constructed Wetlands for Cadmium Removal and Toxicity Reduction
By Varangkana Visesmanee
Supervisor: Prof. Chongrak Polprasert / Dr. Jutamaad Satayavivad

Evaluation of Rehabilitation and Mining Potential of A Municipal Solid Waste Dumpsite
By Tawach Prechthai
Supervisor: Prof. Chettiyappan Visvanathan/ Dr. Jutamaad Satayavivad

Exposure Assessment and Remediation Options of Mercury for Small-Scale Gold Mining: A Case Study in Phichit Province, Thailand
By Soontree Umbangtalad
Supervisor: Dr. Preeda Parkpian / Prof. Chettiyappan Visvanathan

Immunotoxicity of Methylmercury: Non-Neuronal Lymphocytic Cholinergic System as a Potential Target
By Tawit Suriyo
Supervisor: Dr. Jutamaad Satayavivad/ Dr. Preeda Parkpian/ Dr. Sansanee Chaiyaroj

Influence of Hydrodynamic and Physico-Chemical Approaches on Fouling Mitigation in a Membrane Bioreactor
By Sher Jamal Khan
Supervisor: Prof. Chettiyappan Visvanathan

Photochemical Modeling for Prediction of Ground-Level Ozone over the Continental Southeast Asia Region to Assess Impact on Rice Crop Yield
By Le Hoang Nghiem
Supervisor: Dr. Nguyen Thi Kim Oanh

Physiological Study of Ferric Uptake Regulator (FUR) Gene in Agrobacterium Tumefaciens
By Worawan Kitphati
Supervisor: Prof. Skorn Mongkolsuk/Dr. Preeda Parkpian

Potential Exposure to Airborne Pesticides in Homes: A Case Study in Bangkok Metropolitan Region, Thailand
By Prapat Pentamwa
Supervisor: Dr. Nguyen Thi Kim Oanh

Quantitative Microbial Risk Assessment in a Tropical Canal Network: A Case Study of Thailand
By Mamadou Billo Cherif Diallo
Supervisor: Dr. Oleg Shipin

Removal of Lead from Wastewater Using an Anaerobic Sulfate Reduction Process
By Paphungkorn Teekayuttasakul
Supervisor: Prof. Ajit Annachhatre

The Anammox Process for Nitrogen Removal from Seafood Processing Industrial Wastewater
By Apipong Lamsam
Supervisor: Prof. Ajit Annachhatre

The Development of Assessment Procedure for Exposure to Open Rice Straw Burning Emission: A Case Study of School Children in Thailand
By Aungsiri Klinmalee
Supervisor: Dr. Nguyen Thi Kim Oanh

Environmental Toxicology, Technology and Management

Application of Dielectrophoretic Field – Flow Fractionation in Environmental Studies
By Sittisak Pui-ock
Supervisor: Dr. Mathuros Ruchiwarat/Dr. Peter Gascoyne/Dr. Preeda Parkpian

Exposure to Benzene, Oxidative DNA Damage and Genetic Polymorphisms among Urban and Rural Schoolchildren
By Nantaporn Buthbumrung
Supervisor: Dr. Khunying Mathuros Ruchirawat/Dr. Herman Auturp/Prof. Chongrak Polprasert

19.8 Masters Students' Theses

A Comparative Study of Airborne Polycyclic Aromatic Hydrocarbons in Bangkok and Seoul

By Chonthicha Saksuphak
Supervisor: Dr. Nguyen Thi Kim Oanh / Dr. Gwi-Nam Bae

Anaerobic Digestibility of Ultrasound and Chemical Pretreated Waste Activated Sludge

By Seng Bunrith
Supervisor: Prof. Chettiyappan Visvanathan

An Assessment of Heavy Metal Focusing on Cadmium Uptake by Food Crops and Vegetables Grown in the Greater Bangkok Metropolitan Region, Thailand

By Thach Huynh Thi Thu Trang
Supervisor: Dr. Preeda Parkpian

Application of Water Pinch Analysis for Industrial Water Reuse: Case Studies in Rayong Province, Thailand

By Nguyen Thi Mai Thanh
Supervisor: Dr. Thammarat Koottatep

Assessment of Atmospheric Impact of POPs Emission from the Cement Industry: A Case Study of Siamcity Cement Company, Thailand

By Artid Prakitcharoensuk
Supervisor: Dr. Nguyen Thi Kim Oanh

Bioremediation of Sites Contaminated with P, P'-Dichlorodiphenyl Trichloroethane (DDT)

By Tran Thi Thanh Thuy
Supervisor: Prof. Ajit Annachhatre

Bioremediation of Soil Contaminated with Endosulfan Using Cycling Anaerobic and Aerobic Soil Column Bioreactors

By Chaloemchai Nakkhwan
Supervisor: Prof. Ajit Annachhatre

Characterization and Modeling of Land Site Contaminated with Endosulfan

By Teerawuth Suwannasri
Supervisor: Prof. Ajit Annachhatre

Characterization of Atmospheric Particles for Source Apportionment

By Lalitcha Imchuenstri
Supervisor: Dr. Nguyen Thi Kim Oanh

Comparison of Nitrogen Removal between Conventional Membrane Bioreactor and Attached Growth Membrane Bioreactor

By Pradeep Chaminda Munasinghe
Supervisor: Prof. Chettiyappan Visvanathan

Copper Transformation and Distribution in a Small Scale Gold Mining Area: Case Study of Phichit Province

By Sarun Thanavibulsate
Supervisor: Dr. Preeda Parkpian

Defoliant Agent Application during the United States-Vietnam War and Potential Longterm Environmental Effects

By Tran Thu Trang
Supervisor: Dr. Nguyen Thi Kim Oanh

Determination of Primary and Secondary Organic Aerosols in the Bangkok Metropolitan Region with the Focus on Water Soluble Organic Carbon

By Bidur Dahal
Supervisor: Dr. Nguyen Thi Kim Oanh

Dry Continuous Anaerobic Digestion of Municipal Solid Waste in Thermophilic Conditions

By Binod Kumar Chaudhary
Supervisor: Prof. Chettiyappan Visvanathan

Evaluation of Activated Sludge with Partial Nitrification Process for Treatment of Surimi Processing Wastewater

By Jindaporn Ittarat
Supervisor: Prof. Ajit Annachhatre

Evaluation of a Multifunctional Mangrove-Based Wetland in the Samut Prakarn Province (Bang Pu Nature Reserve)

By Alisa Khunchornyakong
Supervisor: Dr. Oleg Shipin

Feasibility of Clean Development Mechanism (CDM) Application for Municipal Solid Waste Management in Dong Nai Province, Vietnam

By Dang Thi Thuy Duong

Supervisor: Prof. Chongrak Polprasert

Feasibility Study of Solid and Hazardous Wastes Destruction through Co-Processing in Cement Kilns

By Narasak Chotchamlong
Supervisor: Prof. Chongrak Polprasert

Herbicide Application and Environmental Pollution in Peri-Urban of Vientiane, Lao PDR

By Somsanith Duangpaseuth
Supervisor: Dr. Preeda Parkpian

Hydrogen Gas Production from the Electrochemical Precipitation Process Treating Textile Wastewater

By Huynh Minh Khai
Supervisor: Dr. Thammarat Koottatep

Improvement of the Quantum Dot-Based Fish Technique and its Application for Identification of Microorganisms in Water

By Quail Das
Supervisor: Dr. Oleg Shipin / Dr. Joydeep Dutta

Investigating Household Drinking Water Treatment Preferences in Bangladesh Using the Repertory Grid Methodology

By Subarna Sharmin
Supervisor: Dr. Oleg Shipin

Investigating Household Drinking Water Treatment Preferences in Vietnam using Repertory Grid Methodology

By Hoang Ngoc Tuong Van
Supervisor: Dr. Oleg Shipin

Investigation on Simultaneous Nitrification/Denitrification and Fouling of an Aerobic Granular Membrane Airlift Bioreactor

By Prashanthini Vijayalayan
Supervisor: Prof. Chettiyappan Visvanathan

Mitigation of Anthropogenetic Impacts and Quality Enhancement for Remnant Mangrove Ecosystem in Central Vietnam (Hoi An City)

By Nguyen Quoc Nghi
Supervisor: Dr. Oleg Shipin / Dr. Carl Erik H.Berg

<p><i>Nanoparticle-Based Development of Selected Innovative Nucleic Acid-Related Microbiological Methodologies</i> By Cesar Ortinero Supervisor: Dr. Oleg Shipin / Dr. Joydeep Dutta</p>	<p><i>Potential for the Conversion of a Waste Stabilization Pond System into an Integrated Pond Wetland System for the Treatment of Wastewater in Udon Thani</i> By Chansanouk Khounnouvong Supervisor: Dr. Oleg Shipin</p>	<p><i>The Effect of Diazinon Pesticide on Cholinesterase Enzyme Activity of Common Carp in Vietnam</i> By Chau Thi Kim Thoa Supervisor: Dr. Preeda Parkpian</p>
<p><i>Nitrogen Removals in Vertical Flow Constructed Wetland with Low-Cost Substrata Treating Fecal Sludge</i> By La Thien Luan Supervisor: Dr. Thammarat Koottatep</p>	<p><i>Potential of Clean Development Mechanism (CDM) Activities for Greenhouse Gases Reduction at a Starch-Processing Factory in Thailand</i> By Suthirat Kittipongvisee Supervisor: Prof. Chongrak Polprasert</p>	<p><i>The Efficiency of Andrographolide in Attenuating Cadmium-Induced Hepatotoxicity in Rats</i> By Watanyoo Nakareangrit Supervisor: Dr. Preeda Parkpian</p>
<p><i>Performance Evaluation of Anaerobic Digestion of Municipal Solid Waste: A Case Study of Rayong Municipality, Thailand</i> By Warangkana Jutidamrongphan Supervisor: Prof. Chongrak Polprasert</p>	<p><i>Potential of Domestic Wastewater Reuse in Vietnam: A Case Study of Wastewater-Fed Fish Ponds in Yen So Commune, Hanoi City</i> By Tran Quang Toan Supervisor: Dr. Thammarat Koottatep</p>	<p><i>Treatability Studies on the Wastewater from a Dye Manufacturing Industry</i> By Jarussaeng Molen Supervisor: Prof. Chettiyappan Visvanathan</p>
<p><i>Performance Evaluation of Duckweed-Based Wastewater Treatment (DUBWAT) System in Degrading Endocrine Disruptor</i> By Katevadee Phrukepattanapong Supervisor: Prof. Chongrak Polprasert</p>	<p><i>Removal Kinetics of Bisphenol-A and Mass Balance Analysis in Subsurface Flow Constructed Wetlands</i> By Cao Thi Van Hau Supervisor: Prof. Chongrak Polprasert</p>	<p><i>Treatment of Surface Water and Municipal Wastewater by Hybrid Ceramic Microfiltration Systems</i> By Le Anh Tuan Supervisor: Prof. Chettiyappan Visvanathan</p>
<p><i>Phosphorus Recovery from Wastewaters through Struvite Formation</i> By Patiya Kemacheevakul Supervisor: Prof. Chongrak Polprasert</p>	<p><i>Removal of Gaseous Air Pollutants Using Chemically Impregnated Activated Carbon</i> By Sukanya Kiatphaungchai Supervisor: Dr. Nguyen Thi Kim Oanh</p>	<p><i>Upflow Anaerobic Sludge Blanket (UASB) Process for Surimi Wastewater Treatment and Reduction of Greenhouse Gas Emissions</i> By Parinda Doungsri Supervisor: Prof. Ajit Annachhatre</p>
<p><i>Photochemical Smog Modeling for Ozone Air Quality Management in Ho Chi Minh City, Vietnam</i> By Tran Nguyen Quang Huy Supervisor: Dr. Nguyen Thi Kim Oanh</p>	<p><i>Removal of Linear Alkylbenzene Sulfonate (LAS) from Greywater by Using Constructed Wetlands</i> By Huynh Thi Cam Hong Supervisor: Dr. Thammarat Koottatep</p>	
<p><i>Pilot Scale Anammox Process for the Treatment of Surimi Processing Wastewater</i> By T.M.W.R.M.B. Samarakoon Supervisor: Prof. Ajit Annachhatre</p>	<p><i>Roadside Air Quality in Ho Chi Minh City and Vehicle Emission Estimation by Back Calculation</i> By Nguyen Tran Huong Giang Supervisor: Dr. Nguyen Thi Kim Oanh</p>	
<p><i>Pilot-Scale Biological Sulfide Oxidation Process for Treating Effluent from Thai Rayon Industry</i> By Maung Myo Kyaw Supervisor: Prof. Ajit Annachhatre</p>	<p><i>Sequential Dry Batch Anaerobic Digestion of the Organic Fraction of Municipal Solid Waste</i> By Nguyen Quang Huy Supervisor: Prof. Chettiyappan Visvanathan</p>	
<p><i>Potential Bioavailability of POPs in Lake Sediment under Tropical Conditions: A Case Study of Mae Thang Reservoir, Northern Thailand</i> By Pannawee Mekwichai Supervisor: Dr. Preeda Parkpian</p>	<p><i>Sustainable Solid Wastes Management Action Plan for Ulaanbaatar, Mongolia</i> By Ariunbaatar Javkhlan</p>	

Chapter 20: SERD – FOOD ENGINEERING AND BIOPROCESS TECHNOLOGY FIELD OF STUDY

20.1 Introduction

This field of study is focused on the application of bioconversion in various sectors of industry and agriculture. These include food processing, aquaculture, environmental engineering, paper and textile manufacturing, cosmetics and health care. BPT focuses on the application of microorganism and enzymes to meet the demands of the developing countries of the region. FE focuses on the systems for handling, processing and storage of both durable and perishable food products in developing small- scale food processing technologies. Emphasis is also placed on the determination of material properties; design and development of new processes and related equipment; and computer modeling and simulation of postharvest and food processing operations.

20.2 Faculty and Research Staff

Full-time Faculty

ATHAPOL NOOMHORM, BSc, Kasetsart Univ, Thailand; MEng, Lamar Univ, Texas; PhD, Louisiana State Univ, USA.

Professor (Agro-Industrial Development; Food Process Technology; Post Harvest Technology)

SUDIP KUMAR RAKSHIT, BSc, Loyola College; BTech, Jaavpur Univ, India; MTech, PhD, Indian Inst of Tech, India

Professor (Biochemical Engineering and Biotechnology; Biopolymers and Lipid Biotechnology; Fermentation and Enzyme Technology; Food Biotechnology; Functional Foods)

20.3 Grants and Sponsored Research Completed in 2008

Advanced International Training Programme Putting Ideas to Work- Strategies for Innovation-led Sustainable Growth

Duration 1-Mar-08 31-Dec-08
Project Investigator Sudip Kumar Rakshit
Sponsor Swedish Governmental Agency for Innovation Systems (VINNOVA)
Total Contracted Amount (Baht) 778,009

Development of Rapid Methods for the Detection of Pathogens in Aquatic Food

Duration 1-Feb-06 30-Jun-08
Project Investigator Sudip Kumar Rakshit
Sponsor RTG
Total Contracted Amount (Baht) 830,000

Food Industry Innovation in Thailand

Duration 1-Jan-08 31-Dec-08
Project Investigator Sudip Kumar Rakshit
Sponsor Food and Agriculture Organization
Total Contracted Amount (Baht) 480,000

International Conference on Innovations in Food and Bioprocess Technologies

Duration 1-Jun-06 31-Jan-08
Project Investigator Sudip Kumar Rakshit, Binod Yadav
Sponsor Participants
Total Contracted Amount (Baht) 570,000

Post harvest training course

Duration 7-Dec-07 31-Dec-08
Project Investigator Athapol Noomhorn
Sponsor The State Polytechnic of Jember, Indonesia
Total Contracted Amount (Baht) 168,000

Technology for Probiotic Production and Feed Formulation Containing Viable Beneficial Organisms for Enhanced Healthy Production

Duration 1-Jun-07 30-Jun-08
Project Investigator Sudip Kumar Rakshit
Sponsor BIOTEC, NSTDA, RTG
Total Contracted Amount (Baht) 107,000

The Compilation of Technical and Business Information for mangosteen and holy basil

Duration 1-Jan-08 31-May-08
Project Investigator Athapol Noomhorn

Sponsor National Innovation Agency, Ministry of Science and Technology, RTG
Total Contracted Amount (Baht) 100,000

20.4 On-going Grants and Sponsored Research

AIT Support to National University (2007-2010)-Research

Duration 1-Jun-07 31-Dec-10
Project Investigator Sudip Kumar Rakshit
Sponsor Swedish International Development Cooperation Agency, Sweden
Total Contracted Amount (Baht) 3,252,400

Enabling Bio-innovation for poverty alleviation in Asia

Duration 8-Mar-08 31-Dec-11
Project Investigator "Sudip Rakshit, Bernadette Resurreccion, Edsel Sajor Sponsor International Development Research Centre, Canada
Total Contracted Amount (Baht) 17,232,280

International Conference on Innovations in Food Process Technology and Engineering 2008

Duration 1-Aug-08 31-Mar-09
Project Investigator Athapol Noomhorn
Sponsor Participants
Total Contracted Amount (Baht) 650,000

Linking Thai Jasmine Rice Farmers with Markets using Participatory action research for sustainability of rain-fed lowland rice-based system in Northeast Thailand

Duration 1-Jan-08 31-Dec-10
Project Investigator Prabhat Kumar, Sudip Rakshit
Sponsor Consultative Group on International Agricultural Research CGIAR World Bank
Total Contracted Amount (Baht) 8,262,000

Molecular Identification of Novel Cellulase from Buffalo Rumen

Duration 15-Oct-08 15-Oct-09
Project Investigator Sudip Rakshit
Sponsor RTG
Total Contracted Amount (Baht) 900,000

Networking with French speaking French, Vietnamese and Cambodian universities in the area of bioconversion of lignocellulose residues to ethanol

Duration 1-Jan-08 31-Dec-09
Project Investigator Sudip Kumar Rakshit

Sponsor Agence Universitaire de la Francophonie (AUF)
Total Contracted Amount (Baht) 1,000,000

Networking with Norwegian and Regional Institutions in Energy Issues (South-South-North Networking): 2006-2009

Duration 1-Aug-06 31-Dec-09
Project Investigator S Kumar, Ram Shrestha, Animesh Dutta
Sponsor Norwegian Ministry of Foreign Affairs
Total Contracted Amount (Baht) 4,140,000

Organic Symposium and Regional Workshop

Duration 1-Sep-08 30-Apr-09
Project Investigator Athapol Noomhorm
Sponsor National Innovation Agency, Ministry of Science and Technology, RTG
Total Contracted Amount (Baht) 2,046,188

Production of Germinated Brown Rice using Thai Rice Variety (KMDL 105)

Duration 1-Nov-08 31-Oct-09
Project Investigator Athapol Noomhorm
Sponsor RTG
Total Contracted Amount (Baht) 820,000

Production of instant rice using combined microwave fluidized bed drying

Duration 1-Nov-08 31-Oct-09
Project Investigator Athapol Noomhorm
Sponsor RTG
Total Contracted Amount (Baht) 2,000,000

Sustainability Workshops: Spreading Awareness through intensive program on Sustainability

Duration 1-Jul-08 31-Jan-09
Project Investigator Athapol Noomhorm
Sponsor University of Tokyo, Japan
Total Contracted Amount (Baht) 990,960

20.5 Publications

Refereed Journals

K.. Jeyagowri, Alfredo J. Anceno and S.K.Rakshit. Production, purification and characterization of Bacillus sp. GRE7 xylanase and its application in eucalyptus Kraft pulp biobleaching", accepted for publication in World Journal of Microbiology, Vol. 24., Number 5, pp. 605-612, 2008.

Nitayavardhana, S., Rakshit, S. K., Grewell, D. Van Leeuwen, J. and Khanal, S. K. Ultrasound

pretreatment of cassava chips to enhance sugar release for subsequent ethanol production. *Biotechnology and Bioengineering*, 101 (3) : 487-496, 2008

Noomhorm, A and Imran Ahmad. (2008). Food supply chain management and food safety: South&East-Asia scenario. *Agricultural Information Research*, 17(4), 2008.

Rakshit, S. K. Effect of alpha keto glutatate on monoclonal antibody production of anchorage Dependant and anchorage independent cell lines in serum free and serum containing edium. *Applied Biochemistry and Biotechnology*. Volume 151, Numbers 2-3, pp 489-501 December, 2008

Rittichai Assawarachan and Athapol Noomhorm. (2008). Effect of operating condition on the kinetic of color change of concentrated pineapple juice by microwave vacuum evaporation. *J. of Food, Agriculture and Environment*, Vol6(3&4).

S. Parnsakhorn and A. Noomhorm (2008) Changes in Physicochemical Properties of Parboiled Brown Rice during Heat Treatment; *Agricultural Engineering International: the CIGRE-journal*. Manuscript FP 08 009. Vol. X. August, 2008.

Sutee Wangtueai and Athapol Noomhorm (2008) Processing Optimization and Characterization of Gelatin from Lizardfish (*Saurida* spp.) Scales. *LWT Journal* Volume 40, Issue 10, December 2008

Suthasinee Nilsang, Kutty Selva Nanda Kumar, Igor Yu. Glaev, Sudip Kumar Rakshit, Rikard Holmdaht, Bo Mattiasson and Ashok Kumar, Three Dimensional Culture for Monoclonal Antibody Production by Hybridoma Cells Immobilized cells in Macroporous Gel Particles. *Biotechnology Progress*, 24(5):1122-31.2008

Conference Proceedings

A. Noomhorm (2008); Thailand best practices - The roadmap to developing winning solutions for the co-generation industry: Proceeding on Biomass & Residues Asia 2008 Organized by Sound Initiatives. Part of Agribusiness Conferences I Asia 2008; 25 to 28 March at the Grand Hyatt in Singapore .

W. Sangsom, I. Ahmad and A. Noomhorm: Optimization of rice supply case in Thailand – A case study of two rice mills; : Proceeding of the second international symposium on Food and Water Sustainability in Asia 2008; 7-8 October 2008 Macau, China pp87-101

Other Publications

Books and monographs

Hui, Y.H., C. Clary, M.M. Farid, O. O. Fasina, A Noomhorm and J. Welti-Chanes (2008); 'Food Drying: Science and Technology', Microbiology, Chemistry, Application: *DEStech Publications, Inc.*, 792 pg.

Book chapters

Athapol Noomhorm and Imran Ahmad (2008): Vacuum drying; Chapter 8; *Food Drying: Science and Technology', Microbiology, Chemistry, Application: DEStech Publications, Inc.*, Pg:203-214

Papers in conferences, seminar and workshops

Athapol Noomhorm and Peeyush Soni: (2008); Thai agriculture in advent of global climate change: Paper presented at TIGS Symposium 2008 organized by Transdisciplinary Initiative for Global Sustainability (TIGS), Integrated Research System for Sustainability Science(IR3S), The University of Tokyo and Department of Economics,

University of Hawaii at Manoa;
February 26th-28th, 2008

Athapol Noomhorm and
Rittichai Assawarachan (2008);
Application electromagnetic
radiation technologies in food
processing: Paper presented at
The 2nd R&DID* International
Conference – 2008; University of
the Thai Chamber of Commerce,
Bangkok, Thailand ;Theme:
Global Competitiveness Through
R&DID (R&DID* : Research and
Development, Innovation,
Design)

Reports

Noomhorm, A, J Sripinyowanich:
(2008) Overview and setting up
the website on different type of
product for business
information on Basil leaves and
Mangosteen; Report submitted
to National Innovation Agency
(NIA), Bangkok; May 2008

Noomhorm, A. (2008). Frozen
shrimp supply chain in Thailand;
Report submitted to Asian
Productivity Organization, Tokyo,
Japan; November 2008.

20.6 Masters Students' Theses and Research Studies

*Antioxidant Activity and DNA Damage
Protection by Lycopene from Fresh and
Cooked Tomato*

By Juthaluk Wongchaichana
Supervisor: Prof. Sudip K. Rakshit

*Development of a Supply Chain
Management System for Frozen Shrimp
in Thailand*

By Sivaporn Wannaiampikul
Supervisor: Prof. Athapol Noomhorm

*Effect of Drying Methods on Extracted
Triterpene Compounds for Ling-Zhi
(Ganoderma Lucidum)*

By Chutiwan Tochai
Supervisor: Prof. Athapol Noomhorm

*Effect of Packaging, Drying and Storage
on Quality of Fresh Chilli and Chilli
Powder*

By Wimaluck Loawattanatrakul
Supervisor: Prof. Athapol Noomhorm

*Effect of Young Rice Milk, Maltodextrin,
Fibrose and Rice Bran on Functional Ice
Cream*

By Prapakorn Pholsuwan
Supervisor: Prof. Athapol Noomhorm

*Evaluation of Supply Chain System for
Aromatic Rice: A Case Study in the
Northeast of Thailand for Quality,
Production and Marketing*

By Wilasinee Sangsom
Supervisor: Prof. Athapol Noomhorm

*Increased Sensitivity of a PCR for
Detecting Viable Food Borne Pathogens*

By Kim Davin
Supervisor: Prof. Sudip K. Rakshit

*Multiplex PCR for Rapid Detection of
some Seafood Pathogens*

By Phuong Thi Cuc Tran
Supervisor: Prof. Sudip K. Rakshit

*Optimization of Biodiesel Production from
Refined and Used Cooking Oil*

By Smitha Krishnan
Supervisor: Prof. Sudip K. Rakshit

*Optimization of Crystal Stick Sugar
Production from Nipa Palm Sap (Nypa
fruticans)*

By Nattha Pawasuttikul
Supervisor: Prof. Sudip K. Rakshit

*Production of Leaf Protein Concentrate
from Cassava Leaves*

By Asamaporn Juttupornpong
Supervisor: Prof. Athapol Noomhorm

*Reduction of Oil Uptake in Instant Fried
Noodles by Optimising the Frying
Conditions*

By Yuppadee Preechakul
Supervisor: Prof. Athapol Noomhorm

*Screening and Identification of
Thermostable Probiotics for Chicken Feed*

By Lalida Saeeah
Supervisor: Prof. Sudip K. Rakshit

Chapter 21: SERD – GENDER AND DEVELOPMENT STUDIES

FIELD OF STUDY

21.1 Introduction

A small project, Women in Development was initiated in the Human Settlements Development Division at AIT in the late 1980s. This grew into the Gender and Development Studies unit in 1991, with financial support from CIDA, NORAD, the Dutch Development Cooperation and the Japanese Government.

