ANNUAL REPORT ON RESEARCH 2019

AIT
Asian Institute of Technology

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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.

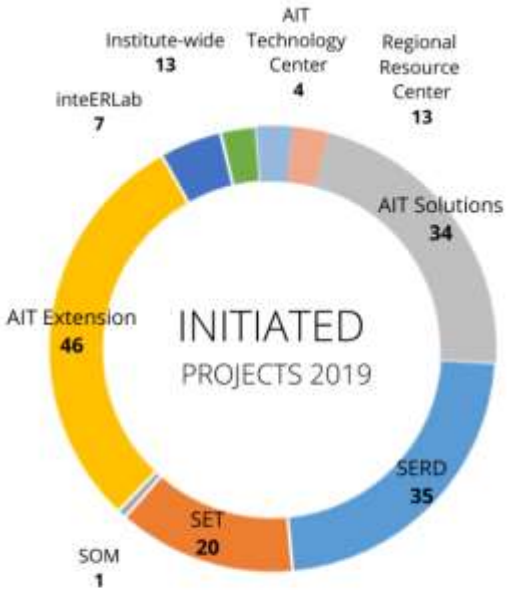
Besides the usual laboratories and academic buildings, the main campus includes housing, sports, and medical facilities, a conference center, and a library with over 230,000 volumes and 830 print and on-line periodicals. All serve to fulfill the AIT mission

> ***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 Research

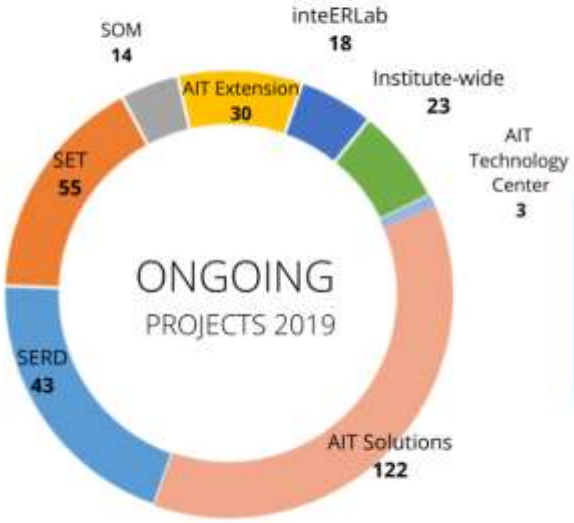
Research is importantly aligned to all 17 SDG's, contributing to the sustainable development of the region, strengthening the knowledge development and business capacity, and supporting communities with their economic development and integration into the global economy. AIT focuses on assisting stakeholders build their capacity to promote sustainability through appropriate technology, relevant and applied research, sustainable frameworks for development and planning, informed policy making and practice applications in the region. AIT pursues excellence in research, within the five thematic areas of focus namely: (i) Climate Change, (ii) Smart Communities, (iii) Food-Energy-Water, (iv) Infrastructure, and (v) Technology, Policy and Society. AIT's academic programs are implemented through its three schools, the School of Environment, Resources and Development (SERD), the School of Engineering and Technology (SET), and the School of Management (SOM). AIT through it various Institute Wide outreach centers and departments jointly carry out number of research, consultancy and capacity development projects under internationally funded projects of the Asian Development Bank (ADB), the World Bank, Department for International Development (DFID, UK), GIZ, UN Agencies, USAID, UKRI, UNU, ISCU, AAC etc. AIT works across a broad range of sectors and disciplines

Chapter 2: RESEARCH AT A GLANCE



Total project budget **320** million Thai Baht

Total number of initiated projects **155**



Total project budget **1,346** million Thai Baht

Total number of initiated projects **332**

Total project budget **197** million Thai Baht

Total number of initiated projects **122**

Chapter 3: SCHOOL OF ENGINEERING AND TECHNOLOGY

1. VISION

The School of Engineering and Technology (SET) aims to become a unique and prestigious multicultural hub of higher learning in engineering and technology, offering state-of-the-art multidisciplinary programs and cutting-edge research in partnership with the industries for sustainable growth of the region. SET focus is on growth and long-term sustainability by enriching academic reputation and internationality.

2. CORE VALUES

Reflecting the uniqueness of AIT, the following core values are advocated by SET:

- **Excellence in teaching / learning**
- **Excellence in research**
- **Transparency of administration**
- **Quality assurance**
- **Unity in Diversity**
- **Culture of Collaboration**

School of Engineering and Technology (SET) is the biggest school in AIT with academic programs offerings in five countries: Thailand (mother campus), Vietnam, Sri Lanka, Nepal and Myanmar. The school is currently organized in three thematic areas and 8 academic outreach centers.

SET emphasizes on a learning process that combines theoretical problem-solving and real-life application of engineering principles. Its research orientation is outward-looking; addressing the actual and anticipated needs of the region. SET enhances its academic portfolio by emphatically injecting the "5I" features namely internationality, innovation, integration, information technology and industrial partnership. The school is currently working on the international accreditation process for all programs.

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/

3. Thematic Groups, Fields of Study and Multi-disciplinary Programs

Through a rice and varied curriculum, students have many opportunities for intellectual growth. The School of Engineering and Technology offers degree and non-degree programs in three thematic groups:

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:

1) Construction, Engineering and Infrastructure Management (CEIM)
2) Geotechnical and Earth Resources Engineering (GTE)
3) Structural Engineering (STE)
4) Transportation Engineering (TRE)
5) Water Engineering and Management (WEM)
6) Offshore Technology and Management (OTM)
7) Disaster Preparedness, Mitigation and Management (DPMM)
8) Gender, Transportation and Development

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:

1) Mechatronics (MEC)
2) Microelectronics and Embedded Systems (MES)
3) Industrial and Manufacturing Engineering (IME)
4) Nanotechnology

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:

1) Computer Science (CS)
2) Information Management (IM)
3) Remote Sensing and Geographic Information Systems (RS-GIS)
4) Telecommunications (TC)
5) Information and Communications Technologies (ICT)

Undergraduate Programs

1) Civil and Infrastructure Engineering
2) Computer Science/Information Technology
3) Electronics
4) Industrial Engineering
5) Information and Communication Technology
6) Mechatronics
7) Telecommunications

4. 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 Navigation Satellite System (GNSS); Geoinformatics Applications in Environment, Agriculture and Disaster Management, Sensor and WebGIS, Advance Mapping - UAV, LIDAR, Kinematic GPS, Monitoring Upper Atmosphere, Health GIS

Telecommunications, Information and Communications Technologies (TC, ICT)

Mobile Wireless Communications, Network Performance Analysis, Digital Communications

Geotechnical and Earth Resources Engineering (GTE)

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

Structural Engineering

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

Transportation Engineering (TRE)

Transportation Planning, Traffic Engineering, Highway and Pavement Engineering, Road Safety and Accident Analysis and Transportation Logistics

Water Engineering and Management (WEM)

Water resources management; Climate change impact and adaptation in water sector; Water related disaster management

5. 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.

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

Geo informatics 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

Information Center

IFIC coordinates the activities of the International Ferro cement Society (IFS) including publication of "Journal of Ferro cement", conducting continuing education courses and sponsored research projects in low-cost construction. Visit IFIC: http://www.set.ait.asia/ific/

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

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6. Governance

Dean

DIETER TRAU, Dipl. Ing. FH in Chemical Engineering/Biotechnology, Aachen University, Ph.D. in Chemistry, HKUST
Professor *[Approaches and platform technologies for bioanalytics, biosensors, and diagnostics, analytical Chemistry, colloidal chemistry and encapsulation]*

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

Associate Dean

SANGAM SHRESTHA, MSc., Institute of Agriculture and Animal Science, Tribhuvan University, Nepal; MSc., Asian Institute of Technology, Thailand; PhD., University of Yamanashi, Japan.

Associate Professor *[Climate change and adaptation, Integrated water resources management, Hydrology and water quality modeling, Groundwater development and management, Sustainable water management policy]*

3.1 : SET – 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:

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5) Water Engineering and Management (WEM)
6) Offshore Technology and Management (OTM)
7) Disaster Preparedness, Mitigation and Management (DPMM)
8) Gender, Transportation and Development

3.1.1 : SET – CONSTRUCTION ENGINEERING AND INFRASTRUCTURE MANAGEMENT FIELD OF STUDY

1. Introduction

The Construction, Engineering and Infrastructure Management (CEIM) field of study prepares students to become effective managers and decision-makers familiar with the modern techniques of construction management, engineering management and infrastructure management. It trains professionals to play leading roles in the international construction industry. It molds students to become active leaders in infrastructure development and management.

Areas of Specialization

Students may choose to either specialize in Construction Engineering and Management (CEM) or Infrastructure Management (IM).

Construction Engineering and Management covers advanced project management approaches to finance, plan, design, construct, monitor and control construction projects. This master's degree program emphasizes in-depth construction project management approaches such as project organization management, construction planning and control, project procurement, contract management, productivity analysis and improvement, quality and safety improvement, IT in project management, sustainable construction, project financing, Public Private Partnership (PPP) project management, international construction joint venture and construction business strategy.

Infrastructure Management focuses on the processes necessary for the planning and development of new infrastructure, and on maintaining and operating mature infrastructure for sustainability. A wide variety of management topics are covered, such as infrastructure planning, infrastructure economics, infrastructure management systems, optimal maintenance management, reliability of infrastructure systems, asset valuation and utilization, and infrastructure planning under risk and uncertainty.

Research Center

CEIM hosts the EU-ASIA Network of Competence Enhancement on Public Private Partnership (PPP) in Infrastructure Development.

Computer Simulation Lab

- AROUSAL (Construction Project Management Simulator)
- STELLA (System Dynamics Simulation Software)
- Project Scheduling and Resources Management Software
- Contract and Cost Management Software
- @RISK Decision Tool (Risk Analysis)
- Virtual Reality

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; Public Private Partnership Project; Project Financing)*

HADIKUSUMO, BONAVENTURA H. W., 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)*

DJOEN SAN SANTOSO, BEng., Parahyangan Catholic University, Indonesia; M.Eng, AIT; PhD, Saitama University, Japan

Associate Professor (Infrastructure management in developing countries, construction project management, public transportation, non-motorized transportation, risk management)

Visiting/Adjunct/Affiliated Faculty

Amoussou-Guenou, Roland
Ph.D., University of Paris II – Pantheon Assas

Brockmann, Christian
Dipl.-Volksw., Dipl.-Kfm. (FernUni Hagen) DEA (ENSM Nantes) Dipl.-Ing. (TU Braunschweig)

Charoenpornpattana, Santi
Ph.D., University of Tokyo, Japan
M. Eng. Civil Eng. Asian Institute of Technology

Clayton, Terry
M.S., Rutgers University

Johan, Johny
M. Eng. Asian Institute of Technology
M.M., International Management, Presetya, Mulya

Kunatippapong, Burin
M.M., Mahidol University
M.Eng. Queensland University of Technology, Australia

Nopayak, Watcharinpan
Ph.D., Bangkok University and Ohio University
(Joint Degree)
M.B.A., Asian Institute of Technology

Ogunlana, Stephen O.
Ph.D., Loughborough University of Technology
M.Sc., University of Iife

Sirirangsi, Poovadol
D.Eng., Asian Institute of Technology
M.B.A., University of Central Oklahoma

Sypsomos, Michael G.
B.S. University of South Alabama

3. On-going Grants and Sponsored Research

Professional Master Project Management in Yangon 3, Myanmar, September 2018
Duration: 01-Aug-18 to 31-May-20
Project Investigator: Dr. BHW Hadikusumo
Total Contracted Amount (THB): 212,925.00

Professional Master Project Management in Mandalay 2, Myanmar, September 2018
Duration: 01-Sep-18 to 31-May-20
Project Investigator: Dr Djoen S Santoso
Total Contracted Amount (THB): 170,340.00

Professional Masters in Project Management in MPM Yangon-Taunggyi, Myanmar, July 2019
Duration: 01-Jul-2019 to 31-Jul-2021
Project Investigator: Dr BHW Hadikusumo
Total Contracted Amount (THB): 255,510.00

Professional Master Project Management in Nay Pyi Taw, Myanmar, July 2019
Duration: 01-Jul-2019 to 31-Jul-2021
Project Investigator: Dr BHW Hadikusumo
Total Contracted Amount (THB): 255,510.00

4. Publications

Papers in Refereed Journal

Abdul Qayoom, Bonaventura H. W. Hadikusumo. Multilevel safety culture affecting organization safety performance: a system dynamic approach. Engineering, Construction and Architectural Management, Volume 26, pp. 2326-2346

Djoen San Santoso, Nuttapon Bourpanus. Moving to e-bidding: Examining the changes in the bidding process and the bid mark-up decision of Thai contractors. Journal of Financial Management of Property and Construction, Volume 25.

Books

Patrick Manu, Fidelis Emuze, Bonaventura H. W. Hadikusumo. Construction Health and Safety in Developing Countries (Spon Research) 1st Edition. Publisher: Routledge; September 4, 2019. 346 pages. ISBN-10: 1138317071 ISBN-13: 978-1138317079

Book Chapters

Abdul Qayoom, Bonaventura HW Hadikusumo. A narrative review of occupational safety and health legislation in Pakistan. In: Abdul Qayoom, Bonaventura HW Hadikusumo, eds. Construction Health and Safety in Developing Countries. Routledge.

Djoen San Santoso, Kaludewa Nethmi Dinithini Pathmasiri Silva. Analysis of online shopping activities in Sri Lanka (in Indonesian). In: Joewono, T.B., Rizki, M., and Syahputri, J. eds., Perjalanan dan Aktivitas Belanja di Era Digital (Travel and Shopping Activities in the Digital Age). Bandung, Indonesia.

6. Doctoral Students' Dissertation

System Dynamics Modelling of Contractual Relationships between the Owner and the Contractor in the Construction Projects
By: Mr. Muhammad Kamran Nasir
Supervisor: Prof. Bonaventura H.W. Hadikusumo

7. Masters Students' Theses and Projects

Owner's Quality Management in a Public Infrastructure Project: A Case Study of an Embankment Protection Project
By: Mr. Lam Hoang Vu
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Owner's Project Quality Management in Construction: A Case of Main Road Construction to Khanh An Industrial Park in Ca Mau Province, Vietnam
By: Mr. Trinh Chi Vung
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Management Practice: A Case Study of a Landscaping Contractor at Gamuda Gardens Project in Hanoi City
By: Mr. Pham Cao Minh
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Adoption of BIM for Project Management of Sustainable Construction
By: Mr. Nguyen Chi Thanh
Supervisor: Prof. Bonaventura H.W. Hadikusumo

A Feasibility Study of a Water Supply Project
By: Mr. Trinh Cong Binh
Supervisor: Dr. Chotchai Charoenngam

Design Management Towards Efficiency in Urban Planning Project: A Case Study of Paksong Town's Zone Planning in Paksong District, Champasak Province, Laos
By: Mr. Nguyen Hoang Viet
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Quality Management in Fertilizer Project: A Case Study of DAP2 Fertilizer Project, Vietnam
By: Mr. Phung Hong Thai
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Cost Control Practices in Indian Construction Companies
By: Mr. Nalam Raksheeth
Supervisor: Dr. Chotchai Charoenngam

Project Cost Management Practices of Construction Contractors: A Case Study of High-Rise Building Projects in Myanmar
By: Mr. Pyae Phyo Aung
Supervisor: Dr. Chotchai Charoenngam

Quality Management System (QMS) Factors Affecting Project Performance in Indian Residential Projects
By: Mr. Satya Pavan Ganni
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Planning and Monitoring for High-Rise Buildings Design and Build Projects from a Contractor's Perspective: A Case Study of Masteri Thao Dien Project
By: Mr. Duong Le Hieu Trung
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Market Entry Strategy and Market Development for a Korean Engineering Consultant in Vietnam
By: Mr. Koh Jong Up
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Supervisor's Quality Assurance and Quality Control in Construction: A Case Study of Taynam Office Project in Ho Chi Minh City, Vietnam
By: Mr. Nguyen Quoc Dung
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Adoption of ISO9000/QMS for a Small Contractor: A Case Study of MA Builders International Vietnam
By: Mr. Pham Duc Nguyen
Supervisor: Prof. Bonaventura H.W. Hadikusumo

A Survey of Information Technology (IT) Software Adoption in Indian Construction Companies
By: Mr. Malisetty S J Narasimha Kumar
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Financial Management Practices and Their Relationship with SME Company's Performance in the Construction Industry of India
By: Mr. Samudanapalepu Venkata Pratap
Supervisor: Dr. Chotchai Charoenngam

Organizational Management Functions of Small Contractors in India
By: Mr. Sreenath Gajula
Supervisor: Dr. Chotchai Charoenngam

Development of Procurement Management Maturity Assessment Tool for Contractors in Indian Construction Industry
By: Mr. Md. Abdul Aameer
Supervisor: Dr. Djoen San Santoso

Analyzing the Effect of Service Quality and Performance of Service Over Resident's Satisfaction in High Rise Condominiums
By: Mr. Gavulla Surya Reddy
Supervisor: Dr. Djoen San Santoso

Factors Affecting Maintenance Cost of Apartments in India
By: Mr. Pavuluri Naga Venkata Akhil
Supervisor: Dr. Djoen San Santoso

Owner's Project Management in Low Cost Housing: A Case Study of the Yuzana Low Cost Housing Project
By: Ms. Nang Ywat Noan
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Financial Management Practices of Construction Contracrtors: A Case in Cambodia
By: Mr. Monichot Samreth
Supervisor: Dr. Chotchai Charoenngam

Project Governance Factors Affecting Project Performance for Construction Projects in Myanmar
By: Ms. Su Thinzar Thein
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Examining Technology Transfer of Myanmar Local Contractors in Building Construction Projects
By: Ms. Ingyin Ko Ko Sooriyaarachchi
Supervisor: Dr. Djoen San Santoso

Strategies for Advanced Technology Adoption of Construction Companies in Myanmar
By: Mr. Aung Myint Tun
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Contingency Services of Residential Contractors during the Service Delivery Process and the Impact on Customer Satisfaction in Myanmar
By: Ms. Aye Myint Thu
Supervisor: Dr. Chotchai Charoenngam

The Influence of Corporate Entrepreneurship on Small and Medium-Sized Construction Enterprises in Myanmar
By: Mr. Lynn Htet Kyaw
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Owner's Project Management Practices Influencing Professional Behaviors of Contractor in the High-Rise Building Projects in Myanmar
By: Ms. Thuzar Win Shwe
Supervisor: Dr. Chotchai Charoenngam

Financial Factors Leading to the Failure or Success of Construction Firms
By: Mr. Chan Vantheav
Supervisor: Dr. Chotchai Charoenngam

Effect of Team Management on Construction Team Performance in Construction Companies in Myanmar
By: Mr. Saw Yan Naung
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Effectiveness of Contractual Governance, Cooperation, Trust and Commitment in Construction Projects in Myanmar
By: Ms. Nay Wunn Lett
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Effectiveness of Relationship Marketing Activities on Customers for Construction Contractors in Myanmar
By: Ms. Aye Nyein Moe
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Innovative Cultural Characteristics and Strategies of Construction Firms in India
By: Ms. Vinyasa G. C.
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Characteristics of Organizational Culture in Contractor Companies Affecting Project Performance and Management Styles
By: Mr. Sai Soum Mein
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Financial Difficulties in Construction Projects: A Case Study of Contractors in Government Construction Projects in India
By: Mr. Manas Pratim Das
Supervisor: Dr. Chotchai Charoenngam

Project Governance Practices in Large Construction Projects: Case Studies of Large Private Sector Building Construction Projects in India
By: Mr. Diraksh Rahman
Supervisor: Dr. Djoen San Santoso

Factors Affecting Schedule Delays in Residential Building Projects in India
By: Mr. Bekkam Subhash Preetham
Supervisor: Dr. Chotchai Charoenngam

Safety Management System and Its Implementation in Construction Projects in India
By: Mr. Dandu Surya Lachi Raju
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Management Maturity of Building Construction Projects in Myanmar
By: Mr. Tin Thurain Htoo
Supervisor: Dr. Djoen San Santoso

Risks in the Tendering Process Faced by the Contractors While Tendering for Design-Bid-Build Projects in Pakistan
By: Mr. Muhammad Abbas Khan
Supervisor: Dr. Chotchai Charoenngam

The Correlation between Relational Contracting Factors and Project Performance in Contracts of Thailand
By: Mr. Akegarat Senaphark
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Financial Indicators of the Property Development Company Influencing its Financial Risk in Thailand
By: Ms. Kavisara Phumiphithakkun
Supervisor: Dr. Chotchai Charoenngam

Effectiveness of Digital Marketing Strategies for Better Performance of Residential Real Estate Development Projects in Myanmar
By: Mr. Nyein Chan Thu
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Contract Administration Activities that Enhance Trust and Cooperation between Owners and Contractors in Construction Projects in Sri Lanka
By: Mr. Kande Thanthrige Gayan Madushan Kandethanthri
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Practices of Owner Project Management Team in Life Cycle of Residential Development Projects of Nepal
By: Ms. Rashmi Panthi
Supervisor: Dr. Chotchai Charoenngam

An Examination of the Factors Generating Construction Waste in Indian Building Construction Projects
By: Mr. Bhupathiraju Sri Harsha
Supervisor: Dr. Djoen San Santoso

Effective Procurement Policy and Procedure for Construction Companies in Thailand
By: Mr. Thitibhop Dherapongsthada
Supervisor: Dr. Bonaventura H.W. Hadikusumo

Analyzing Worker's Safety Behavior Using Social Network Analysis Approach: A Case of Hydropower Construction Projects in Nepal
By: Ms. Sapana G.C.
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Quality Management of a Drainage System Project: A Case of Shwe Ta Chaung Canal Project in Mandalay, Myanmar
By: Ms. Myint Myint Than
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Management of a Building Project: A Case Study of Basement + 12-Storey Residential Building
By: Ms. Myo Ei Ei Soe Win
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Management Competency Assessment and Development for SME Building Contractors: A Case Study of WL Contractor
By: Mr. Win Lwin
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Challenges of "the Engineer" in Managing EPC Contraction Projects: A Case Study of Thermal Power Plant in Vietnam
By: Mr. Tran Tuan Nam
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Rural Road Development Strategy in the Northern Shan State: Implementation and Performance
By: Mr. Su Kan Mon
Supervisor: Dr. Djoen San Santoso

Quality Management of Water Supply System for the Pyi Gyi Tagon Township (Mandalay) JICA Project
By: Ms. Kyawt Kay Khaing
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Back and Muscle Injuries of Construction Workers in India
By: Mr. Mahesh Kumar Nidumolu
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Identification of Construction Worker's Safety Risks and Safety Precautions in Indian Construction Projects
By: Mr. Manda Dheeraj Sai
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Factors Affecting Worker's Engagement in a Safety Program in India
By: Ms. Meda Venkata Renuka
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Risk Management in Deep Earthwork/Excavation: A Case Study of the Six Basements Earthwork/Excavation for Civil Building in Vietnam
By: Mr. Ha Thanh Tung
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Implementation of Safety Management in Road Construction Project: A Case Study of the 62nd Road Construction Project in Mandalay, Myanmar
By: Ms. Thet Hnin Phyu
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Safety Management in Maintenance of Hydropower Plant: A Case Study of Baluchaung No. 3 Hydropower Plant
By: Mr. Aung Hlaing Oo
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Cost Management for Building Construction: A Case Study of the Lanmadaw 1st Street Project
By: Ms. Khin Phyoe Khaing
Supervisor: Dr. Chotchai Charoenngam

Integrated Project Delivery Characteristics in Large Construction Projects: A Case Study of Wastewater Treatment Plant Project in Ho Chi Minh, Vietnam
By: Ms. Marina Lapa Viana
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Risk Assessment for the LNG Infrastructure Projects: A Case Study of the LNG Import Terminal EPC Projects in Vietnam
By: Mr. Vu Khac Quyen
Supervisor: Dr. Chotchai Charoenngam

Financial Ratio Analysis for Property Developers in Vietnam from 2016 to 2018
By: Mr. Vo Hoang Nguyen
Supervisor: Dr. Chotchai Charoenngam

Adoption of BIM in a Construction Process: A Case Study of Diamond Lotus Project
By: Mr. Le Tan Thanh Tung
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Financial Feasibility Study of Steel Casting Plant: A Case Study of NKCast Company
By: Mr. Doan Van Ngoc
Supervisor: Dr. Chotchai Charoenngam

Risk Management for a Housing Project: A Case Study of Xeo Trom 3 Residential Area and Social Housing An Giang Construction Company
By: Mr. Phan Hoang Trong
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Architectural Design Management Using BIM
By: Mr. Do Ngoc Nguyen
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Owner's Engineering Management in an EPC Project: A Case Study of Civil Works on Song Hau 1 Thermal Power Plant
By: Mr. Tran Ngo Trung Hau
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Key Factors for Real Estate Project Development: A Case Study of Celadon City Project - Invested by GMD Land HCMC
By: Mr. Pham Xuan Tung
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Risk Management of Large-Span Suspension Bridge in Remote Area: A Case Study of Malikha Bridge (Machanbaw) in Myanmar
By: Mr. Kyaw Zin Htwe
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Development and Construction of Rural Road Project: A Case Study of Gwaygone - Wattchote - Natmauk Road in Myanmar
By: Mr. Than Htoo Aung
Supervisor: Dr. Djoen San Santoso

Cost Control of Asphalt Concrete Road Construction Projects: A Case Study of Pyay-Phaukkaung-Taungoo Road Project
By: Ms. Saw Thinzar Minn
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Tendering Management for Public Projects
By: Mr. Thu Zar Win
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Planning, Monitoring and Control for Road Project: A Case Study of Nawin-Zayitchaung-Kyaukowlay Road
By: Ms. Oh Mar Htun
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Analyzing Monitoring and Control of Tayanar Phayargone Road Project
By: Ms. May Hnin Phyo
Supervisor: Dr. Djoen San Santoso

Project Management, Key Interaction and Coordination by Owners for Residential Building Projects: A Case Study of Lan Thit Mixed-Use Project, Yangon in Myanmar
By: Mr. Zaw Myo Hlaing
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Enhancing the EPC Project Management Performance of Underground Works in Hydropower Projects: A Case Study of the Upper Yeywa Hydropower Project in Kyaukme District, Shan State Myanmar
By: Mr. Nay Myo Win
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Contractor Delay Risks in Red Fidic Contract: A Case Study of Boo Phu Ninh Water Treatment Plant in Quang Nam Province, Vietnam
By: Mr. Vo Thanh Phong
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Management for Disaster Recovery of a Mountainous Road: A Case Study of Minn Bu-Ann Road in Myanmar
By: Ms. May Sandar Khin
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Assessing Employer's Contractual Risks in International Grant Project: A Case Study of Rural Development Programme Project Granted by Kreditanstalt fur Wiederaufbau (KfW)
By: Mr. Soe Soe Oo
Supervisor: Prof. Bonaventura H.W. Hadikusumo

A Contractor's Quality Management for a Wastewater Removal Pumping Station Project
By: Mr. Aung Myint Myat
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Risk Management in Remote and Conflict Areas: A Case Study of Einine-Mineyin Road Project
By: Ms. Hla Hmue Khin Khin
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Tendering Management for Consultant Selection in an International Grant Project: A Case Study of RRRP Project
By: Mr. Zaw Myo Aung
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Planning, Monitoring and Controlling of International Grant Projects: A Case Study of Pin Phyit-Wapyar Rural Road Project
By: Mr. Kyaw Thura Swe
Supervisor: Prof. Bonaventura H.W. Hadikusumo

International Aid Project Development and Management: A Case Study of the Wastewater Treatment Project in Myingan Prison
By: Ms. Su Su Hlaing
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Schedule Risk Management in Fly Over Construction Project: A Case Study of Insein Flyover (Yangon)
By: Mr. Khine Zaw Lin
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Project Management School Building: A Case Study of No. (7) Ahlone Basic Education High School Project
By: Mr. Kyaw Swar
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Assessment of Small Contractor's Competency: A Case Study of YZW Company
By: Mr. Ye Zaw Win
Supervisor: Prof. Bonaventura H.W. Hadikusumo

Controlling System for a Building Project: A Case Study of the Kyan Sit Min Housing Project
By: Ms. Thi Thi Khaing
Supervisor: Dr. Chotchai Charoenngam

Project Organization Management for Road Construction Projects
By: Mr. Kyaw Wai (A) Htay Win
Supervisor: Dr. Chotchai Charoenngam

3.1.2: SET – GEOTECHNICAL AND GEOTECHNICAL EARTH RESOURCES ENGINEERING FIELD OF STUDY

1. Introduction

The Geotechnical and Earth Resources Engineering (GTE) field of study educates students not only in the traditional areas of geotechnical engineering, such as foundation engineering, earth structures, underground excavation and slope engineering, but also in new dynamic areas such as tunneling, ground improvement, geosynthetic engineering, land reclamation, computational techniques, forensic engineering and offshore exploration. GTE students are also trained to solve increasingly challenging environmental problems involving engineering for provision of efficient waste disposal facilities, clean-up of contaminated sites as well as prevention and mitigation of geohazards such as landslides and erosion problems.

Specialization Areas in Geotechnical Engineering:

- Soil Engineering
- Rock Engineering Geology and Applied Geology
- Geoenvironmental Engineering

Interdisciplinary Area of Specialization in:

Geo-Exploration and Petroleum Engineering (GEPG)

Professional Master Engineering Programs:

- PME in Geotechnical Engineering and Management (PME-GEM)
- PME in Geoexploration and Petroleum Engineering (PME-GEPG)
- PME in Soil Improvement and Geosynthetics Engineering & Management (PME-SIGMA)

Laboratory Facilities

GTE's laboratories are among the best equipped and most active geotechnique laboratories in the Asia-Pacific region. They include the Soil Mechanics Laboratory, the Rock Mechanics Laboratory, the Engineering Geology Laboratory, the Geo-synthetic Material Laboratory, the Geophysics Laboratory and the Geoenvironmental Laboratory. GTE laboratories support teaching and research activities and also provide commercial testing services for many large national and international infrastructure development projects.

Research Centers

GTE hosts the Asian Center for Soil Improvement and Geosynthetics (ACSIG) to promote training and professional activities in these emerging areas. ACSIG is also the Secretariat of the International Geosynthetic Society-Thailand Chapter. GTE is also the home of the Southeast Asian Geotechnical Society (SEAGS) which was established 30 years ago at AIT as the catalyst for promotion of professional activities and cooperation among geotechnical engineers in the region. SEAGS publishes the well-established Geotechnical Engineering Journal.

2. Research Facilities and Laboratories

The Geotechnical 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 six (6) sections, i.e., *Soil Mechanics, Rock*

Mechanics, Engineering Geology, Geoexploration & Petroleum Geoengineering (GEPG), 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 equipment for vane tests, Dutch cone tests, piezocone tests, pressure-meter 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 air photos 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 G-856AX PROTON MAGNETOMETER, GRADIOMETER, GEODE SEISMIC SYSTEM and 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 applications, mineral and groundwater resources, as well as in performing analysis, interpretation and visualization of geophysical data acquired.

Geoexploration and Petroleum

Geoengineering 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, Techlog, Eclipse, Pipesim, PetroMOD etc. which are worth of more than 2 million USD as donated by Schlumberger to AIT.

Geoenvironmental Laboratory

The Geoenvironmental Laboratory pro-vides 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.

3. Faculty and Research Staff

Emeritus Professor
A S BALASUBRAMANIAM, BSc, Ceylon Univ, Sri Lanka; PhD, Cambridge Univ, UK

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

Associate Professor *(Tunnelling and underground excavations in rocks and soils; Slope stability and retaining structures; Landslides; Earth structures and dams; Pile foundations; Buried pipes and culverts)*

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

Associate Professor *(Exploration and Engineering Geophysics; Petrophysics; Geotechnical Engineering; Computer-aided Analysis in Geoengineering)*

KUO-CHIEH CHAO, BSc, National Chung-Hsing University, Taiwan; MS, Colorado State University, USA; Ph.D. Colorado State University, USA

Associate Professor *(Geotechnical and Earth Resources Engineering; Geosystem Exploration and Petroleum Geo-engineering)*

Bergado, Dennes T.
Professor
Ph.D. Utah State University, USA
M.Eng. Asian Institute of Technology

Park, Kyung-Ho
Assistant Professor
Ph.D., State University of New York at Buffalo

Jamsawang, Pitthaya
Acting Lab. Supervisor
M.Eng., King Mongkut's University of Technology, Thonburi

4. Publications

Papers in Refereed Journal

Kuo Chieh Chao, John Nelson. Validation of Foundation Design Method on Expansive Soils, Geotechnical Engineering Journal of the SEAGS & AGSSEA, Volume 50, pp. 103-111.

Papers in Conference Proceedings

Phichet Morya, Supavat Kongpanickul, Kuo Chieh Chao, Rustam Ishenaliev. Rainfall-Induced Failure on Unsaturated Fill and Highly Weathered Schist Slopes, Japanese Geotechnical Society Special Publication, Volume 7, Issue 2, pp. 556-564

5. Masters Students' Theses and Projects

A Study of the Lateral Movement of the Earth Retaining Wall due to Excavation of Basement of Astra Tower on Sudriman Street in Jakarta, Indonesia
By: Mr. Ravi Ghimire
Supervisor: Dr. Kuo-Chieh Chao

Building Response to Shield Tunneling in the MRT Blue Line Extension in Bangkok Subsoil
By: Mr. Chatri Yindee
Supervisor: Dr. Kuo-Chieh Chao

Assessment of Shale Gas Characteristics and Potential in the Cuu Long Basin, Vietnam
By: Mr. Chu Hoang Duong
Supervisor: Dr. Giao Pham Huy

Evaluation of the Relationship Between Initial Subgrade Reaction Modulus with Depth and Friction Angle for the Cohesionless Soils in Nakhon Ratchasima, Thailand
By: Mr. Ankit Keneth Lall
Supervisor: Dr. Kuo-Chieh Chao, Dr. Tian Ho Seah

Soil Characterization and Consolidation Analysis with Reference to Subsidence Assessment for the 3rd UMRT Line in Hanoi
By: Mr. Hoang Ngoc Khai
Supervisor: Dr. Pham Huy Giao

Effect of the Degree of Saturation on Soil-Pile Interaction for Expansive Soils
By: Ms. A-Nanya Chaladthanyakit
Supervisor: Dr. Kuo-Chieh Chao

Close Proximity Tunnelling and Measures Adopted in the MRTA Orange Line-East Project
By: Ms. Hsu Latt Maung
Supervisor: Dr. Kuo-Chieh Chao

Effect of Climate Change on Rainfall-Induced Failures of Embankment Slopes in Timor-Leste
By: Ms. Thishani Amarathunga
Supervisor: Dr. Kuo-Chieh Chao

Observational Method and Instrumentation Application in the MRT Blue Line Extension Project
By: Ms. Evan Undalok Catalan
Supervisor: Dr. Kuo-Chieh Chao

Construction and Application of Rock Physics Template in Reservoir Characterization in the Wichian Buri Sub-basin, Thailand
By: Ms. Swanya Singim
Supervisor: Dr. Pham Huy Giao

Integrated Digital Rock Physics and Well Log Analysis for Characterization of Fractured Igneous Reservoirs in the Phetchabun Basin, Thailand
By: Ms. Phatcharin Somkham
Supervisor: Dr. Pham Huy Giao

Machine Learning-Based Porosity Analysis for Fractured Igneous Rock Reservoirs Using Genetic Algorithm
By: Mr. Pramuditha Theekshana Munasinghe
Supervisor: Dr. Pham Huy Giao

Evaluation of Multi-Standpipe Grouting Technique and RTGC Method for Mae Ngad - Mae Kuang Water Diversion Tunnel Project
By: Mr. Phichet Morya
Supervisor: Dr. Kuo-Chieh Chao

Evaluation of the Heave Characteristics for the Prediction of Heave Using Consolidation Swell and Constant Volume Tests
By: Mr. Mohammed Azhar Mohammed Mowjood
Supervisor: Dr. Kuo-Chieh Chao

Evaluation of the Slope Instability of Punatshangchhu Hydroelectric Project Authority-I Dam in Bhutan
By: Ms. Rinchen Lhamo
Supervisor: Dr. Kuo-Chieh Chao

Threshold Stress and Plastic Settlement for High Speed Railway Foundation on Bangkok Soft Clay Under Cyclic Loading
By: Mr. Supavat Kongpanickul
Supervisor: Dr. Kuo-Chieh Chao

Strength Improvement of Bangkok Soft Clay Backfilled in a Lake with Vacuum PVD Technique
By: Mr. Piyavat Ngernbumrung
Supervisor: Dr. Kuo-Chieh Chao

Evaluation of the Effectiveness of Large Diameter Jet Grouting Technique for Tunnel Construction in Mass Rapid Transit Authority (MRTA) Orange Line-East Project
By: Ms. Sasirada Seepim
Supervisor: Dr. Kuo-Chieh Chao

An Integrated Study of Hydrogeological Characterization, Groundwater and Land Subsidence Analysis for the Mekong Delta in Vietnam
By: Ms. Nguyen Thi Hai Anh
Supervisor: Dr. Pham Huy Giao

Application of Rock Physics in Characterization of a Gas Hydrate Reservoir
By: Ms. Pham Hong Trang
Supervisor: Dr. Pham Huy Giao

3.1.3 : SET – STRUCTURAL ENGINEERING FIELD OF STUDY

1. Introduction

The Structural Engineering (STE) field of study teaches students to plan, design, and supervise the construction of infrastructure and facilities essential to modern life. Structural engineers investigate the behavior and design of all kinds of structures, including buildings, skyscrapers, bridges, elevated highways, tunnels, airports, dams, power plants, factories, stadiums, shopping complexes, oil rigs and aircraft. They must ensure that their designs satisfy a given design intent predicated on safety and on serviceability. They are also responsible for making efficient use of funds and materials to achieve these goals. As structures become more complex, structural engineers strive to find innovative solutions to improve the structural performance. Therefore, STE students are taught to keep abreast of the latest developments in advanced structural materials, computational modeling of structural systems, seismic-resistant design, building aerodynamics, construction planning and management and much more. Students are also taught to question and challenge general beliefs and practices in the field through basic and applied research. The STE curriculum is kept up-to-date and relevant through the faculty's ongoing active involvement in the solution of strategic real world problems outside the classroom. It offers two areas of specialization and the flexibility to construct personalized study programs, either broad-based and multidisciplinary or narrowly focused and highly technical. STE alumni form a strong network of regional leaders in private practice, government service, education and research.