Gender and Development Studies (GDS) is a center for graduate studies, research and outreach in the School of Environment, Resources and Development. Within the overall gender specific framework, GDS highlights both the need for specialized academic degree awarding studies in gender and development, and the integration of gender analysis and a gender relations perspective in AIT's other fields of study.

21.2 Faculty and Research Staff

Full-time Faculty

BERNADETTE RESURRECCION, BSc, Assumption College, Philippines; MA, PhD, Inst of Social Studies, the Hague, the Netherlands.

Associate Professor (*Gender, environment and Natural Resource Management, Labor Migration, Governance, Urban Development*)

KYOKO KUSAKABE, BA, Sophia University, Tokyo, Japan; MSc, PhD, AIT, Thailand.

Associate Professor and SERD Associate Dean (*Women's employment in informal economy; Labor migration, Cross-border trade; Gender and development policy and planning; Gender issues in fisheries/aquaculture.*)

PHILIPPE DONEYS, B.A., University of Toronto, Canada; MA, University of London, UK; PhD, Institut d'Etudes Politiques de Paris, France.

Assistant Professor and Field Coordinator (*New Technologies, Industrialization and Gender HIV/AIDS; Gender Politics, Civil Society and Human Rights; Gender, Migration and Trafficking in Asia*)

Visiting Faculty

DONNA L. DOANE, M. A. Anthropology, M.A., M. Phil. Economics, Yale University, and Ph.D. Economics, Yale University
Visiting Faculty (*Economic Development, Gender and Development, Informal economy, home based work, social protection, technology policies, indigenous knowledge and technology blending, analyses of prejudice and discrimination, conflict, ethnicity and gender*)

JULAIKHA BENTE HOSSAIN, MSc in University of Dhaka, Bangladesh; MSc. and PhD in Asian Institute of Technology, Thailand

Project Manager and Visiting Faculty (*Gender and Development with emphasis on the policies and programmes for gender equality and women's empowerment; Gender, Employment and Organization; Gender and ICT for Development; Gender and Human Rights; Gender, Development and Public Policy; Gender Mainstreaming; Gender and Natural Resource Management*)

YAYOI SUGIHASHI, BA, MA, Hosiie University Graduate School, PhD University of Manchester, UK

Visiting Lecturer, Ochanomizu University, Japan (*Gender and economic development; Gender statistics; and Gender issues in employment*)

Research Staff

JULAIKHA BENTE HOSSAIN, MSc in University of Dhaka, Bangladesh; MSc. and PhD in Asian Institute of Technology, Thailand

Project Manager and Visiting Faculty (*Gender and Development with emphasis on the policies and programmes for gender equality and women's empowerment; Gender, Employment and Organization; Gender and ICT for Development; Gender and Human Rights; Gender, Development and Public Policy; Gender mainstreaming; Gender and Natural Resource Management*)

LADA PHADUNGKIATI, MSc. in Asian Institute of Technology, Thailand

Project Researcher (*Gender, Crossborder Migrant Workers and Citizenship: A case study of the Burmese-Thai border*)

KITTIMA LEERURUTTANAWISUT, MS in Urban and Regional Planning, Chulalongkorn University, Thailand

Research Associate (*Research on Policy processes in Biotechnology and Bio safety measures in Shrimp Farming in Thailand under IDRC on Knowledge System*)

21.3 Grants and Sponsored Research Completed in 2008

Awards for Post-Graduate Education: Gender and Development Studies with Specialization in Gender and Social Analysis in Environment and Development

Duration 1-Apr-05 28-Dec-08
Project Investigator Bernadette Resurreccion
Sponsor IDRC Canada
Total Contracted Amount (Baht) 8,778,000

Micro-vendors' Association Leadership in the Development of a solid waste management system in Daem Kor Market Phnom Penh: A process of documentation

Duration 1-Aug-07 31-Jul-08
Project Investigator Kyoko Kusakabe
Sponsor SEA-UEMA / CIDA Project
Total Contracted Amount (Baht) 32,400

Project Development on Socio-Economic Impacts and Social Inclusion in Public Policy Processes in Selected Agricultural Food Biotechnology among five Southeast Asian Countries

Duration 1-Mar-08 30-Sep-08
Project Investigator Bernadette Resurreccion, Edsel Sajor
Sponsor IDRC, Canada
Total Contracted Amount (Baht) 4,168,340

Research on Local Governance in Cambodia and India

Duration 1-Dec-06 31-Jul-08
Project Investigator Kyoko Kusakabe
Sponsor Ryukoku University
Total Contracted Amount (Baht) 311,725

21.4 On-going Grants and Sponsored Research

Capacity Building for Gender, Poverty and Mobility Analysis of Road Transportation Development in the GMS Region

Duration 1-Jan-08 01-Jul-10
Project Investigator Kyoko Kusakabe
Sponsor ASEAN Foundation
Total Contracted Amount (Baht) 10,889,238

Gender and Sustainable Development: Natural Resource Management, Migration and Multi-local Livelihoods

Duration 1-Dec-07 01-Aug-10
Project Investigator Bernadette Resurreccion

Sponsor European Commission
Total Contracted Amount (Baht) 3,098,103

Gender, Cross Border Migrant Workers and Citizenship- A Case Study of the Burmese-Thai Border

Duration 1-Nov-06 31-Oct-09
Project Investigator Kyoko Kusakabe
Sponsor IDRC
Total Contracted Amount (Baht) 10,559,630

Japanese Government - Gender and Development

Duration 1-Dec-06 31-Dec-09
Project Investigator Kyoko Kusakabe
Sponsor Japanese Government
Total Contracted Amount (Baht) 15,556,655

M-Power Research Fund

Duration 1-Jan-07 31-Dec-09
Project Investigator Bernadette Resurreccion, Edsel Sajor
Sponsor Mekong Program on Water, Environment and Resilience (M-Power)
Total Contracted Amount (Baht) 732,600

NORAD-GDS 2006-2009

Duration 1-Jan-06 31-Dec-09
Project Investigator Bernadette Resurreccion
Sponsor NORAD
Total Contracted Amount (Baht) 20,781,377

SEA-UEMA Project -Gender

Duration 1-Apr-08 31-Aug-10
Project Investigator Koyoko Kusakabe, Edsel Sajor
Sponsor CIDA-AIT/SEA-UEMA
Total Contracted Amount (Baht) 3,972,864

Socially and Gender Responsive Natural Resource Management in the Context of the Biodiversity Conservation Corridors Initiative Project

Duration 1-Jul-08 31-Jan-10
Project Investigator Julaiikha B Hossain
Sponsor Asian Development Bank
Total Contracted Amount (Baht) 3,400,000

Student Exchange Program from University of Dhaka, Bangladesh

Duration 1-Mar-07 31-Dec-09
Project Investigator Bernadette Resurreccion
Sponsor University of Dhaka, Bangladesh
Total Contracted Amount (Baht) 173,150

Training workshop for the students from Ochanomizu University, Japan

Duration 1-Jun-05 31-Dec-09
Project Investigator Kyoko Kusakabe
Sponsor Participants
Total Contracted Amount (Baht) 97,778

21.5 Publications

Books

Resurreccion, Bernadette and Elmhirst, Rebecca, eds. (2008). Gender and Natural Resource Management: Livelihoods, Mobility and Interventions. London: Earthscan and IDRC. ISBN 978-1-84407-580-5.

Chapter in Books

Kusakabe, Kyoko (2008) "Gender ideology and international borders along the borders of Thailand, Laos, Myanmar and Cambodia", in Martin Gainsborough (ed) *On the borders of state power: Frontiers in the Greater Mekong Sub-region Past and Present*, Routledge.

Kusakabe, Kyoko, Prak Sereyvath, Ubolratana Suntornratana and Napaporn Sriputinibondh (2008) "Gendered commodity chain of fish border trade from Cambodia to Thailand" in Suchada Thaweessit, Peter Vail and Rosalia Sciortino (eds.) *Transborder issues in the Greater Mekong Sub-region*, Mekong Sub-region Social Research Center, Faculty of Liberal Arts, Ubon Ratchathani University, pp.479-497.

Resurreccion, Bernadette (2008) 'Gender Mainstreaming in the Tonle Sap Region: Three Myths,' O. Varis, M. Keskinen, M Kumme (Eds), The Modern Myths on the Mekong. Helsinki: Helsinki University of Technology Press.

Resurreccion, Bernadette (2008) 'Gender, Legitimacy and Patronage-driven Participation: Fisheries Management in the Tonle Sap Great Lake, Cambodia,' In B Resurreccion and R Elmhirst (Eds) Gender and Natural Resource Management: Livelihoods, Mobility and Interventions. London: Earthscan.

Papers in Refereed Journal

Han, Chusana and Resurreccion, Bernadette (2008) "Struggling Alone. Gender, Migration and Domestic Violence among Thai Women in Bangkok, Asian Journal of Women's Studies, Vol 14 No. 1 (Ewha University Press).

Kusakabe, Kyoko (2008) "Lessons and achievements from the international workshop 'Gender and development and local needs: Networking for gender equity and locally-diverse gender needs'" (in Japanese)

Kusakabe, Kyoko, Prak Sereyvath, Ubolratana Suntornratana, and Napaporn Sriputinibondh (2008) "Gendering border spaces: Impact of open border policy between Cambodia-Thailand on small-scale women fish traders", *African and Asian Studies*, 7.1

Poh Sze Choo, Barbara S. Nowak, Kyoko Kusakabe and Meryl J. Williams (2008) "Guest editorial: Gender and Fisheries", *Development*, Vol. 51, No.2, pp.176-179.

Conference/ Workshop Papers

Kusakabe, Kyoko (2008) "Development policies in Thailand vs the economy of migration: who cares for the women migrant workers and their children?", presented at the workshop on development policies affecting migration in the Greater Mekong Sub-region, Co-organized by Mekong Migration Network, National University of Laos and Asian Migrant Centre, 15-16 July 2008, Vientiane, Lao PDR.

Kusakabe, Kyoko (2008) "Experience on gender and development in fisheries communities and community-based economic activities", presented at the ASEAN-SEAFDEC Regional Technical Consultation on "One Village, One

Fisheries Product (FOVOP)", 24-27 March 2008, Bangkok Thailand, Organized by SEAFDEC, ASEAN and ASEAN Foundation.

Kusakabe, Kyoko (2008) "Greater Mekong Subregion economic integration, migration and its gendered implication", presented at Public Policy School and Graduate School of Engineering, Hokkaido University, Japan, 22 July, 2008.

Kusakabe, Kyoko (2008) "Trade facilitation for gender equity: Focus on border trade and industry in GMS region", presented at the regional workshop on "Trade and industrial policy environment and human development: Issues and challenges", Organized by UNDP Regional Centre Colombo, UNDP Cambodia and Economic Institute of Cambodia, 4-5 September 2008, Phnom Penh, Cambodia.

Kusakabe, Kyoko (2008) "Who pays for the kids?: Childcare arrangements of cross-border workers in Thai-Burmese border towns", Re-imagining the national territories in East Asia, 5th East Asian Regional Conference in Alternative Geographies, 14 December 2008, Seoul National University, pp.63-72 (Conference proceedings).

Kusakabe, Kyoko and Ruth Pearson (2008) "Border industrialization and labor mobility: A case of Burmese migrant workers in border area factories", Presented at the 10th International Conference on Thai Studies, Bangkok, Thailand, 9-11 January 2008.

Kusakabe, Kyoko and Ruth Pearson (2008) "Burmese migrant workers and their children in Thailand: Who cares?", Presented at IAFFE Annual Conference, 19-21 June 2008, Turin, Italy.

Kusakabe, Kyoko and Ruth Pearson (2008) "No where to return to: Burmese migrant workers' citizenship in Mae Sot, Thailand",

Presented at Conference on Return Migration in Asia: Experience, Ideologies and Politics, 31 July-1 August 2008, National University of Singapore.

Resurreccion, Bernadette 'Gender and Patronage-driven Participation: Fisheries Management in the Tonle Sap, Cambodia,' International Conference on Connecting People, Participation and Place, organized by the Department of Geography, Durham University, UK, Durham, 15-16 January 2008.

Resurreccion, Bernadette and Sajor, Edsel 'Reconstituting Thailand's Technology-intensive Shrimp Farms Through Gendered Migration,' International Conference, International Association of Studies on the Commons, University of Gloucestershire, Cheltenham, 14-18 July 2008.

Resurreccion, Bernadette and Sajor, Edsel. 'Performative Innovation: Gendered Practices of Adopting the System of Rice Intensification (SRI) in Cambodia. Paper presented at the Conference on Asian Feminisms Confronts Neo-liberalism, Fundamentalisms and Conflict. Kartini Network on Women and Gender Institutes in Asia, Bali, Indonesia, 3-5 November, 2008.

Resurreccion, Bernadette, Leeruttanawisut, Kittima, Sajor, Edsel 'Public Policy in Biotechnology Development in the Thai Shrimp Industry,' Paper presented at the Experts' Meeting on Socio-economic Impact and Social Inclusion in Agro-Food Biotechnology Policy in Five Southeast Asian Countries, AITCC, Thailand, 27 September 2008.

Resurreccion, Bernadette, Wang Jing and Sajor, Edsel, 'Biotechnology in Hybrid Rice Development in Yunan, China: Policy Process and Implications on Social Equity and Social Inclusion. Paper presented at the Experts' Meeting on Socio-economic Impact and Social

Inclusion in Agro-Food Biotechnology Policy in Five Southeast Asian Countries, AITCC, Thailand, 27 September 2008.

Project on Climate Change Adaptation in Asia.

Gender, Vulnerability and HIV Risk: A Case Study of Female Sex Workers in Bangladesh

By Sk. Muslima Moon

Supervisor: Dr. Philippe Doney

Monographs/Occasional Papers/Printed Reports

AIT, University of Leeds, UNIFEM, MAP Foundation (2008) "Round table discussion on past and current research on migrant workers in Thailand", proceedings from workshop in Bangkok, Thailand, 17 January 2008, supported by IDRC

Kusakabe, Kyoko (2008) "Training manual on Gender in planning and statistics", for UNFPA and Ministry of Planning, Cambodia. July 2008.

Kusakabe, Kyoko and Veena N. (2008) *Gender equality in urban environmental management: A case book*, Southeast Asia Urban Environmental Management Application Project, Thailand.

Kusakabe, Kyoko, Smita Mishra-Panda and Ouk Chansopheap (2008) "Women, political parties and decentralized governments: Case studies of women leaders in India and Cambodia", LORC Working Paper, Local Human Resources and Public Policy Development System Open Research Centre, Ryukoku University, 2008.

Resurreccion, Bernadette (2008) *The Gender Dimensions of the Adoption of the Systems of Rice Intensification (SRI) in Cambodia*. Oxfam America.

Resurreccion, Bernadette and Nguyen Thi Hai Yen (2008) "Migration in Southeast Asian Cities." Paper presented at the SAREC Urban Development Experts' Meeting, AITCC Bangkok, 5-6 June 2008

Resurreccion, Bernadette with Fajber, Liz and Sajor, Edsel (2008) "Climate Change Adaptation in Southeast Asia." ISET/IDRC/DFID

21.6 Doctoral Student's Dissertation

Gender and Domestic Violence: A Study of Migrant Women in Bangkok, Thailand

By Chusana Khonjantes - Han

Supervisor: Dr. Bernadette Resurreccion

21.7 Masters Students' Theses and Research Studies

Changing Livelihood of Kayan Women Refugees: A Case Study of Huay Pu Keng Village, Mae Hong Son Province, Thailand

By Cecil Khin

Supervisor: Dr. Philippe Doney

Environments of Insecurity: Domestic Violence against Migrant Wives in the Republic of Korea

By Munyi Song

Supervisor: Dr. Bernadette P. Resurreccion

Gender Analysis of Housing Choices of Burmese Migrant Workers: A Case Study of Mahachai, Samut Sakhon Province, Thailand

By Phyu Sin

Supervisor: Dr. Kyoko Kusakabe

Gender and the Use of Mobile Phones: A Case Study of Burmese Migrant Workers in Mae Sot, Tak Province, Thailand

By Naw Aye Aye Hlaing

Supervisor: Dr. Philippe Doney

Gendered HIV/AIDS Vulnerability among the Mining Population in Quangninh, Vietnam

By Ngo Thi Thanh Huong

Supervisor: Dr. Philippe Doney

Gendered Practices of Identity in a Transnational Community: Reflections on Vietnamese Migrant Service Workers in Bangkok, Thailand

By Nguyen Thi Hai Yen

Supervisor: Dr. Bernadette P. Resurreccion

Indigeneous Women and Livelihoods on Palm Oil Plantations: The Case of the Mah Meri in Carey Island, Malaysia

By Lai Wan Teng

Supervisor: Dr. Bernadette P. Resurreccion

Intra-Household Gender Relations and Land Claims: Implications for the Land Administration and Management Program in the Philippines

By Kathlyn Kissy Haynes Sumaylo

Supervisor: Dr. Bernadette P. Resurreccion

Living with Insecurity: The Case of Women and Men in a Resttlemnt Village in Northern Thailand

By Win Theint Theint

Supervisor: Dr. Bernadette P. Resurreccion

NGOs and Women's Participation in Local Government in Bangladesh

By Mumita Tanjeela

Supervisor: Dr. Philippe Doney

Participation and Benefit Sharing: Gender Dimensions of a Community Forestry Program in Nepal

By Geeta Bhatrai Bastakoti

Supervisor: Dr. Kyoko Kusakabe

Riverbank Erosion, Gender and Livelihood Strategies: A Case Study in Burirhat, Bangladesh

By Jubaiya Jahan

Supervisor: Dr. Bernadette P. Resurreccion

Social Services for Intimate Partner Violence Victims in Shaanxi Province, China

By Chen Xiao-Yan

Supervisor: Dr. Kyoko Kusakabe

State's Responsibility in Eliminating Domestic Violence in Thailand

By Suangsurang Mitsamphanta

Supervisor: Dr. Philippe Doney

Understanding Resistance and Compliance among Women in a High Caste Brahmin-Chettri Community in Nepal

By Prasuna Saakha

Supervisor: Dr. Kyoko Kusakabe

Women's Empowerment through Community Based Solid Waste Management Groups: Case Studies of Bangkok and Nakhon Pathom, Thailand

By Jagriti Shankar

Supervisor: Dr. Philippe Doney

Research Study: Child Domestic Workers in Phnom Penh, Cambodia

By An Sophaphin

Supervisor: Dr. Kyoko Kusakabe

Women's Coping Strategies in the Context of Male Out-Migration: A Case Study of Kaski District, Nepal

By Anupa Rimal Lamichhane

Supervisor: Dr. Bernadette P.

Resurreccion

Women's Participation in Local Government: Case Studies of Elected Women Members of the Commune Councils in Ponhea Leu District, Kandal Province, Cambodia

By Ouk Chansopheap

Supervisor: Dr. Kyoko Kusakabe

Chapter 22: SERD – NATURAL RESOURCES MANAGEMENT

FIELD OF STUDY

22.1 Introduction

This field of study emphasizes natural resources, including land, forest and wild animals, and environmental conservation concerns. It addresses the problems of deforestation, land and coastal ecosystem degradation, biodiversity depletion, diminishing water supply, and other environmental pressures and threats on local, national, regional and global ecosystems.

22.2 Faculty and Research Staff

Full-time Faculty

DIETRICH SCHMIDT-VOGT, BSc, Freiburg University, Germany; MSc, University of Saskatoon, Canada; PhD, Heidelberg University, Germany.

Associate Professor (Landscape Ecology; Integrated Land Use Systems; Sustainable Forest Management; and Human Impact on Vegetation)

EDWARD L WEBB, BA, Occidental College, Los Angeles; PhD, Univ of Miami, USA.

Associate Professor (Tropical Forest Ecology; Community-based natural resources management, and Forestry)

GANESH P SHIVAKOTI, BS, MS, Udaipur Univ, India; PhD, Michigan State Univ, USA.

Professor (Natural Resources Economics; Common Property Resources; NRM Policy Analysis; and Watershed Management)

RAJENDRA P SHRESTHA, BSc, Haryana Agri. Univ, India; MSc, DTechSc, AIT, Thailand.

Assistant Professor (Sustainable Land Management; Natural Resources Degradation and Environmental indicators; GIS/RS applications and Geoinformation for Decision making)

Visiting Faculty

SYLVAIN PERRET, MS and PhD, University of Montpellier III, France; DSc, Ecole Polytechnique de Lorraine, Nancy, France.

Visiting Associate Professor (Water management/institutions, governance, economics/sustainability in rural development/dynamic modeling)

UTIS KUTINTARA, BS, Kasetsart Univ., MS and PhD, Colorado State Univ. USA.

Visiting Faculty (Forest Ecology, Wildlife Ecology and Management, Nature Conservation)

22.3 Grants and Sponsored Research Completed in 2008

Applying Traditional Knowledge on Forest Management in Tropical Forest Restoration

Duration 25-Apr-07 31-Aug-08
Project Investigator Dietrich Schmidt-Vogt
Sponsor RTG Visiting Scholar
Total Contracted Amount (Baht) 900,000

Creation of a Dedicated Website at AIT for SLM Support for GSU Portfolio project Implementation

Duration 23-Jul-07 31-Oct-08
Project Investigator Rajendra Shrestha
Sponsor UNDP-GEF
Total Contracted Amount (Baht) 200,880

Travel, Networking and Learning through Stakeholder Participation in

Capacity building of University of Northern Sumatra's (USU) Environmental Research Center in initiating Masters Program in Integrated Inland and Coastal Resources Management

Duration 1-May-08 31-Dec-08
Project Investigator Ganesh P. Shivakoti
Sponsor The Ford Foundation, Jakarta Office, Indonesia
Total Contracted Amount (Baht) 465,000

22.4 On-going Grants and Sponsored Research

AIT Support to National University (2007-2010)-Curriculum Development

Duration 1-May-07 31-Dec-10
Project Investigator Dietrich Schmidt-Vogt, N. Mithulananthan
Sponsor Swedish International Development Cooperation Agency, Sweden
Total Contracted Amount (Baht) 3,285,600

AIT Support to National University (2007-2010)-Financial Management

Duration 1-Jun-07 31-Dec-10
Project Investigator Dietrich Schmidt-Vogt
Sponsor Swedish International Development Cooperation Agency, Sweden
Total Contracted Amount (Baht) 998,000

Asian Governance and Leadership Training and Observation Tour

Duration 1-Apr-05 31-Dec-09
Project Investigator Ganesh P. Shivakoti
Sponsor Graduate School of Governance at Sungkyunkwan University, South Korea
Total Contracted Amount (Baht) 820,000

Capacity Building of Faculty Staff of Tamil Nadu Agricultural University India

Duration 15-Nov-08 30-Mar-09
Project Investigator Rajendra P. Shrestha
Sponsor Tamil Nadu Agricultural University India
Total Contracted Amount (Baht) 117,088

Collaboration in Integrated Natural Resources Management in Indonesia "Decentralization, Local People, Gender and Resources"

Duration 1-Aug-05 31-Dec-09
Project Investigator Ganesh P. Shivakoti
Sponsor The Ford Foundation
Total Contracted Amount (Baht) 984,000

Collaboration on Capacity Building of Hanoi Agricultural University and Hue University of Agriculture and Forestry in Initiating INRM and Poverty Alleviation

Duration 1-Jul-08 31-Dec-10
 Project Investigator Ganesh P. Shivakoti
 Sponsor The Ford Foundation, Hanoi, Vietnam
 Total Contracted Amount (Baht) 6,536,600

Modelling interactions between human activities and biophysical processes in coastal ecosystem using remote sensing and GIS

Duration 1-Nov-08 31-Oct-09
 Project Investigator Rajendra P. Shrestha
 Sponsor RTG
 Total Contracted Amount (Baht) 608,000

Monitoring and Conserving Forest Diversity in Nam Dong District, Thua Thien Province, Vietnam

Duration 1-Jan-06 31-Dec-09
 Project Investigator Ganesh Shivakoti (Edward L. Webb)
 Sponsor The MacArthur Foundation
 Total Contracted Amount (Baht) 12,800,000

MSU-Study Abroad VI

Duration 1-Jan-07 31-Dec-09
 Project Investigator Ganesh P. Shivakoti
 Sponsor Michigan State University, USA
 Total Contracted Amount (Baht) 1,832,012

Roles of Natural and Restored Forests in Carbon Sequestration and Climate Change

Duration 15-Nov-08 15-Nov-09
 Project Investigator Dietrich Schmidt - Vogt
 Sponsor RTG
 Total Contracted Amount (Baht) 900,000

Socially and Gender-Responsive Natural Resource Management in the Context of the Biodiversity Corridors Initiative

Duration 1-Jan-06 31-Jul-09
 Project Investigator Dietrich Schmidt-Vogt (Bernadette Ressurreccion)
 Sponsor ADB
 Total Contracted Amount (USD) 99,976

22.5 Publications

Refereed Journals

Chalermphol, Juthathip and **Genesh P. Shivakoti** . 2008. (in press). "Pesticide use and prevention practices of tangerine growers in Northern Thailand" *Journal of Agricultural Education and Extension*.