Areas of Specialization

STE students may choose one of two areas of specialization.

Structural Analysis, Mechanics and Computation focuses on computational and applied mechanics, finite element methods, structural dynamics, wind and earthquake engineering, computer-aided design and expert systems.

Structural Design and Materials stresses advanced and low-cost construction materials, concrete technology, advanced design of reinforced and pre-stressed concrete structures, seismic design and wind-resistant design of structures, bridge engineering, and fire protection technology.

2. Research Facilities and Laboratories

Structural Engineering Laboratory

The Structural Engineering Laboratory (STE Lab) has a long history of excellence in advanced structural and material research. The STE 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 STE 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 complete 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 kN to 500 kN.), stroke (+100 mm to +250 mm.) and servo-value capacities for static, dynamic and fatigue testing. Standard laboratory instrumentation for structural engineering is available e.g., extensometer, universal testing machine, ultrasonic pulse velocity and strain gauge preparation, impulse force test hammer, etc.

Seismic Load Simulation Facility

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 servo value control, and (3) the existing strong reinforced concrete floor of the STE 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.

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 School of Engineering and Technology at AIT and Faculty of Engineering at Thammasat University. 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 graduated students of AIT and Thammasat University.

3. Faculty and Research Staff

Emeritus Professor

PISIDHI KARASUDHI, Ph.D., Northwestern Univ., USA; M.Eng., AIT, Thailand; B.Eng., Chulalongkorn Univ. Thailand. [Solid Mechanics]

Full-time Faculty

KANOK-NUKULCHAI, WORSAK, Ph.D., Univ of California (Berkeley), USA; M.Eng., AIT, Thailand; B.Eng. (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, D.Eng., M.Eng., University of Tokyo, Japan; B.Eng. (Hon), Chulalongkorn Univ, Thailand**.**

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

PUNCHET THAMMARAK, PhD, The Univ of Texas, Austin, USA; B.Eng. (Hon), Chulalongkorn Univ, Thailand;

Lecturer *[Computer Methods of Structural Analysis; Finite Element Methods in Engineering (FE Programming; Dynamic problem & Wave Propagation Analysis; Absorbing Boundary Conditions; Material Nonlinearities; Soil-Structure Interactions; Structural Engineering (Reinforced-Concrete Design /Steel Design]*

Visiting/Adjunct/Affiliated Faculty

SOMNUK TANGTERMSIRIKUL, D.Eng., and M.Eng, University of Tokyo, Japan; B.Eng. (Hon), Chulalongkorn Univ, Thailand.

Adjunct Professor [*Modeling of concrete behavior, Durability evaluation and service life design of concrete structures, High performance cementitious based materials, Special concrete such as SCC and RCC, Use of wastes and recycled materials in cement and concrete, Health monitoring, Repair and maintenance of concrete structures*]

AMORN PIMANMAS, Ph.D., and M.Eng, University of Tokyo, Japan; B.Eng. (Hon), Chulalongkorn Univ, Thailand.

Adjunct Associate Professor [*Evaluation of seismic performance of reinforced concrete buildings; Nonlinear finite element analysis of reinforced concrete; Inspection, repairing and strengthening of reinforced concrete*]

THANAKORN PHEERAPHAN, Ph.D., and M.Sc., Massachusetts Institute of Technology USA. B.Sc., Virginia Military Institute, USA.

Adjunct Associate Professor *[Advanced Concrete Technology; Forensic Engineering Structural Evaluation and Retrofitting of Structures; Dynamic soil-structure interaction; Seismic behavior of underground structure; Seismic*

behavior of earth structure; Multi-Agent simulation; Development of Virtual Clearinghouse for earthquake disaster reconnaissance]

RAKTIPONG SAHAMITMONGKOL, D.Eng., M.Eng, University of Tokyo, Japan; B.Eng., Sirindhorn International Institute of Technology, Thailand.

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

SONGSAK SUTHASUPRADIT, Ph.D., Konkuk University, Korea; M.Eng., AIT, Thailand; B.Eng., Srinakharinwirot University, Thailand.

Adjunct Faculty [*Development of a Nonlinear Enhanced Assumed Strain Shell Element for Bridge Analysis; An Assumed Strain 4-Node Reinforced Concrete Shell Element Considering Geometric and Material Nonlinearity; Railway Bridge Inspection an Evaluation*]

KITTIPOOM RODSIN, Ph.D., The University of Melbourne, Australia M.Eng., AIT, Thailand; B.Eng., Chulalongkorn Univ, Thailand.

Adjunct Faculty *[Experimental Investigation of Socket-Type Connection for Pre-Cast Column-Footing Connection; Suppression of Pedestrian Bridge Vibration in Bangkok]*

NAVEED ANWAR, D.Eng., M.Eng., AIT, Thailand; B.Sc.Eng., Univ. of Engineering & Tech., Lahore, Pakistan.

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

BUI THANH TAM, D.Eng., M.Eng., AIT, Thailand; B.Eng., Ho Chi Minh City University of Technology, Vietnam.

Senior Research Associate *[Computational Mechanics; Finite Element Analysis; Structural Analysis; Fluid-Structure Interaction; Parallel Computing; Software Development]*

3. Grants and Sponsored Research Completed in 2019

Tsunami Hazard Evaluation in Thailand & Tsunami Evacuation Simulation for Identifying Effective Disaster Risk Reduction Measures
Duration: 3-Sep-18 to 2-Sep-20
Project Investigators: Dr. Pennung Warnitchai
Total Contracted Amount (THB): 3,228,340.00

Seismic Resistant Design Procedure for Tal Buildings in Thailand
Duration: 20-Sep-18 to 19-Sep-20
Project Investigators: Dr. Pennung Warnitchai
Total Contracted Amount (THB): 3,624,000.00

4. Publications

Papers in Refereed Journal

A. Jirasakjamroonsri, N. Poovarodom, P. Warnitchai. Seismic site characteristics of shallow sediments in the Bangkok Metropolitan Region, and their inherent relations. Bulletin of Engineering Geology and the Environment, Volume 78, pp 1327-1343.

T. Mehmood, K. Rodsin, P. Warnitchai, K. Kolozvari. Investigating the vulnerability of nonductile reinforced concrete columns in moderate seismic regions to gravity load collapse. The Structural Design of Tall and Special Buildings, Volume 28.

K. Khy, C. Chintanapakdee, P. Warnitchai, A.C. Wijeyewickrema. Modified response spectrum analysis to compute shear force in tall RC shear wall buildings. Engineering Structures, Volume 180, pp. 295-309.

F.A. Najam, P. Warnitchai, M.I. Qureshi, T. Mehmood. Simplified seismic demand estimation for existing tall buildings in Thailand. Proceedings of the Institution of Civil Engineers: Structures and Buildings, Volume 172, pp. 391-406.

Book Chapters

T. Ornthammarath, P. Warnitchai. The ranges of uncertainty among the use of NGA-west1 and NGA-west 2 ground motion prediction equation. In: Rajesh Rupakhety, Simon Olafsson, Bjarni Bessason, eds. Proceedings of the International Conference on Earthquake Engineering and Structural Dynamics. pp. 1-9. Springer, Cham.

Md. S. Uddin, J.K. Routray, P. Warnitchai. Systems Thinking Approach for Resilient Critical Infrastructures in Urban Disaster Management and Sustainable Development. In: Ehsan Noroozinejad Farsangi, Izuru Takewaki, Tony Y. Yang, Abolhassan Astaneh-Asl, Paolo Gardoni, eds. Resilient Structures and Infrastructure, pp. 379-415. Springer Singapore.

5. Doctoral Students' Dissertation

A Supplemental Seismic Design Procedure for US-Code Conforming RC Moment Frames Constructed with Masonry Infills
By: Mr. Matrin Suthasit
Supervisor: Prof. Pennung Warnitchai

6. Masters Students' Theses

An Experimental Study of a Precast Beam-Beam Connection Using U-Shell Ferrocement without Bent in Splice Bar Ends
By: Mr. Dammalapati Kartheek
Supervisor: Dr. Punchet Thammarak

Effects of Enforcing Backup Frame Condition on a Dual-System High-Rise Structure
By: Mr. Mohammed Minhaj Ur Rahman
Supervisor: Dr. Punchet Thammarak, Dr. Naveed Anwar

Development of High-Strength, Self-Levelling Mortar for Thin-Layer Repairing Application
By: Mr. Pranab Baruah
Supervisor: Prof. Pennung Warnitchai, Dr. Thanakorn Pheeraphan

Normalized Modal Curvature Measurement for a Reinforced Concrete Frame Structure
By: Mr. Opath Dumnernnirun
Supervisor: Dr. Punchet Thammarak

Performance-Based Seismic Evaluation of High Rise R.C. Core Wall Building in Karachi, Pakistan
By: Mr. Anas Ahmad Farooqi
Supervisor: Dr. Punchet Thammarak, Dr. Naveed Anwar

The Development of Structural Health Monitoring Technique of External Prestressing Tendon for Precast Segmental Box Girders by Cable Vibration Measurement
By: Mr. Narawich Thanawongwat
Supervisor: Dr. Punchet Thammarak

Development of Heuristic Tools for Image Based Crack Inspection and Monitoring of Concrete Building Components
By: Mr. Eshanta Mishra
Supervisor: Prof. Pennung Warnitchai, Dr. Naveed Anwar

Evaluation of RC Mega Column, Tubular System and Core Wall System for Tall Building in High Wind and High Seismic Region
By: Mr. Phal Chanpisith
Supervisor: Prof. Pennung Warnitchai, Dr. Naveed Anwar

Enhancing Seismic Resilience by Non-structural Measures of Tall Building in Manila, Philippines
By: Ms. Catherine Borja Diaz
Supervisor: Dr. Punchet Thammarak, Dr. Naveed Anwar

Deep Neural Network Based Approach for Seismic Fragility Assessment of an Ordinary Standard Bridge
By: Mr. Ajit Devkota
Supervisor: Dr. Punchet Thammarak, Dr. Naveed Anwar

Structural Health Monitoring (SHM) by Acceleration and Modal Strain Measurements from Traffic-Induced Vibrations in Bangkok-Noi Canal Crossing Bridge Using Piezoresistive-Based Strain Transducers
By: Mr. Rattana Tiwari
Supervisor: Dr. Punchet Thammarak

An Equivalent Linear Procedure to Determine Nonlinear Seismic Demand of Low- to Mid-Rise RC Frame Buildings with Masonry Infill Walls
By: Mr. Saroj Chalise
Supervisor: Prof. Pennung Warnitchai

System Development of Moire Camera Array for Displacement and Strain Measurements
By: Ms. Rujika Tuladhar
Supervisor: Dr. Punchet Thammarak

Seismic Performance of Adjoining and Independent Low-Rise RC Frame-Infill Buildings in Yangon, Myanmar
By: Ms. Honey
Supervisor: Dr. Punchet Thammarak, Dr. Naveed Anwar

A Response Modification Analysis Procedure for Seismic Analysis of High-Rise, Shear-Walled Buildings
By: Ms. Sara Joshi
Supervisor: Prof. Pennung Warnitchai

Seismic Response Comparison of Independent and Adjoining Low-Rise Masonry Buildings Without Gap
By: Ms. Zeba Khan
Supervisor: Dr. Punchet Thammarak, Dr. Naveed Anwar

The Development of Modal Strain Measurement for Balanced Cantilever Bridges by using Semi-Conductor Strain Gauges
By: Mr. Sanjoy Kumar Bhowmik
Supervisor: Dr. Punchet Thammarak

Development of Mix Design of Structural Self-Compacting Light-Weight Concrete
By: Mr. Wasin Wangtan
Supervisor: Prof. Pennung Warnitchai & Dr. Thanakorn Pheeraphan

Seismic Base Isolation of Multi-Span Simply Supported (MSSS) Concrete Bridges
By: Ms. Pratibha Agrawal
Supervisor: Prof. Pennung Warnitchai

Performance Evaluation of Sampling Moire Method in Displacement Measurement from Long Distance
By: Ms. Winsupa Junmoogda
Supervisor: Dr. Punchet Thammarak

Performance Evaluation of a Compression-Free Energy Dissipation Brace by Dynamic Testing
By: Mr. Siraphop Kladam
Supervisor: Dr. Punchet Thammarak

An Integrated Study of Structural Health Monitoring by Measurements of Acceleration and Strain caused by Ambient Effects
By: Mr. Kritcha Karunkritkul
Supervisor: Dr. Punchet Thammarak

Seismic-Base Isolation of High-Rise Buildings with RC Shear Walls: Identification of an Isolation Mechanism
By: Ms. Nirmala Suwal
Supervisor: Prof. Pennung Warnitchai

3.1.4: SET – TRANSPORTATION ENGINEERING FIELD OF STUDY

1. Introduction

The Transportation Engineering (TRE) field of study trains students to solve challenging problems arising from the effects of industrialization and population growth on the movement of people and goods. In cities around the world, movement is hampered by traffic congestion, insufficiency of public transport facilities, traffic accidents, and other conditions. As manufacturing expands globally, businesses are seeking to reduce transportation costs by moving more goods through fewer distribution nodes. Concerns over congestion on highways, increasing pollution and hazardous materials all emphasize the need to maximize the efficiency of our transportation systems. TRE students learn to address these problems by applying advanced knowledge in transportation planning and economics, traffic engineering and the design of highways/pavements and other transportation facilities. Students in TRE acquire advanced skills in planning, design, operations, maintenance, rehabilitation, performance, and evaluation of transportation systems, including their economic and public policy aspects. The curriculum emphasizes development of analytic, problem-solving, design and management skills suitable for public and private sector professional work.

Areas of Specialization
TRE students may choose one of two areas of specialization.

Planning and Engineering trains students in planning and logistics as well as traffic and safety. Among other topics, they are immersed to issues relating to transportation systems, urban/regional transportation analysis and planning methods, airport planning & design, and traffic engineering.

Highways and Pavements focuses on design and operation as well as management systems and maintenance. Students in this specialization will become skilled in geometric design and highway safety, design/performance of highways and airport pavement as well as pavement management systems.

Laboratory Facilities
Laboratories in the TRE field of study provide students with up-to-date software, hardware, equipment and high-speed Internet connections to ensure seamless research study. Students interested in working on pavement design have the access to the Thailand Department of Highways. TRE students may also use equipment and resources in the ACTS and TARC research centers.

Research Center/Sponsored Research/ Training

- Asian Center for Transportation Studies (ACTS)
- Thailand Accident Research Center (TARC)
- Logistics Management at the Intermodel Terminals

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

KUNNAWEE KANITPONG, Ph.D., University of Wisconsin-Madison; M.Sc., University of Maryland at College Park, USA; B.S., Chulalongkorn University, Thailand.

Associate Professor *(Road Traffic Safety, Accident Data Analysis, Highway Materials and Construction,*

Pavement Design and Analysis, and Pavement Management System)

THIRAYOOT LIMANOND, Ph.D., University of California, Davis, USA; M.S., Arizona State University, USA; B. Eng., Chulalongkorn Univ., Thailand

Assistant Professor *(Sustainable transport, travel demand, transportation planning, traffic engineering, transport energy planning, intelligent transportation system)*

SURACHET PRAVINVONGVUTH, Ph.D., Utah State University, USA; M.S., AIT, Thailand; B. Eng., Chulalongkorn University, Thailand

Assistant Professor *(Sustainable transport, travel demand, transportation planning, traffic engineering, transport energy planning, intelligent transportation system)*

Visiting / **Adjunct 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)*

KAZUSHI SANO, D.Eng., M.Eng., B.Eng., University of Tokyo, Japan

Visiting Associate Professor *(Transportation Planning, Traffic Engineering, and Logistics)*

TAKASHI NAKATSUJI, D. Eng., M. Eng., B. Eng., Hokkaido University, Japan.

Visiting Professor (*Traffic Engineering, Traffic Flow Simulation, Winter Maintenance, Traffic Accident Reconstruction*)

Ampol Karoonsoontawong, Ph.D., M.S., The University of Texas at Austin, USA; B.Eng. (2nd Class Honors), Chulalongkorn University, Thailand

Adjunct Faculty *(Transportation Network Modeling, Transportation Logistics, Public Transportation Scheduling, Applied Operations Research)*

SHINYA HANAOKA, Ph.D., M.S., B.Eng Tohoku University, Sendai, Japan.

Visiting Faculty *(Transportation Network Modeling, Transportation Logistics, Public Transportation Scheduling, Applied Operations Research)*

Research Staff

Research Assistant

Miss Kanwalai Nachaisit, M.A. (Major: History of Southeast Asia); B.A. (Major English), Silpakorn University, Thailand

Srivarang Jendupakarn, Bachelor of Nursing Science, Burapha University, Chonburi, Thailand

Pathumporn Dabsomsri, B.Eng. (Transportation Engineering), Suranaree University of Technology, Nakhon Rachasima, Thailand

Research Associate

Auearree Jensupakarn, M.Eng. (Transportation Engineering), Asian Institute of Technology; B.Eng. (Civil Engineering), Suranaree University of Technology, Nakhon-Ratchasima, Thailand

Jetpan Wetwitoo, M.Eng. (Transportation Engineering), Asian Institute of Technology; B.Eng. (Civil Engineering), King Mongkut's University of Technology North Bangkok, Bangkok, Thailand

Santosh Baral, M.Eng. (Transportation Engineering), Asian Institute of Technology; B.Eng. (Civil Engineering, Nepal Engineering College, Changunarayan, Bhaktapur, Nepal

Napong Bubanpong., M.Eng. (Transportation Engineering, Asian Institute of Technology; B.Eng. (Civil Engineering), King Mongkut's Institute of Technology, Bangkok, Thailand

Ratthapong Meesit, M.Eng. (Transportation Engineering), Asian Institute of Technology; B. Eng. (Civil Engineering), Prince of Songkla University, Songkla, Thailand

Mr. Ridwan B.A. Quaium, M.Sc (Civil engineering), Texas A&M University; B.Sc. (Civil Engineering), Virginia Tech, Blacksburg, Virginia, USA

3. Grants and Sponsored Research Completed in 2019

Feasibility study on economic, engineering, and environmental impact of the west part of the Bangkok's 3rd outer ring road project
Duration: 7-Nov-2017 to 31-July-2019
Project Investigator: Dr. Surachet Pravinvongvuth
Total Contracted Amount (THB): 5,233,272.14

Motorcycle Accident Investigation 2018
Duration: 1-Jan-2018 to 30-Sep-2019
Project Investigator: Dr. Kunnawee Kantipong
Total Contracted Amount (THB): 12,207,681.00

Toyota Passenger-Car Accident Analysis-Phase 3
Duration: 1-Aug-2018 to 31-July-2019
Project Investigator: Dr. Kunnawee Kantipong
Total Contracted Amount (THB): 517,805.00

4. On-going Grants and Sponsored Research

Motorcycle Accident Investigation 2019-2020
Duration: 1-Jan-2019 to 31-Dec-2020
Project Investigator: Dr. Kunnawee Kantipong
Total Contracted Amount (THB): 18,394,584.00

Toyota Passenger-Car Accident Analysis-Phase 4
Duration: 1-May-2019 to 30-Apr-2020
Project Investigator: Dr. Kunnawee Kantipong
Total Contracted Amount (THB): 539,205.00

5. Doctoral Students' Dissertation

Departure Time Choice Behavior for Intercity Travel during Long Holidays in Bangkok Metropolitan Area, Thailand
By: Mr. Bhawat Chaichannawatik
Supervisor: Dr. Kunnawee Kanitpong, Dr. Thirayoot Limanond

6. Masters Students' Theses and Research Studies

Travelers' Mode Choice Behaviour and Key Influential Factors among Different Age Groups
By: Mr. Muppidi Naveen Reddy
Supervisor: Dr. Surachet Pravinvongvuth

Assessment of Daily Traffic Counts to Identify a Typical Day for Data Collection to Estimate the Annual Average Daily Traffic
By: Mr. Goney Vedha Prakash Reddy
Supervisor: Dr. Surachet Pravinvongvuth

Risk Perception of Mobile Phone Use While Driving and Its Effect on Driving Performance
By: Mr. Natakorn Phuksuksakul
Supervisor: Dr. Kunnawee Kanitpong

Motorcyclists' Risk Perception and its Relationship to Road Accidents
By: Ms. Udayanthi Kumari Ilangasinghe
Supervisor: Dr. Kunnawee Kanitpong

Application of Microscopic Traffic Simulation for the Design of HOV Lanes on Bangkok Expressway Network
By: Ms. Wai Nwe Nwe Aung
Supervisor: Dr. Surachet Pravinvongvuth

Intersection Throughput Analysis: Evaluation of Signal Timing Plan at Non-Lane-Based Mixed Traffic Intersections
By: Ms. Yu Mon Kyaw
Supervisor: Dr. Surachet Pravinvongvuth

Relationship between Pedestrian Accessibility and Transit Rider Characteristics: A Case Study of Airport Rail Link Stations
By: Ms. Nadeesha Upamali Weerakkody
Supervisor: Dr. Surachet Pravinvongvuth

Implication of the Chet Network on a Realistic Set of Travel Demands in Comparison with Sioux Falls Network
By: Mr. Bethala Aditya
Supervisor: Dr. Surachet Pravinvongvuth

Microscopic Traffic Simulation Approach to Design Locations of Pedestrian Crossing on the Chet Network
By: Mr. Hasun Geeshawa Kodittuwakku
Supervisor: Dr. Surachet Pravinvongvuth

Application of Traffic Conflict Technique for Traffic Safety Evaluation Between Roundabout and Unsignalized Intersection: A Study in Thailand
By: Mr. Mohammed Sikander Sultan
Supervisor: Dr. Kunnawee Kanitpong

Traffic Signal Violations Caused by Commercial Motorcycle Couriers in Thailand
By: Mr. Anartham Raghuveer
Supervisor: Dr. Kunnawee Kanitpong

The Travel Behavioral Intentions of Passengers Towards Public Transportation in Bangkok
By: Mr. Maddukuri Surya Kalyan
Supervisor: Dr. Kunnawee Kanitpong

3.1.5: SET - WATER ENGINEERING AND MANAGEMENT FIELD OF STUDY

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 climate variability and change and uncertainty of water in space and time.

The Water Engineering and Management (WEM) imparts education and training towards 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 acquire knowledge and hands-on practice in tools and techniques to come up with viable and sustainable water management for water, food, energy, and environmental security. Students conduct research on country-specific water related problems, and have opportunities to join research and internship programs with industries and partners.

Academic Programs

Masters and Doctoral Degree Program
WEM offers academic programs leading to Masters Degree, Doctoral Degree, Professional Masters Degree, and Diploma and Certificates covering five focal areas: *Agricultural Water, Coastal Water, Urban Water, Water Resources, and Extreme Events and Risk Management*.

For further details, please visit www.set.ait.asia/wem/

Double Degree Masters Program
The following Double Degree Masters programs are offered with renowned institutions under which students are awarded two Masters degrees: one from AIT and one from AIT's partner institution.

- Urban Water Engineering and Management (UWEM) in collaboration with UNESCO-IHE, The Netherlands and Environmental Engineering and Management field of study at AIT
- Agricultural Water Management for Enhanced Land and Water Productivity (DD-AWELWP) in collaboration with UNESCO-IHE, The Nether-lands
- Hydroinformatics and Water Management (HWM) in collaboration with The University of Nice, Sophia Antipolise, France

Distance-based Program

WEM also offers e-learning programs on:

- Integrated Water Resources Management (IWRM) in collaboration with UNUINWEH, Canada
- Service Oriented Management of Irrigation Systems (SOMIS) in collaboration with UNESCO-IHE, The Netherlands

The WEM field of study covers five focal areas: Agricultural Water, Coastal Water, Urban Water, Water Resources, and Extreme Events and Risk Management. The curriculum is 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.

Climate change impact and adaptation in water sector is an active area of research and education at WEM. 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 drought analysis and management, river flow analysis, and flood control and mitigation, flood modeling and forecasting, flood plain development and management. Research in the area of climate change and water resources include downscaling of climatic variables at local scale and impact and adaptation studies of future climate on water resources and on water use sectors.

In addition, WEM offers the following Double Degree Masters programs with renewed institutions under which students are awarded two Master degrees: one from AIT and one from AIT's partner institution.

- Urban Water Engineering and Management (UWEM) in collaboration with UNESCO-IHE, The Netherlands and Environmental Engineering and Management field of study at AIT
- Agricultural Water Management for Enhanced Land and Water Productivity (DD-AWELWP) in collaboration with UNESCO-IHE, The Netherlands
- Hydroinformatics and Water Management (HWM) in collaboration with The University of Nice, Sophia Antipolise, France

WEM also offers e-learning programs on:

- Integrated Water Resources Management (IWRM) in collaboration with UNU-INWEH, Canada
- Service Oriented Management of Irrigation Systems (SOMIS) in collaboration with UNESCO-IHE, The Netherlands

WEM also encourages students to undertake internship program and receive students from partner institutions under exchange and dual degree program.

2. Faculty and Research Staff

Emeritus Professor
ASHIM DAS GUPTA, BEng, Assam Engineering College, India; MEng, DEng, AIT, Thailand.

Visiting Professor *(Integrated water resources management; Groundwater development and management; Modeling and monitoring)*

Full-time Faculty

MUKAND SINGH BABEL, BEng, Rajasthan Agricultural Univ, India; MEng, DEng, AIT, Thailand.

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; Climate change impact and adaptation; Groundwater resources management; and Flood and drought analysis, forecasting and management]*

SANGAM SHRESTHA, MSc., Institute of Agriculture and Animal Science, Tribhuvan University, Nepal; MSc., Asian Institute of Technology, Thailand; PhD., University of Yamanashi, Japan.

Associate Professor [*Climate change and adaptation, Integrated water resources management, Hydrology and water quality modeling, Groundwater development and management, Sustainable water management policy*]

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]*

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]*

AKIYUKI KAWASAKI, BEng, MEng, Deng., Yokohama National University, Japan

Visiting Associate Professor *[Geographic Information System / City and regional planning / Transboundary river / Benefit sharing / Land-use modeling / Disaster management (Landslide and flood)]*

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]*

DAMIEN JOURDAIN, BEng, MSc, Ecole Nationale Superieure Agronomique Montpellier, France; PhD, University of Montpellier I, France

Visiting Assistant Professor *[Agricultural & Natural Resources Economics/ Farm Modeling/ Water and Watershed Management / Payment for Environmental Services]*

H. RAMESH, M.Tec., The National institute of Engineering, Mysor, Ph.D., National Institute of Technology Karnataka, Kurathkal, India.

Visiting Assistant Professor *[Water Resources Engineering, Hydraulic, and Civil Engineering]*

SANTOSH G. THAMPI, M Tech., IIT. Madras, Ph. D., IISc, Bangalore, India

Visiting Professor *[Hydraulics, Water Resources Engineering, Soil and Civil Engineering]*

Affiliated Faculty

SUTAT WEESAKUL, D.Eng, M.Eng, 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]

3. Grants and Sponsored Research Completed in 2019

Training on Hydrological Modeling for Water Accounting
Duration: 18-Dec-2017 to 31-May-2019
Project Investigator: Dr. Sangam Shrestha
Total Contracted Amount (THB): 995,488.00

SWINDON-Sustainable Water Management in Developing Countries-Regional Coordinator
Duration: 1-Jan-2018 to 31-Dec-2019
Project Investigator: Prof. Mukand S. Babel
Total Contracted Amount (THB): 912,000.00

A comparative study of global & local model for climate change impact assessment in Asian region
Duration: 12-Jan-2018 to 31-Dec-2019
Project Investigators: Dr. Sangam Shrestha
Total Contracted Amount (THB): 2,892,534.23

Training programme for Nepal on "Developing project proposal for submission to the Green Climate Fund"
Duration: 1-Sep-2018 to 31-Dec-2019
Project Investigator: Prof. Mukand S. Babel

Total Contracted Amount
(THB): 1,443,936.00

4. On-going Grants and Sponsored Research

Connecting climate change, hydrology & fisheries for energy and food security in Lower Mekong Basin
Duration: 1-Jan-2018 to 31-Dec-2020
Project Investigators: Dr. Sangam Shreshtha, Dr. Vilas Nitivattanon, Dr. Duc Hoang Nguyen
Total Contracted Amount
(THB): 6,930,000.00

Mapping groundwater resilience to climate change & human development in Asian cities
Duration: 1-Sep-2018 to 31-Aug-2021
Project Investigators: Dr. Sangam Shrestha, Dr. S. Mohana Sundaram
Total Contracted Amount
(THB): 2,975,360.00

ENRICH: Enhancing Resilience to future Hydro-meteorological extremes in the Mun river basin in Northeast of Thailand
Duration: 1-Oct-2018 to 30 Sep-2021
Project Investigators: Prof. Mukand S. Babel, Dr.Sangam Shrestha
Total Contracted Amount
(THB): 5,000,000.00

Physical Hydraulic Model Study of Deedoke Hydroelectric Power Project Republic of the Union of Myanmar
Duration: 15-Mar-2019 to 30-Mar-2020
Project Investigator: Mr. Arturo Roa
Total Contracted Amount
(THB): 4,185,000.00

SWINDON- International Expert Workshop- South East Asia 2019
Duration: 1-Aug-2019 to 31-Jul-2020
Project Investigator: Prof. Mukand S. Babel
Total Contracted Amount
(THB): 648,550.00

Symposium on Climate Change Impacts, Vulnerability & Adaptation: Asian Perspective
Duration: 1-Aug-2019 to 31-Jul-2020
Project Investigators: Dr. Sangam Shrestha, Prof. Mukand S. Babel
Total Contracted Amount
(THB): 617,400.00

Physical Hydraulic Model Study of Aya PSPP, Republic of the Philippines
Duration: 25-Oct-2019 to 30-Mar-2020
Project Investigator: Mr. Arturo Roa
Total Contracted Amount
(THB): 1,830,000.00

Physical Hydraulic Model Study of Luang Prabang Hydroelectric Power Project, Lao PDR
Duration: 1-Nov-2019 to 30-Apr-2022
Project Investigator: Mr. Arturo Roa
Total Contracted Amount
(THB): 8,650,950.00

5. Publications

Papers in Refereed Journal

S Boonwichai, S Shrestha, MS Babel, S Weesakul, A Datta. Evaluation of climate change impacts and adaptation strategies on rainfed rice production in Songkhram River Basin, Thailand. Science of the Total Environment, Volume 652, pp. 189-201

Pallav K. Shrestha, Sangam Shrestha, Sarawut Ninsawat. How significant is sub-daily variability of rainfall for hydrological modelling of floods? A satellite-based approach to sub-daily downscaling of gauged rainfall. Meteorological Applications, Volume 26, pp. 288-299.

Binod Bhatta, Sangam Shrestha, Pallav K Shrestha, Rocky Talachabadel. Evaluation and application of a SWAT model to assess the climate change impact on the hydrology of the Himalayan River Basin. Catena, Volume 181.

Sweta Yadav, Mukand S Babel, Sangam Shrestha, Proloy Deb. Land use impact on the water quality of large tropical river: Mun River Basin, Thailand. Environmental Monitoring and Assessment, Volume 191.

Uttam Ghimire, Sangam Shrestha, Mukand S Babel, G Srinivasan. A multi-temporal analysis of streamflow using multiple CMIP5 GCMs in the Upper Ayerawaddy Basin, Myanmar. Climatic Change, Volume 159, pp. 59-79.

Chanapathi Tirupathi, Thatikonda Shashidhar, Vishnu P Pandey, Sangam Shrestha. Fuzzy-based approach for evaluating groundwater sustainability of Asian cities. Sustainable Cities and Society, Volume 44.

Yinglan A, Guoqiang Wang, Tinxi Liu, Sangam Shrestha, Baolin Xue. Vertical variations of soil water and its controlling factors based on the structural equation model in a semi-arid grassland. Science of the Total Environment, Volume 69, pp. 1016-1026.

Puze Wang, Jiping Yao, Guoqiang Wang, Fanghua Hao, Sangam Shrestha, Yanbo Peng. Exploring the application of artificial intelligence technology for identification of water pollution characteristics and tracing the source of water quality pollutants. Science of the Total Environment, Volume 693, 133440.

Anil Aryal, Sangam Shrestha, Mukand S Babel. Quantifying the sources of uncertainty in an ensemble of hydrological climate-impact projections. Theoretical and Applied Climatolog, Volume 135, pp. 193-209.

C. Chirachawala, S. Shrestha, M.S. Babel, S.G.P. Virdis, S. Wichakul. (2020) Evaluation of global land use/land cover products for hydrologic simulation in the Upper Yom River Basin. Science of The Total Environment. Volume 708, 135148

Books

Indrajit Pal, Jason von Meding, Sangam Shrestha, Iftekhar Ahmed, Thayaparan Gajendran. An Interdisciplinary Approach for Disaster Resilience and

Sustainability. Springer Singapore. Published Online in 2019, Printed Copy Published in 2020. ISBN 978-981-329-527-8

Papers in Conference Proceedings

Pragya Pradhan, Sangam Shrestha. Evaluation of SWAT and ANN models for hydrologic simulation in Sre Pok river basin of Cambodia. 2019 SWAT-SEA Conference, 21-26 October 2019. Siem Reap, Cambodia.

Pragya Pradhan, Sangam Shrestha. Evaluation of The Climate Change Impact on Water Balance of Srepok River Basin Using an Ensemble of RCMs. Vietnam International Water Week 2019 (VACI 2019). 22 March 2019, Hanoi, Vietnam.

Sangam Shrestha, Hok Panha. Assessment of temporal and spatial variations in climate extremes in the 3S River Basin. Vietnam International Water Week 2019 (VACI 2019). 22 March 2019, Hanoi, Vietnam.

Ang Raksmey, Sangam Shrestha. Multi-Variable Hydrologic Model Calibration Using Measured Discharge and Remotely Sened Evapotranspiration: A Case Study in Sekong River Basin. Vietnam International Water Week 2019 (VACI 2019). 22 March 2019, Hanoi, Vietnam.

Shakthi Gunawardana, Sangam Shrestha. Assessment of the impact of climate change and mining activities on streamflow and loading of selected metals in the Chindwin River, Myanmar. Vietnam International Water Week 2019 (VACI 2019). 22 March 2019, Hanoi, Vietnam.