Cochard Roland, S.L. Ranamukhaarachchi, **G.P. Shivakoti**, O.V. Shipin, P.J. Edwards and K.T.Seeland. 2008.**The 2004 tsunami in Aceh and Southern Thailand: a review on coastal ecosystems, wave hazards and vulnerability"** *Perspectives in Plant Ecology, Evolution and Systematics*. 10:3-40.

Gnanavelrajah, N., Shrestha, R.P., Schmidt-Vogt, D. and Samarakoon, L. 2008. Assessment of carbon stock and soil carbon management in agricultural land uses in Thailand. *Land Degradation and Development*, 19(3)242-256.

Khadka, S., Schmidt-Vogt, D. 2008: Integrating biodiversity conservation and addressing economic needs: an experience with Nepal's community forestry. In: *Local Environment* 13 (1), pp. 1-13.

Khumsree, Malasree, K. Ruddle and Ganesh P. Shivakoti. 2009 (forthcoming). "Rights and Conflicts in the Management of Fisheries in the Lower Songkhram River Basin, Northeast Thailand." *Environmental Management*.

Mahdi, **Ganesh P. Shivakoti** and Dietrich Schmidt-Vogt .2009. "Livelihood Change and Livelihood Sustainability in the Uplands of Lembang Subwatershed, West Sumatra, Indonesia, in a Changing Natural Resource Management Context." *Environmental Management*. 43:84-99.

Mahdi, Shivakoti, G., Schmidt-Vogt, D. 2008: Livelihood change and livelihood sustainability in the uplands of Lembang sub-watershed, West Sumatra, Indonesia, in a changing natural resources management context. In: *Environmental management* (published online).

Pattanapant, Arpaphan and **Ganesh P. Shivakoti** .2008. (in press). "Opportunities and constraints of

organic agriculture in Chiang Mai Province, Thailand." *Asia Pacific Journal of Rural Development*.

Pensuk, A. and **R. P. Shrestha** 2008 Linking Land Use Change and Rural Livelihoods: A Study of Phattalung Watershed in Southern Thailand, *Asia-Pacific Journal of Rural Development* 18(2),143-164..

Pensuk, A. and **R. P. Shrestha**, 2008. Effect of Paddy Area Conversion to Rubber Plantation on Rural Livelihoods: A Case Study of Phatthalung Watershed, Southern Thailand, *GMSARN International Journal*, 2 (2008) 185 – 190.

Shrestha, R. P. and Roy, K. 2008. Land Degradation Assessment in the Greater Mekong Subregion. *Journal of Environmental Information Science*, 36(5) 29-38.

Son, N.T. and **R. P. Shrestha**, 2008. GIS-Assisted Land Evaluation for Agricultural Development in Mekong Delta, Southern Vietnam. *Journal of Sustainable Development in Africa*, 10(2)875.895.

Son, N.T., T. V. Hieu, **R. P Shrestha**, N.T. Trieu, N.V. Kien, V. T. Anh, P. A. Dung, H. N. Duc, H.N. Duc, N.M. Du and N. X. Niem, 2008. Integrated land-use planning for sustainable agriculture and natural resources management in the Vietnamese Mekong delta. *Asia-Europe Journal*, 6(2) 307–324.

Speelman, S., Farolfi, S., **Perret, S.R.**, D’Haese, L. & D’Haese, M. (2008) Irrigation Water Value at Small-scale Schemes: Evidence from the North West Province, South Africa. *International Journal of Water Resources Development*, 24(4): 621-633.

Viswanathan, P.K. and **Ganesh Shivakoti** .2008. "Adoption of Rubber Integrated Farm Livelihood Systems: Contrasting Empirical

Evidences from Indian Context.”
Journal of Forest Research.13(1):1-14.

Wannasai, N. and **Shrestha, R. P.** 2008. Role of land tenure security and farm household characteristics on land use change in the Prasae watershed, Thailand. *Land Use Policy*. **25**(2)214-224.

Yonariza and **Ganesh Shivakoti**. 2008 (in press). Decentralization and Co-management of Protected Areas in Indonesia. *Journal of Legal Pluralism*. No. 57.

Refereed Books/Chapters

G. P. Shivakoti and Elinor Ostrom. 2008. “Facilitating decentralized policies for sustainable governance and management of forest resources in Asia.” In Webb, Edward and Ganesh P. Shivakoti. (ed.) 2008. *Decentralization, Forests and Rural Communities: Policy Outcomes in South and Southeast Asia*. Sage Publications—New Delhi/Thousand Oaks/London. (chapter 11).

Gautam, A.P. and G.P. Shivakoti. 2008. “Evolution and impacts of community-based forest management in the hills of Nepal.” In Webb, Edward and Ganesh P. Shivakoti. (ed.). 2008. *Decentralization, Forests and Rural Communities: Policy Outcomes in South and Southeast Asia*. Sage Publications—New Delhi/Thousand Oaks/London. (chapter 6).

Kijtewachakul, N., G.P. Shivakoti, and E. Webb 2008.. “Evolution of community-based management and forest health in northern Thailand: Case study from Nahai and Huai-muang villages in Sopsai watershed, Thawangpa district, Nan province.” In Webb, Edward and Ganesh P. Shivakoti. (ed.) 2008. *Decentralization, Forests and Rural Communities: Policy Outcomes in South and Southeast Asia*. Sage Publications—New Delhi/Thousand Oaks/London. (chapter 9).

Webb, Edward and Ganesh P. Shivakoti. (ed.) (2008). *Decentralization, Forests and Rural Communities: Policy Outcomes in South and Southeast Asia*. Sage Publications—New Delhi/Thousand Oaks/London/Singapore.

Yonariza and Ganesh P. Shivakoti. 2008. “Decentralization Policy and Revitalization of Local Institutions for Protected Area Co-management in West Sumatra, Indonesia.” In Webb, Edward and Ganesh P. Shivakoti. (ed.). 2008. *Decentralization, Forests and Rural Communities: Policy Outcomes in South and Southeast Asia*. Sage Publications—New Delhi/Thousand Oaks/London. (chapter 5).

Conference Proceedings

Bastakoti, R.C. and **G.P. Shivakoti**. 2008. “**Community Organizations in Water Resource Governance: Rural-Urban Interface of Irrigation Management in Thailand**.” Paper presented at the 13th World Water Congress, 1-4 September 2008, Montpellier, France.

Kamran, M.A., **G.P. Shivakoti**, E.L. Webb and A.P. Gautam. 2008. “**Variation in Management: Variation in Equity, Livelihoods and Forest Conditions in South Asia**.” Paper presented in the 12th biennial meeting of the International Association for the Study of Commons held at Cheltenham, Gloucestershire, U.K. July 14-18, 2008

Perret, S.R. & Geysler, M. (2008) Can smallholder farmers meet the financial costs of irrigation services? A case study on economic efficiency and social equity in South Africa. In: Proceedings of IWRA Conference, XIIIth World Water Congress, Montpellier, Sept 1-4 2008. Oral and paper presentation, 14p.

Schmidt-Vogt, D. and R. P. Shrestha, 2008. Landuse and Land Cover

Change as an Integrative Theme for INRM Curriculum development. Presented at the *Workshop on Collaboration in Developing Integrated Natural Resources Management Graduate Program at the University of Northern Sumatra (USU)*, 9-10 June 2008, Medan, Indonesia.

Shrestha, R.P. and N. Gnanavelrajah, 2008. Assessing Biophysical and Socioeconomic Condition for Watershed Management: Case of Khlong Yai Watershed, Thailand. 3rd GMSARN International Conference, 12-14 November, 2008, Kunming, China.

Thuithaisong, C., P. Parkpian, O. Shipin, R.P. Shrestha and K. Naklang, 2008. Development of Microbial Diversity as Biological indicators for Soil Quality in Sustainable Organic Rice Farming, BRT Conference, 10-13 October, Surat Thani, Thailand.

Other Publications

Book reviews

Schmidt-Vogt, D. 2008: “Hermann Kreutzmann (ed.): Karakoram in transition: culture, development and ecology in the Hunza valley. Oxford University Press 2006.” In: Internationales Asienforum (International Quarterly for Asian Studies), 39 (3-4).

Schmidt-Vogt, D. 2008: „Marc Askew, William S. Logan, Colin Long: Vientiane: transformations of a Lao landscape. Routledge 2006.” In: Internationales Asienforum (International Quarterly for Asian Studies), 39 (1-2), pp. 194-196.

22.6 Doctoral Students' Dissertation

Local Responses on Changing Contexts of Natural Resources Management: Case

Study at Watershed of West Sumatra, Indonesia
By Mahdi
Supervisor: Prof. Ganesh P. Shivakoti

22.7 Masters Students' Theses

An Impact Evaluation of the Socio-Economic Development Program on Poverty Reduction and Resource Management in Ethnic Minorities and Mountainous Areas of Vietnam: A Case study in Sondong District, Bac Giang Province
By Nong Huu Duong
Supervisor: Prof. Ganesh P. Shivakoti

Assessment of a Co-Management Initiative for Protected Area Governance and Development at Teknaf Game Reserve in Bangladesh
By Rezaur Rahman
Supervisor: Dr. Edward L. Webb / Dr. Mokbul Morshed Ahmad

Co-Management of Protected Areas in Central Vietnam: Applications for Conservation Planning
By Nguyen Dai Anh Tuan
Supervisor: Dr. Edward L. Webb / Prof. Ganesh P. Shivakoti

Compliance with Community Forest Management: A Case Study of Nam Dong, Central Vietnam
By Nguyen Quang Hoa Anh
Supervisor: Dr. Edward L. Webb / Dr. Dietrich Schmidt-Vogt

Condition and Value of Secondary Forest in Laos: An Analysis along a Gradient of Accessibility in Luang Prabang
By Puwadej Meknapapong
Dr. Dietrich Schmidt-Vogt

Design of Guidelines for Nature Conservation Education for Children: A Case Study of Phong My Secondary School, Thua Thien Hue Province, Vietnam

By Mai Quang Huy
Supervisor: Dr. Edward L. Webb

Economic Valuation of Wetlands according to Different Management Scenarios: A Case Study in Honghu Wetland, Hubei Province Central China
By Du Juan
Supervisor: Prof. Ganesh P. Shivakoti / Dr. Sylvain Perret

Effectiveness of the International Fund for Saving the Aral Sea and its Working Bodies in Overcoming the Aral Sea Crisis: Assessment of the Situation in Dashoguz, Turkmenistan
By Bekmurad Eyeberdiyev
Supervisor: Dr. Dietrich Schmidt-Vogt

Effect of Land Use Change and Climate on Surface Runoff and Water Balance: The Case of Mae Kam Mee Watershed, Northern Thailand
By Thian Wittayawarakul
Supervisor: Dr. Rajendra Prasad Shrestha

GIS-Aided Marine Conservation Planning and Management: A Case Study in Phu Quoc Island, Vietnam
By Mai Ky Vinh
Supervisor: Dr. Rajendra Prasad Shrestha

Indigenous Institutions in Community Forest Management in a Changing Context: A Case Study of Ri Bhoi District, Meghalaya, India
By Evanshainia Syiem
Supervisor: Dr. Dietrich Schmidt-Vogt

Interaction of Local People and Protected Forest: A Study of Rimbo Panti Nature Reserve and Recreational Park in West Sumatra Province, Indonesia
By Yulinda
Supervisor: Dr. Edward L. Webb

Land Use Change and its implication on Local Livelihoods in the Upper Ca River Basin: A Case Study in Tuong Duong District, Nghe An Province, Vietnam
By Vo Huu Cong
Supervisor: Dr. Rajendra P Shrestha

Linkage of Land Use Change and Climate with Soil Erosion and Rice Productivity in Ninhthuan, Central Vietnam
By Bao Van Tuy
Supervisor: Dr. Rajendra Prasad Shrestha

Managing Wetland Forests for Conservation and Sustainable Use: A Study of Sago Palm (Metroxylon sagu Rottb.) in Khuan Khreng Peat Swamp, Thailand
By Nongnuch Lomwong
Supervisor: Dr. Dietrich Schmidt-Vogt

Participatory Integrated Watershed Management and Impact on Livelihood: A Case Study from Kavrepalanchowk District, Nepal
By Urmila Pandey
Supervisor: Dr. Dietrich Schmidt-Vogt

Problems of CBNRM Application in Natural Reserves Conservation at Khazar Nature Reserve: Case Study of GYZYL SUW Settlement, Turkmenistan
By Ruslan Ovezdurdiyev
Supervisor: Dr. Dietrich Schmidt-Vogt

Resource Use and Conflict in Phu Khieo Wildlife Sanctuary, Thailand: A Case Study on People - Park Interaction
By Pornpita Khlangpukhiaw
Supervisor: Dr. Rajendra Prasad Shrestha

Status, Options and Challenges in Soil and Water Conservation in Bhutan: An Implication for Sustainable Land Management
By Chhimi Rinzin
Supervisor: Dr. Rajendra Prasad Shrestha

The Effects of Selective Logging on Population and Regeneration of Important Timber Species and on Habitat Quality in Thuong Quang Commune, Nam Dong District, Thua Thien Hue Province, Vietnam
By Pham Cuong
Supervisor: Dr. Edward L. Webb / Dr. Dietrich Schmidt-Vogt

Chapter 23: SERD – PULP AND PAPER TECHNOLOGY

FIELD OF STUDY

23.1 Introduction

This field of study strives for finding basic solutions for the immediate technical problems facing the local pulp and paper industry. Research activities in PPT are focused on optimising pulping, bleaching and papermaking processes with emphasis on the reduction of their negative impact on environment. The quality of the product is also emphasized to maintain competitive edge of local pulp and paper industry in the global market. Modification of existing processes to suit local raw material is another challenging area of research.

23.2 Research Facilities and Laboratories

The Pulp and Paper Laboratory was established to provide the need for research and high level education for this specific field. The laboratory is equipped with all basic facilities for teaching and research purposes in the field of pulp and paper technology. Several sophisticated equipment have been constantly furnished to extend the services for advance research and special studies likewise. The facilities are provided for activities in pulping paper testing, printing and coating, as well as for wood component analysis. The equipment is standardized according to ISO, TAPPI, and Scandinavian Standards. The programmable six-vessel autoclave digester makes cooking study in research level possible in the most convenient setting. Other major equipment in Pulp and Paper Laboratory include the single batch digester, bleaching reactor, sheet formers, fiber length analyzer, formation tester, deinking flotation cell, and spectrophotometer with ERIC option. In addition to provide assistance and research facilities needs for students, faculty, the laboratory also provides professional services for pulp and paper

industry internationally. Among its major equipment include a 6-bomb autoclaved digester, CRS Engineering; Bleaching reactor; PFI mill; Fiber length analyzer FS-200, Kajaani; Spectrophotometer with ERIC option, Technidyne; and a Beta formation tester, Ambetec.

23.3 Faculty and Research Staff

Full-time Faculty

SAID IRANDOUST, MSc, PhD,
Chalmers University of Technology,
Sweden

Professor [*catalytical gas-fluid processes with a focus on reaction kinetics, mass transport, flow calculations, reactor modeling and reactor design*]

MOUSA M NAZHAD, BSc, Univ of Tehran, Iran; MSc, Univ of Concordia, Montreal; PhD, Univ of British Columbia, Vancouver, Canada.

Associate Professor [*Recycled fiber, Paper and Paperboard quality, Nanoparticles in papermaking, Specialty papers, Pulp processing and Biorefining*]

RAIMO O MALINEN, MSc, LicTech,
DTech, Helsinki Univ. of Tech.,
Finland.

Associate Professor [*Wood and Fibre Chemistry in general; Pulping Technology; Fibre Technology; the use of different fibre raw materials in pulping papermaking; Environmental Technology; Project Management, Basic Engineering and Feasibility Studies*]

Visiting Faculty

ESA KALEVI LEHTINEN, M.Sc. (Tech.)
in Wood Chemistry and Pulping

Technology, Lic.Sc. (Tech.) in Paper Technology and Chemistry of Forest Products, Helsinki University of Technology, Finland.

Visiting Lecturer [*Pigment coating technology of paper, Paper technology in general*]

ESA MATTI JUHANI VILJAKAINEN,
MSc in Chem. Eng. (HUT), Tech. Lic. (HUT), Helsinki University of Technology, Finland.

Visiting Faculty [*Fiber Processing: Mechanical pulping and Recycled fiber technology, Stock preparation and Chemical pulping; Proven skills in paper and board making technology; Expert in industrial effluent treatment and Environment technology*]

23.4 Publications

Refereed Journals

Datao Liu, Rendang Yang, Jun Li, Kefu Chen and Mousa M. Nazhad, 'Development of bio-based thermal and acoustic insulating materials by steam injection technology, Bioresource technology journal, 2008 (in press)

Erik Rusdi Sutjipto, Kecheng Li, Saisanee Pongpattanasuegsa and Mousa M. Nazhad, Effect of recycling on paper properties, Tappsa Journal, Archive 3, January 2008 (e-journal)

Girindra K. Mishra, Hodgson, K., Retulainen, E. and Mousa M. Nazhad "The influence of network structure on compression strength of linerboard", Tappsa journal, 2008 (in press: e-journal)

Navae-Ardeh, S. and Mousa M. Nazhad, "A new model for maximizing the bending stiffness of a

symmetric three-ply paper or board”, Tappi journal, p. 28 (October 2008)

By Le Van Hiep
Supervisor: Dr. Esa Viljakainen

Optimization of ECF Bleaching for Bagasse Pulp

By Thongbai Phainarin
Supervisor: Dr. Esa Viljakainen

Conference Proceedings

Khosravani, A., Latibari, A.J., Tajvidi, M., Mirshokraei, S.A., Rahmaninia, M and Mousa M. Nazhad, The performance of Nanoparticles in relation with Zeta Potential of the Wet-End system, Nano Thailand Symposium (NTS), Queen convention center, Bangkok, November, 2008.

Comparison of Separate and Mixed Mechanical Treatment on Acacia Kraft, Eucalyptus Kraft and Aspen BCTMP Pulps for Fine Paper

By Nianqing Wang
Supervisor: Dr. Esa Lehtinen

Optimization of PO Stage in Bleaching of Eucalyptus Pulp

By Yan Guirong
Supervisor: Dr. Esa Viljakainen

Khosravani, A., Latibari, A.J., Tajvidi, M., Mirshokraei, S.A., Rahmaninia, M and Mousa M. Nazhad, ‘Monitoring the performance of nanoparticles at wet-end system of a paper mill by zeta potential’, Nano bio Clean tech, San Francisco, California, October, 2008

Cooking and Bleaching Effect on Fiber Development Behavior of Acacia mangium Kraft Pulp in Refining

By Agunan Butar-Butar
Supervisor: Dr. Esa Viljakainen

Production of SC-A Paper from Lower Grade Waste Paper

By Inda Giana
Supervisor: Dr. Mousa M. Nazhad

Landrea, F., Dutta, J., Hodgson, K. and Mousa M. Nazhad, Role of silica nanoparticles on strength properties of paperboard, 94th PAPTAC conference, February 2008.

Effect of Binders on Compressibility of the Coating Layer during Calendering and Properties of the Coating Layer

By Ming Hui
Supervisor: Dr. Esa Lehtinen

Role of Chitosan on Folding Boxboard Strength and Printability

By Punnarai Wongwikkorn
Supervisor: Dr. Mousa M. Nazhad

Rahmaninia, M, Mirshokraedi, S.A, Ebrahimi, G., Khosravani, A. and Mousa M. Nazhad, The role of cationic stragg-nanosilica system on retention and drainage’, Nano bio Clean tech, San Francisco, California, October, 2008

Effect of Coating Formulation Change with Varying Dosage of CMC and SB Latex on Coating Color Rheology and Final Properties of Coated Paper

By Sudhir Kumar
Supervisor: Dr. Esa Lehtinen

Steps Forward on Developing a Standard Handsheet Forming Procedure at Different Filler Loads

By Liu Kaibao
Supervisor: Dr. Esa Lehtinen

Rahmaninia, M, Mirshokraedi, S.A, Ebrahimi, G., Khosravani, A. and Mousa M. Nazhad, Effect of Cationic Starch-Nanosilica system on drainage of OCC pulp, Nano Thailand Symposium (NTS), Queen convention center, Bangkok, November, 2008.

Effect of Fractionation and Refining on Bagasse Sheet Properties

By Ky Thi Hai Yen
Supervisor: Dr. Esa Lehtinen

The Effect of Using Rodlike PCC in Rotogravure Coating

By George Harison Pasaribu
Supervisor: Dr. Esa Lehtinen

23.5 Masters Students' Theses and Projects

Bleachability of Two Kraft Pulps: Acacia Auriculiformis and the Mixture of Acacia Auriculiformis and Eucalyptus Camaldulensis

Effect of Plastic Pigments and Calendering on Coating Layer Properties

By Anne Elizabeth Djajasaputra
Supervisor: Dr. Esa Lehtinen

Project: Alternative Energy and Its Pros and Cons: A Review

By Benni Dehartin
Supervisor: Dr. Mousa M. Nazhad

Bleachability of Two Kraft Pulps: Acacia Auriculiformis and the Mixture of Acacia Auriculiformis and Eucalyptus Camaldulensis

Effects of Calcium Carbonate Dose on Surface Properties of Coated Fine Paper

By Han Bing
Supervisor: Dr. Esa Lehtinen

Project: Characterization of the Specialty Pulp from Leaf Fiber (Sisal and Abaca) for Specialty Paper

By Suebthip Pongpaiboon
Supervisor: Dr. Esa Viljakainen

Bleachability of Two Kraft Pulps: Acacia Auriculiformis and the Mixture of Acacia Auriculiformis and Eucalyptus Camaldulensis

Improving the Brightness of Recycled Pulp for Supercalendered (SC) Paper

By Donald Hun
Supervisor: Dr. Esa Viljakainen

Project: Factors of Receptive Coating Affecting Print Quality for Ink Jet Printing

By Somchoke Limwongsaree
Supervisor: Dr. Esa Lehtinen

Bleachability of Two Kraft Pulps: Acacia Auriculiformis and the Mixture of Acacia Auriculiformis and Eucalyptus Camaldulensis

Neutral Deinking of Newspaper and Magazine Paper or Office Waste Compared to Alkaline Deinking

By Md. Moidul Islam
Supervisor: Dr. Mousa M. Nazhad

Project: System and Control of Retention in the Paper Machine : A Literature Review

By Mohammad Hazin
Mohammad Hazin
Dr. Esa Lehtinen

Chapter 24: SERD – REGIONAL AND RURAL DEVELOPMENT PLANNING FIELD OF STUDY

24.1 Introduction

This field of study focuses on rural poverty, improvement of the quality of life, and social and economic development of rural areas. Practice oriented rural regional planning is carried out regularly at district and subdistrict levels following a participatory and integrated approach, and attention is paid to management of development Institutions, infrastructure and physical resources. Sectoral and spatial planning is equally emphasized along with the management of rural development programs and local development projects to strengthen rural communities for sustainable development.

24.2 Faculty and Research Staff

Full-time Faculty

GOPAL B THAPA, BSc, Tribhuvan Univ, Nepal; MSc, DTechSc, AIT, Thailand.

Professor(Natural Resources Management; Sustainable Agricultural Development and Planning; Watershed Management)

JAYANT K ROURAY, BSc(Hons), MSc, PhD, Utkal Univ; MRP, Indian Inst of Tech, India.

Professor (Community Forestry; Distric Planning Methods and Techniques; Geographic Information Systems; Rural Transport Development; Rural-Regional Development; Social Impact Assessment)

SOPARTH PONGQUAN, BSc, Chiang Mai Univ; MSc, AIT, Thailand; DSc, Univ of Wageningen, The Netherlands.

Associate Professor (*Capacity Building; Community Development and Monitoring and Evaluation of Development Projects; Decentralized Local Government; People's and Community Participation; Rural Development*)

MOKBUL MORSHED AHMAD, BSc, MSc, Dhaka Univ, Bangladesh; MSc, AIT, Thailand; PhD, Univ of Durham, UK.

Assistant Professor (*Economic geography; regional and rural development planning; community development; Non-Governmental Organizations (NGOs); civil society; globalization etc*)

Professional Staff

VITON NIL-UBOL, MSc, AIT, Thailand

Field Lab Supervisor, Regional and Rural Development Planning

24.3 Grants and Sponsored Research Completed in 2008

Indian Ocean Tsunami Warning Systems (IOTWS)

Duration 1-Sep-06 31-Jan-08
Project Investigator Mokbul Morshed Ahmad
Sponsor USAID
Total Contracted Amount (Baht) 869,500

Training Programme on Environmental Management Tools for SAARC Countries

Duration 1-Jan-06 31-Mar-08
Project Investigator Jayant Rouray
Sponsor UNEP ROAP
Total Contracted Amount (Baht) 1,920,000

Understand Governance of Sanitation in the Region: A Case Study of Thailand

Project Description: The research was conducted to understand and assess the existing environmental governance structure, roles and mandated responsibility as defined by laws, rules and

regulations both at central and local levels. The scope of this research was primarily focused on water and sanitation. The field study was conducted in Klong Sam sub-district of Klong Luang district in Pathumthani province.

Duration: January – June 2008

Investigators: Dr. Soparth Pongquan and Ms. Boontawee Teamwan (Under overall coordinator of NCCR N-S, AIT; Dr. Thammarat Koottatep)

Collaborator: Swiss Federal Institute of Aquatic Science and Technology (Eaweg/Sandec), Switzerland.

Sponsor: Swiss National Centre of Competence in Research North-South (NCCR N-S), Switzerland
Total Contracted Amount: 459,250 Baht

USEPAM Networking

Duration 1-Nov-02 15-Feb-08

Project Investigator Gopal B. Thapa

Sponsor Danish International Development Assistance (Danida)

Total Contracted Amount (Baht) 2,356,000

USEPAM- Regional Coordinator & Long-term Technical Advisor

Duration 1-Nov-02 15-Feb-08

Project Investigator Gopal B. Thapa

Sponsor Danish International Development Assistance (Danida)

Total Contracted Amount (Baht) 5,583,721

USEPAM Regional Experts

Duration 1-Nov-02 15-Feb-08

Project Investigator Gopal B. Thapa

Sponsor Danish International Development Assistance (Danida)

Total Contracted Amount (Baht) 2,356,000

USEPAM Workshops and Staff

Exchanges

Duration 1-Nov-02 15-Feb-08

Project Investigator Gopal B. Thapa

Sponsor Danish International Development Assistance (Danida)

Total Contracted Amount (Baht) 6,596,800

24.4 On-going Grants and Sponsored Research

AIT-Norwegian Institution Networking

Duration 1-Jan-06 31-Dec-09

Project Investigator Jayant Rouray

Sponsor The Norwegian Ministry of Foreign Affairs

Total Contracted Amount (Baht) 12,178,388

International training program on Education for sustainable development in Higher education

Duration 1-Nov-08 30-Nov-09
 Project Investigator Gopal B. Thapa
 Sponsor Ramboll Natura
 Total Contracted Amount (Baht) 3,663,000

Refereed Books/Chapters

Ahmad, M. M. and Kumar, A. (2008). Hope Not Complacency? Disaster Management in India and Sri Lanka. Bangkok: AIT.

An Evaluation of Socio-Economic Benefits of a Pilot Project on Handicraft Making by the Physically Disabled in the Mekong Delta, Vietnam

By Huynh Ngoc Hong Nhung
 Supervisor: Dr. Mokbul Morshed Ahmad

24.5 Publications

Refereed Journals

Phongphom, Artittaya, " Farmer's Network Development in Northesat Thailand: A Case Study of Thai Bru in Mukdahan Province", Asia-Pacific Journal of Rural Development, Volume XVIII, Number 1, July 2008.

Pongponrat, Kannapa and Soparth Pongquan, "Community Participation in Local Tourism Planning in Thailand: A Case Study of Koh Samui, Surat Thani Province, Asian Profile, Vol. 36, No. 2, April, 2008.

S. M. Wahid, M. S. Babel, A. Das Gupta, J. K. Routray and R. S. Clemente, "Degradation-environment-society spiral: A spatial auto-logistic model in Thailand". Natural Resources Forum, Volume 32 (4) 290-304, 2008.

Thapa, G.B. and Niroula, G.S. (2008), Alternative options of land consolidation in the mountains of Nepal: An analysis based on stakeholders' opinions, *Land Use Policy*, Vol. 25, pp. 338-350, Elsevier Ltd.

Varamit, Suchaya and Soparth Pongquan, "Impacts on Microfinance Strategies on the Ennomic Changes of Small Farmers in Northern Thailand: A Case Study" , Asia-Pacific Journal of Rural Development, Volume XVIII, Number 1, July 2008.

Yila, O., Thapa, G.B. (2008), Adoption of agricultural land management technologies by smallholder farmers in the Jos Plateau, Nigeria, *International Journal of Agricultural Sustainability*, Vol. 8, pp. 277-288. Earthscan.

Conference Proceedings

Jayant Kumar Routray, Taimkare Thitithamtada and Camille Karbassi-Zadeh (Compiled and Edited), Report of the 5th Roundtable on Economic and Social Council's Promotion and Achievement of Millennium Development Goals (MDGs) through Education and Outreach, Asian Institute of Technology, Bangkok, 24-25 March 2008.

Pongquan, Soparth. "Environmental Policies and Local Governance in Thailand", Regional Conference on Politics and Environmental Crisis organized by KPI Bangkok, Thailand, November 5-7, 2008.

Other Publications

Jayant K Routray and others, An Assessment of Capacity for Effective Coastal Management: India Country Assessment, Asian Institute of Technology, Bangkok April 2008 (Mangroves for the Future (MFF) Programme, sponsored by the IUCN Bangkok)

Suwankitti, Wanchat, Ek Boreth and Soparth Pongquan, Millennium Development Goals at Asian Institute of Technology, AIT, Thailand, February, 2008.

Assessing the Potential of the Transport Cum Economic Corridors in the Greater Mekong Subregion

By Hideki Kawahara
 Supervisor: Prof. Jayant Kumar Routray

Assessment of Performance of Community Volunteers in Community Development Projects in Qinghai Province, Tibet

By Li Jia
 Supervisor: Dr. Soparth Pongquan

Community Preparedness for Coping with Flood Hazards: A Case Study in Ayeyarwady Delta in Myanmar

By Khin Thein Htwe
 Supervisor: Dr. Mokbul Morshed Ahmad

Developing Indicators for Sustainable Development of Local Communities in a Marine Protected Areas (MPA) of Vietnam

By Tran Thi Phan
 Supervisor: Prof. Jayant Kumar Routray

Impact of Forestland Allocation Project on Rural Communities: A Case Study of Tong Coi Village Ba Commune, Quang Nam Province, Vietnam

By Vo Nhu Toan
 Supervisor: Prof. Gopal Bahadur Thapa

Regional Disparity in Nepal: Contributory Factors and Implication for Development

By Uttam Shrestha
 Supervisor: Prof. Jayant Kumar Routray

Socio Economic Analysis of Rural-Urban Disparity in Bangladesh

By Nourin Shabnam
 Supervisor: Prof. Jayant Kumar Routray

The Contribution of the Silk Weaving Household Industry to Rural Households in Cambodia: A Case Study of Bati District, Takeo Province

By Ek Chanboreth
 Supervisor: Dr. Soparth Pongquan

24.6 Masters Students' Theses and Research Studies

A Comparative Study of Government Primary Schools for Girls and Community Primary Schools Project of Punjab Rural Support Programme in Lahore, Pakistan

By Zeeshan Ahmed
 Supervisor: Dr. Mokbul Morshed Ahmad

The Impacts of Tourism in Kuangxi Waterfall Park: Past, Present and Future
By Acksonsay Rattanaovong
Supervisor: Dr. Mokbul Morshed Ahmad

Research Study: An Assessment of China's Property Contract on Households: A Case Study of Land Distribution in Longgartang Village, Gansu Province
By Ou Jia
Supervisor: Dr. Mokbul Morshed Ahmad

Research Study: Compulsory Education in Lao PDR: The Case Study of an Ethnic Minority in Kham District, Xiengkhouang Province
By Vanglor Chongtoua
Supervisor: Dr. Soparth Pongquan

Research Study: Evaluation of Social and Economic Effects of Resettlement Scheme: A Case Study of Kroong Village, Sa Nhon Commune, Sathay District, Kontum Province, Vietnam
By Nam Hai Bui
Supervisor: Prof. Gopal Bahadur Thapa

Research Study: Impact of Khas Land Allocation on Employment and Income Generation: A Case Study of Jainta Pur Adarsha Gram Project, Bangladesh
By Shoaib Ahmad Khan
Supervisor: Prof. Gopal Bahadur Thapa

Research Study: Social and Economic Impacts of the Poverty Alleviation Program in Soc Trang Province, Vietnam
By Truong Nguyen Thuy Trang
Supervisor: Prof. Gopal Bahadur Thapa

Chapter 25: SERD – URBAN ENVIRONMENTAL MANAGEMENT FIELD OF STUDY

25.1 Introduction

Urban Environmental Management (UEM) is an area of academic discourse and professional practice in which urban planning and urban management issues are studied and practiced from an environmental management perspective.

As an academic field, UEM provides opportunities of graduate level education and research at master (MSc) and doctoral (PhD) level. It draws on and integrates theories and perspectives in established disciplines of urban planning urban and regional development and urban policy and management studies into a distinctive framework of problems, issues and questions concerning the urban environment. It enables students to identify problems; apply appropriate analytic methodologies; design, plan and implement programs and projects; and monitor impacts and challenges within the context of sustainable development in developing societies.

The Field of Study prepares students for professional careers in the public and private sector as well as international development agencies and civil society organizations engaged in urban and environmental management.

25.2 Research Facilities and Laboratories

The Field of Study has a workshop room which can accommodate about 24 students in four clusters at a time. Each cluster is equipped with a desk top computer with internet facilities. The workshop room also has audio-visual facilities for presentations.

25.3 Faculty and Research Staff

Full-time Faculty

A T M NURUL AMIN, BA (Hons), MA, Univ of Dhaka, Bangladesh; MA, PhD, Univ of Manitoba, Canada.

Professor

EDSEL SAJOR, BSc, University of the Philippines; MA, PhD, ISS, The Hague, The Netherlands.

Assistant Professor [*Conflict Management; Governance; Land Development in Peri-Urban; Policy Process and Scientific Discourse; Politics of Environmental Policy; State-Society Relations in UEM; Urban Land Management*]

L A S RANJITH PERERA, BSc, MSc, University of Moratuwa, Sri Lanka; MSc, PhD, AIT, Thailand.

Assistant Professor [*Urban Architecture; Urban Environment Management; Urban Housing; Urban Planning*]

NOWARAT COOWANITWONG, BS, Mahidol Univ; MS, Long Island Univ; MS, PhD, Univ of Florida, USA.

Assistant Professor

VILAS NITIVATTANANON, BEng, Chulalongkorn Univ; MA, Thammasat Univ; MEng, AIT, Thailand; PhD, Univ of Pittsburgh, USA.

Assistant Professor [*Economic Analysis; Management of Infrastructure and Services; Systems Analysis; Urban Environmental Management; Water Engineering*]

Research Staff

Dr. Muhammad Abu Yusuf
Project Manager
Southeast Asia Urban Environmental Management Applications (SEA-UEMA) Project

Ms. Arlene Neites Satapornvanit
Senior Project Associate, Project Management Information System SEA-UEMA Project

Ms. Lekha Ratnayake
Senior Project Associate, Flagship Projects
SEA-UEMA Project

Ms. Farhana Khan Lima
Project Associate, Flagship Projects
SEA-UEMA Project

Mr. Prajapati Shapkota
Senior Project Associate, Policy Advocacy
SEA-UEMA Project

Dr. Ariva S. Permana
Senior Research Associate, Flagship Projects
SEA-UEMA Project

Ms. Pham Thi Khanh Van
Project Associate, Learning Networks and Training
SEA-UEMA Project

Ms. Warin Choomsai Na Ayudhaya
Project Associate, Project Management
SEA-UEMA Project

Ms. Laksiri Chomchuen
Project Coordinator, Ratchaburi project
SEA-UEMA Project

Mr. Rezaur Rahman
Project Associate, Graduate Education
SEA-UEMA Project

Administrative Staff

Ms. Vantana Pattanakul
Administrative Secretary

25.4 Grants and Sponsored Research Completed in 2008

Action Research - Subaccount 1: Personnel Costs and Contingencies

Duration 13-Aug-03 31-Aug-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 20,659,803

Action Research - Subaccount 2: Research Grants (Canadian partners, National institution and Student Research Grants)

Duration 13-Aug-03 31-Aug-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 4,222,735

Action Research - Subaccount 3: Technical assistance

Duration 13-Aug-03 31-Aug-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 1,897,512

Alumni Demonstration Projects, Demonstration-Subaccount 1: Personnel Costs and Contingencies

Duration 13-Aug-03 31-Dec-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 33,410,320

Alumni Demonstration Projects, Demonstration-Subaccount 2: Demonstration field projects

Duration 13-Aug-03 31-Dec-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 1,619,940

Alumni Demonstration Projects, Demonstration-Subaccount 3: Seminar

Duration 13-Aug-03 31-Dec-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 7,705,648

Alumni Demonstration Projects, Demonstration-Subaccount 4: Monitoring/Supervision

Duration 13-Aug-03 31-Aug-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 4,640,000

Application of Research Results & Lessons learned - Subaccount 1: Personnel costs and Contingencies

Duration 13-Aug-03 31-Aug-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 7,068,402

Application of Research Results & Lessons learned - Subaccount 2: Pilot Projects

Duration 13-Jun-03 31-Aug-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 6,441,451

Application of Research Results & Lessons learned - Subaccount 3: Workshop and Seminars

Duration 13-Aug-03 31-Aug-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 5,266,526

Application of Research Results & Lessons learned - Subaccount 4: Policy Dialogues

Duration 13-Aug-03 31-Aug-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 3,617,866

A Review of Current Practices of integrating Social and Environmental Considerations in Urban Infrastructure Development Policies in the Asia-Pacific Region

Duration: October-December 2008
Project Investigator: Dr. L A S Ranjith Perera and Dr. Ariva S. Permana
Sponsor: United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)

Community and stakeholder participation in water quality improvement and pollution abatement in Bang Pa canal in a peri-urban area in Ratchaburi Province, Thailand

Duration: 1-Dec-07 31-Dec-08

Project Investigator: Dr. Edsel Sajor, Dr. Nowarat Coowanitwong
Sponsor: SEA-UEMA / CIDA Project
Total Contracted Amount: (Baht) 839,610

Planning Research: "Project Development on Socio-Economic Impact and Social Inclusion in Public Policy Processes in Selected Agricultural Food Biotechnology Among Five Southeast Asian Countries"

Duration: 2008
Co-principal Investigator: Dr. Edsel Sajor
Sponsor: International Development Research Centre (IDRC), Canada
Total Contracted Amount: (Baht) 4,168,340

SEA-UEMA Application of Research Results and Lessons Learned

Duration 13-Aug-03 31-Aug-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 3,220,044

SEA-UEMA Application of Research Results and Lessons Learned

Duration 13-Aug-03 31-Aug-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)
Total Contracted Amount (Baht) 2,576,331

SEA-UEMA Community and stakeholder participation in water quality improvement and pollution abatement in Bang Pa canal in a peri-urban area in Ratchaburi Province, Thailand

Duration 1-Dec-07 31-Dec-08
Project Investigator Edsel Sajor, Nowarat Coowanitwong
Sponsor SEA-UEMA / CIDA Project
Total Contracted Amount (Baht) 839,610

South East Asia Urban Environmental Management Applications (SEA-UEMA) Project Management

Duration: 13-Aug-03 31-Aug-08
Project Investigator: Prof. A T M Nurul Amin, Dr. L A S Ranjith Perera, Dr. Edsel Sajor, Dr. Nowarat Coowanitwong, Dr. Vilas Nitivattananon, Dr. Pritam Krishna Shrestha, Dr. Muhammad Abu Yusuf
Sponsor: The Canadian International Development Agency (CIDA)
Total Contracted Amount: (Baht) 6,077,559

Sub-sector Networks & Professional Support Programs-Subaccount 1: Personnel costs

Duration 13-Aug-03 31-Dec-08
Project Investigator Edsel Sajor
Sponsor The Canadian International Development Agency (CIDA)

Total Contracted Amount (Baht) 4,872,000

Sub-sector Networks & Professional Support Programs-Subaccount 2: Information Dissemination

Duration 13-Aug-03 31-Dec-08

Project Investigator Edsel Sajor

Sponsor The Canadian International Development Agency (CIDA)

Total Contracted Amount (Baht) 7,245,810

Sub-sector Networks & Professional Support Programs-Subaccount 3: Meeting and Logistics

Duration 13-Aug-03 31-Dec-08

Project Investigator Edsel Sajor

Sponsor The Canadian International Development Agency (CIDA)

Total Contracted Amount (Baht) 30,429,583

Sub-sector Networks & Professional Support Programs-Subaccount 4: PR Campaigns/Promotion

Duration 13-Aug-03 31-Aug-08

Project Investigator Edsel Sajor

Sponsor The Canadian International Development Agency (CIDA)

Total Contracted Amount (Baht) 4,614,335

Sub-sector Networks & Professional Support Programs-Subaccount 5: Training Courses

Duration 13-Aug-03 31-Aug-08

Project Investigator Edsel Sajor

Sponsor The Canadian International Development Agency (CIDA)

Total Contracted Amount (Baht) 7,775,770

Sub-sector Networks & Professional Support Programs-Subaccount 6: Visiting/ Post Doctoral Fellows

Duration 1-Jan-03 31-Aug-08

Project Investigator Edsel Sajor

Sponsor The Canadian International Development Agency (CIDA)

Total Contracted Amount (Baht) 6,031,623

Sub-sector Networks & Professional Support Programs-Subaccount 7: Country Policy Forums

Duration 13-Aug-03 31-Aug-08

Project Investigator Edsel Sajor

Sponsor The Canadian International Development Agency (CIDA)

Total Contracted Amount (Baht) 3,114,252

Sustainable Communities-Bridging the Gap between Research and Action

Duration 1-Jun-08 31-Dec-08

Project Investigator Edsel Sajor

Sponsor Helsinki University of Technology, Lifelong Learning Institute Dipoli (TKK Dipoli)

Total Contracted Amount (Baht) 3,500,000

Toyo-AIT Joint Workshop and Research Symposium Series

Duration 1-Jan-07 11-Dec-08

Project Investigator L.A.S.R. Perera

Sponsor Toyo University, Japan

Total Contracted Amount (Baht) 359,600

Water Governance in Mekong Region Peri-urban Areas, A thematic research segment under the research project of "Improving Mekong Water Allocation". CGIAR Challenge Program on Water & Food and M-Power (Mekong Program on Water Environment and Resilience).

Duration: Year 2008

Principal Investigator: Dr. Edsel Sajor

Total Contracted Amount: (Baht) 732,600

25.5 On-going Grants and Sponsored Research

Benchmarking on environmental infrastructure management in selected cities of Southeast Asia

Duration 1-May-08 01-Mar-09

Project Investigator Vilas Nitivattananon

Sponsor CIDA/SEA-UEMA

Total Contracted Amount (Baht) 372,880

Construction Waste Characterization and Management Options with a Focus on Concrete Utilization in Bangkok Metropolitan Region

Duration 29-May-07 31-May-09

Project Investigator Vilas Nitivattananon

Sponsor RTG

Total Contracted Amount (Baht) 1,200,000

Enabling Bio-innovation for Poverty Alleviation in Asia

Duration: 2008-2010

Project Investigator: Prof. Sudip Kumar Rakshit,, Dr.

Edsel Sajor, Dr. Bernadette Resurreccion

Sponsor: International Development Research Centre (IDRC), Canada

Total Contracted Amount: (Baht) 17,000,000

Environmental Management Measures (EMM's) applied on the range of formal to informal sectors in selected cities.

Duration 1-Jul-08 30-Sep-09

Project Investigator Ranjith Perera

Sponsor CIDA-AIT/SEA-UEMA

Total Contracted Amount (Baht) 116,480

Evaluation of TIPMSE Programs as a tool to support decision making for promoting waste Recycling System in Thailand

Duration 1-Dec-08 01-May-10

Project Investigator Vilas Nitivattananon

Sponsor RTG

Total Contracted Amount (Baht) 2,250,000

Project Management

Duration 13-Aug-03 31-Aug-10

Project Investigator Edsel Sajor

Sponsor The Canadian International Development Agency (CIDA)

Total Contracted Amount (Baht) 32,922,627

Rain water Harvesting and Utilization

Duration 1-Oct-08 01-Oct-09

Project Investigator Vilas Nitivattananon

Sponsor RTG/RMUTT

Total Contracted Amount (Baht) 300,000

Research Cooperation between Sida and AIT on Support Planning Urban Research during 2007-2009

Duration 15-May-07 28-Feb-09

Project Investigator Edsel Sajor

Sponsor SIDA-Swedish Research Council

Total Contracted Amount (Baht) 7,800,000

SEA-UEMA Graduate Education

Duration 1-Apr-08 31-Aug-10

Project Investigator Nurul Amin, Edsel Sajor

Sponsor CIDA-AIT/SEA-UEMA

Total Contracted Amount (Baht) 29,818,752

SEA-UEMA Project -Flagship Projects

Duration 1-Apr-08 31-Aug-10

Project Investigator Ranjith Perera, Edsel Sajor

Sponsor CIDA-AIT/SEA-UEMA

Total Contracted Amount (Baht) 24,132,672

SEA-UEMA Project - -Learning Networks and Training

Duration 1-Apr-08 31-Aug-10

Project Investigator Vilas Nitivattananon, Edsel Sajor

Sponsor CIDA-AIT/SEA-UEMA

Total Contracted Amount (Baht) 12,290,528

SEA-UEMA Project Management

Duration 1-Apr-08 31-Aug-10

Project Investigator Edsel Sajor, Nowarat

Coowanitwong, Muhammad Abu Yusuf

Sponsor CIDA-AIT/SEA-UEMA

Total Contracted Amount (Baht) 33,541,664

SEA-UEMA Project - Policy Advocacy

Duration 1-Apr-08 31-Aug-10

Project Investigator Nowarat Coowanitwong, Edsel Sajor

Sponsor CIDA-AIT/SEA-UEMA

Total Contracted Amount (Baht) 7,486,400

Study of the rise gated communities in Bangkok Metropolitan Area and its implication on land equity

Duration: 2007-2009

Research Mentor: Dr. Edsel Sajor

Sponsor: Royal Thai Government

25.6 Publications

Refereed Journals

Perera, R. (2008). A Comment on the paper, Small Town Communities and Regional Planning: Regional Australia from a Small 'Wheat-belt' Town Perspective, by Khan, S.A. *Regional Development Dialogue*, 29(2).

Perera, R. (2008). The Viability of Waste Banks as Social Enterprises: Experiences of Two Demonstration Projects Implemented in Thailand, Submitted to *i-manager*, 3(1): 31-38.

Permana, A. S., **Perera, R.** and S. Kumar (2008). Understanding Energy Consumption Pattern of Households in Different Urban Development Forms: A Comparative Study in Bandung City, Indonesia, Submitted to *Energy Policy Journal*, 36(2008):4287-4297.

Resurreccion, B. and **Sajor, E.** "Not a Real Worker": Gendering Migrants in Thailand Shrimp Farms" *International Migration Review* [Submitted May 2008].

Sajor, E. and Thu, M. (2008), "Institutional and Development Issues in Integrative Management of Saigon River". Submitted for publication (*Journal of Environment and Development*, Jan 2008); Accepted for publication on April 2009.

Sujaritpong, S. and **Nitivattananon, V.** (In press). "Factors Influencing Wastewater Management Performance: Case of Housing Estates in Suburban Bangkok, Thailand", *Journal of Environmental Management* 90, pp. 455-465.

Suthibak, S. and **Nitivattananon, V.** (2008). "Assessment of factors influencing the performance of solid waste recycling programs", *Resources Conservation & Recycling* 53, pp. 45-56.

Suthibak, S. and **Nitivattananon, V.** (2008). "Assessment of Waste Recycling Performance: a Study of School Garbage Banks in Thailand", *GMSARN International Journal*. Vol. 2, No. 3, pp. 83-90.

Trethanya, S. and **Perera, R.** (2008). "Environmental Assessment for Non-Prescribed Infrastructure Development Projects Implemented within Local Authority Areas: A Justification Based on a Case Study in Bangkok Metropolitan", *Impact Assessment and Project Appraisal Journal*, 26(2):127-138.

Refereed Books/Chapters

Nitivattananon, V. and Noonin, C. (2008). "Thailand urban environmental management: case of environmental infrastructure and housing provision in Bangkok Metropolitan Region", in *Vulnerable Cities: Realities, Innovations and Strategies*, Kidokoro, J., Okata, J., Matsumura, S. and Shima, N. (Eds), Springer, Japan, pp. 187-208.

Resurreccion, B., **Sajor, E.**, and Fajber, E. (2008). "Climate Adaptation in Asia: Knowledge Gaps and Research Issues in Southeast Asia." Research Report ISET-International and ISET-Nepal. June 2008. 78 p

Resurreccion, B., **Sajor, E.**, and Sophea, H. "Gender Dimensions of the Adoption of the System of Rice Intensification (SRI) in Cambodia" Research Report. Oxfam America. December 2008.

Teik, H.K., Hasan, F., and **Perera, R.** (2008). Unlocking the Potential of Community Composting Towards the Establishment of an Eco-neighborhood, Case Study Series, ADP 2/2008, Bangkok: Asian Institute of Technology, Pp.39.

Conference Proceedings

Nitivattananon, V. and Nguyen, Thi Chau Huyen (2008). "Benchmarking

on environmental infrastructure management in selected cities of Southeast Asia", Proceedings of International Cities, Towns & Communities (ICTC) Society 2008, Sydney, Australia, 7-10 October 2008.

Nitivattananon, V., Rattanussorn, M., Plang-ngern, S. and Sorpimai, K. (2008). "Management Options of Concrete Waste Utilization in Bangkok Metropolitan Region", Proceedings of International Conference on Waste Engineering and Management, 28-30 May 2008, Hong Kong SAR.