Siriwat Boonwichai, Sangam Shrestha. Assessment of Climate Change Impacts on Water Resources in the Songkhram River Basin, Thailand. Vietnam International Water Week 2019 (VACI 2019). 22 March 2019, Hanoi, Vietnam.

M Babur, Sangam Shrestha. Climate change impact on the hydrology and the water balance of the 3S River Basin. Vietnam International Water Week 2019 (VACI 2019). 22 March 2019, Hanoi, Vietnam.

Pragya Pradhan, Sangam Shrestha. Evaluation of AI and Physical-based Models to forecast hydrology in river basin of different climatic regions. International Symposium on Disaster Resilience and Sustainable Development. 7-8 March 2019, AIT, Thailand.

Chirayut Chirachalwala, Sangam Shrestha. Evaluation of landuse/land cover and precipitation production for hydrologic prediction in data-scarce watersheds: an application in the Yom River Basin, Thailand. International Symposium on Disaster Resilience and Sustainable Development. 7-8 March 2019, AIT, Thailand.

Sangam Shrestha. Assessment of climate change impact on hydrologic regime of the Asian River Basins. AGU Fall Meeting, 9-13 December 2019 in San Francisco, USA.

6. Doctoral Students' Dissertation

Hydrological Response to Climate Change and Land Use Change in the Forested Watersheds of Thailand
By: Mr. Jessada Techamahasaranont
Supervisor: Dr. Sangam Shrestha, Prof. Mukand S. Babel

7. Masters Students' Theses and Research Studies

WEM

Evaluation of Machine Learning Techniques for Downscaling Precipitation in the Yom River Basin, Thailand
By: Mr. Pichayapong Srisawad
Supervisor: Dr. Sangam Shrestha

Optimization of Reservoir Operation under Climate Change Scenarios for Flood Control and Irrigation: A Case Study of Kiew Kor Mah Reservoir in the Wang River Basin, Thailand
By: Ms. Ananya Suksri
Supervisor: Dr. Sangam Shrestha

Mapping Groundwater Resiliency under Climate Change Scenarios: A Case Study of Kathmandu Valley, Nepal
By: Mr. Sanjiv Neupane
Supervisor: Dr. Sangam Shrestha

Development of a Framework for the Analysis and Design of Sea-Dome Artificial Reefs: A Case Study of Phetchaburi, Thailand
By: Mr. Chayutpong Manakul
Supervisor: Dr. Sutat Weesakul

Mapping Groundwater Resilience to Population and Land Use Development Scenarios: A Case of Ho Chi Minh City, Vietnam
By: Mr. Riwaz Kumar Adhikari
Supervisor: Dr. Sangam Shrestha

Comparison of Physically-based Hydrological Model (SWAT) with Artificial Neural Network (ANN) Model in Different Climatic Regions
By: Ms. Pragya Pradhan
Supervisor: Prof. Tawatchai Tingsanchali, Dr. Sangam Shrestha

Evaluation of Global Land Use/Land Cover and Precipitation Products for Hydrologic Simulation in the Yom River Basin, Thailand
By: Mr. Chirayut Chirachawala
Supervisor: Dr. Sangam Shrestha

Integrating Remote Sensing-Derived Evapotranspiration and Ground-Monitored Discharge Data for Improvement of Hydrologic Modeling: A Case Study of the Sekong River Basin
By: Mr. Raksmey Ang
Supervisor: Dr. Sangam Shrestha

Simulation for Maximum Hydropower Generation under Climate Change Scenarios for Kulekhani Hydropower Plant, Nepal

By: Ms. Alisha Shrestha
Supervisor: Prof. Tawatchai Tingsanchali, Dr. Sangam Shrestha

Assessment of Climate Change Impact on Streamflow and Sediment using Two Downscaling Approaches: A Case Study of the Huai Bang Sai River Basin, Thailand
By: Ms. Pavithra Madushani Weerasekara
Supervisor: Prof. Mukand S. Babel

Assessment of Water Security in River Basins of Thailand
By: Mr. Kaushal Chapagain
Supervisor: Prof. Mukand S. Babel

Pluvial Flood Hazard Assessment and Management under Urbanization and Climate Change Scenarios in Kathmandu Metropolitan City, Nepal
By: Mr. Saurav K C
Supervisor: Dr. Sangam Shrestha

Evaluation of Climate Change Impact and Land Management Practices on Sediment Yield in the Upper Nan River Basin, Thailand
By: Ms. Mukadange Yasasna Vinushi Amaratunga
Supervisor: Prof. Mukand S. Babel

Modelling of Pluvial Flood Hazard under Climate and Land Use Change Scenarios: The Case of Tipolo Catchment in Mandaue, Philippines
By: Mr. Adones Bactasa Caduyac
Supervisor: Prof. Mukand S. Babel

Assessment of Hydropower Development Impacts on Hydrology in the Upper Ayeyarwady River Basin in Myanmar
By: Mr. Vidanelage Ruwan Chinthaka De Mel
Supervisor: Dr. Sangam Shrestha

Equilibrium Bay Shape Approach for Analysis of Shoreline in Myanmar
By: Ms. Khin Nathar Aung Myint Htay
Supervisor: Dr. Sutat Weesakul

Quantifying the Impact of Human Activities and Climate Change on Water Resources in the Srepok River Basin, Vietnam
By: Ms. Trang Thi Huyen Pham
Supervisor: Dr. Sangam Shrestha

Integrated Flood Risk Assessment and Management with Flood Control Measures in Nan Municipality, Thailand
By: Mr. Thanasit Promping
Supervisor: Prof. Tawatchai Tingsanchali, Dr. Sangam Shrestha

Assessment of Climate Change Impact on Hydrology of Wangchu River in Bhutan and Raidak River in India
By: Ms. Phub Zam
Supervisor: Dr. Sangam Shrestha

Impacts of Meteorological Droughts on Rice Yield and Agricultural Gross Provincial Product under Climate Change in the Upper Mun River Basin, Thailand
By: Mr. Mapeture Munetsi
Supervisor: Prof. Mukand S. Babel, Dr. Franciscus Xaverins Suryadi

Development and Application of Machine Learning Tools for Rainfall Forecasting
By: Mr. Le Ngoc HieuChathuranika
Supervisor: Dr. Sutat Weesakul

Meteorological Drought Assessment for Mongkol Borey River Basin, Cambodia
By: Mr. Tan Soran
Supervisor: Prof. Tawatchai Tingsanchali

Comparison of Short-Term Rainfall Forecasts for Prediction of Sewer Flow in Urban Area: A Case Study of Damhusaen Catchment, Copenhagen
By: Mr. Thaileng Thol
Supervisor: Prof. Mukand S. Babel

Dam Breach Modeling and Downstream Flood Inundation Hazard at Kaeng Krachan Dam in Phetchaburi Province, Thailand
By: Ms. Pantila Ramanandana
Supervisor: Prof. Tawatchai Tingsanchali, Dr. Sangam Shrestha

Assessment of Land Use Change Impact on River Flows and Sediment: A Case of Chindwin River Basin, Myanmar
By: Ms. Sanju Thapa Shrestha
Supervisor: Dr. Sangam Shrestha

Socio-economic Factors Affecting Adoption of Drip Irrigation for Cucumber in Potohas, Pakistan
By: Mr. Asif Iqbal
Supervisor: Dr. Avishek Datta, Prof. Mukand S. Babel

Assessment of Climate Change Impact on Maize and Wheat Yields in Punjab, Pakistan
By: Mr. Tallat Mehmood
Supervisor: Prof. Mukand S. Babel, Dr. Sangam Shrestha

Socio-Economic and Environmental Impact Assessment of Different Power-Sourced Drip Irrigation System in Punjab Pakistan
By: Mr. Iftkhar Ul Hussan
Supervisor: Dr. Sangam Shrestha, Prof. Mukand S. Babel

Effects of Deficit Irrigation and Fertigation on Growth, Yield and Water Productivity of Greenhouse-Grown Cucumbers
By: Mr. Muhammad Sadiq Anjum
Supervisor: Dr. Avishek Datta, Dr. Sangam Shrestha

Evaluation of Drip Irrigation Systems under Climate Change Scenarios in Punjab, Pakistan
By: Mr. Abuzar Saleem
Supervisor: Dr. Sangam Shrestha, Dr. Ekasit Kositsakulchai

Climate Change Impact Assessment and Adaptation Strategies for Wheat Cultivation in Faisalabad, Pakistan
By: Mr. Anjum Yousaf
Supervisor: Prof. Mukand S. Babel, Dr. Ekasit Kositsakulchai

Effects of Deficit Irrigation and Fertigation on Growth, Yield and Quality under Greenhouse-Growth Cucumbers
By: Mr. Zain Ul Abdin
Supervisor: Prof. Mukand S. Babel, Dr. Ekasit Kositsakulchai

Yield, Quality and Water Productivity of Tomato under Different Mulches and Soil Moisture Deficits with Drip Irrigation in Plastic Tunnel
By: Mr. Ammar Ahmad
Supervisor: Dr. Avishek Datta, Dr. Ekasit Kositsakulchai

Effect of Chlorination on the Performance of Drip Irrigation System
By: Mr. Erfan Ahmad
Supervisor: Prof. Mukand S. Babel, Dr. Ekasit Kositsakulchai

Impact of Drought on Wheat Yield under Climate Change in Punjab and Sindh Provinces of Pakistan
By: Mr. Muhammad Naveed Tahir
Supervisor: Prof. Mukand S. Babel, Dr. Sangam Shrestha

Response of Drip Irrigated Hybrid Maize to Fertigation Rate and Irrigation Frequency in Semi-Arid Region of Punjab, Pakistan
By: Mr. Asif Iqbal
Supervisor: Dr. Avishek Datta, Dr. Sangam Shrestha

Application of Water Accounting Procedure for Enhancing Water Productivity of Cotton and Wheat: A Case Study in 5R-Hakra Canal, Punjab, Pakistan
By: Mr. Adnan Asghar
Supervisor: Dr. Avishek Datta, Dr. Ekasit Kositsakulchai

Evaluation of Climate Change Impact and Adaptation Strategies for Cotton Cultivation in Faisalabad, Pakistan
By: Mr. Usman Tariq
Supervisor: Dr. Sangam Shrestha, Prof. Mukand S. Babel

Comparative Performance Assessment of Selected Models for Hydrological Forecasting: A Case Study of Karnali River Basin, Nepal
By: Mr. Suwas Ghimire
Supervisor: Prof. Mukand S. Babel

Assessment of Lift Irrigation Potential Under Climate Change Scenarios in Mid-Hills of Nepal: A Case Study of Rainas Municipality in Lamjung District
By: Mr. Bibek Shrestha
Supervisor: Dr. Sangam Shrestha

Application of Geographic Information System (GIS) and Fuzzy Analytic Hierarchy Process (FAHP) for the Assessment of Water Quality in Manchar Lake, Sindh, Pakistan
By: Mr. Khalid Jan
Supervision: Dr. Mohammad Esmaeil Asadi, Dr. Sangam Shrestha

Impacts of Climate Variability and Droughts on Groundwater Quality in Nawabshah District, Sindh, Pakistan
By: Mr. Sanaullah
Supervisor: Dr. Sangam Shrestha

Assessment of Sea Water Intrusion Under Climate Change and Future Sea Level Rise Scenarios in Kadhan Pateji Outfall Drain (KPOD) of Badin District, Sindh, Pakistan
By: Mr. Sanwal Karim
Supervisor: Dr. Mohana Sundaram Shanmugam

Modeling Stream Flow, Sediment Yield and Watershed Management Strategies: A Case Study of Keenjhar Lake in Pakistan
By: Mr. Asif Ali
Supervisor: Dr. Mohammad Esmaeil Asadi, Dr. Mohana Sundaram Shanmugam

Impact of Climate Change on the Availability of Stream Flows in Darawat Dam Watershed in Sindh, Pakistan
By: Mr. Iftikhar Ahmed Langah
Supervisor: Dr. Mohana Sundaram Shanmugam

Managing Drought for Wheat Under Climate Change in Umerkot District, Sindh, Pakistan
By: Mr. Faisal Ahmed Rajper
Supervisor: Prof. Mukand S. Babel

Flood Hazard Assessment and Management of Left Bank OutFall Drain (LBOD) for Flood Prevention in Badin District, Sindh, Pakistan
By: Mr. Shakir Habib Memon
Supervisor: Dr. Sangam Shrestha

UWEM

Investigating the Role of Re-Suspended Fecal Indicator Bacteria (FIB) for Bathing Water Quality Models
By: Mr. Michael Allen Bell
Supervisor: Dr. Oleg Shipin, Dr. Arlex Sanchez Torres

Framework for Assessing the Benefits of Furrows as a Nature-Based Solution in Rangsit Area, Thailand
By: Ms. Linda Jean Watkin
Supervisor: Dr. Sutat Weesakul, Dr. Zoran Vojinovic

Evaluation of Green Infrastructure's Benefits and Co-Benefits for Runoff Volume and Pollutant Reduction: A Case Study of Cul-de-Sac, Sint Maarten
By: Ms. Daniela Maria Rivera Dobles
Supervisor: Dr. Wenchao Xue, Dr. Zoran Vojinovic

Development of a Framework for Assessing Public Health Risk due to Pluvial Flooding: A Case study of Sukhumvit in Bangkok, Thailand
By: Ms. Pratima Pokharel
Supervisor: Dr. Sutat Weesakul, Dr. Zoran Vojinovic

Evaluation of Flood Mitigation Measures Using the " Room for the River" Approach in Lower Chao Phraya River Basin
By: Mr. Ivan Leonardo Mantilla Ni?o
Supervisor: Dr. Oleg Shipin, Dr. Zoran Vojinovic

Assessment of Spatial and Temporal Varied Pluvial Flood Hazard due to Climate Change and Storm Surge for the Coastal City: A Case Study of Pattaya City, Thailand
By: Mr. Gidion Thobias Chahe
Supervisor: Dr. Wenchao Xue, Prof. Roshanka Ranasinghe

Adaptation to Climate Changes Impacts and Socio-Economic Changes on Water Supply and Demand in Nairobi,Kenya

By: Ms. Lydia Nduku Munene
Supervisor: Prof. Mukand S. Babel, Dr. Berry Gersonius

Multi-Objective Optimization for Improving Equity and Reliability in Intermittent Water Supply Systems
By: Mr. Passwell Pepukai Nyahora
Supervisor: Prof. Mukand S. Babel, Dr. David Ferras

3.2: SET – 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 field of studies:

1. Mechatronics (MEC)
2. Microelectronics and Embedded Systems (MES)
3. Industrial and Manufacturing Engineering (IME)
4. Nanotechnology

3.2.1: SET – MECHATRONICS and MICROELECTRONICS & EMBEDDED SYSTEMS FIELDS OF STUDY

1. Introduction

Mechatronics

The **Mechatronics (MEC)** field of study provides students with expertise not only as builders of components of engineering technologies but also system integrators. Mechatronics provides students with new insights into the field of automation 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.

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 and Embedded Systems

The **Microelectronics and Embedded Systems (MES)** field of study addresses the increasingly critical demand for microelectronics expertise in the Asia-

Pacific region's rapidly growing industrial sector. Students study a balanced mix of technologies including analog and digital circuit design and processing-related topics such as failure analysis, as well as integrated circuit miniaturization and newly emerging specializations such as nanotechnology. The Microelectronics curriculum was designed and is constantly adapted in partnership with microelectronics companies and collaborating universities overseas.

2. Research Facilities and Laboratories

Mechatronics and Microelectronics and Embedded Systems 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, INTER-BUS 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 SYNOPSYS IC Design, ANYSIM, ANSYS, ADAMS and many types of special sensors and actuators are also available for research use.

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, Xilink 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 CoE at AIT include, but not exclusively, research and development focused on the application of nanoparticles, nanomaterials, devices and sensors. The CoE 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.

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, self-organisation, Biomimetic processes, Polyelectrolyte deposition, Gas sensors, Bio-sensors, optoelectronic devices]*

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

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]*

MONGKOL EKPANYAPONG, B.Eng., Chulalongkorn, Univ, Thailand; M.Eng. Asian Institute of Technology, Thailand, M.Sc., Ph.D., Georgia Institute of Technology, USA

Assistant Professor *[Embedded Systems, Computer Architecture, VLSI design (Low power design), Physical VLSI design, High Performance Computing, GPGPU, DSP]*

HARSHA ABEYKOON, B.Sc., University of Moratuwa, M.Sc., Phd, Keio Univ., Yokohama, Japan.

Assistant Professor (Mechatronics)

Visiting Faculty

Dr. Bidyadhar Subudhi , PhD in Control System Engg. from Univ. of Sheffield, UK.

Visiting Professor, currently Professor at the Department Electrical Engg., National Institute of Technology Rourkela, India.

Dr. Zahid Raza, Ph.D. in Computer Science, Jawaharlal Nehru University, India**.**

Visiting Faculty, currently an Assistant Professor in the School of Computer and Systems Sciences, Jawaharlal Nehru University, India.

LOUIS GABOR HORNYAK, Ph.D. (1997), Colorado State University. Instructor (Introduction to Nanoscience) and Research Professor, Department of Metallurgical & Materials Engineering, Colorado School of Mines in Golden, Colorado

Adjunct Faculty *[Span carbon nanotube synthesis & thermodynamics, nano metal composite materials fabrication and optical properties, template synthesis of gold-55 quantum dot clustersyn thesis & optical characterization]*

Chanchana Thanachayanont, Ph.D., Imperial College, London, U.K.