Perera, R. (2008). "Use of Appropriate and Affordable Technology for Water Quality Improvement in a Community Managed Water Supply Demonstration Project in Phnom Penh, Cambodia", Proceedings of the 3rd WEPA International Forum on Water Environmental Governance in Asia: Putrajaya, Water Environment Partnership in Asia, pp.38-45.

Permana, A.S. and **Perera, R.** (2008). "Land-use Change as the Primary Determinant of Air Quality Degradation in Bandung City, Indonesia, Proceedings of the International Conference on Air Quality Management in Southeast Asia, 21-23 November, 2007, Ho Chi Minh City, Vietnam.

Permana, A.S. and **Perera, R.** (2008). The Nexus of Land Use, Transport, Energy and Environment as a Workable Policy Arena to Synergize Co-benefits: Evidence from Bandung City, Indonesia. Presented in the international conference on Climate Friendly Transportation Strategies in Asia: Overcoming obstacle to Co-benefits. Better Air Quality, Bangkok 2008.

Resurreccion, B. and **Sajor, E.** (2008) 'Performative Innovation: Gendered Practices of Adopting the System of Rice Intensification (SRI) in Cambodia. Paper presented at the

Conference on Asian Feminisms Confronts Neo-liberalism, Fundamentalisms and Conflict. Kartini Network on Women and Gender Institutes in Asia, Bali, Indonesia, 3- 5 November, 2008.

Sajor, E. and Satapomvanit, A. (2008) "Applied Conventional Research and Action Research in Development Work on Urban Environmental Management: Towards Better Complementmentation". Paper presented in International Conference on Sustainable Urban Environmental Practices. 28-31 October 2008. Sponsored by SEA-UEMA AIT-CIDA Partnership and Chang Mai Municipality, Thailand.

25.7 Doctoral Students' Dissertation

Water Supply Privatization's Impact on Urban Poor: A Study in Pathumthani Thailand
By Saeed Zakiahmed J.
Supervisor: Prof. A. T.M. Nurul Amin

Incompatibility of Energy Users' Domains and its Impacts on Energy Efficiency in a Tropical City
By Ariva Sugandi Permana
Supervisor: Dr. L .A. S. Ranjith Perera

25.8 Masters Students' Theses

A Multidisciplinary and Multi-Stakeholder Responsive Approach for Coastal Setback Delineation in Sri Lanka
By Walawe Durage Samanthi
Supervisor: Dr. L .A. S. Ranjith Perera

Application of Benchmarking For Urban Water Supply System: Case of Hue City, Vietnam
By Nguyen Thi Chau Huyen
Supervisor: Dr. Vilas Nitivattananon

A Study of Peri-Urban Air Quality and Land Use Change Using a GIS Application in Yogyakarta City, Indonesia
By Sintha Prima Widowati Gunawan
Supervisor: Dr. Nowarat Coowanitwong

A Study of Urban Water Supply Management Strategy in Dili City, East Timor

By Satornino Amaral
Supervisor: Dr. Nowarat Coowanitwong

Conservation of Nongtha Wetland in Vientiane: An Assessment of Stakeholders Needs for Strategic Interventions
By Phouangphet Khonethip
Supervisor: Dr. L .A. S. Ranjith Perera

Construction and Demolition Waste Characterization and Economic Analysis on Minimization Options in Bangkok Metropolitan Region
By Kamonpun Sorpimai
Supervisor: Dr. Vilas Nitivattananon

Developing Eco-efficiency Indicators for an Urban Transportation System in Hanoi City, Vietnam
By Le Thi Thanh Nhan
Supervisor: Dr. Vilas Nitivattananon

Domestic Wastewater Management: A Case Study in Vangvieng District, Lao PDR
By Souksakhone Savath
Supervisor: Prof. A. T. M. Nurul Amin

Hanoi Sustainable Urban Planning Policy through Strategic Environmental Assessment Applications
By Vu Trung Dien
Supervisor: Dr. Nowarat Coowanitwong

Land-Use Planning as a Tool for Promoting Environmentally Sustainable Transport (EST): A Case Study of Bangkok Region Thailand
By Pajaree Uthayansuthi
Supervisor: Prof. A. T. M. Nurul Amin

Local Government and Stakeholders in Managing Diverted Flood and Compensation: A Case Study in Sena municipality, Ayutthaya, Thailand
By Panuwat Boonyanan
Supervisor: Dr. Edsel E. Sajor

Management Modes for Recyclable Waste Material in Vientiane, Lao PDR
By Somvath Keokhamphoui
Supervisor: Dr. L .A. S. Ranjith Perera

Policy Aspects and Framework on Persistent Organic Pollutants (POPs) in Lao PDR

By Sivannakone Malivarn
Supervisor: Dr. Nowarat Coowanitwong

Public Administration Reform Process and Improvement of Water Supply Delivery System: Two Case Studies in Vientiane Capital City and Xamneua Town of Houaphan Province, Lao PDR
By Lianexay Bounmanivanh
Supervisor: Dr. Edsel E. Sajor

Reduce, Reuse and Recycle Practices in Construction and Demolition Waste Management with a Focus on Selected Asian Cities
By Guilberto Himang Borongan
Supervisor: Dr. Vilas Nitivattananon

The Composing Process Form Organic Wastes to the Wastes Derived Compost: Case Study Nonthaburi Municipality, Thailand
By Abdellatif Ossor
Supervisor: Prof. A. T. M. Nurul Amin

The Effectiveness of Partnership Models for Environmental Education in the Primary and Secondary Schools in Phnom Penh
By Sao Sambat Morakath
Supervisor: Dr. L .A. S. Ranjith Perera

Urban River Rehabilitation in a Developing Country: A Case Study in Marikina City, Philippines
By Carlyne Zanoia Yu
Supervisor: Dr. Edsel E. Sajor

Vulnerability of Maldives Islands to Climate Change and Extreme Weather Events: A Study on Perception, Impacts and Adaptation
By Miruza Mohamed
Supervisor: Dr. L .A. S. Ranjith Perera

Water for the Environment: The Need for Strategic Environmental Assessment in Dhaka, Bangladesh
By Sabiha Zafrin
Supervisor: Dr. Nowarat Coowanitwong

Water Governance: A Comparison of Three States in Malaysia
By Hong Chern Wern
Supervisor: Dr. Edsel E. Sajor

Chapter 26: SERD – AGRIBUSINESS MANAGEMENT PROGRAM

26.1 Introduction

Agriculture plays a vital role in the economic growth of many country especially developing countries like of Asia including Thailand, China, India, Vietnam, Malaysia etc. Due the growing industrialization the importance of agri-products has increased several-folds. The food and food-products import-export policies play important role in the overall development of any country and the world as a whole.

In developing countries, since last 25 years, majority of the young people educated, came from agriculture community or from the similar background. But, due to many reasons they have not been able to compete for available jobs, which demand specialized skills and knowledge. Even in their attempts to set up small entrepreneurial activities in non-farm sector they face many problems generally not encountered by such youths in urban areas. All these rural youths can now be supported for new opportunities of entrepreneurship in business activities related to Agriculture. They have the basic understanding of agriculture, which can be utilized for promotion of business enterprises revolve around agricultural activities.

Rationale

As the nature of rural economy of many developing countries of Asia-Pacific region shifts from subsistence farming to commercial food enterprises, a new breed of agribusiness professionals is needed to manage this transformation. The proposed program will cater the unique needs of agribusiness professionals, which comprise of knowledge and skills in elements of

agriculture sector policy issues, technology, marketing and finance. Agribusiness professionals are needed in several sectors, including in multinational companies involved in corporate farming, food processing, packaging and marketing, agricultural finance institutions, agricultural cooperatives, animal feed industry, biotechnology industry, fertilizer and pesticide industry, irrigation and mechanical equipment manufacturing, medicinal plants/herbs, and government-initiated rural/agricultural development schemes.

The agri-business management program builds on long standing strengths and experience in research, and internal and external postgraduate teaching in the fields of agricultural production, preservation, processing, agro- and food-industry management and marketing, and in agricultural development.

The program focuses on the potential for and contribution of the agribusiness industry in developing economies. It is aimed at enhancing small business entrepreneurship among primary producers of agri-food products, and traders and other market intermediaries in the value chain. The course is appropriate for entrepreneurs themselves and also for people working in the public sector and non-governmental organizations. Entrepreneurs and others will be enabled to take advantage of opportunities within the agri-food and related sectors, and increase the contribution of these sectors within public and national objectives.

Objectives

Specific objectives of the Masters Program in Agribusiness Management are:

1. To train students, academics, researchers and professionals, to develop skills and practices in the area of good agricultural production, appropriate value addition, systematic marketing, food-chain supply and global trade.
2. To enhance the sustainability and capability of agricultural enterprises by providing trained students with knowledge of international standards on food safety and traceability in agricultural production, local and global trade policies etc.

26.2 Faculty and Professional Staff

Faculty

ATHAPOL NOOMHORM [**Professor**, Food Engineering & Bioprocess Technology Field of Study]
(*Starch and Cereal Technology; Postharvest Technology; Food Processing; Agro-industrial Development*)

GANESH. P. SHIVAKOTI [**Professor**, Agricultural Systems & Engineering and Natural Resources Management Fields of Study]
(*Agricultural Development and Policy Analysis; Resource Development; Farming Systems; Natural Resources Management*)

SUDIP KUMAR RAKSHIT [**Professor**, Food Engineering & Bioprocess Technology Field of Study]
(*Food and Biosafety; Biofuels and Food Security; New Bio-*

based Food Products; Bioprocess Technology)

VILAS M. SALOKHE [**Professor**, Agricultural Systems & Engineering Field of Study, and ABM Coordinator]

(Controlled Environment Agriculture; Terramechanics; Agricultural Systems Analysis; Human Factors Engineering)

H. P. W. JAYASURIYA [**Assistant Professor**, Agricultural Systems & Engineering Field of Study]

(Design & Development of Agricultural and Processing Equipment; Precision Agriculture; Agricultural Systems Analysis; Instrumentation & Data Acquisition)

NICHOLAS DIMMITT [**Assistant Professor**, School of Management]

(Action Research; Business Communication; Business Ethics; Professional Development & Training; Language Policy and Language Planning)

RIAN BEISE-ZEE [**Assistant Professor**, School of Management]

(International Marketing and Branding; Diffusion of Innovation; Customer-manufacturer Interaction in Innovation Development)

SUNDAR VENKATESH [**Visiting Associate Professor**, School of Management]

(Finance; Financial Accounting; Corporate Governance; Financial Restructuring; Financial Information Management)

SAHDEV SINGH [**Adjunct Faculty**, Agricultural Systems & Engineering Field of Study]

(Information and Communication Technologies; Decision Tools; ERP; Quantitative Analysis; Human Resources Development in Agro-industries; SCM)

Professional Staff

PEEYUSH SONI [**Affiliated Faculty**, Agricultural Systems & Engineering Field of Study]

(Controlled Environment Agriculture; Agricultural Systems Analysis; Analytical Techniques and Decision Tools for Agribusiness)

IMRAN AHMAD [**Laboratory Supervisor**, Food Engineering & Bioprocess Technology Field of Study]

(Food Enterprises Productivity; Food Process Operations; Food Supply Chain)

Chapter 27: GENDER, TRANSPORTATION AND DEVELOPMENT

AREA OF STUDY

27.1 Introduction

Asia as a region has historically experienced high intra-mobility of goods and people, but in the recent years, the quantum of such mobility has increased dramatically. Various factors have contributed to this increase, including economic disparity within the region; differences in economic/ employment/ business opportunities; transportation and communication infrastructure development, education opportunities, and a wider network of migrants in major cities and industrial areas in the region.

The largest factor is the heavy investment in the construction and renovation of road networks. Road networks, which are important for regional integration within Asia, are critical for the less developed member countries, especially those in the Greater Mekong Subregion (GMS) countries. Recognizing this, bilateral and regional financial institutions supported heavily to improve the road network. The fact that people move both within and out of the region has implications not only for the well-being of migrants themselves, but also for the sending and receiving communities.

However, several questions remain. Have these roads actually contributed to poverty alleviation in the poorer regions of Asia? Or have they only increased the disparity between the rich and poor, resulting in future social tensions in the region?

The graduate course Gender, Transportation and Development (GTD) is a multi-disciplinary program that is problem-solving in nature. It focuses on specific problems of the effect of infrastructure planning and management on equitable and sustainable development for women and men. As a multi-disciplinary program, it focuses on:

1. Gender and development
2. Regional development planning
3. Infrastructure planning and management, with special focus on transportation engineering and management

It covers both the physical planning based on transportation engineering, and social, community and gender analysis and planning based on social science. It envisages to develop planning and management theories and practices contextualized to Southeast Asia, especially the GMS region.

The program consists of required courses, elective courses and research (Thesis or Research Study). Required and elective courses are offered from the areas of gender and development, transportation engineering, regional development and planning, urban environmental management, and construction engineering and infrastructure management. The Area of Study has had the first batch of students in August 2008.

27.2 Faculty and Research Staff

Coordinating faculty members

KYOKO KUSAKABE, **Associate Professor**, Gender & Development Studies Field of Study, School of Environment, Resources & Development

SHINYA HANAOKA, **Visiting Associate Professor**, Transportation Engineering Field of Study, School of Engineering & Technology, and Associate Professor, Tokyo Institute of Technology, Japan.

Contributing faculty members

School of Engineering & Technology

Transportation Engineering Field of Study

HYUNMYUNG KIM,
Assistant Professor

KUNNAWEE KANITPONG,
Assistant Professor

HIRONORI KATO, **Visiting Associate Professor**, Associate Professor, Department of Civil Engineering, The University of Tokyo

PICHAJ TANEERANANON,
Visiting Associate Professor

SHINJI TANAKA, **Visiting Associate Professor**, Assistant Professor, Institute of Industrial Science, the University of Tokyo, Japan

School of Environment, Resources & Development

Gender & Development Studies Field of Study

PHILIPPE DONEYS, **Assistant Professor**

Regional & Rural Development Planning Field of Study

JAYANT KUMAR ROUSTRAY,
Professor

MOKBUL MORSHED AHMAD, **Assistant Professor**

**Urban Environmental
Management Field of Study**

VILAS NITTIVATANANON,
Assistant Professor

Research staff

LADA PHADUNGIATI, **Project
Researcher**

TANARADEE KHUMYA, **Project
Researcher**

Chapter 28: SCHOOL OF MANAGEMENT

28.1 Introduction

The School of Management (SOM) prides itself for having world class academic and professional programs. SOM is offering a PHD Program, Doctor of Business Administration (DBA) Program, Executive Masters (EMBA) and Full time MBA Program. SOM was ranked third in 2004 by Asia Inc. among the MBA programs of South East Asia and 2008 SOM was ranked as the internationally known TOP school in Thailand.

SOM was established in October 1987 to meet the growing need for managerial expertise in the Asia – Pacific region. The School strongly believes in the intensive development of corporate leaders for the present and future. Currently SOM provides specialization in Entrepreneurship, Strategy, International Business, Management of Technology, Public Management, Marketing, Finance and other areas. The courses at SOM are taught by highly experienced faculty from over 15 nations.

SOM currently has students from over 30 countries and various academic backgrounds enrolled in its programs. In every case study, group work and assignment the students work in groups with students from 3 to 5 different nations. The bonds formed by the students during their stay in SOM have proved as important as the knowledge and skills they gain. At SOM we stress on ethics and moral values as much as the need to produce managers who can drive their organizations to profitability and prosperity.

28.2 Mission

Mission

“to develop socially responsible global leaders who will enhance organizational performance for the

growth and sustainable development of economies and societies in Asia”

Vision

“to become the leading creator and disseminator of Asian management knowledge, practices and values”

Positioning

“A global management school which offers knowledge that promotes deep understanding of Asian management practices

28.3 School Governance

Dean of School

BARBARA IGEL, BA, MA, Technical Univ, Berlin; PhD, Freie Univ, Berlin, Germany.

Associate Professor (*High-tech Entrepreneurship; Industrial Economics; Knowledge Management; Management of Innovation*)

Associate Dean of School

RIAN BEISE-ZEE, Dipl. Ing. (Industrial Engineering), Technical University of Berlin, Dr.oec (Economics & Business), Germany

Assistant Professor (*International Marketing, Innovation Marketing, Service Marketing*)

28.4 Center and Research

The School of Management is involved in training and extension activities through the Management Development Programs (MDP). MDP was established as an integral part of the School of Management (SOM). It is the research, consultancy, and executive development arm of the School. It is SOM’s non-

degree academic activities and programs, which complement SOM’s degree programs and other related activities of SOM. It facilitates the linkage between SOM, AIT and the business community and public sector in Asia.

The objectives of MDP:

- To establish closer links between the business community/public sector and SOM through executive education programs and consulting in the areas of Management of Technology, International Business, Service Marketing and Technology, and International Public Management.

- To facilitate the development of research projects which are both of high practical value to the business community/public sector and academically rigorous.

MDP activities include:

- Corporate relationship management
- Executive development programs
- Organizing executive forums, workshops, seminars, and conferences
- Other activities contributing to SOM’s objectives

28.5 Research Facilities and Laboratories

The School of Management has 5 state-of-the-art multimedia classrooms including a large amphitheater for academic use. Each classroom is equipped with a multimedia podium that consists of LCD projectors, audio cassette recorder, VHS player/ recorder, slide projectors or visualizer, built-in desktop PC, laptop and wireless internet connection.

The School of Management has its own computer laboratory to support management education. For instructional purposes, there is a network of over 60 computers for student's use.

Laboratory consultants are available during office hours to assist with computer related problems. The consultants will provide help by answering general questions relating to the lab e.g., how to obtain a computer account, questions related to the PC Proficiency about software applications, email, printing etc.

The School of Management also provides the students with an extensive range of online journals and database. The students can access the journal and database to read articles from reputed international journals.

28.6 Faculty and Research Staff

Full-time Faculty

JOHN C S TANG, BS, MS, PhD, Univ of Florida, USA.

Professor (*Engineering Economy; International Economics; International Operating Environment of Business; Managerial Economics*)

LALIT M JOHRI, BSc(Hons), MSc, MBA, PhD, Univ of Delhi, India.

Professor (*International Business; International Joint Ventures; Marketing; Negotiations; Strategic Management*)

NAZRUL ISLAM, BScEng, BUET, Bangladesh; MEng, DEng, AIT, Thailand.

Professor (*Management of Technology; Technology and Development; Technology Policy; Technology Transfer*)

BARBARA IGEL, BA, MA, Technical Univ, Berlin; PhD, Freie Univ, Berlin, Germany.

Associate Professor (*High-tech Entrepreneurship; Industrial Economics; Knowledge Management; Management of Innovation*)

DO BA KHANG, MSc, Eotvos Lorand Univ, Hungary; MSc, DTechSc, AIT, Thailand.

Associate Professor (*Management Science; Operations Management; Project Management; Service Management; Small and medium enterprises (SME) support and management*)

MARK NEAL, B.A (Hons.) Sociology, university of Reading, U.K, Ph.D (Mgmt), The Business School, Bournemouth University, U.K

Associate Professor (*Cross-Cultural Management, Gender and Organization Leadership*)

RAVI SHANKAR, MBA (Operations Mgmt & Systems), University of Allahbad India, M.Tech (Mechanical Engg) Regional Engg College Jamshedpur, Ph.D(IE/Operations) IIT, Delhi India.

Associate Professor (*Operation Management, Supply Chain and Retail*)

SUNUNTA SIENGTHAI, BA, Chulalongkorn Univ, Thailand; MA, PhD, Univ of Illinois, USA.

Associate Professor (*Labor & Industrial Relations, HRM, Wages & Productivity*)

SUNDAR VENKATESH, BSc, BL, Univ of Calcutta; PhD, Indian Inst of Management, India.

Visiting Associate Professor (*Finance; Financial Accounting*)

DONYAPRUETH KRAIRIT, BS, Thammasat Univ, Thailand; MS, Univ of Colorado at Boulder; PhD, Massachusetts Inst of Tech, Cambridge, USA.

Assistant Professor (*Technology, Policy and Management*)

NICHOLAS J DIMMITT, BA, MA, San Francisco State Univ; PhD, Univ of Southern California, USA.

Assistant Professor (*Business Communication, Business Ethics, Research Methods*)

RIAN BEISE-ZEE, Dipl. Ing. (Industrial Engineering), Technical University of Berlin, Dr.oec (Economics & Business), Germany

Assistant Professor (*International Marketing, Innovation Marketing, Service Marketing*)

WINAI WONGSURAWAT, B.A.S (Econ & Math., Comp. Sc.) Stanford University USA PH.D (Managerial Econ and Strategy), Kellogg School of Management, Northwestern University, USA

Assistant Professor (*Strategic Management*)

YUOSRE BADIR, M.S The Swiss Federal Institute of Technology Lausanne (EPFL), M.Sc University of Putra Malaysia, Ph.D (MOT) EPFL

Assistant Professor (*Technology, International Strategic Alliance, Organization Theory and Design*)

Visiting and Adjunct Faculty

ILKKA KAURANEN, MS Engg, Lic Tech, DTech, Helsinki University of Technology, Finland.

Visiting Professor (*Development and Management in Industry*)

INDRA M PANDEY, MComm, PhD, Univ of Delhi, India.

Visiting Professor (*Corporate Finance, Emerging Capital Markets*)

FREDRIC W SWIERCZEK, BA, Temple Univ, USA; MA, PhD, Univ of Pittsburgh, Pennsylvania, USA.

Visiting Associate Professor (*Behavioral Science; Organizational Development*)

ASHISH SADH, Ph.D (Marketing) Devi Ahilya University, Indore, India MBA (Marketing) A.P.S University, Rewa, India

Visiting Faculty (Marketing Research, Brand and Image Management)

PETER HADDAWAY, PH.D M.S.C University of Illinois at Urbana-Champaign, USA

Visiting Faculty (Decision-Theoretic Problem Solving, E-Commerce)

PETER MOSER Ph.D., M. Econ., University of St. Gallen, Switzerland

Visiting Faculty (European Integration and International Trade Policy)

ARNE DEUSSEN, PhD, University of Geneva, Switzerland, Master (Lic.oec.HSG), University of ST.Gallen, Switzerland

Adjunct Faculty (Management of Change)

CHIA-HSING HUANG, Ph.D University of Pennsylvania, USA, MBA University of Connecticut, USA

Adjunct Faculty (International Investment, International Finance, M&A)

GERARD TOCQUER, Ph.D., University of Nice-Sophia Antipolis, France, M.A (Marketing), University of Sherbrooke, Canada, C.P.D., Cornell University, Ithaca USA

Adjunct Faculty (Service Innovation, Service Culture and Branding)

JARUNEE WONGLIMPIYARAT, Ph.D (Tech Management) University of Manchester U.K, M.Sc. (Tech and Innovation Management) University of Sussex, U.K

Adjunct Faculty (Tech and Innovation, Technology Commercialization)

PHASIN SUEBSUBANUNT, Ph.D. (Business Admin.), Henley Management College, Brunel (West London) University, UK

MBA, School of Management, AIT, Thailand

Adjunct Faculty (Finance, Investment)

RAGNAR THOR GRUNDTVIG SØEGAARD, Ph.D London School of Foreign Trade, England, Master of Business Administration, University of Gothenburg, Sweden

Adjunct Faculty (Finance)

SOMROTE KOMOLAVANIJ, Ph.D M.S., University of Texas, USA

Adjunct Faculty (Business Statistics, Economy, QC, Operations Research)

TRITOS LAOSIRIHONGTHONG, Ph.D., (Management of Technology) School of Management, AIT, Thailand

Adjunct Faculty (Manufacturing Strategy and Supply Chain Management)

WILLI ZIMMERMANN, Ph.D. (Political Science) University of Munich, Germany, Post-Doc. Diploma, Swiss Federal Institute of Technology Switzerland

Adjunct Faculty (Public Sector Management, Environmental Management)

28.7 Grants and Sponsored Research Completed in 2008

2nd Swiss EMBA Programme Study Trip

Duration 5-Dec-06 30-Jun-08
Project Investigator John Tang
Sponsor University of Applied Sciences (HTW, Churs) Switzerland
Total Contracted Amount (Baht) 864,000

Ansell Leadership Development Program 2007-08

Duration 1-Oct-07 30-Sep-08
Project Investigator Sundar Venkatesh
Sponsor Ansell Limited, Australia
Total Contracted Amount (Baht) 3,740,000

Executive MBA Program in Human Resources Management

Duration 1-Jan-04 31-Dec-08
Project Investigator Truong Quang
Sponsor Swedish International Development Cooperation Agency, Sweden

Total Contracted Amount (Baht) 45,658,200

IEMBA Program Vietnam

Duration 1-Jan-04 31-Dec-09
Project Investigators Frederic William Swirczek and Do Ba Khang
Sponsor AIT Operation
Total Contracted Amount (Baht) 36,000,000

The 12th Asia Pacific Management Conference 2006

Duration 1-Oct-06 31-Dec-08
Project Investigator Nazrul Islam
Sponsor Participants
Total Contracted Amount (Baht) 693,750

28.8 On-going Grants and Sponsored Research

DBA Program in Bangkok 2006

Duration 31-Oct-06 31-Dec-09
Project Investigators Indra Pandey and Barbara Igel
Sponsor Participants
Total Contracted Amount (Baht) 15,552,000

DBA Program in Bangkok 2007

Duration 1-Feb-07 31-Jan-10
Project Investigators Indra Pandey and Barbara Igel
Sponsor Participants
Total Contracted Amount (Baht) 19,440,000

DBA Program in Bangkok 2008

Duration 1-Jan-08 31-Dec-10
Project Investigator Barbara Igel
Sponsor Participants
Total Contracted Amount (Baht) 16,848,000

DBA Program in HCMC 2007

Duration 1-Feb-07 31-Jan-10
Project Investigators Indra Pandey and Barbara Igel
Sponsor Participants
Total Contracted Amount (Baht) 14,000,000

DBA Program in HN 2007

Duration 1-Jul-07 30-Jun-10
Project Investigator Indra Pandey and Barbara Igel
Sponsor Participants
Total Contracted Amount (Baht) 12,250,000

DBA Program in Sri Lanka 2006

Duration 31-Oct-06 31-Dec-09
Project Investigators Indra Pandey and Barbara Igel
Sponsor Participants
Total Contracted Amount (Baht) 11,988,000

DBA Program in Taiwan 2007

Duration 1-Nov-07 31-Dec-10
Project Investigator Indra Pandey and Barbara Igel
Sponsor Participants
Total Contracted Amount (Baht) 14,025,000

Executive MBA Program Bangkok

Duration 1-Jan-08 30-Jun-09
 Project Investigator Nicholas Dimmitt
 Sponsor Participants
 Total Contracted Amount (Baht) 2,518,950

Executive MBA-BKK Program, May 2008

Duration 1-May-08 31-Dec-09
 Project Investigator Nicholas J. Dimmitt
 Sponsor Professional managers/administrators of private/public sector
 Total Contracted Amount (Baht) 9,000,000

Part of the ProSPER.NET Joint Project on Integrating Sustainability in Business School Curricula

Duration 1-Nov-08 30-Nov-09
 Project Investigator Mark Neal
 Sponsor Ministry of Environment Japan/UNU-IAS
 Total Contracted Amount (Baht) 1,683,000

28.9 Publications

Refereed Journals

A. Barve, A. Kanda, and **Ravi Shankar**, Making 3PL effective in agile supply chains, *International Journal of Logistics Systems and Management*, (Inderscience), Vol. **4**(1), 2008, pp 40-60.

A. Ramesh, D.K. Banwet, and **Ravi Shankar**, Modelling the enablers of supply chain collaboration, *International Journal of Logistics System and Management*, (Inderscience), Vol. **4**(6), 2008, pp. 617-633.

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Johri, Lalit M. and Petison, Phallapa "Value-based localization strategies of automobile subsidiaries in Thailand", *International Journal of Emerging Markets*, Vol. 3 No. 2, 2008, pp. 140-162

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N. Khilwani, **Ravi Shankar**, and M. K. Tiwari, Facility Location Problem: An

approach based on Group Decision Making System and Psychological Algorithm, *International Journal of Production Research*, (Taylor & Francis), Vol. **46**(4), 2008, pp. 895-927.

P. Charan, **Ravi Shankar**, and R. K. Baisya, Analysis of interactions among the variables of supply chain performance measurement system implementation, *Business Process Management Journal*, (Emerald), Vol. **14**(4), 2008, pp 512-529.

Petison, Phallapa and **Johri, Lalit M.** "Dynamics of Manufacturer -Supplier Relationships in Emerging Markets: A case of Thailand" *Asia Pacific Journal of Marketing and Logistics*, Vol. 20 No. 1, 2008, pp. 76-96

Petison, Phallapa and **Johri, Lalit M.** "Localisation drivers in an emerging market: case studies from Thailand", *Management Decision*, Vol. 46 No. 9, 2008, pp. 1399-1412

Petison, Phallapa and **Johri, Lalit M.** "Managing local employees: expatriate roles in a subsidiary", *Management Decision*, Vol. 46 No. 5, 2008, pp. 743-760

Praveen Kumar and **Ravi Shankar**, Using Fuzzy QFD for design optimization and prioritization in a product development, *Industrial Engineering Journal*, (IIIE), May 2008, Vol. **1**(3), pp. 2-8.

Praveen Kumar, **Ravi Shankar**, and S. S. Yadav, An Integrated approach of Analytic Hierarchy Process and Fuzzy Linear Programming for supplier selection, *International Journal of Operational Research*, (Elsevier), Vol. **3**(6), 2008, pp. 614-631.

Praveen Kumar, **Ravi Shankar**, and S. S. Yadav, Flexibility in global supply chain: modeling the enablers, *Journal of Modeling in Management*, (Emerald), Vol. **3**(3), 2008, pp. 277-297.

R. M. Debnath, and **Ravi Shankar**, Benchmarking Telecommunication Services in India: An application of data envelopment analysis, *Benchmarking: an International Journal*, (Emerald), Vol. **15**(5), 2008, pp. 584-598.

R. M. Debnath, and **Ravi Shankar**, Measuring Performance of Indian Banks: an application of Data Envelopment Analysis, *Business Performance Management Journal*, (Emerald), Vol. **10**(1), 2008, pp. 57-85.

R. M. Debnath, **Ravi Shankar**, and Surender Kumar, Outlining voices of customers in technical education, *International Journal of Management in Education*, (Emerald), Vol. **2**(2), 2008, pp. 195-221.

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R. V. Rao, P. J. Pawar, and **Ravi Shankar**, Multi-objective optimization of electro-chemical machining process, *Proc. IMechE, Part B: Journal of Engineering Manufacture*, Vol. **222**(8), 2008, pp. 949-958.

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Romel M. Carlos and **Do Ba Khang**, Characterization of biomass energy projects in Southeast Asia, *Biomass and Bioenergy*, Vol. 32, No. 6, pp. 525-532, 2008.

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Sabry, F. and **Wongsurawat, W.** (2008), 'When Do Breakpoints Give Mutual Fund Investors a Break?', *Journal of Investment Compliance*, 9(2): 5-11.

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Tilak Raj, **Ravi Shankar**, Mohd. Suhaib and Yashvir Singh, An AHP approach for the selection of Advanced Manufacturing System: a case study, *International Journal of Manufacturing Research*, (Inderscience), Vol. **3**(4), 2008, pp 471-498.

V. K. Khanna, and **Ravi Shankar**, Journey to Implement Toyota Production System: A case Study, *Journal of Advances in Management Research*, (IIT Delhi), Vol. **5**(1), 2008, pp. 80-88.

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Wonglimpiyarat, J. (2008), 'Biotech Revolution - the impact of biotechnology on the pharmaceutical industry', *International Journal of Technology, Policy and Management*, Vol. 8(2), pp. 182-193, Inderscience Publisher.

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Jaakko Ikävalko & Seppo Hänninen & Ari Serkkola & **Ilkka Kauranen**. *Enhancing commercialization in information technology: How joint research projects within technology programs evolve in practice*. In *Emerging Topics and Technologies in Information Systems*. Miltiadis Lytras & Patricia Ordonez De Pablos, editors, IGI Global, Hershey, Pennsylvania, USA, 2008.

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Seppo Hänninen & **Ilkka Kauranen**. *Product innovation as a micro*

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Siengthai, S. (2008) "Chapter 9: Globalization and Unprotected Workers" in *Globalization, Flexibilization, and Working Conditions in Asia and the Pacific*, edited by S. Lee and F. Eryaud, Chandos Publishing.

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Conference Proceedings

Haddawy, P. and **B. Igel** (2008), "Fostering Innovation in Higher Education" The 30th Annual Meeting of the Council of Engineering Deans of Thailand, Bangkok, 9 May 2008

Nguyen The Hoang and **Donyaprueth Krairit**, The 2008 Applied Business Research Conference, Orlando, Florida, U.S.A., January 2-5, 2008. (All papers and proposals are evaluated using a double-blind reviewing process.) "Political Connections, Corruption and the Allocation of Government Expenditure."

P. Charan, R.K. Baisya, and **Ravi Shankar**, Selection of supply chain performance measurement system using fuzzy approach, Presented by the co-author and published in proceedings, Eighth Global Conference of Global Institute of Flexible Systems Management, Stevens Institute of Technology, NJ, US (June 14-16, 2008)

R. Joshi, D.K. Banwet, and **Ravi Shankar**, Weak capabilities of Indian dairy chain: an exploratory case study through SAP-LAP approach, Presented by the co-author and

published in proceedings, Eighth Global Conference of Global Institute of Flexible Systems Management, Stevens Institute of Technology, NJ, US (June 14-16, 2008)

R. Ramesh, D.K. Banwet, and **Ravi Shankar**, Modeling enablers of flexibility in Indian apparel and textile supply chain, Presented by the co-author and published in proceedings, Eighth Global Conference of Global Institute of Flexible Systems Management, Stevens Institute of Technology, NJ, US (June 14-16, 2008)

R.M. Debnath and **Ravi Shankar**, Performance evaluation and benchmarking of Indian banks: An application of data envelopment analysis, Presented and published in proceedings of International Conference on Data management, IMT Ghaziabad, Also appeared in the proceeding of the conference- Data management: Macmillan India, Delhi, pp. 427-439 (2008)

Shanta R Yapa & **Ilkka Kauranen**. *Striking the right balance between process efficiency and innovativeness: CMMi with a novel innovation process model*. At the 4th SLIIT Research Symposium 2008 "Information Technology for National Empowerment," in Malambe, Sri Lanka, on December 17, 2008. Sri Lanka Institute of Information Technology (SLIIT). 4 pages.

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Other Publications

Amazing story of Mumbai Dabbawallah (Published in: Designing and Managing the Supply Chain: Concepts, Strategies, and Case studies (Third Edition: *Special Indian Edition*), Tata McGraw-Hill Publishing Company Ltd, New Delhi (2008) David Simchi-Levi, Philip Kaminsky, Edith Simchi-Levi & **Ravi Shankar**) 2008

Maruti Udyog Limited; (Published in: Designing and Managing the Supply Chain: Concepts, Strategies, and Case studies (Third Edition: *Special Indian Edition*), Tata McGraw-Hill Publishing Company Ltd, New Delhi (2008) David Simchi-Levi, Philip Kaminsky, Edith Simchi-Levi & **Ravi Shankar**) 2008

Venkatesh, S. Book Reviews: "Business Analysis and Valuation, IFRS Edition (Text and Cases), Krishna G. Palepu, Paul M. Healy, Victor L Bernard & Erik Peek, International Journal of Accounting, volume 43, issue 4, December 2008.

28.10 Doctoral Students' Dissertation

International Business

Internet Technology and Customer Relationships: Assessing Travel Agencies in Vietnam
By Hoang Thi Phuong Thao
Supervisor: Dr. Fredric W. Swierczek

Management Competencies, Cultural Values, Learning Styles, and Delivery of Learning: Implications for MBA Programs
By Tawit Sudsakorn
Supervisor: Dr. Fredric W. Swierczek

The Psychological Contract in Employment: Empirical Evidence from an Economy in Transition
By Do Xuan Truong
Supervisor: Dr. Fredric W. Swierczek/ Dr. Sununta Siengthai

Management of Technology

Success Criteria and Factors for Biomass Energy Project Implementation in Southeast Asia: A Lifecycle-based Approach
By Romel M. Carlos
Supervisor: Dr. Do Ba Khang

28.11 Masters Students' Theses, Research Studies and Projects

Business Administration

Research Study: The Critical Role of Strategic Planners to the Success of Advertising Agency
By Vemuri Madhavi
Supervisor: Dr. Nicholas J. Dimmitt

International Business

"Sadaqah Bank": A Model for a New Financial Institution for Sustainable Poverty Alleviation
By Md. Zahidul Alam
Supervisor: Prof. Ilkka Kauranen

Research Study: A Comparative Study on Islamic Banking and Conventional Banking Methods into the Future Prospects of Islamic Banking
By Neha Goel
Supervisor: Dr. Donyaprueth Krairit

Research Study: Analysis of the Thai Venture Capital Industry: Development and Constraints
By Germain Alban Chastel
Supervisor: Dr. Nicholas J. Dimmitt

Research Study: Competitiveness of Thailand Leather Industries: Prospects and Challenges
By Yossapon Tiranut
Supervisor: Prof. John C. S. Tang

Research Study: Competitiveness Study of Chinese State-owned Express Delivery Services
By Zhang Qian
Supervisor: Prof. Ilkka Kauranen

Research Study: Family Ownership and Firm Performance: A Study of the Retail Industry Around the World
By Nguyen Thi Kim Anh
Supervisor: Dr. Sundar Venkatesh

Research Study: Identifying Cost Drivers of Next Generation Networks with Respect to Telecom Services and Possible Cost Saving Areas
By Hettiarachchige Wikum Dhammika Gunaratna
Supervisor: Dr. Sundar Venkatesh

Research Study: Integrated Marketing Communications for Building Customer Relationships in Service Business: A Case Study of Total Access Communication Public Company Limited
By Wassamon Samakhabootra
Supervisor: Dr. Nicholas J. Dimmitt

Research Study: How Emerging Market Companies Go Global: A Case Study of Advance Agro-Public Limited Company
By Phawina Chamninawakun
Supervisor: Prof. Nazrul Islam

Research Study: Human Resource Management Practices as Facilitators of Organizational Change
By Puneet Talwar
Supervisor: Dr. Sununta Siengthai

Research Study: Macroeconomic Environments of the BRICs (Brazil, Russia, India, and China) and Opportunities for South Korea
By Seungkook Kang
Supervisor: Prof. John C S Tang

Research Study: Measuring Human Capital Productivity: A Comparative Study on Firm Level
By Sebastian Herzig
Supervisor: Prof. Lalit Johri / Dr. Rian Beise-Zee

Research Study: Mergers and Acquisition Strategies of Tata Motors
By M. Ashok Kumar
Supervisor: Dr. Winai Wongsurawat

Research Study: Postal Financial Services in Vietnam: A Case Study of VNPost's Setting up its Postal Bank
By Nguyen Thi My Hoang
Supervisor: Prof. John C. S. Tang

Research Study: Quality of Higher Education in Pakistan (Balochistan)
By Farah Samreen
Supervisor: Dr. Do Ba Khang

Research Study: Supply Chain Management of a Convenience Store in Thailand: A Case Study of 7-Eleven
By Daranee Manboonmana
Supervisor: Dr. Ravi Shankar

Research Study: The Communication System of a Management Control Process: A Case Study
By Ngoc Nguyen Hoang Khanh Tran
Supervisor: Dr. Nicholas J. Dimmitt

Project: Case Studies of Smallholder Agriculture Producers' Participation in the Asian Market
By Tian Yating
Supervisor: Dr. Rian Beise-Zee

Project: Competitor Analysis and Rankings of the European Utility Players
By Aninda Baruah
Supervisor: Dr. Donyaprueth Krairit

Project: CRM Theories in Practice: The Case of IBM-France
By Merrienne Charlotte
Supervisor: Prof. Ilkka Kauranen

Project: Development of a B2B Strategy for a Successful Consumer Product: The Case of Nespresso
By Gregory Pennaneach
Supervisor: Prof. Nazrul Islam

Project: Financial Information and Operation Services - United Nations Headquarters
By Mohit Sharma
Supervisor: Dr. Donyaprueth Krairit

Project: How to Increase the Sales of Rubber-Man Products Used for Rubber Trees in Asia
By Kanchana Silprachawong

Supervisor: Prof. Lalit M. Johri

Project: Market Entry Strategies for a Super Premium Brand: A Case Study
By Anuradha Sharma
Supervisor: Dr. Nicholas J. Dimmitt

Project: Market Entry Strategy for a Multi National Company in Lao PDR: A Case Study of Schneider Electric, Thailand
By Vivek Vij
Supervisor: Dr. Rian Beise-Zee

Project: Penden Cement Authority Limited (PCAL) and its CSR policy- A Case Study of Cement Plant
By Jigme Thinley
Supervisor: Dr. Nicholas J. Dimmitt

Project: Perception of the Thai Automotive Human Resource Development Project (TAHRDP) on Thai Vocational Colleges
By Parada Buranatun
Supervisor: Dr. Sununta Siengthai

Project: Project Study for FAO: Case Studies of Smallholders of Agriculture Producers' Participation in Markets
By Mith Samonn
Supervisor: Dr. Rian Beise-Zee

Project: The Dilemma of Choosing a Distribution Route: A Case Study of Wyeth Limited- India
By Nabajyoti Acharya
Supervisor: Dr. Sununta Siengthai

Project: The Online Independent Music Entertainment Services
By Rongpichate Kuwalairat
Supervisor: Dr. Donyaprueth Krairit

Project: The Role of Corporate Social Responsibility in the Food Industry in France
By Melanie Cerny
Supervisor: Dr. Sununta Siengthai

Project: The Study of Behaviors, Attitude, and Satisfaction of Super Jew's Audiences Toward the Program and Add-ins
By Noparat Yingjamsiri
Supervisor: Dr. Winai Wongsurawat

International Public Management

Research Study: Corporate Social Responsibility as a Brand Core Value: A Case Study of Kuoni DMC
By Nguyen Ngoc Diep Anh
Supervisor: Dr. Nicholas J. Dimmitt

Research Study: Critical Success Factors and Success Criteria for International Development Projects in Cambodia
By Naly Sok
Supervisor: Dr. Do Ba Khang

Research Study: Performance of Relief Assistance: A Study of International and Local Response to Cyclone Nargis in Myanmar
By Ko Ko Lwin
Supervisor: Dr. Do Ba Khang

Project: Intership in the Environment Operations Center in the Greater Mekong Subregion Countries
By Wu Jian
Supervisor: Dr. Nicholas J. Dimmitt

Project: Relationship between Capital Structure and Firm Profitability: An Empirical Study of Vietnamese Listed Companies
By Phan Cam Ly
Supervisor: Dr. Donyaprueth Krairit

Management of Technology

Enhancing Navigation Safety from the Perspective of Knowledge Management: The Case of a Shipping Company in Thailand
By Yiarayong Klangboonkrong
Supervisor: Dr. Barbara Igel

Research Study: Adoption and Implementation of the Quality Management Systems: A Case Study of Thai Manufacturing Companies
By Kerkchai Choomwong
Supervisor: Dr. Barbara Igel

Research Study: A Study on Technology Transfer Process in Bhutan Telecom Limited
By Sonam Tashi

Supervisor: Prof. Nazrul Islam

Research Study: E-Safety Awareness and Its Implications to Users of Online Social Networks: A Study in the Asian Context
By Sevvanthinathan Gogulan
Supervisor: Dr. Donyaprueth Krairit

Research Study: Islamic Shariah Compliant Supplier Selection Framework for Halal Food Products
By Tayyab Waqas Amjed
Supervisor: Dr. Barbara Igel

Research Study: Select Study of Enablers for e-Governance Projects in Bhutan
By Hari Prasad Kafley
Supervisor: Dr. Ravi Shankar

Research Study: Talentship: Linking Talent to Sustainable Strategic Success in Global Retailing: A Case Study of Carrefour S.A.
By Asif Aziz Rahman
Supervisor: Dr. Barbara Igel

Project: Airbus' Sup@irworld (e-Procurement) Project in a Strategic Context
By Antoine Joseph Alfred Jehannet
Supervisor: Dr. Donyaprueth Krairit

Project: Business Process Re-Engineering for an IT Support Company
By Pavadepouille Sundaram Ramesh
Supervisor: Dr. Nicholas J. Dimmitt

Project: Foreign Market Attractiveness: Should Livejob, Denmark Enter and Operate in the Indian Market?
By Ajaya Kumar Tripathi
Supervisor: Dr. Rian Beise-Zee

International Business - Management of Technology

Project: A Development Strategy for Cooling Tower Production in Rinki Vietnam Company
By Pham Van Thanh
Supervisor: Dr. Fredric W. Swierczek

Project: A Development Strategy for Power Engineering Consulting Center No. 1 for 2008 -2010
By Vu Thi Boi Huong
Supervisor: Dr. Fredric W. Swierczek

Project: A Differentiation Strategy for BBruan Vietnam
By Le Van Minh
Supervisor: Dr. Fredric W. Swierczek

Project: A Growth Strategy for Retail Banking in Vietnam
By Huynh Thi Thanh Ngoc
Supervisor: Dr. Fredric W. Swierczek

Project: A Human Resource Strategy for an Air Separation Unit Business of Ph Co., Ltd.
By Nguyen Thi Bao An
Supervisor: Dr. Do Ba Khang

Project: A Planning and Implementation Roadmap for Technology Transfer from Astek to Embedded System Division (EMB) at Global Cybersoft, Inc.
By Lam Hong Le Ly
Supervisor: Prof. Nazrul Islam

Project: A Strategy for NAACO Company
By Nguyen Trong Duy
Supervisor: Dr. Mark Neal

Project: A Strategy Mix to Increase Market Share in a Price-Driven Market: The Case of Truemove
By Naruemon Simakajornboon
Supervisor: Prof. Lalit M. Johri

Project: ATOS Origin (Thailand) Ltd.: How to Sustain Company Profitability?
By Pirata Phakdeesattayaphong
Supervisor: Prof. Lalit M. Johri

Project: Building Up a Comprehensive Strategy for Competition: A Case Study of Light Furniture Joint Stock Company (LFC)
By Thai Hoang Nam
Supervisor: Dr. Winai Wongsurawat

Project: Business Development for a Software Company in Vietnam
By Mai Hoai An
Supervisor: Dr. Do Ba Khang

Project: Capability Maturity Model Integration (Cmmi®) for the Information Technology Center of Vietnam Electricity
By Dang Minh Trong
Supervisor: Dr. Fredric W. Swierczek

Project: Changing the Distribution Model in B. Braun Vietnam Company Ltd.
By Ngo Thi Kieu Diem
Supervisor: Dr. Fredric W. Swierczek

Project: Competitive Strategy in Vietnam's IT Market: A Case Study of the Information Technology Center of Vietnam Electricity
By Nguyen Truong Giang
Supervisor: Dr. Fredric W. Swierczek

Project: Customer Relationship Management as a Solution for Long-Term Development in HG Travel
By Tran Thi Hue Chi
Supervisor: Dr. Fredric W. Swierczek

Project: Designing an Agile Supply Chain in Saigon Manufacturing Trading Corporation
By Nguyen Tran Thanh Thuan
Supervisor: Dr. Ravi Shankar

Project: Developing Alternative Strategies for Intrafix Air: A Case Study of B. Braun Vietnam Pharmaceutical Company
By Ho Thi Kim Thoa
Supervisor: Dr. Fredric W. Swierczek

Project: Developing the Strategy to Attract Foreign Direct Investment into Tien Giang After Vietnam Entered the World Trade Organization
By Phan Quoc Nam
Supervisor: Prof. John C. S. Tang

Project: Developing Tourism Products in the Mekong Delta Vietnam
By Nguyen Thanh Dieu
Supervisor: Dr. Do Ba Khang

Project: Distributor Network Optimization: A Case Study of Lube Oil Vietnam Company Limited
By Nguyen Huu Tri
Supervisor: Dr. Mark Neal

Project: Enhancing Vinaphone Customer Services
By Pham Thi Le Thuy
Supervisor: Dr. Fredric W. Swierczek

Project: How to Enhance the Effectiveness of the Training Activities at Friesland Foods Dutch Lady Vietnam
By Trinh Thanh Son
Supervisor: Dr. Sununta Siengthai

Project: How to Retain and Motivate Talents: A Case Study of Asian Institute of Technology Center in Vietnam
By Do Thuc Uyen
Supervisor: Dr. Fredric W. Swierczek

Project: How to Transform Oriflame Asia from a Good to a Great Company
By Yoginder Singh Grewal
Supervisor: Prof. Lalit M. Johri

Project: Human Resource Strategy in IMT Solutions
By Doan Van Ngoc Giao
Supervisor: Dr. Do Ba Khang

Project: Implementing Preventive Maintenance in Imexpharm Pharmaceutical Corporation
By Nguyen Phuoc Thien
Supervisor: Dr. Fredric W. Swierczek

Project: Improvement of Operational Management for Better Profit Ability in Arkema Vietnam Ltd.
By Ta Quoc Dung
Supervisor: Dr. Do Ba Khang

Project: Improving Competitiveness of Jotun Paints (Vietnam) by Implementation of a "Lean" Concept in Production
By Pham Mong Diem
Supervisor: Dr. Ravi Shankar

Project: Improving Customer's Satisfaction in a Public Agency Applying the One-Stop-Shop Model
By Le Hong Thanh
Supervisor: Dr. Fredric W. Swierczek

Project: Improving Human Resources Management Practice in a Contact Center: A Case Study of Call to Contact Co., Ltd.
By Nguyen Dang Cat Dung
Supervisor: Dr. Sununta Siengthai

Project: Improving Seameo's Image through Strategic Planning
By Nguyen Hong Thuy
Supervisor: Dr. Fredric W. Swierczek

Project: Improving Service Quality of Fault Service in TOT Public Company
By Marie Opassatian
Supervisor: Prof. Lalit M. Johri

Project: Improving the Competitiveness of Distributor Network in the Lubricants Business: A Case Study of Exxonmobil Vietnam Company Limited
By Hoang Do Nguyen Thang
Supervisor: Dr. Mark Neal

Project: Improving the Competitiveness of Everich Distribution Company
By Nguyen Tan Dung
Supervisor: Dr. Fredric W. Swierczek

Project: Improving the Distribution and Sales Productivity at Nestle Vietnam Co., Ltd.
By Nguyen Duc Sanh
Supervisor: Dr. Rian Beise-Zee