Adjunct Faculty *[Transmission Electron Microscopy; Semiconductor Physics; Quantum Physics; Solar Cells; and Nanoparticles]*

Metha Jeeradit, Ph.D*. (Electrical Engineering) from Standford University, USA*

Adjunct Faculty *[Electrical Engineering]*

4. On-going Grants and Sponsored Research

Development of a Laser Guided Vehicle Project
Duration: 1-Jul-2017 to 30-Jun-2021
Project Investigator: Prof. Manukid Panichkun
Total Contracted Amount (THB): 2,930,000.00

Machine Shop Service
Duration: 15-Feb-2019 to 15-May-2021
Project Investigator: Dr. Mongkol Ekpanyapong
Total Contracted Amount (THB): 100,000.00

5. Publications

Papers in Refereed Journal

Sabeethan Kanagasingham, Mongkol Ekpanyapong, Rachan Chaihan. (2019) Integrating machine vision-based row guidance with GPS and compass-based routing to achieve autonomous navigation for a rice field weeding robot. Precision Agriculture

Chairath Sirirattanapol, Masahiko Nagai, Apichon Witayangkurn, Surachet Pravinvongvuth, Mongkol Ekpanyapong. Bangkok CCTV image through a road environment extraction system using multi-label convolutional neural network classification. ISPRS International Journal of Geo-Information, Volume 8

Prasert Nonthakarn, Mongkol Ekpanyapong, Udomkiat Nontakaew, Eric Bohez. A collaborative system to improve knowledge sharing in scientific research project. Information Development, volume 35, pp. 624-638

P. Ranawaka, M. Ekpanyapong, A. Tavares, M. Dailey, Athikulwongse K., Silva V. High performance application specific stream architecture for hardware acceleration of HOG-SVM on FPGA. IEICE Transactions on Fundamentals of Electronics, Communications and Computer Sciences, pp. 1792-1803.

Sondarangallage D.A. Sanjeewa, Manukid Parnichkun. Control of Rotary Double Inverted Pendulum System Using Mixed Sensitivity H Controller. International Journal of Advanced Robotic Systems, Volume 16, Issue 2.

Chaiyaporn Silawatchananai, Manukid Parnichkun. Haptics Control of an Arm Exoskeleton for Virtual Reality Using PSO based Fixed Structure H Control. International Journal of Advanced Robotic Systems, Volume 16, Issue 3.

Papers in Conference Proceedings

Piyumal Ranawaka, Mongkol Ekpanyapong, Adriano Tavares, Krit Athikulwongse, Victor Silva. Application specific architecture for hardware accelerating HOG-SVM to achieve high throughput on HD. Proceedings of the International Conference on Application-Specific Systems, Architectures and Processors

Nguyen Cao Thang, Manukid Parnichkun, Phan Thi Tra Mi, Nguen Nhu Hieu, Le Thi Hong Gam, Pham Ngoc

Chung. Force Control of an Upper Limb Exoskeleton for Perceiving Reality Using Force Feed Forward Model. The 5th International Conference on Engineering Mechanics and Automation (ICEMA 5). Hanoi, Vietnam.

Sudarshan M. Samarasinghe, Manukid Parnichkun. Pitch Control of an Active Omni-wheeled Unicycle Using LQR. The 2019 International Symposium on Instrumentation, Control, Artificial Intelligence, and Robotics. Bangkok, Thailand.

Bhashitha C.W. Gamage, Manukid Parnichkun. Pitch Balancing Control of a Flipping Two-Wheel Stair Climbing Robot. The 2019 International Symposium on Instrumentation, Control, Artificial Intelligence, and Robotics. Bangkok, Thailand.

Dayantha Ilangasinghe, Manukid Parnichkun. Navigation Control of an Automatic Guided Forklift. The 2019 International Symposium on Instrumentation, Control, Artificial Intelligence, and Robotics. Bangkok, Thailand.

6. Doctoral Students' Dissertation

Mechatronics

Control of Force Feedback Arm Exoskeleton for Virtual Reality
By: Mr. Chaiyaporn Silawatchananai
Supervisor: Prof. Manukid Parnichkun

Development and Control of a Rotary Double Inverted Pendulum System
By: Mr. Sondarangallage D.A. Sanjeewa
Supervisor: Prof. Manukid Parnichkun

7. Masters Students' Theses and Projects

Mechatronics

Development of a Ferrofluid Based Soft Actuator Using Magnetic Field Optimization
By: Ms. Tasnova Tanzil Khan
Supervisor: Dr. A.M. Harsha S. Abeykoon, Dr. Tanujjal Bora

An Influence of Tether Vibration Control on TSS Orbital Position and TSS Control using Lyapunov-Based MIMO MRAC
By: Mr. Singanamala Dinesh
Supervisor: Dr. Song Weon Keun

The Influence of Pendulum Motion Control of an Elastic Tether on Orbit Deviation and Orbital Maneuvering of TSS
By: Mr. Kompally Revanth Roy
Supervisor: Dr. Song Weon Keun

Detection and Classification Based on Radar and Vision Image Data Using Deep Learning Networks
By: Mr. Jnana Sai Abhishek Varma Gokaraju
Supervisor: Dr. Song Weon Keun

Automatic Unknown Environment Searching and Map Making of a Mobile Robot Using Laser Range Finder and Reflectors
By: Mr. Dechatorn Subcharoen
Supervisor: Prof. Manukid Parnichkun

Development of a Xylophone-Playing Robot
By: Mr. Soe Maung Maung Oo
Supervisor: Prof. Manukid Parnichkun

Development and Navigation of a Hybrid Omni-mecanum Wheel Robot Platform
By: Mr. Jude Amila Mihiranga Robise
Supervisor: Prof. Manukid Parnichkun

Development and Motion Control of a 2 DOF Four-legged Robot with External Force Interaction
By: Mr. Jayaneththi Pathirannahalage Chandima Jayaneththi
Supervisor: Prof. Manukid Parnichkun

Development and Control of a Mobile Double Inverted Pendulum
By: Mr. Ratnayake Mudiyanselage Dhanika Thimal Ratnayake
Supervisor: Prof. Manukid Parnichkun

Sensorless Omnidirectional Force Control of Mecanum-Wheeled Mobile Robot and Sensorless Wheel Misalignment Detection of Wheeled Mobile Robot
By: Mr. Shiva Paudel
Supervisor: Dr. A.M. Harsha S. Abeykoon

Development and Attitude Control of a 3-Axis Satellite Platform Using Redundant Reaction Wheel System
By: Mr. Phawaphol Udompitayatorn
Supervisor: Prof. Manukid Parnichkun

Development and Control of a Master-Slave Leg Exoskeleton for Knee and Ankle Rehabilitation
By: Ms. Parntip Intaganok
Supervisor: Prof. Manukid Parnichkun

Visual SLAM and Human Recognition System of a Legged Robot
By: Mr. Jose Carlos Perez Ipiales
Supervisor: Prof. Manukid Parnichkun

Microelectronics and Embedded Systems

Development of Cardiac Murmurs Detection System
By: Ms. Niharika Mattepalli
Supervisor: Dr. Mongkol Ekpanyapong

Real-Time, Camera-Based Human Fall Detection Using Raspberry Pi
By: Mr. Bathula Sharath Kumar
Supervisor: Dr. Mongkol Ekpanyapong

Development of a Baby Cry Monitoring Device
By: Mr. Kolaneru Prashanth
Supervisor: Dr. Mongkol Ekpanyapong

Thai Digit Recognition on License Plates Using YOLOv3
By: Ms. Nadimpalli Lakshmi Manasa

Supervisor: Dr. Mongkol Ekpanyapong

Autonomous Navigation and Operation of the Power Tiller in Wet Paddy Fields
By: Mr. Kandula Arun Kumar Reddy
Supervisor: Dr. Mongkol Ekpanyapong

Clothing Recognition Using Deep Learning Techniques
By: Mr. M. Akshay Roy
Supervisor: Dr. Mongkol Ekpanyapong

Multi-Task Processing AI System Design for Autonomous Vehicle Driving
By: Mr. Sahrudai Bondalapati
Supervisor: Dr. Mongkol Ekpanyapong, Dr. Song Weon Keun

Race Classification Using YOLO Based on Human Face
By: Ms. Malisetty Reethi
Supervisor: Dr. Mongkol Ekpanyapong

Car Parking Occupancy Detection using YOLOv3
By: Mr. Arepalli Rama Venkata Naga Sai
Supervisor: Dr. Mongkol Ekpanyapong

Convolutional Neural Network-Based Object Detection Model Compression for Efficient Inference on Embedded Systems
By: Mr. Natthasit Wongsirikul
Supervisor: Dr. Mongkol Ekpanyapong

Deep Learning on Raspberry PI3 for Face Recognition
By: Mr. Nimshi Kollu
Supervisor: Dr. Mongkol Ekpanyapong

Hardware Acceleration of CNN-Based Object Detection Architecture
By: Ms. Laddusinghe Badu Hasini Thilanka Thilakasiri
Supervisor: Dr. Mongkol Ekpanyapong

Detection of Human Presence and Status of Electric Appliances for Home Automation and Human Tracking using Video Surveillance
By: Mr. Sandesh Shrestha
Supervisor: Dr. Mongkol Ekpanyapong

3.2.2: SET – INDUSTRIAL AND MANUFACTURING ENGINEERING FIELD OF STUDY

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.

2. Research Facilities and Laboratories

IME field shares all the laboratory facilities with Mechatronics and Microelectronics and Embedded Systems 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 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.

3. Faculty and Research Staff

Full-time Faculty

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

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]*

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 Werktuig Kundig Electro-Technisch Ingenieur, Rijks Universiteit Gent (State University of Ghent, Belgium); Kandidat Burgerlijk Ingenieur, Rijks Universiteit Gent (State University of Ghent, Belgium); Technisch Ingenieur Electro-Mechanica, Hoger Technisch Instituut Sint Antonius Gent, (Higher Technical Institute Saint Antonius Ghent, Belgium).

Associate Professor *(Computer Aided Design; Computer Aided Manufacturing; Computer Graphics; Computer Numerical Control; Five Axis Machining; Robust Control; Simulation of Metal Removal; [CNC/CAD/CAM; Mold and Die Design, Eco-Design, Biomechanics, Industrial Packaging]*

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]*

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

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

Visiting Faculty

Indrajit Mukherjee, Ph.D. in Industrial Engineering and Management, Indian Institute of Technology, Kharagpur, India.

Visiting Assistant Professor, currently Assistant Professor in the Shailesh J. Mehta School of Management, IIT Bombay.

Dr. Sounak Kumar Choudhury, Ph.D. in Manufacturing Science in Mechanical Engineering, Lumumba University, Moscow, Russia.

Visiting Professor, currently Professor in the Mechanical Engineering Department of the Indian Institute of Technology (IIT) Kanpur, India

5.On-going Grants and Sponsored Research

The international Simulation and Modelling Conference 2017
Duration: 15-Oct-2017 to 14-Oct-2020
Project Investigator: Dr. Pisut Koomsap
Total Contracted Amount
(THB): 37,105,538.40

6. Publications

Papers in Refereed Journal

Zhao Min, Luong T. Huynh, Muhammad Shafiq. Coordination of a Multi-Echelon Supply Chain using Spanning Revenue Sharing Contract. International Journal of Industrial Engineering: Theory, Applications and Practice, Volume 26, No. 6.

Pramudyo Sigit Cahyono, Luong T. Huynh. One vendor and multiple retailers' system in vendor managed inventory problem with stochastic demand. International Journal of Industrial and Systems Engineering, Volume 31, pp. 113-136.

Papers in Conference Proceedings

Luong T. Huynh, Susith Salgado. Supply Contract Arrangement under Supply Disruption. APIEMS 2019. 2-5 Dec 2019. Japan

Luong T. Huynh, Ngiuwichit Sakkarin. Job Shop Rescheduling under Rush Order Arrivals. APIEMS 2019. 2-5 Dec 2019. Japan

7. Masters Students' Theses and Projects

Industrial and Manufacturing Engineering

Improving Computer-Aided Design for Design for Additive Manufacturing
By: Mr. Sarthak Routray
Supervisor: Dr. Pisut Koomsap

Failure Mode and Effects Analysis (FMEA) Improvement by Clue-Based Failure Mode Identification
By: Mr. Akash Deep
Supervisor: Dr. Pisut Koomsap

An Economic Order Quantity Model with Imperfect Quality
By: Mr. Chiewchan Nimitmongkol
Supervisor: Dr. Huynh Trung Luong

Supply Chain Network Design under Distribution Center Disruption
By: Mr. Ashish Devkota
Supervisor: Dr. Huynh Trung Luong

Development of a Vendor Managed Inventory Model for Show Moving Items
By: Mr. Weerasingha Arachchige Arosh Rajitha Perera
Supervisor: Dr. Huynh Trung Luong

Development of Color Sorting Unit for Uniform Size Mosaic Tile Sorting
By: Mr. Kankanamage Don Kalana Madhushankha Munasinghe
Supervisor: Dr. Pisut Koomsap

Development of Product Flow-Based Pallet Assembly for Multiple-Size Title Custom Mosaic Design
By: Mr. Chatura Lavanga Mendis
Supervisor: Dr. Pisut Koomsap

Development of Smart Manufacturing for Tiling Automation of Custom Mosaic Design
By: Ms. Bothungaarachchige Naduni Hansika Abeywardena
Supervisor: Dr. Pisut Koomsap

Using a Combination of Option and Quantity Flexibility Contracts to Deal with Supply Disruptions
By: Mr. Merennage Francis Susith Salgado Wijesekera Goonaratne
Supervisor: Dr. Huynh Trung Luong

Job Shop Rescheduling Under Rush Order Arrivals
By: Mr. Sakkarin Ngiuwichit
Supervisor: Dr. Huynh Trung Luong

Reducing the Impact of Disruptions in Supply Chains with the use of Supply Contract Agreements
By: Ms. Gangaw Wut Yee
Supervisor: Dr. Huynh Trung Luong

Analyzing a Supplier's Decision under the Combination of Long-Term and Penalty Contracts
By: Ms. Vishala Rashmini Marasinghe
Supervisor: Dr. Huynh Trung Luong

Development of Collaborative Additive Manufacturing
By: Mr. Ranaweera Arachchige Senal Dinuka Ranaweera
Supervisor: Dr. Pisut Koomsap

Application of SMED Methodology and Scheduling in High-Mix Low Volume Production Model to Reduce Setup Time: A Case of S Company
By: Ms. Wang Shih-Shun
Supervisor: Dr. Huynh Trung Luong, Dr. Chuang-Chun Chiou

Improve the Efficiency of a Plastic Film Capacitor Assembly Line by use of Simulation Software: A Case Study of C Company
By: Mr. Yu-Ting Hsieh
Supervisor: Dr. Huynh Trung Luong, Prof. Chin-Yin Huang

Optimization of Medical Material Warehouse Management Policy: A Case Study of Taiwan T Hospital
By: Mr. Hao-Lun Huang
Supervisor: Dr. Huynh Trung Luong, Dr. Shao-Jen Weng

3.2.3: SET – NANOTECHNOLOGY FIELD OF STUDY

1. Introduction

Nanotechnology

Nanotechnology is an interdisciplinary field and hence this programme is addressed to both engineering and science background students. The master of engineering program in nanotechnology focusing on advanced materials and nano-materials. It aims to prepare students to play an active role in shaping their career in the application of appropriate

The programme in Nanotechnology at AIT is designed to address the knowledge-based industries of the 21st century that will require continuous development of their workforce. Postgraduate nanotechnology masters and Ph. D. courses are a well-recognized means of gaining experience in state-of-the-art techniques and applications. The program at AIT is addressed to the needs of engineers and science background students for entering into this burgeoning technology area. Nanotechnology with a focus on nanomaterials engineering at AIT provides international level engineering program. Partnership in learning and
research with the corporate world is been one of the hall marks of the program.

The AIT Nanotechnology Graduate program is a unique blend of truly cross-disciplinary teaching with an integrated curriculum. Budding Nanotechnologists come from different disciplines, including various engineering disciplines, physics, materials sciences and chemistry, so a good postgraduate programme in nanotechnology must be able to accommodate students from a wide range of backgrounds. Nanotechnology is an interdisciplinary field and the engineering focus of the AIT programme indeed targets only the engineers and science background students.

2. Research Facilities and Laboratories

Laboratory Facilities

The Nanotechnology Laboratory consists of a chemistry lab, instrumentation lab, and biology lab and electronics laboratory. The chemistry laboratory is equipped with standard chemical tables and hood for carrying out wet-chemical processing and several furnaces and humidity control chamber. The instrumentation room consists of equipment such as optical spectrophotometer, contact-angle measurement system, solar simulator, photocatalysis bench, gas-sensor test bench, CVD system, methanol reforming reactor, nanowire factory etc. The electronics lab is equipped with digital ocilloscopes, signal generators, power supplies, standard voltage and current meters as well as stocked with discrete devices for testing and research. Thin film deposition systems (dip-coating units) and custom ink-jet printing equipment is also available. The newly

set up biolab consists of autoclave, centrifuge, incubation chamber, laminar airflow, incubator shaker, microscope etc. These facilities are used for teaching and research proposes at AIT.

Our research encompasses working in "Poor-man's nanotechnology". The unifying concept in the laboratory is to make use of inexpensive wet-chemical methods to fabricate innovative materials and futuristic device components. The education is supported by a state-of-the-art research center focused on applications of nanoparticles in Energy, Food & Agriculture and the environment. Current research activities focus on dye-sensitized solar cells, piezotronic devices, gas sensors, bio-diagnostic tools, environmental mitigation through visible light photocatalysis, self-organization of nanoparticles, and layer-by layer growth from colloidal particles, amongst others.

Center of Excellence in Nanotechnology (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-organization processes to fabricate innovative materials, develop diagnostic tools, and apply nanoparticles to environmental issues amongst others. Activities of the CoE at AIT include, but not exclusively, research and development focused on the application of nanoparticles, nanomaterials, devices and sensors. The CoE 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. Members of the Center of Excellence in Nanotechnology have published over 80 journal papers, articles and book chapters since its inception in 2006. Wide ranging collaboration with multinationals and smaller companies in the region includes Donaldson Inc. (USA), Rak Investment Co. (UAE), SVI Company Ltd. and Western Digital (Thailand), Advance Nanotec (India) and NanoThread Inc. (USA). The Center of Excellence in Nanotechnology has extensive research collaborations with

State University of New York, Buffalo and Colorado School of Mines (USA), Swiss Federal Institute of Technology-Lausanne (Switzerland), Uppsala University and Royal Institute of Technology (Sweden), Agharkar Research Institute and S. N. Bose Center for Basic Sciences (India), Chulalongkorn University, Prince of Songkhla University, Naresuan University, NANOTEC/NSTDA (all in Thailand), amongst others.

The Center of Excellence in Nanotechnology, AIT released a portfolio of 16 nanotechnology products and processes to mark the AIT 52nd Anniversary celebrations last September 5, 2011 at Renaissance Hotel, Bangkok. The portfolio release is a culmination of five (5) years of extensive research in the center, one of the 8 centers in Thailand supported by National Nanotechnology Center (NANOTEC). Four patents for these products have been applied and others in the process.