Project: Improving the Distribution System of British American Tobacco, Vietnam
By Dang Thi Ngan
Supervisor: Dr. Fredric W. Swierczek

Project: Improving the Effectiveness of Order Management in Scancom International A/S
By Hoang Minh Khoi
Supervisor: Dr. Fredric W. Swierczek

Project: Improving the Human Resource Management of Petrolimex
By Vu Thi Hoang Ha
Supervisor: Dr. Fredric W. Swierczek

Project: Improving the KPIs for Pharmaceutical Enterprises: A Case Study of DiethelmVietnam Co., Ltd.
By Trinh Quang Thanh
Supervisor: Dr. Fredric W. Swierczek

Project: Improving the Performance of Human Resource Management in the Industrial Zone Development Company
By Pham Van Tinh
Supervisor: Dr. Fredric W. Swierczek

Project: Increasing Customers' Trust: A Case Study of B. Braun Company
By Le Thi Hop
Supervisor: Dr. Fredric W. Swierczek

Project: Internal Customer Complaint Handling of Siam Commercial Bank Public Company Limited
By Kalsuda Srisuwan
Supervisor: Prof. Lalit M. Johri

Project: Managing Cash Flow in An Nam Group (ANG)
By Ho Thi Viet Ha
Supervisor: Dr. Fredric W. Swierczek

Project: Marketing Distribution Channels in Tourism: A Case Study of Aurora Travel
By Hoang Thi Thuy Trang
Supervisor: Dr. Rian Beise-Zee

Project: Optimizing the Distribution Network of Richfield Worlwide Joint Stock Company
By Vuong Van Dung
Supervisor: Dr. Fredric W. Swierczek

Project: Project Financing of a Water Treatment in Vietnam: A Case Study of Binh a Water Corporation Limited
By Nguyen Thi Ngoc Lan
Supervisor: Dr. Sundar Venkatesh

Project: Quality Service System and New Service Development Process Application in Asia Commercial Bank
By Nguyen Ngo Anh Thu
Supervisor: Prof. Ilkka Kauranen

Project: Reducing Labour Turnover Rate for Petroleum Drilling Service Company
By Pham Van Thu
Supervisor: Dr. Sununta Siengthai

Project: Reducing Turnover and Retaining Employee Loyalty: A Case of Lac Viet Computing Corporation
By Nguyen Bach Diep
Supervisor: Dr. Fredric W. Swierczek

Project: Retention Issues at Ford Vietnam Ltd.
By Van Phong Dao
Supervisor: Dr. Fredric W. Swierczek

Project: Solutions to Enhance HRM Activities in the Company: A Case Study of Toyota Tsusho Saigon Motor Service
By Duong An Giang
Supervisor: Dr. Sununta Siengthai

Project: Stimulating Employee Motivation and Labor Retention in a Personal Care Company in Vietnam
By Luong Hoang Thi Yen Loan
Supervisor: Dr. Nicholas J. Dimmitt

Project: Strategic Change Management in Small and Medium Enterprises: A Case Study of TICH Giang Company
By Nguyen Tien Trung
Supervisor: Dr. Fredric W. Swierczek

Project: Strategies to Develop the Full-Time Faculty in Business Administration, SonadeziCollege
By Tran Lan Quyen
Supervisor: Dr. Fredric W. Swierczek

Project: Strategy Implimentation in La Vie: Human Resource Management Impacts
By Nguyen Thanh Nguyen
Supervisor: Dr. Fredric W. Swierczek

Project: Strengthening the Technical Support and Quality Assurance Process in William E Connor and Associate Vietnam
By Nguyen Dang Quy Thien
Supervisor: Dr. Fredric W. Swierczek

Project: The Role of Technical Service Quality in Industrial Markets: The Case of NSC Vietnam
By Tran Quoc Canh
Supervisor: Dr. Rian Beise-Zee

Project: Total Quality Management Implementation into the Company Operation
By Tran Thai Hoang
Supervisor: Dr. Barbara Igel

Chapter 29: AIT EXTENSION

29.1 Introduction

AIT Extension contributes to the development of the region through continuing professional education, short-course training and consultancy services. We do this by working to develop highly qualified and committed professionals who play a leading role in the sustainable development of the region and its integration into the global economy.

AIT Extension's operating programs:

- Agriculture, Resources and Development (ARD)
- Development Management (DM)
- Education and Information Technology (EIT)

29.2 Mission

AIT Extension identifies and responds to regional opportunities for continuing education, training and consultancy, and thus helps realize AIT's mission to develop highly qualified and committed professionals who will play a leading role in the sustainable development of the region and its integration into the global economy. AIT Extension is an innovative and responsive provider of a broad array of capacity building programs and service

29.3 Unit Governance

Dr. Jonathan Shaw
Director

29.4 Learning Approach

AIT Extension's learning systems utilize interactive, task-based, web-based, distance mentoring and self-access learning experiences.

Teaching-learning methods used in AIT Extension training course include

lectures, workshops, group discussions, case analyses group work, individual exercises, reflective thinking, role plays, project work and study visits. We believe strongly in the value of peer learning, problem-based learning, participatory learning and learner-centeredness and aim to maximize learning in all training by using these approaches appropriately. Participants benefit from close personal attention from accomplished professionals. A typical training course provides five to six hours of workshop sessions every weekday.

In all courses, participants learn relevant applications of computer and information technology. The internet is used as a support tool for sourcing information and to facilitate distance learning and mentoring activities. In most courses desktop computer is provided for exclusive use of each participant for the duration of their training. Dedicated computer and other laboratory facilities are accessible 24 hours/day, including weekends.

All training courses take advantage of our stimulating academic and social environment, which is a multicultural English speaking academic community.

29.5 Training Resources

AIT Extension has a wide pool of academic and professional Resource Persons drawn from AIT's schools, and from leading international and local organization in the region.

Its professional staff are specialists in human resources development, curriculum planning, instructional system design, information technology application development and other specific technological areas.

AIT has incorporated state-of-the-art educational and information

technologies into all training facilities on campus.

Extension's training facilities including computing and networking hardware and software are used for various training programs. The training facilities are accessible 24 hours daily. At least one computing station is dedicated for exclusive use of each participant throughout the duration of the program. All training program participants have unlimited use of e-mail and access to the Internet.

29.6 Grants and Sponsored Research Completed in 2008

2nd Workshop on Improving Administrative Data Sources for Monitoring of MDG Indicators

Duration 26-Nov-07 27-Feb-08
Project Investigator Niramol Ponvilai
Sponsor Asian Development Bank
Total Contracted Amount (Baht) 268,125.00

AIT-NCED Linkage for Capacity Building Activity-1

Duration 1-Jul-07 31-Dec-08
Project Investigator Voravate Chonlasin
Sponsor DANIDA
Total Contracted Amount (Baht) 2,296,800.00

Conflict Mediation and Dialogue

Duration 1-Oct-07 03-Jan-08
Project Investigator Purvi Chudasama
Sponsor participants
Total Contracted Amount (Baht) 768,000.00

Delivering Quality Extension Services

Duration 12-Nov-07 28-Jan-08
Project Investigator Wichit Silpamaneephan
Sponsor ACIAR
Total Contracted Amount (Baht) 597,108.00

Educational Research Methodology

Duration 15-Oct-07 24-Jan-08
Project Investigator Kanlaya Muangsan
Sponsor DANIDA
Total Contracted Amount (Baht) 558,960.00

Effective Management Skills and Techniques

Duration 1-Oct-07 09-Jan-08
 Project Investigator Pradeep Dash, Purvi Chudasama
 Sponsor Multi-donors
 Total Contracted Amount (Baht) 673,312.00

Effective Training Implementation and Management

Duration 19-Nov-07 06-Mar-08
 Project Investigator Kanlaya Muangsan
 Sponsor Multi-donors
 Total Contracted Amount (Baht) 1,327,425.00

E-Governance for Decision Makers

Duration 19-Nov-07 28-Feb-08
 Project Investigator Pradeep Dash, Purvi Chudasama
 Sponsor Government of India
 Total Contracted Amount (Baht) 426,228.00

Information and Communication Technologies (ICT) for Education Management

Duration 29-Oct-07 10-Jan-08
 Project Investigator Warindhorn Wachirasiri
 Sponsor IRQUE, Sri Lanka and TEQIP India
 Total Contracted Amount (Baht) 477,598.00

Information Technology and Management

Duration 5-Nov-07 31-Jan-08
 Project Investigator Thaniya Jirasathitpornpong
 Sponsor Multi-donors
 Total Contracted Amount (Baht) 462,000.00

Leadership in Public Services

Duration 8-Oct-07 17-Jan-08
 Project Investigator Pradeep Dash, Purvi Chudasama
 Sponsor Government of India
 Total Contracted Amount (Baht) 417,536.00

Local Government, Community Participation, Rural Infrastructure and IT Application for Sustainable Development

Duration 19-Nov-07 31-Jan-08
 Project Investigator Thaniya Jirasathitpornpong
 Sponsor LCED/Bangladesh
 Total Contracted Amount (Baht) 512,000.00

Management of Organizational Change

Duration 8-Oct-07 17-Jan-08
 Project Investigator Pradeep Dash, Purvi Chudasama
 Sponsor Government of India
 Total Contracted Amount (Baht) 365,344.00

Participatory Curriculum Development

Duration 29-Oct-07 07-Feb-08
 Project Investigator Kanlaya Muangsan
 Sponsor IRQUE, Sri Lanka
 Total Contracted Amount (Baht) 451,341.00

Public Private Partnership in Urban Environment Management

Duration 2-Dec-07 28-Feb-08
 Project Investigator Sahdev Singh, Bahul Raj Shrestha
 Sponsor UNDP-Nepal
 Total Contracted Amount (Baht) 217,800.00

Rights-based Approach to Development

Duration 3-Dec-07 01-Mar-08
 Project Investigator Worawan Sumroentrum
 Sponsor Multi-donors
 Total Contracted Amount (Baht) 551,745.00

Rural Agribusiness Development and Management

Duration 12-Nov-07 28-Jan-08
 Project Investigator Wichit Silpamaneephan
 Sponsor ACIAR and ADRA Mongolia
 Total Contracted Amount (Baht) 578,680.00

Selected Tools for Oracle 10g Database Development and Administration

Duration 12-Nov-07 31-Jan-08
 Project Investigator Thaniya Jirasathitpornpong
 Sponsor Bank of Mongolia
 Total Contracted Amount (Baht) 1,518,000.00

Small Scale Water Resources Management

Duration 3-Dec-07 25-Feb-08
 Project Investigator Wichit Silpamaneephan
 Sponsor LCED/Bangladesh
 Total Contracted Amount (Baht) 969,624.00

Strategic HR: Making Resources a Strategic Function

Duration 5-Nov-07 14-Feb-08
 Project Investigator Pradeep Dash, Purvi Chudasama
 Sponsor Multi-donors
 Total Contracted Amount (Baht) 903,516.00

Training on Biotechnology Policy and Biosafety of GMOs

Duration 17-Dec-07 21-Mar-08
 Project Investigator Sorat Phutthaphithak
 Sponsor ACIAR
 Total Contracted Amount (Baht) 317,781.00

University Management and Administration

Duration 13-Dec-07 21-Mar-08
 Project Investigator Kanlaya Muangsan
 Sponsor IRQUE, Sri Lanka
 Total Contracted Amount (Baht) 539,088.00

Water Utilities Leadership Center Asia

Duration 1-Jul-07 31-Jul-08
 Project Investigator Jeffrey Major
 Sponsor USAID/Eco-Asia
 Total Contracted Amount (Baht) 840,000.00

29.7 Grant and Sponsored Trainings Initiated in 2008

9th Fredskorpset Preparatory Course in Asia

Duration 28-Apr-08 15-Aug-08
 Project Investigator Reynaldo Calabdan, Warindhorn Wachirasiri
 Sponsor Fredskorpset, Norway
 Total Contracted Amount (Baht) 2,855,953.00

10th Fredskorpset Preparatory Course in Asia

Duration 1-Oct-08 18-Jan-09
 Project Investigator Reynaldo Calabdan, Warindhorn Wachirasiri
 Sponsor Fredskorpset, Norway
 Total Contracted Amount (Baht) 2,154,524

Agribusiness Development and Management

Duration 28-Apr-08 8-Jul-08
 Project Investigator Wichit Silpamaneephan
 Sponsor ACIAR and Jember University
 Total Contracted Amount (Baht) 1,290,150.00

AIT-NCED Institutional AIT-RFLDC First regional exposure visit program on Agribusiness development and management

Duration 5-Nov-08 26-Feb-09
 Project Investigator Mr Wichit Silpamaneephan
 Sponsor GOB DANIDA & Indoneasia Govt
 Total Contracted Amount (Baht) 1,855,498

AIT-NCED Institutional Linkage for Capacity building program

Duration 1-Aug-08 13-Oct-09
 Project Investigator Mr Raynaldo
 Sponsor ESAT DANIDA Nepal
 Total Contracted Amount (Baht) 2,730,000

Arbitration Adjudication and Contract Management

Duration 1-Dec-08 30-Apr-09
 Project Investigator Voravate Chonlasin
 Sponsor NECORD
 Total Contracted Amount (Baht) 2,073,093

Bridge Diagnostics, Performance Evaluation and Rehabilitation

Duration 1-Sep-08 11-Dec-08
 Project Investigator Wichit Silpamaneephan
 Sponsor World Bank & Government of Nepal
 Total Contracted Amount (Baht) 950,328.00

Central Bank Financial Management, Auditing and Accounting for NRB

Duration 7-Jul-08 09-Oct-08
 Project Investigator Upul Kaluhetti Bramahnage
 Sponsor Nepal Rastra Bank

Total Contracted Amount (Baht) 648,918.00

Central Bank Human Resource Management for NRB

Duration 30-Jun-08 02-Oct-08

Project Investigator Upul Kaluhetti Bramahnage

Sponsor Nepal Rastra Bank

Total Contracted Amount (Baht) 619,462.00

Central bank Regulation and Supervision

Duration 28-Apr-08 31-Jul-08

Project Investigator Upul Kaluhetti Bramahnage

Sponsor Nepal Rastra Bank

Total Contracted Amount (Baht) 651,905.00

Certificate Course on Management Consulting Essentials

Duration 4-Feb-08 31-Oct-08

Project Investigator Voravate Chonlasin, Bahul Raj Shrestha

Sponsor participants

Total Contracted Amount (Baht) 484,450.00

Competitive Advantage and Leadership

Duration 4-Aug-08 10-Nov-08

Project Investigator Upul Kaluhetti Bramahnage

Sponsor Nepal Telecom & Commercial Leasing Sri Lanka

Total Contracted Amount (Baht) 887,202.00

Conflict Mediation and Dialogue

Duration 1-Sep-08 04-Dec-08

Project Investigator Upul Kaluhetti Bramahnage

Sponsor Social National "fadma" Development Project Nigeria

Total Contracted Amount (Baht) 440,708.00

Construction Management using ICT

Duration 1-Sep-08 31-Oct-08

Project Investigator Agus Prajogo

Sponsor Multi-donors

Total Contracted Amount (Baht) 635,060.00

Construction Management using IT

Duration 1-Dec-08 31-Mar-09

Project Investigator Ms Thaniya Jirasathitpornpong

Sponsor LGED Bangladesh

Total Contracted Amount (Baht) 829,480

Course on project Accounting and the Development of School and Provincial Accounting

Duration 27-Sep-08 31-Jan-09

Project Investigator Thaniya Jirasathitpornpong

Sponsor SEMPII/Sri Lanka

Total Contracted Amount (Baht) 1,060,620

CSR Asia Summit 2008

Duration 2-Nov-08 04-Feb-09

Project Investigator Mr Voravate

Sponsor CSR Asia Participants & Sponsors

Total Contracted Amount (Baht) 1,718,550

Delivering Quality Extension Services

Duration 28-Apr-08 7-Jul-08

Project Investigator Wichit Silpamaneephan

Sponsor ACIAR-SADI

Total Contracted Amount (Baht) 1,197,419.00

Education Strategic planning

Duration 24-Nov-08 31-Jan-09

Project Investigator Mr Upul Kaluhetti Brahmanage

Sponsor MOE Sri Lanka

Total Contracted Amount (Baht) 1,872,500

Effective Energy Systems for Sustainable Development

Duration 18-Aug-08 26-Aug-08

Project Investigator Worawan Sumroentrum

Sponsor AOTS EBARA

Total Contracted Amount (Baht) 255,528

Effective Leadership and Execution

Duration 17-Mar-08 23-Jun-08

Project Investigator Upul Kaluhetti Bramahnage

Sponsor Nepal Telecom

Total Contracted Amount (Baht) 404,820.00

Effective Leadership and Execution

Duration 15-Sep-08 21-Dec-08

Project Investigator Khin Ma Ma Gyi

Sponsor Nepal Telecom

Total Contracted Amount (Baht) 403,617.00

Effective Management Skills and Techniques

Duration 10-Nov-08 31-Dec-08

Project Investigator Upul Kaluhetti Bramahnage

Sponsor MOH-Maldives and DoPT-India

Total Contracted Amount (Baht) 1,575,000

Financial Management, Planning and Projection

Duration 14-Jul-08 26-Oct-08

Project Investigator Upul Kaluhetti Bramahnage

Sponsor Government of Bangladesh and SHEP

Total Contracted Amount (Baht) 353,600.00

Financial Management, Planning and Projections: UPHCP-II

Duration 15-Sep-08 31-Dec-08

Project Investigator Upul Kaluhetti Bramahnage

Sponsor UPHCP-II

Total Contracted Amount (Baht) 784,000.00

Fiscal Decentralization

Duration 8-Sep-08 18-Dec-08

Project Investigator Upul Kaluhetti Bramahnage

Sponsor Government of Nepal

Total Contracted Amount (Baht) 1,422,367.00

General Banking in Central Bank for NRB

Duration 16-Jun-08 18-Sep-08

Project Investigator Upul Kaluhetti Bramahnage

Sponsor Nepal Rastra Bank

Total Contracted Amount (Baht) 641,313.00

Human Resources Management for ACIAR-SADI

Duration 21-Jun-08 28-Sep-08

Project Investigator Niramol Ponvilai

Sponsor ACIAR-SADI

Total Contracted Amount (Baht) 654,454.00

Implementing ERP Applications and Management

Duration 21-Apr-08 30-Sep-08

Project Investigator Thaniya Jirasathitpornpong

Sponsor Multi-donors

Total Contracted Amount (Baht) 412,528.00

In Country Training: Seminar on Leadership and Work Ethics

Duration 2-Jul-08 31-Oct-08

Project Investigator Voravate Chonlasin

Sponsor Government of Maldives

Total Contracted Amount (Baht) 268,195.00

Information Technology Applications in Management

Duration 5-Jun-08 31-Dec-08

Project Investigator Thaniya Jirasathitpornpong

Sponsor Multi-donors

Total Contracted Amount (Baht) 493,750.00

Integrated Coastal Management in Thailand

Duration 21-Feb-08 30-Sep-08

Project Investigator Niramol Ponvilai

Sponsor UNIDO

Total Contracted Amount (Baht) 476,400.00

International Exposure Program on Financing SMEs

Duration 27-Feb-08 06-Jun-08

Project Investigator Sirinthip Pongsuvina

Sponsor CAB

Total Contracted Amount (Baht) 997,572.00

International Training and Study Visit Program on Cleaner Production Technologies and Management

Duration 20-Aug-08 12-Dec-08

Project Investigator Sirinthip Pongsuvina

Sponsor Department of Environment, Malaysia

Total Contracted Amount (Baht) 798,888.00

IT Applications in Management

Duration 15-Dec-08 28-Feb-09

Project Investigator Ms Thaniya Jirasathitpornpong

Sponsor Multi donors

Total Contracted Amount (Baht) 702,900

IT Applications in Project Management

Duration 1-Sep-08 31-Jan-09

Project Investigator Thaniya Jirasathitpornpong

Sponsor Multi-donors

Total Contracted Amount (Baht) 1,022,474.00

IT Strategic Planning

Duration 19-May-08 31-Dec-08

Project Investigator Agus Prajogo, Thaniya

Jirasathitpornpong

Sponsor The Institute of Chartered Accountants of Sri Lanka

Total Contracted Amount (Baht) 503,194.00

Local Curriculum planning and Management

Duration 8-Dec-08 21-Mar-09
 Project Investigator Ms Kanlaya Muangsan
 Sponsor ESAT-DANIDA,Nepal
 Total Contracted Amount (Baht) 918,720

Management and Implementation of Education Projects for Sri Lankan Provincial Project managers and Project Staff

Duration 22-May-08 31-Dec-08
 Project Investigator Thaniya Jirasathitpornpong
 Sponsor SEMPII/Sri Lanka
 Total Contracted Amount (Baht) 602,525.00

MATT-2: First Regional Exposure Visit Program (Batch 12)

Duration 16-Aug-08 22-Dec-08
 Project Investigator Fazle Karim, Voravate Chonlasin
 Sponsor DFID
 Total Contracted Amount (Baht) 5,384,454.00

Microfinance for Poverty Alleviation Project

Duration 20-Apr-08 30-Jun-08
 Project Investigator Parichad Nantavong
 Sponsor Wayamba Development Bank of Sri Lanka
 Total Contracted Amount (Baht) 833,937.00

Operation and Management of Science Laboratory

Duration 1-Dec-08 30-Apr-09
 Project Investigator Voravate Chonlasin
 Sponsor Government of Sri Lanka
 Total Contracted Amount (Baht) 695,838

Oracle Database 10g: Development and Administration

Duration 10-Nov-08 31-Dec-08
 Project Investigator Mr Augus Prajogo
 Sponsor UNDP Mongolia
 Total Contracted Amount (Baht) 831,600

Performance Management

Duration 7-Jul-08 16-Oct-08
 Project Investigator Kanlaya Muangsan
 Sponsor NCED, Nepal
 Total Contracted Amount (Baht) 1,215,737.00

Planning and Budgeting Practises in Thailand

Duration 15-Dec-08 31-Mar-09
 Project Investigator Voravate Chonlasin
 Sponsor BAPPENAS
 Total Contracted Amount (Baht) 412,500

Procurement Management and Monitoring

Duration 14-Jan-08 17-Apr-08

Project Investigator Purvi Chudasama, Upul Kaluhetti Brahmanage
 Sponsor NPA Sri Lanka
 Total Contracted Amount (Baht) 613,985.00

Procurement Management for Road and Highways Development Project

Duration 21-Apr-08 31-Jul-08
 Project Investigator Worawan Sumroentrum
 Sponsor UNDP
 Total Contracted Amount (Baht) 381,282

Program on Best Practices in HR in the Financial Services Sector

Duration 10-Feb-08 28-Apr-08
 Project Investigator Wichit Silpamaneephan
 Sponsor Reserve Bank of India
 Total Contracted Amount (Baht) 1,466,023.00

Project Management and Evaluation

Duration 26-May-08 11-Sep-08
 Project Investigator Upul Kaluhetti Bramahnage
 Sponsor Multi-donor agencies
 Total Contracted Amount (Baht) 1,149,774.00

Project Monitoring and evaluation

Duration 24-Nov-08 31-Jul-09
 Project Investigator Ms Worawan Sumroetrum
 Sponsor UNDP BD
 Total Contracted Amount (Baht) 1,465,094

Project Monitoring, Evaluation and Application of IT

Duration 21-Jul-08 31-Aug-08
 Project Investigator Thaniya Jirasathitpornpong
 Sponsor LGED
 Total Contracted Amount (Baht) 608,000.00

Regional Training Session on Eco-Governance and Coastal Eco-system

Duration 28-Apr-08 3-Aug-08
 Project Investigator Sirinthip Pongsuvina
 Sponsor LEAD-Pakistan
 Total Contracted Amount (Baht) 551,180.00

Rural Poverty Reduction

Duration 20-Oct-08 31-Dec-08
 Project Investigator Worawan Sumroentrum
 Sponsor The North East Community Restoration and Development (NECORD) Project, Sri Lanka
 Total Contracted Amount (Baht) 988,900

Seminar and Study Visit Program on University Management and Administration

Duration 4-Aug-08 30-Oct-08
 Project Investigator Waridhorn Wachirasiri
 Sponsor World Bank/Balkh University, Afghanistan
 Total Contracted Amount (Baht) 1,327,576.00

Seminar and Study Visit Program on Wildlife Protected Area Management

Duration 29-Sep-08 12-Jan-09
 Project Investigator Sirinthip Pongsuvina

Sponsor Department of Wildlife Conservation, Sri Lanka
 Total Contracted Amount (Baht) 1,386,832.00

Skills Upgrading and Capacity Building

Duration 2-Oct-08 31-Oct-08
 Project Investigator Agus Prajogo
 Sponsor UNDP
 Total Contracted Amount (Baht) 198,000

Srilanka Educators Programme on education for social cohesion and peace

Duration 10-Nov-08 31-Jan-09
 Project Investigator Mr Raynaldo
 Sponsor GTZ Srilanka
 Total Contracted Amount (Baht) 868,750

Strategic HR and Office Management Skills

Duration 12-May-08 21-Aug-08
 Project Investigator Upul Kaluhetti Bramahnage
 Sponsor Governments of India and Malaysia
 Total Contracted Amount (Baht) 638,236.00

Strategic Management and Planning of Tourism Destinations

Duration 16-Jun-08 30-Sep-08
 Project Investigator Worawan Sumroentrum
 Sponsor Multi-donors
 Total Contracted Amount (Baht) 598,799.00