3. Faculty and Research Staff

Full-time Faculty

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

Professor *[Functional materials, nanomaterials, Nanoparticles, nanorods, self organisation, Biomimetic organisation, Polyelectrolyte deposition, photocatalysis, Gas sensors, Biosensors, solar cells, water treatment, desalination]*

Associated Faculty

GABOR LOUIS HORNYAK, Ph.D. (1997), Colorado State University. Instructor (Introduction to Nanoscience) and Research Professor, Department of Metallurgical & Materials Engineering, Colorado School of Mines in Golden, Colorado

Professor, *[Carbon nanotube synthesis & thermodynamics, nano metal composite materials fabrication and optical properties, template synthesis of gold-55 quantum dot cluster synthesis& optical characterization]*

SIVANAPPAN KUMAR, Ph.D. Institut National Polytechnique de Toulouse, France

Professor, *Energy Field of Study, SERD, AIT (Renewable energy resource and technologies, Climate change and greenhouse gas mitigation, Solar Energy, Cleaner production, Energy and sustainable development)*

CHETTIYAPPAN VISVANATHAN, Ph.D. (1998) Chemical / Environmental Engineering, Institut National Polytechnique, Toulouse, France.

Professor, *Environmental Engineering and Management Field of Study, SERD, AIT (Cleaner production, Industrial Environment Management, Membrane Technology, Solid/Liquid Separation, Water and Wastewater Treatment)*

OLEG V. SHIPIN, PhD, Inst. of Biochemistry and Physiology of Microorganisms, Moscow, Russia.

Associate Professor, Environmental Engineering & Management Field of Study *(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 of Environmental Engineering; Molecular Microbiology, Health and Ecological Risk assessment, Ecological Engineering*)

THAMMARAT KOOTTATEP, D.Eng. Water and Wastewater Engineering, Asian Institute of Technology, Thailand

Associate Professor, *Environmental Engineering and Management Field of Study, SERD, AIT (Decentralized Waste and Wasterwater Treatment Systems, Eco-engineering Technology for Waste and Wastewater Treatment and Management, Environmental Health and Sanitation)*

ANIL KUMAR ANAL, DVM., University of Agriculture, Pakistan; MSc. and PhD., AIT, Thailand

Assistant Professor, Food Engineering & Bioprocess Technology Field of Study *(Animal Biotechnology, Food and Pharmaceutical Biotechnology, Dairy and Meat Process Technology, Food Colloids and Biopolymer, Functional Foods, Micro-/Nanoencapsulation, Bionanotechnology)*

PRABHAT KUMAR, Dr.-Rer.Hort., Uni Hannover, Germany; M.Sc. (Ag. Systems), AIT, Thailand; B.Sc. (Ag.) & Hons. RAU, Pusa, India

Affiliated Faculty & Senior Research Specialist, Agricultural Systems & Engineering Field of Study *(Integrated Pest Management, Farming Systems, Climate change adaptation, Tropical Plant Production and Protection, Smallholder production, Applied research, Nanotechnology and agriculture)*

Visiting Faculty

SIDDHARTH JABADE, Ph.D. (2005) in Mechanical Engineering, Indian Institute of Technology-Bombay, India.

Visiting Faculty (*Intellectual property rights, Innovation management, heat transfer).*

Adjunct Faculty

CHANCHANA THANACHAYANONT, Ph. D. (1999) and BE (1994), Imperial College, London. The National Metals and Materials Technology Center, National Science and Technology Development Agency, Thailand

Adjunct Faculty *(Transmission Electron Microscopy, Materials Characterization, Semiconductor Physics, III-V Compound Semiconductors)*

WALEED S. MOHAMMED, Ph. D. (2004), University of Central Florida (USA), M. Eng (1999) Cairo University, Egypt; Bangkok University (Rangsit Campus), Bangkok, Thailand

Adjunct Faculty (Optical wireless, Micro/nano optics, Fiber optics, Grating design, Bio-Photonics)

Research Staff

TANUJJAL BORA, M.Eng Microelectronics, AIT, Thailand; Ph.D. (2012) Nanotechnology, AIT, Thailand

Research Associate *(quantum dot, solar cell, photocatalysis, water purification, metal-semiconductor nanostructures)*

MAYUR BABANRAO CHAUDHARI, B.E. Electronics, Vishwakarma Institute of Technology, India: M.Eng (2011) Nanotechnology, AIT, Thailand

Research Associate *(Optical properties of metal nanoparticles, size and shape effects, simulation)*

HTET HTET KYAW, B.E Electronic Communication, Mandalay Technological University, Myanmar; M.Eng (2012) Nanotechnology, AIT, Thailand

Research Associate *(Heavy Metal Ion sensor by electric field assisted surface plasmon resonance approach)*

MAYUREE JAISAI, B.Sc. Biotechnology, Mae Fah Luang University, Thailand

Research Assistant (Hydrothermal growth to produce antimicrobial paper and properties)

Administrative Staff

ARGIE D. GONZALES, B.Sc. Business Administration, MSU-Iligan Institute of Technology, Philippines

4. Grants and Sponsored Research Completed in 2019

Development of Robust Coatings for IDEAL Fastener Industry Applications
Duration: 20-Sep-2016 to 31-Jul-2019
Project Investigator: Dr G Louis Hornyak
Sponsor: IDEAL Fastener Asia Ltd
Total Contracted Amount (THB): 10,899,020.00

5. Publications

Papers in Refereed Journal

Tanujjal Bora, Joydeep Dutta (2019) Plasmonic Photocatalyst Design: Metal Semiconductor Junction Affecting Photocatalytic Efficiency, Journal of Nanoscience and Nanotechnology, Volume 19, pp. 383-388.

Papers in Conference Proceedings

Tasnova Tanzil Khan, A. M. Harsha S. Abeykoon, Tanujjal Bora, Golam Fahad Mullick (2019) Design of a Prototype of a Ferrofluid Based Soft Actuator, 2019 1st International Conference on Advances in Science, Engineering and Robotics Technology (ICASERT-2019), 3-5 May 2019, Dhaka, Bangladesh. IEEE

6. Masters Students' Theses and Research Studies

Synthesis and Mesoporous Silica Nanoparticles and their Thin Film Applications as Anti-reflection Coatings
By: Mr. Gorantla Chaithanya Reddy
Supervisor: Dr. Gabriel Louis Hornyak

Fabrication of Titanium Dioxide-Coated Stainless Steel Mesh Filters for Oil/Water Separation
By: Mr. P. Arvind Rao
Supervisor: Dr. Tanujjal Bora

Antireflection Coatings Using Zinc Oxide Nanostructures
By: Mr. Pettigadi Giridhar
Supervisor: Dr. Gabriel Louis Hornyak

Nanoparticle Embedded Acrylic Polymer Coating for Enhanced Optical Transmittance
By: Ms. Katta Keerthana
Supervisor: Dr. Tanujjal Bora

Deposition of Metal Oxide Thin Films Using the Spark Deposition Method and their Application as Anti-reflection Coatings
By: Mr. Konduru Chaitanya
Supervisor: Dr. Gabriel Louis Hornyak

Preparation and Characterization of Polyacrylic/Silica Nanocomposite by Soap-Free Emulsion Polymerization Method
By: Ms. Meiling Li
Supervisor: Dr. Tanujjal Bora, Dr. Gabriel Louis Hornyak

Preparation of Superhydrophobic and Anti-Corrosion coating on Steel by One-Step Electrodeposition
By: Mr. Shuang Liang
Supervisor: Dr. Tanujjal Bora, Dr. Gabriel Louis Hornyak

Surface Wetting Behavior of Selected Natural Surfaces and Semi-Quantitative Correlation with Theory
By: Ms. Apichaya Chantaraklud
Supervisor: Dr. Tanujjal Bora

Fabrication of Nanostructured Tin Dioxide Superhydrophilic Surfaces for Antifogging Application
By: Mr. Anan Saenkhamai
Supervisor: Dr. Tanujjal Bora

3.3: SET – INFORMATION AND COMMUNICATION 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:

1) Computer Science (CS)
2) Information Management (IM)
3) Remote Sensing and Geographic Information Systems (RS-GIS)
4) Telecommunications (TC)
5) Information and Communications Technologies (ICT)

3.3.1: SET – COMPUTER SCIENCE and INFORMATION MANAGEMENT FIELDS OF STUDY

1. Introduction

Computer Science Field of Study

The Computer Science (CS) field of study aims to meet the growing international demand for highly-skilled computer specialists by:

- Providing a curriculum that enables students to acquire the breadth required to function in the modern-day computer industry;
- Providing a state-of-the-art research environment;
- Encouraging students to specialize beyond the basic curriculum by initiating an individual research program;
- Fostering close relationships with both local industry and international Organizations

This field of study focuses on world-class teaching and research into the foundations and applications of computing systems. The curriculum covers a broad range of topics in computer systems, theory, software engineering, information science, and applications. The faculties are particularly active in artificial intelligence, security, computer graphics, machine learning and data mining, robotics, computer vision and image processing, software engineering, networking, simulation, and information systems.

The courses and research topics span the range from theory to practice. Students are encouraged to take courses and conduct research in areas related to computer science such as Information Management, Telecommunications, Information and Communication Technologies, Remote Sensing and Geographic Information Systems, Mechatronics, Microelectronics and Embedded Systems, Industrial Engineering, and other fields of study 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 region's need 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 industry's 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

The Information Management (IM) field of study is designed to prepare students to respond to four basic challenges confronting business, government and non-profit organizations today:

- Planning the effective use of information and communication technologies
- Developing corporate and government policies to maximize the benefits resulting from the widespread use of these technologies;
- Improving the strategic management of information resources
- Increasing the productivity and creativity

The Information Management field of study at AIT aims to fulfill the growing need for information management skills in government and private organizations. It was the first program of its kind in Asia.

The field focuses on 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.

Laboratory Facilities

The laboratories for IM are shared with the Computer Science field of study. The labs offer a complete selection of dedicated servers and desktop PCs running Windows and Unix. A variety of management software is available to support student coursework and research.

The laboratories are also sponsored by IBM, who, through its Academic Initiative, provides all students with free use of its Rational and WebSphere software products.

2. Research Facilities and Laboratories

CSIM Laboratories are well-equipped for teaching and research. The program maintains its own file, Web, email, and database servers for experimental and daily use. The teaching lab is kept up to date with modern desktop systems and can seat up to 60 students for practical sessions. Specialized equipment includes a 20-core Xeon grid computing cluster, a heterogeneous compute cloud, and experimental broadband satellite links to Japan and other countries in the region, video and image processing equipment, and augmented/virtual reality equipment. Full wireless coverage in the building allows students to conveniently work with their personal notebook computers.

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.

Chair Professor, Thai Network Information Center (THNIC) and **IntERLab Director** *(Networking and Distributed Computing, Algorithms, Programming Languages)*

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

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

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

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

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

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

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

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

Visiting and Adjunct Faculty

PAUL JANECEK, BSEE, US Military Academy; MSc, University of London, UK; PhD, Swiss Federal Institute of Technology, Switzerland.

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

RAPHAEL DUBOZ, MA, University of Marseille, France; MA, University of Paris 6, France; PhD, University of Littoral Cote d'Opale, France.

Visiting Assistant Professor and Researcher in Centre de Cooperation Internationale en Rechercher Agronomique Pour Le Development (CIRAD) *(Computing Modeling and Simulation, with Applications in the Environmental Sciences)*

CHUTIPORN ANUTARIYA, BSc, First Class Honors, Chulalongkorn University, Thailand; MSc, D.Tech.Sc., Asian Institute of Technology.

Adjunct Faculty *(Database Systems, XML and Web Technologies, Knowledge Representation, Intelligent Systems, Semantic and Linked Data Technologies)*

SURADET JITPRAPAIKULSARN, BS, Chulalongkorn University, Thailand; PhD, Case Western Reserve University, USA.

Adjunct Faculty *(System Engineering, Software Engineering, System & Software Development in managerial role, Advanced knowledge of software architecture, software product line and software process improvement)*

Research Staff

RAMESH MARIKHU, BEng, Kathmandu University, Nepal; MEng, Information & Communication Technologies, Asian Institute of Technology, Thailand.

JEDNIPAT MOONRINTA, BEng, Computer Engineering, Second-Class Honors, Chiang Mai University, Thailand; MEng, Computer Science, Asian Institute of Technology, Thailand.

M.P. HIRANYA N. KUMARA, BEng, University of Ruhuna, Sri Lanka, MEng, Computer Science, Asian Institute of Technology, Thailand.

HITES NIDHI SHARMA, BEng, Computer Engineering, Tribhuvan University, Nepal, MEng, Information Management, Asian Institute of Technology, Thailand.

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

4. Grants and Sponsored Research Completed in 2019

Development of Learning Innovation in Organization: Standards, Best Practices & Tools in MOOC/SPOC Design, Development, Instruction & Assessment
Duration: 16-May-2018 to 31-Dec-2019
Project Investigator: Dr. Chutiporn Anutariya
Total Contracted Amount:
(THB): 550,000.00

5. On-going Grants and Sponsored Research

Curriculum Development in Data Science & Artificial Intelligence
Duration: 15-Nov-2019 to 14-Nov-2021
Project Investigators: Prof. Phan Minh Dung, Prof. Matthew Dailey
Total Contracted Amount:
(THB): 36,973,841.00.00

ScratchThai: Intelligent Tutoring Chatbot in Scratch Programming for Computer Science Course
Duration: 15-May-2019 to 14-May-2020
Project Investigator: Dr. Chutiporn Anutariya
Total Contracted Amount:
(THB): 1,444,144.00

6. Publications

Papers in Refereed Journal

Weeraphan Chanhom, Chutiporn Anutariya. TOMS: A Linked Open Data System for Collaboration and Distribution of Cultural Heritage Artifact Collections of National Museums in Thailand, New Generation Computing, Volume 37, pp 479-498.

Attipa Julpisit, Vatcharaporn Esichaikul. A collaborative system to improve knowledge sharing in scientific research project. Information Development, Volume 35, pp. 624-638

Junar Landicho, Anon Saengarunwong, Vatcharaporn Esichaikul. Modelling Domestic Water Demand and Management Using Multi-Criteria Decision Making Technique. Mindanao Journal of Science and Technology, Volume 17, pp. 56-70

Papers in Conference Proceedings

Teeradaj Racharak, Watanee Jearanaiwongkul, Chutiporn Anutariya. Concept Similarity for the Description

Logic ALEH: A Case Study in Rice Disease Detection, 9th Joint International Semantic Technology Conference (JIST 2019). 25-27 November 2019, Hangzhou, China. Springer.

Janaka Jayalath, Vatcharaporn Esichaikul, J. Wettasinghe. Gamification in e-Learning for Technical and Vocational Education and Training, International Research Symposium & TecEx 2019, Sri Lanka

Chaisiriprasert, P., Yongsiriwit, K., Simapornchai, A., and Dailey, M. Cloud-based services for cooperative robot learning of 3D object detection and recognition. In Advances in Intelligent Systems and Computing, 807, pp. 14–24

Book Chapters

Orasa Teriwat, Vatcharaporn Esichaikul, Ranee Esichaikul. Requirement patterns analysis and design of online social media marketing for promoting eco-tourism. In: Unger H., Sodsee S., Meesad P., eds. Advances in Intelligent Systems and Computing. Springer.

7. Doctoral Students' Dissertation

Computer Science

Linked-OpenScholar: A Support System for Research and Teaching
By: Ms. Chariya Nonthakarn
Supervisor: Prof. Matthew N. Dailey, Prof. Vilas Wuwongse

Information Management

An Online Support System for Elder Care in Thailand
By: Ms. Sukontip Wongpun
Supervisor: Prof. Sumanta Guha

8. Masters Students' Theses and Research Studies

Computer Science

Andros Store: The Open-Source Android Application Store
By: Mr. Visutr Boonnateephisit
Supervisor: Prof. Matthew N. Dailey

Semantic Segmentation of Bridge Inspection Images for Damages Assessment
By: Mr. Teera Laiteerapong
Supervisor: Prof. Matthew N. Dailey

Video Analytics for Inter-Customer Relationship Discovery
By: Mr. C. Venkata Sai Sravan Kumar
Supervisor: Dr. Matthew N. Dailey

Understanding the Natural Language: A Case Study of the Academic Interview Domain
By: Mr. Chaichan Poonperm
Supervisor: Prof. Phan Minh Dung

Analysis of Course Structures and Learners' Engagement in MOOCs: The Case of Thai MOOCs
By: Ms. Wanlipa Thongsuntia
Supervisor: Dr. Chutiporn Anutariya

Google Analytics Customer Revenue Prediction
By: Mr. Varun Kumar Reddy Mannem
Supervisor: Dr. Chutiporn Anutariya, Prof. Sumanta Guha

Information Management

The Application of 3D Interactive Data Visualization in Crime Analysis: A Case Study of the City of Chicago
By: Mr. Challa Saran Bhargav
Supervisor: Prof. Sumanta Guha, Dr. Chutiporn Anutariya

Integrating Big Data and Thick Data: A Case Study of Customer Behavior
By: Ms. Nikita Valluri
Supervisor: Dr. Vatcharaporn Esichaikul

IPL Player Performance Prediction using Machine Learning
By: Mr. Ajay Kumar Reddy Doggala
Supervisor: Prof. Sumanta Guha, Dr. Chutiporn Anutariya

A Case Analysis of Laws of Privacy
By: Ms. Chippa Thrishalini
Supervisor: Prof. Phan Minh Dung

Video Analytics for Connection Discovery and User Behavior Monitoring
By: Mr. Amir Rajak
Supervisor: Prof. Matthew N. Dailey

Rules Extraction Based on Classification Algorithms on Early Detection of Breast Cancer Disease
By: Mr. Abdul Jalil Niazai
Supervisor: Dr. Vatcharaporn Esichaikul

Factors Influencing the Adoption of E-Government Websites from a Citizen's Perspective
By: Mr. Mustafa Kamel Mohammadi
Supervisor: Dr. Vatcharaporn Esichaikul

E-Commerce Adoption in SMEs in Afghanistan: Bypassing Challenges
By: Mr. Nesar Ahmad Nori
Supervisor: Dr. Chutiporn Anutariya

Wolwala: Deep Pashto Text-to-Speech
By: Mr. Abdul Rahman Safi
Supervisor: Prof. Matthew N. Dailey

The Citizens Adoption and Trust of E-voting System in Afghanistan
By: Mr. Mohammad Taqi Safdari
Supervisor: Dr. Vatcharaporn Esichaikul

Factor Influencing the Adoption of Mobile Banking from a Consumer's Perspective: The Case Study of Afghanistan
By: Ms. Anosha Sobat
Supervisor: Dr. Vatcharaporn Esichaikul

Text Analytics of Course Evaluation: A Case Study of AIT
By: Mr. Rounak Raj Surana
Supervisor: Dr. Vatcharaporn Esichaikul

Weather Prediction Using Data Mining Techniques: A Case Study of Australia
By: Mr. Sai Abhijeeth Pounjula
Supervisor: Dr. Vatcharaporn Esichaikul

Amazon.com New Employee Access Prediction
By: Ms. Bhavya Sri Thatavarthi
Supervisor: Dr. Chutiporn Anutariya, Prof. Sumanta Guha

Understanding P2P Lending Business Models and its Mobile-based Application Implementation
By: Mr. Katta Omkareshwar
Supervisor: Dr. Chutiporn Anutariya, Prof. Sumanta Guha

Mobile Application Development for Van Services in Thammasat University
By: Mr. Veladi Bhanu Kalyan
Supervisor: Dr. Chutiporn Anutariya, Prof. Sumanta Guha

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

1. Introduction

Geoinformatics comprising Remote Sensing (RS), Geographic Information Systems (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. Recently such as open source Geoinformatics climate change Monitoring using courses Geoinformatics, Advanced Application Development Advance Analysis Methods and Microwave Remote Sensing are added.

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.

2. Research Facilities and Laboratories

RS & GIS provides excellent laboratory facilities for teaching and research projects, including:

- Digital Image Processing for Remote Sensing
- GIS Laboratory
- Asian e-Learning Project Experimental Laboratory
- Geoinformatics Center Laboratory
- Digital Photogrammetry
- Facilities for Sensor Web GIS
- Facilities for RFID & Internet GIS

RS & GIS maintains and ex-tensive computing infrastructure for its students, including network file servers for shared access to data and publicly accessible Web servers for scientific communication.

The field of study also maintains a very good archive of over 600 scenes of SPOT, Landsat-TM, NOAA, ADEOS, ERS-SAR and JERS-SAR satellite imagery to serve students in their research and thesis studies. Other data such as regional topographic, land use, soil and geology maps, as well as aerial photographs, are also available. The RS & GIS library provides students with specific books, journals, computer manuals and open source software.

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 Geo informatics Center laboratory topographic, landuse, soil, geology maps of Thailand and some aerial photographs, ALOS data, are also available. Some equipment in its laboratory available for academic activities include: Arc GIS, ERDAS, Arc View 3.3, ENVI; Total Station; Trimble geoexplorer; Garmin GPS Series III and V; digital camera; wireless hub/switch; wireless USB; network switch; network hub; black/white and color laser printers; A4 and A0 scanners; RFID reader/writer, Sensors and Wi Fi Network, Spectrophotometer, Laser Range Finder, Echo Sounder, Sensor Web GIS; table and personal stereoscopes, SCINDA GPS Base Station, TOPCON Photogrammetry Station and others.

3. Faculty and Research Staff

Full-time Faculty

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

Associate Professor *(GIS, Remote Sensing, RFID and Vehicle Tracking, Indoor Positioning Systems, Environment, Disaster, Agriculture, Health, Applications)*

SARAWUT NINSAWAT, BSc, Silpakorn University; MSc, Asian Institute of Technology, Thailand; Doctor of Creative Cities, Osaka City University, Japan

Lecturer *(WebGIS, OGC Web Services & Specifications, SensorWeb. LBS, Mobile GIS Application)*

Visiting Faculty

KIYOSHI HONDA, BAgr, DEng, University of Tokyo, Japan

Visiting Professor (*Image Processing, Erosion control, Terrain modeling, Sensor Web GIS)*.

MARC SOURIS, PhD, Université de La Rochelle, France

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

RYOSUKE SHIBASAKI, BEng, MEng, University of Tokyo; Deng

Visiting Professor *(integration of data and models based on GIS to reconstruct spatiotemporal dynamics of objects, micro-simulation modeling, 3D mapping of urban areas, and their applications)*

MASAHIKO NAGAI, BS, St. Cloud State University, USA; MS, Asian Institute of Technology, Thailand; DEng, The University of Tokyo, Japan

Visiting Faculty *(Spatial Information Engineering, Remote Sensing, GIS, Image Processing, Mobile Mapping Ontology, Data Interoperability, Environmental Information Science)*

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)*

Affiliated Faculty and Research Staff

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, Bsc, Volgograd State Pedagogical University, Russia, MSc, DTech Sc, Asian Institute of Technology, Thailand

Senior Research Associate *(Remote Sensing and GIS, NOAA AVHRR & Terra/Aqua MODIS receiving and processing system, Digital Image Processing, Computer Graphics, Spatial Data Visualization, MODIS Active Fire Monitoring System, Global Environment and Disaster Monitoring using MODIS)*

4. Grants and Sponsored Research Completed in 2019

Education Camp
Duration: 17-Jun-2018 to 30-Jun-2019
Project Investigator: Prof Nitin Kumar Tripathi
Total Contracted Amount:
(THB): 630,000.00

Workshop on UAV Data Processing
Duration: 1-Nov-2018 to 31-May-2019
Project Investigator: Dr. Sanit Arunplod
Total Contracted Amount:
(THB) 300,000.00

Asian Summer School for Geoinformatics & Issues on Sustainable Development in Asia 2019
Duration: 1-Jul-2019 to 31-Dec-2019
Project Investigator: Dr. Sarawut Ninsawat
Total Contracted Amount
(THB): 250,000.00

5. On-going Grants and Sponsored Research

Design of a data processing & management system for automated residence mapping from satellite
Duration: 01-Oct-2017 to 31-Jan-2020
Project Investigators: Dr. Hiroyuki Miyazaki, Dr. Apichon Witayangkurn
Total Contracted Amount:
(THB): 300,000.00

Survey for International Cooperation in Mapping & Surveying Sector in ASEAN Countries
Duration: 1-Jun-2017 to 31-Jan-2020
Project Investigators: Dr. Hiroyuki Miyazaki, Dr. Apichon Witayangkurn
Total Contracted Amount:
(THB): 200,000.00

Study on Disaster Management using Space Technologies in Asia & Pacific
Duration: 1-Mar-2018 to 28-Feb-2020
Project Investigators: Dr. Sanit Arunplod, Dr. Hiroyuki Miyazaki
Total Contracted Amount:
(THB): 272,887.50

Erasmus+Innovation on Remote Sensing Education & Learning
Duration: 1-Oct-2017 to 30-Sep-2020
Project Investigators: Dr. Sarawut Ninsawat
Total Contracted Amount:
(THB) 5,274,276.00

SMART Surveillance & DSS for Cane Monitoring & Management
Duration: 15-Dec-2018 to 31-Dec-2021
Project Investigator: Dr. Sarawut Ninsawat
Total Contracted Amount
(THB): 2,000,000.00

Survey for International Cooperation in Mapping & Surveying Sector in Asian & Pacific Countries
Duration: 1-Jan-2019 to 31-Mar-2021
Project Investigators: Dr. Hiroyuki Miyazaki, Dr. Sanit Arunplod
Total Contracted Amount
(THB): 174,000.00

Geoinformatics for Smart Oil Palm Plantation
Duration: 1-Apr-2019 to 31-Mar-2021
Project Investigators: Dr. Apichon Witayangkurn, Dr. Sanit Arunplod
Total Contracted Amount
(THB): 2,000,000.00

JIS Education Camp & Study Tour 2019 JIS Group of Institutions, India
Duration: 1-Jul-2019 to 31-Dec-2020
Project Investigator: Dr. Nitin Kumar Tripathi
Total Contracted Amount
(THB): 560,000.00

Installation of tools to prevent & detect the natural disasters of the State Railway of Thailand, 2019
Duration: 1-Jul-2019 to 30-Sep-2020
Project Investigator: Dr. Sarawut Ninsawat
Total Contracted Amount
(THB): 450,000.00

Installation POTEKA weather station to collect weather information & used to analyse to prevent & detect the natural disaster for the SRT
Duration: 15-Aug-2019 to 14-Aug-2020
Project Investigator: Dr. Sarawut Ninsawat
Total Contracted Amount
(THB): 1,160,000.00

Training workshop on UAV Data Processing & Mapping Technology
Duration: 1-Sep-2019 to 31-Mar-

2020
Project Investigator: Dr. Sarawut Ninsawat
Total Contracted Amount (THB): 240,000.00

Field survey commissioned for business development in Thailand
Duration: 1-Aug-2019 to 31-Mar-2020
Project Investigator: Dr. Hiroyuki Miyazaki, Dr. Sanit Arunplod
Total Contracted Amount (THB): 135,000.00

A Feasibility Study as Satellite Data Utilization to Estimate Economic Indicators
Duration: 1-Oct-2019 to 31-Mar-2020
Project Investigator: Dr. Hiroyuki Miyazaki, Dr. Sanit Arunplod
Total Contracted Amount (THB): 138,860.00

6. Publications

Papers in Refereed Journal

Jannet Bencure, Nitin Kumar Tripathi, Hiroyuki Miyazaki, Sarawut Ninsawat, Sohee Minsun Kim. Development of an Innovative Land Valuation Model (iLVM) for Mass Appraisal Application in Sub-Urban Areas Using AHP: An Integration of Theoretical and Practical Approaches. Sustainability Volume 11 (13): 3731.

Siddharth Chaudhary, Sarawut Ninsawat, Tai Nakamura. Non-Destructive Trace Detection of Explosives Using Pushbroom Scanning Hyperspectral Imaging System, Sensors. 2019; 19(1):97.

Jakab, G., Bíró, T., Kovács, Z., Papp, Á., Sarawut, N., Szalai, Z., Balzs, M., Szabó, S. (2019). Spatial analysis of changes and anomalies of intense rainfalls in Hungary. Hungarian Geographical Bulletin, Volume 68, pp. 241-253.

Papers in Conference Proceedings

Songkorn Siangsuebchart, Sarawut Ninsawat, Apichon Witayangkurn, Surachet Pravinvongvuth. Assessment of human mobility from taxi GPS probe data in Bangkok, Thailand, 40th Asian Conference on Remote Sensing, ACRS 2019. 14-18 October 2019, South Korea.

N.M. Son, P.H. Giao, S.G.P. Virdis. DInSAR-based estimation of subsidence rate along an UMRT line in Hanoi. EAGE-GSM 2nd Asia Pacific Meeting on Near Surface Geoscience & Engineering. 22-26 April 2019, Kuala Lumpur, Malaysia.

7. Doctoral Students' Dissertation

Historic Building Information Modeling (HBIM) and 3D Terrestrial Laser Scanning and UAV Point Clouds for an Archeological Site: A Case Study of Wat Maha That, Thailand
By: Ms. Supaporn Manajitprasert
Supervisor: Prof. Nitin Kumar Tripathi

Crop Substitution Modelling for Eucalyptus Plantation using Fuzzy Analytical Hierarchy Process
By: Ms. Rujee Rodcha
Supervisor: Prof. Nitin Kumar Tripathi

Simulation of GNSS Availability and Accuracy in Urban Environment Using Sky View Data
By: Mr. Sakpod Tongleamnak
Supervisor: Dr. Masahiko Nagai

Extraction of Road Environments Using Multi-Label Convolutional Neural Network on Bangkok CCTV Images
By: Mr. Chairath Sirirattanapol
Supervisor: Dr. Masahiko Nagai, Dr. Apichon Witayangkurn

8. Masters Students' Theses

Classification of Subclass Types of Urban Land-use using Spatio-temporal Analysis of Twitter Data and Support Vector Machine Classifier Approach
By: Ms. Donah Rae Calino Pastrana
Supervisor: Dr. Sarawut Ninsawat

Estimation of Power Generation and Cost Efficiency of Canal Top Solar Power Plant on the Narmada Canal in Gujarat, India Using Remote Sensing and GIS
By: Mr. Keta Sandeep
Supervisor: Dr. Sarawut Ninsawat

Development of a Comprehensive Optimal Routing for Fecal Sludge Collection and Transportation
By: Ms. Napassorn Sutthiprapa
Supervisor: Dr. Sarawut Ninsawat

Analysis of Driving Behavior with Accuracy Assessment on Multiple Positioning Devices for Implementation on Taxi
By: Ms. Arissara Somwang
Supervisor: Prof. Nitin Kumar Tripathi, Dr. Apichon Witayangkurn

Exploring the Potential of Using Google Location History/Takeout for a Household Travel Survey
By: Ms. Pornchanok Jitkuntee
Supervisor: Dr. Apichon Witayangkurn

The Development of the Mosquito Sensing System using Infrared Depth Sensors to Identify the Risk of Malaria
By: Mr. Tossawon Ngamnet
Supervisor: Dr. Apichon Witayangkurn

Analyzing the Spatio Temporal Variation of Land Surface Temperature Across Telangana, India Using MODIS Satellite Data
By: Mr. Vangala Bharath
Supervisor: Prof. Nitin Kumar Tripathi

Detection of On-Street Parked Vehicles Using Deep Learning and Sift Extraction
By: Mr. Rangaraj Anshuman Yashodhar
Supervisor: Dr. Hiroyuki Miyazaki

Bins Management System: A Case Study of Hyderabad
By: Mr. Kallepalli Sai Teja
Supervisor: Dr. Tai Nakamura

Development of a Sensor-Based Monitoring System for Smart Farming Using a Weather Station and Water Quality Sensors
By: Mr. Pavan Sai Varma Alluri
Supervisor: Dr. Apichon Witayangkurn

Performance Mapping of Solar PV and Wind Turbines Power Plants: A Case of Rajasthan, India
By: Mr. Rahul Uppu
Supervisor: Dr. Sarawut Ninsawat

Shallow Water Bodies Extraction Using Time Series Approach: Monitoring Periodic Cycles of Flooding and Drought of Mediterranean Temporary Ponds
By: Ms. Dasi Meghana
Supervisor: Dr. Salvatore G.P. Virdis

A Hybrid Indoor Positioning System Using WLAN and iBeacon
By: Ms. Boini Shri Nidhi
Supervisor: Prof. Nitin Kumar Tripathi

Performance Assessment of SLEUTH, an Urban Sprawl Model Using Satellite Based Land Cover Maps: A Case Study of Lucknow, India
By: Mr. Himanshu Bhushan
Supervisor: Dr. Hiroyuki Miyazaki

Sugarcane Yield Estimation from Unmanned Aerial System (UAS) Using Crop Surface Model (CSM) and Object-Based Image Analysis (OBIA) Approach
By: Mr. Sumesh K.C.
Supervisor: Dr. Sarawut Ninsawat

Modeling NDVI and LAI with Climate Anomalies and its Relation with Crop Yield in the Songkhram River Basin, Thailand
By: Ms. Daosaowaluk Kongtong
Supervisor: Prof. Nitin Kumar Tripathi, Dr. Salvatore G.P. Virdis

Assessment of Flood Control (Monkey's Cheeks) Measures in Chao Phraya River Basin
By: Ms. Angsana Chaksan
Supervisor: Dr. Sarawut Ninsawat

Evaluation of Educational Accessibility Using GIS and Network Analysis: A Case Study of Pak Kret District in Nonthaburi, Thailand
By: Ms. Kanit Tinnoraset
Supervisor: Dr. Sarawut Ninsawat

Evaluating Models for Oil Palm Yields Estimation: A Case Study of Southern Thailand
By: Mr. Nattawoot Srisang
Supervisor: Dr. Apichon Witayangkurn

Oil Palm Tree Detection and Health Classification on High-Resolution Imagery Using Deep Learning Technique
By: Ms. Kanitta Yarak
Supervisor: Dr. Apichon Witayangkurn

Analysis of Climate Anomalies and Relationship with Floods and Droughts in Songkhram River Basin, Thailand
By: Ms. Phattamon Heawchaiyaphum
Supervisor: Prof. Nitin Kumar Tripathi, Dr. Sangam Shrestha

Optimal Location of the Park Allocation Using Linear Programming
By: Ms. Khaowpradabdin Songma
Supervisor: Dr. Sarawut Ninsawat

Building and Validating a General Chlorophyll-a Prediction Algorithm for Inland/Coastal Waters in the Mediterranean Sea Using Low Resolution Satellite Imagery
By: Mr. Supanut Chudchatkaew
Supervisor: Dr. Salvatore G.P. Virdis

Multi-Resolution Remote Sensing of Water Surface Temperature and Correlation with Air Temperature: A Case Study of Sardinia Island (Western Mediterranean)
By: Ms. Nooch Soodcharoen
Supervisor: Dr. Salvatore G.P. Virdis

A Comparison of Ionospheric Scintillation Impact on the Space Weather Events and GPS Positioning
By: Mr. Chitrapu Venkata Akhil
Supervisor: Prof. Nitin Kumar Tripathi

Land Suitability Analysis of Urban Growth in Pathum Thani Province, Thailand using GIS-Based Analytical Hierarchy Process and Fuzzy AHP
By: Mr. Mettu Durga Prasad
Supervisor: Prof. Nitin Kumar Tripathi

Variation of Sea Surface Temperature and its Impact on Rainfall Variability in Spatiotemporal Scale: A Case Study of Bangladesh
By: Ms. Showkat Sanjida
Supervisor: Dr. Sarawut Ninsawat

Development of a Liveable City Index (LCI) Using Fuzzy AHP Concepts in Geospatial Technologies
By: Mr. Sunil Kumar V
Supervisor: Prof. Nitin Kumar Tripathi

Analysis of Land Use and Land Cover Change in Telangana State of India: A Remote Sensing, GIS and Modeling Approach
By: Ms. Galigari Apoorva
Supervisor: Prof. Nitin Kumar Tripathi

Geospatial Variation and Monitoring System for Child Malnutrition in India
By: Mr. Ranadheer Mandadi
Supervisor: Prof. Nitin Kumar Tripathi

Spatiotemporal Pattern and Trends Analysis of Crimes: A Case Study of Hyderabad, India
By: Mr. Chakravarthy Nannapaneni
Supervisor: Prof. Nitin Kumar