Study program on Strategic Development Planning for Pro-poor Growth

Duration 10-Oct-08 21-Nov-08
 Project Investigator Worawan Sumroentrum
 Sponsor UNDP Bangladesh
 Total Contracted Amount (Baht) 621,298

Study Visit Program on Biodiversity Management and Conservation

Duration 2-Mar-08 07-Jun-08
 Project Investigator Sirinthip Pongsuvina
 Sponsor UNDP/GEF
 Total Contracted Amount (Baht) 427,985.00

Study Visit Program on Education System Management and Development

Duration 13-Jul-08 30-Sep-08
 Project Investigator Waridhorn Wachirasiri
 Sponsor ADB NEPAL
 Total Contracted Amount (Baht) 257,856

System Management and Capacity Improvement of Technical Education

Duration 7-Sep-08 15-Dec-08
 Project Investigator Kanlaya Muangsan
 Sponsor NPIU, Government of India
 Total Contracted Amount (Baht) 730,467.00

System Management and Capacity Improvement of Technical Education Batch II

Duration 24-Nov-08 27-Feb-09
 Project Investigator Ms Kanlaya Muangsan

Sponsor NPIU Govt of Nepal
Total Contracted Amount (Baht) 544,170

Training Course on Social Studies Education

Duration 1-Sep-08 11-Dec-08
Project Investigator Kanlaya Muangsan
Sponsor DANIDA
Total Contracted Amount (Baht) 1,288,988.00

Training on Tsunami Science and Preparedness

Duration 10-Mar-08 26-Jun-08
Project Investigator Sirinthip Pongsuvinai
Sponsor AARM University of Washington
Total Contracted Amount (Baht) 2,541,265.00

Training Program on Community Water Supply and Waste Management

Duration 12-May-08 23-Aug-08
Project Investigator Sirinthip Pongsuvinai
Sponsor Bangladesh Export Processing Zones (BEPZA)
Total Contracted Amount (Baht) 319,140.00

Training Program on Toxic and Hazardous Waste Management

Duration 20-Oct-08 30-Apr-09
Project Investigator Sirinthip Pongsuvinai
Sponsor University of Balochistan, Pakistan
Total Contracted Amount (Baht) 646,800

Trends in Teaching and Learning in 21st Century Schools

Duration 26-Jan-08 30-Apr-08
Project Investigator Waridhorn Wachirasiri
Sponsor Rex Publishing Philippines
Total Contracted Amount (Baht) 506,727.00

Trends in Teaching and Learning in 21st Century Schools (Batch 2)

Duration 18-May-08 19-Aug-08
Project Investigator Kanlaya Muangsan
Sponsor Rex Publishing Philippines
Total Contracted Amount (Baht) 390,972.00

Trends in Teaching and Learning in 21st century Schools (Batch 3)

Duration 22-Sep-08 25-Dec-08
Project Investigator Kanlaya Muangsan
Sponsor Rex Publishing Philippines
Total Contracted Amount (Baht) 750,308.00

Trends in Teaching and Learning in the 21st Century Schools (Batch 4)

Duration 1-Dec-08 31-Mar-09
Project Investigator Ms Warindhorn Srina
Sponsor Rex Publishing Philippines
Total Contracted Amount (Baht) 339,185

University Management and Administration-Pakistan

Duration 18-Feb-08 29-May-08
Project Investigator Kanlaya Muangsan
Sponsor University of Balochistan, Pakistan
Total Contracted Amount (Baht) 550,025.00

WebPage Development and Deployment

Duration 23-Mar-08 31-Jan-09
Project Investigator Thaniya Jirasathitpornpong
Sponsor SIDA/SAREC
Total Contracted Amount (Baht) 360,015.00

Chapter 30 : INTERNET EDUCATION AND RESEARCH LABORATORY (intERLab)

30.1 Introduction

Continual expansion of the Internet is creating greater demand for well-trained human resources to support the infrastructures and applications of the Internet. New computer science and engineering solutions are needed to simply handle the exponential growth in the traffic and bandwidth usage which is putting severe strain on the Internet today. There is urgent need for a new breed of engineers and technologists to respond to the growing demand from this rapid expansion with endless range of new applications.

As the Internet continues to penetrate every corner of society and of the economy, there are other non-technical issues to be addressed along with the advancement of technological progress. There is a definite need for better understanding of the Internet's social, business, economic as well as legal implications in order to promote the standards of behaviour and practices for the community that are appropriate to continued growth and beneficial use of the Internet.

The intERLab was established in December 2003 as a fixed regional center for Internet infrastructure capacity building, where AIT based on its human and institutional networks, could play a very significant role for the region. Many Internet organizations such as the Network Startup Resource Center (NSRC) funded by NSF, the Asia-Pacific Network Information Centre (APNIC) and the Asia-Pacific Advanced Network (APAN) as well as many Internet business organizations provided strong support for the intERLab establishment.

The concept of establishing a fixed location for the internet human resources development has been discussed and endorsed by leading Asia-Pacific Internet organizations at their AP*

Retreat meeting at AIT in year 2000. Several leading research institutions in Asia-Pacific, Europe and the US have indicated their interests in forming up a network of support for the intERLab research, training and education. The main idea is to work together with partners on training and workshops in order to produce network engineers for the stable deployment of the Internet. It was also encouraged that the intERLab develops its own expertise by doing its own research and eventually become one of the leading Internet research centers in the region.

The core component of the laboratory will be on research activities. This will be achieved by maintaining excellent research facilities and staff, hosting visiting researchers and taking advantage of linkages with research laboratories worldwide. The lab was built upon pre-existing Internetworking Research Laboratory of the School of Advanced Technologies and the Distributed Education Center.

30.2 Mission

To become one of the leading Internet regional centers of excellence; establishing intERLab/AIT name, as one of the leading Internet infrastructure HRD centers in the Asia-Pacific region; launching our research products at the regional and international level; and developing a regular degree program under SET.

30.3 Unit Governance

Prof. Kanchana Kanchanasut
IntERLab Director

30.4 Resources

Education

Distance Education and E-Education Platform VClass

VClass open source consortium
VClass trainings for AIT faculty and staff
VClass hosting service and technical support
ASEAN Virtual Institute of Science and Technology (AVIST) hosting
Custom courseware development;
E-learning consultancy;
Instructional design consultancy;
Custom course design
CanalAVIST streaming VDO over Trans-Eurasia Information Network (TEIN)

Research

Streaming Technology on the Internet

DVRelay for streaming high quality Video (DV format) over heterogeneous network
Overlay network for streaming content delivery

Computer Network Research

Wireless Internet as information infrastructure for rural Asia
Digital Ubiquitous Mobile Broadband OLSR emergency network project
Multimedia communication over heterogeneous network

Training and Internet Information Center

Trainings for Network Infrastructure Engineers (7~8 courses per year)

Human Resource Development for Trans-Eurasia Information Network
Secretariats for AP* Retreat and Asia Pacific Networking Group (APNG) organizations

30.5 Faculty and Research Staff

Faculty

KANCHANA KANCHANASUT, M.Sc and Ph. D. Computer Science, University of Melbourne, Australia. Graduate Diploma in Computer Science, University of Queensland, Australia. B. Sc. Mathematics, University of Queensland, Australia.
Professor of Computer Science, School of Engineering and Technology and Director of intERLab. [*Internet for education; Heterogeneous Networks; Emergency Networks; Mobile Ad Hoc Networks; Streaming Media and Distributed Computing*]

Visiting Faculty

NOEL CRESPI, GET/INT, France; Ing. Dipl (ENST), MSc, PhD.
Visiting Professor. [*SIP; 3G Services; IP Multimedia Subsystem And Context Awareness B3G Core network and Service Architectures*]

YASUO TSUCHIMOTO, Keio University, Japan, PhD in Media and Governance, Keio University, Japan Master of Media and Governance, Keio University, Japan Bachelor of Arts in Environmental Information from Keio University, Japan
Visiting Assistant Professor. [*Computer Networks; Internet Education; Multimedia communication and Overlay network Adjunct Researchers*]

Affiliates

POOMPAT SAENGUDOMLERT, Ph.D. in Electrical Engineering and Computer Science, MIT, USA M.S. in Electrical Engineering and Computer Science, MIT, USA B.S.E. in Electrical Engineering, Princeton University, USA

Assistant Professor School of Engineering and Technology [*Areas of Communication Theory; Optical networks; Resource Allocation Problems and Array Processing*]

TEERAPAT SANGUANKOTCHAKORN, D.Eng in Information Processing, Tokyo Institute of Technology, Japan. M.Eng in Information Processing, Tokyo Institute of Technology, Japan. Certificate in Japanese Language, Osaka University of Foreign Study, Japan. B.Eng. in Electrical Engineering, Chulalongkorn University, Thailand.

Associate Professor School of Engineering and Technology [*Digital Signal Processing; Routing Algorithm in the network such as IP and MPLS network; High Speed network and IP-based multimedia applications*]

Adjunct Researchers

PANITA PONGPAIBOON, Ph.D. in Electrical and Computer Engineering, Carnegie Mellon University Master of Science in Electrical Engineering, Stanford University Bachelor of Science (with University Distinction) in Electrical Engineering, Stanford University

Researcher National Electronics and Computer Technology Center (NECTEC) [*Optical network management; IP-overoptical networking; Survivable and fault-tolerant networks; Network measurement; Traffic classification; IPv6; Mobile IP and Intelligent transport system*]
SURAT LERTLUM, Doctor of Technical Science in Computer Science, Asian Institute of Technology (AIT), Thailand, Master of Science in Computer Science, The George Washington University,

Washington D.C., U.S.A., Bachelor of Science in Computer Science Engineering, Norwich University, Northfield, Vermont, U.S.A.

Research Scientist

Chulachomkiao Royal Military Academy [*Low-resolution (NOAA AVHRR) forest classification includes thermal band; Highresolution (Landsat TM) forest classification includes thermal band; Multiresolution forest classification includes thermal band; Object-Oriented data model for multi-resolution / multitemporal remote sensing and GIS data sets*]

Short-term Visiting Researcher

ANIS LAOUTI, HIPERCOM/INRIA and **Assistant Professor**, TelecomSud, France
[*Mobile Ad Hoc Network, Peer-to-Peer system*]

HAJIME TAZAKI, Jun Murai Laboratory Keio University and WIDE Project
[*IP routing architecture for mobility environment: IP Mobility architecture*]

Research Staff

KHANDAKAR RASHEDUL AREFIN, Master of Engineering in Information and Communication Technologies (ICT), Asian Institute of Technology, Thailand, Bachelor of Engineering in Computer Science and Engineering, Khulna University of Engineering and Technology, Khulna, Bangladesh.
Research Associate [*Mobile Ad Hoc Network*]

PUJAN SRIVASTAVA, Master of Technology (Information Technology), Indian Institute of Information Technology, Bachelor of Engineering (Electronics & Communication) Agra University
Research Associate [*M-learning, Multimedia Communication*]

30.6 Grants and Sponsored Research Completed in 2008

APNG Secretariat

Duration 1-Nov-07 31-Dec-08
 Project Investigator Kanchana Kanchanasut
 Sponsor Asia Pacific Networking Group
 Total Contracted Amount (Baht) 400,000

Asian Internet Engineering Conference (AINTEC) 2007

Duration 30-Jun-07 31-May-08
 Project Investigator Kanchana Kanchanasut, Wit Hmone Tin Latt, D. Kumardas, M. Awal
 Sponsor NECTEC and Participants
 Total Contracted Amount (Baht) 890,517

Basic and Advanced DNS Workshops

Duration 1-May-07 30-Apr-08
 Project Investigator Kanchana Kanchanasut, Wit Hmone Tin Latt
 Sponsor Multi-donors
 Total Contracted Amount (Baht) 500,000

Internet Crime: Prevention, Detection and Investigation

Duration 1-Oct-07 31-Mar-08
 Project Investigator Kanchana Kanchanasut
 Sponsor Participants
 Total Contracted Amount (Baht) 450,000

Multicast Workshop

Duration 1-Nov-07 31-Mar-08
 Project Investigator Kanchana Kanchanasut
 Sponsor Participants
 Total Contracted Amount (Baht) 110,250

Multimedia Architecture and Application Based on SIP

Duration 1-Mar-06 3-Jun-08
 Project Investigator Kanchana Kanchanasut
 Sponsor Science and Technologies of Information and Communication in Asia - Institute National de Technologie
 Total Contracted Amount (Baht) 544,155

New Generation Internet for Medical Science Remote Classroom-07

Duration 1-Jul-07 30-Sep-08
 Project Investigator Kanchana Kanchanasut
 Sponsor French Ministry of Foreign Affairs ICT-Asia Program
 Total Contracted Amount (Baht) 754,068

Renewable Energy Policy and Biomass Energy-E-Learning

Duration 23-Mar-07 29-Feb-08
 Project Investigator Kanchana Kanchanasut
 Sponsor UNESCO Jakarta
 Total Contracted Amount (Baht) 139,160

Vclass SIP-based Mobile Classroom

Duration 1-Feb-06 31-Oct-08
 Project Investigator Kanchana Kanchanasut
 Sponsor Asian Media Information and Communication Centre (AMIC), Singapore
 Total Contracted Amount (Baht) 1,200,000

30.7 On-going Grants and Sponsored Research

CanalAVIST

Duration 1-Dec-07 31-Dec-10
 Project Investigator Kanchana Kanchanasut
 Sponsor DANTE
 Total Contracted Amount (Baht) 729,440

ICT Policy fo National University of Laos

Duration 30-Jun-07 31-Dec-09
 Project Investigator Kanchana Kanchanasut, Wit Hmone Tin Latt
 Sponsor Swedish International Development Agency
 Total Contracted Amount (Baht) 2,201,308

IT Training for National University of Laos (NUOL)

Duration 1-Jun-07 31-Dec-10
 Project Investigator Kanchana Kanchanasut
 Sponsor Swedish International Development Agency
 Total Contracted Amount (Baht) 3,063,745

Technical Support for National University of Laos

Duration 1-Jun-07 31-May-09
 Project Investigator Kanchana Kanchanasut
 Sponsor Swedish International Development Agency
 Total Contracted Amount (Baht) 1,507,358

30.8 Research Projects Initiated in 2008

Asian Internet Engineering Conference 2008

Duration 1-Jul-08 31-Mar-09
 Project Investigator Kanchana Kanchanasut
 Sponsor Multi donors
 Total Contracted Amount (Baht) 900,000

Asia Pacific Networking Group (APNG) Secretariat

Duration 1-Nov-08 31-Oct-09
 Project Investigator Kanchana Kanchanasut, Wit Hmone Tin Latt
 Sponsor Asia Pacific Networking Group
 Total Contracted Amount (Baht) 500,000

Interconnectivity between Mobile Ad Hoc and Fixed Infrastructure Networks for Multimedia Disaster Emergency Communications

Duration 1-Jan-08 30-Apr-09
 Project Investigator Kanchana Kanchanasut, Teerapat S.
 Sponsor NECTEC
 Total Contracted Amount (Baht) 1,900,000

Multicast Workshop

Duration 1-Oct-08 30-Nov-09
 Project Investigator Kanchana Kanchanasut, Wit Hmone Tin Latt
 Sponsor Training participants
 Total Contracted Amount (Baht) 300,000

Routing and BGP Multihoming Workshop

Duration 1-Aug-08 01-Oct-08
 Project Investigator Kanchana Kanchanasut
 Sponsor IXP
 Total Contracted Amount (Baht) 473,299

TEIN2 Human Resource Programme for 2008

Duration 1-Feb-08 31-Dec-08
 Project Investigator Kanchana Kanchanasut, Wit Hmone Tin Latt, Nisararat Tunsakul
 Sponsor TEIN2
 Total Contracted Amount (Baht) 2,500,000

TEIN3 HRD Programme for 2009

Duration 1-Dec-08 01-Dec-09
 Project Investigator Kanchana Kanchanasut
 Sponsor TEIN3
 Total Contracted Amount (Baht) 2,500,000

UniChannel: Distance Education Infrastructure on UniNet

Duration 1-Aug-08 30-Jun-10
 Project Investigator Kanchana Kanchanasut
 Sponsor Researchers/engineers
 Total Contracted Amount (Baht) 2,000,000

VoIP and SIP Workshop

Duration 1-Feb-08 30-Sep-08
 Project Investigator Kanchana Kanchanasut, Wit Hmone Tin Latt
 Sponsor Participants
 Total Contracted Amount (Baht) 409,550

30.9 Publications

Refereed Journals

Kanchanasut, K., Bertholon, J-F. and Vibert, J-F., ANGKOR: A Real-time Remote Classroom on Research and Education Networks, KEIO SFC JOURNAL, Vol. 8 No. 2 2008, pp. 37-48

Leelapatra, W., Kanchanasut, K. and Lursinsap C., *Displacement BDD and Geometric Transformation of BDD Encoded Image, Pattern Recognition Letters*, Elsevier Vol. 29, Issue 4, pp 438-456, March 2008.

Conference Proceedings

Kanchana Kanchanasut, Thirapon Wongsardsakul, Manutsiri Chansutthirangkool, Anis Laouiti, Hajime Tazaki, Khandakar Rashedul Arefin. DUMBO II: a V-2-I emergency

network, November 2008, **AINTEC '08**: Proceedings of the 4th Asian Conference on Internet Engineering. **Publisher**: ACM

Panita Pongpaibool, Kannikar Siriwong Na Ayutaya, Kanchana Kanchanasut, Hajime Tazaki, Rapid IPv6 Address Autoconfiguration for Heterogeneous Mobile Technologies, in 8th International Conference of ITS Telecommunications (ITST 2008), Phuket, Thailand, October 2008.

30.10 Project Demonstration

Kanchanasut K., Philippe Jacquet, Ryuji Wakikawa, Anis LAOUTI, Hajime Tazaki, and Thirapon Wongsardsakul. DUMBO II: a V-2-I Emergency Network, in 8th International Conference of ITS Telecommunications (ITST 2008), Phuket, Thailand, October 2008. <http://dumbo2.interlab.ait.ac.th>

Chapter 31: INSTITUTE-WIDE SPONSORED AND CONTRACTED PROJECTS

31.1 Grants and Sponsored Research Completed in 2008

Development of a Course in Biosecurity in P2/P3 Laboratories for Cambodian, Laotian and Vietnamese Participants

Duration 1-Nov-07 30-Apr-08
Project Investigator Jean-Philippe Thouard
Sponsor MOFA, French Embassy in Thailand
Total Contracted Amount (Baht) 1,000,000

GMSARN Case Research Training Workshop

Duration 1-Sep-04 31-Dec-08
Project Investigator Vilas Wuwongse
Sponsor Swedish International Development Cooperation Agency, Sweden
Total Contracted Amount (Baht) 592,000

Workshop on "Doing Business in Africa"

Duration 1-Sep-07 31-Dec-08
Project Investigator Vilas Wuwongse
Sponsor Ministry of Foreign Affairs (MFA) Thailand
Total Contracted Amount (Baht) 2,194,280

31.2 On-going Grants and Sponsored Research

Capacity Building of Faculty of Engineering, Balkh University, Afghanistan

Duration 1-Jan-08 30-Jun-10
Project Investigator Naveed Anwar
Sponsor Balkh University, Ministry of Higher Education, Islamic Republic of Afghanistan
Total Contracted Amount (Baht) 42,979,260

GMSARN Case Study Research and Training

Duration 1-Sep-04 31-Dec-09
Project Investigator Weerakorn Ongsakul
Sponsor Swedish International Development Cooperation Agency, Sweden
Total Contracted Amount (Baht) 1,022,500

Wetlands Alliance Program

Duration 1-Jan-06 31-Dec-09
Project Investigator Nicholas Innes-Taylor
Sponsor Swedish International Development Cooperation Agency, Sweden
Total Contracted Amount (Baht) 123,520,311

Wetlands Alliance Program-Secretariat

Duration 1-Jan-08 31-Dec-09
Project Investigator Hans Guttman
Sponsor Swedish International Development Cooperation Agency, Sweden
Total Contracted Amount (Baht) 10,200,000

Chapter 32: OVERVIEW OF RESEARCH ACTIVITIES FOR 2008

Overall during the period January to December of 2008 there were **466** sponsored and contracted projects which were conducted by the faculty and staff from within the Fields of Study (FoS) of the three schools, School of Engineering & Technology (SET), School of Environment, Resources & Development (SERD), and School of Management (SOM), as well as in AIT Extension, Internet Education & Research Laboratory (IntERLab), and Institute wide projects. The total publications for the same period stood at **692** from across AIT. The breakdown of which is indicated in the table below:

SCHOOL/FoS	SPONSORED & CONTRACTED PROJECTS		TOTAL PROJECTS	PUBLICATIONS				TOTAL PUBLICATIONS
	Completed	On-going		Refereed Journals	Conference Proceedings	Refereed Books/Chapters	Other Publications	
SET	46	103	149	100	137	9	63	309
CS/IM	2	7	9	10	15	1	-	26
CEIM	3	4	7	4	4	-	-	8
IME	7	6	13	17	22	3	23	65
GGE	5	11	16	18	18	-	23	59
Mech/Mic	7	12	19	19	28	3	3	53
RSGIS	10	16	26	11	21	2	3	37
StE	3	17	20	2	6	-	2	10
TC	1	2	3	7	11	-	-	18
TrE	4	7	11	3	5	-	-	8
WEM	4	21	25	9	7	-	9	25
ICT	-	-	-	-	-	-	-	-
OTM	-	-	-	-	-	-	-	-
SERD	85	91	176	145	94	32	67	317
ASE	1	6	7	13	-	4	2	19
AARM	6	4	10	12	4	1	19	36
E	12	3	15	20	10	1	1	32
EEM	17	30	47	51	45	6	15	117
FEBT	7	11	18	8	-	-	6	14
GDS	4	10	14	4	20	5	-	29
NRM	3	11	14	17	6	5	2	30
PPT	-	-	-	4	-	5	-	9
RRDP	7	2	9	6	2	1	2	11
UEM	28	14	42	9	7	4	-	20
ABM	-	-	-	-	-	-	-	-
GTD	-	-	-	-	-	-	-	-
SOM	5	10	15	44	8	11	3	66
Initiated								
intERLab	9	9	4	22				
AIT Ext	74	23	-	97				
Institute-wide	3	4	7					
TOTAL			466					692

For the same period January to December of 2008 there was a total of **57** dissertations which were successfully undertaken by doctoral students from within the Fields of Study (FoS) of the three schools, SET, SERD and SOM. The total research studies and reports carried out by masters student for the same period stood at **549** from within the three schools. The breakdown of which is indicated in the table below:

SCHOOL/FoS	DOCTORAL STUDENTS' DISSERTATION	MASTERS STUDENTS RESEARCH			TOTAL MASTERS STUDENTS RESEARCH
		Thesis	Research Studies	Projects	
SET	24	180	20	25	225
CS/IM	1	26	8		34
CEIM	1	23		25	48
IME	4	16			16
GGE	2	18	1		19
Mech/Mic	3	23			23
RSGIS	3	11			11
StE	1	9			9
TC	3	11	5		16
TrE	5	10			10
WEM	1	15			15
ICT		15	6		21
OTM		3			3
SERD	29	206	8	4	218
ASE	1	14			14
AARM	4	17			17
E	5	27	2		29
EEM	16	48			48
FEBT		13			13
GDS		19	1		20
NRM	1	20			20
PPT		16		4	20
RRDP		11	5		16
UEM	2	21			21
SOM	4	2	26	78	106
TOTAL	57	388	54	107	549

Chapter 33: AIT MASTERS THESES COMPETITION 2008

The AIT Masters Theses Competition was held on the 14th of May 2008. There were seven competition categories (see below) and students with excellent grades in their theses were nominated to represent their respective fields of study. These presentations have been judged according to relevance; originality; scientific/society contribution; future potential for innovation; and the the presenter's general knowledge of the field and presentation skills. A total of 44 students participated in the competition. There were 18 judges from industry, developmental agencies, international organizations, universities, etc. There were a number of spin off activities and possibilities including employment, projects, interaction with other organizations, press coverage, etc. from the competition.

The winners of the respective categories were the following:

Category	Student's Name / Title of Presentation	Student's Advisor
Resources	Mr Mohammad Al-Amin Sadek: "Feasibility of Improving Tillage Performance by Using Nano surfaces on Tillage Tools"	Dr Hemantha P Jayasuriya
Civil Engineering	Mr D P C Laknath: "Assessment of fishery harbor for livelihood improvement: A case study of Hikkaduwa Harbor, Sri Lanka"	Dr Sutat Weesakul
Information & Communications Technologies	Mr Kanthaiah Sivapragasam Vijayalayan: "Channel assignment in wireless mesh networks- Emended election based transmission timing mechanism for coordinated distribution scheduling in IEEE 802.16 mesh networks"	Prof Kazi M Ahmed
Development	Ms Miruza Mohamed: "Vulnerability of Maldives Islands to Climate Change and Extreme Weather Events: A Study of Perception, Impacts and Adaptation"	Dr LAS Ranjith Perera
Industrial Systems & Engineering	Mr Niti Wiromrat: "Gas Sensors Based on Zinc Oxide Nanorods"	Prof Joydeep Dutta
Management	Ms Yiarayong Klangboonkrong: "Enhancing Navigation Safety from the Perspective of Knowledge Management: The Case of a Shipping Company in Thailand"	Dr Barbara Igel
Energy and Environment	Mr Cesar Ortinero: "Improvement of Nucleic Acid-Based Detection Techniques through the Use of Nanoparticles"	Dr Oleg V Shipin

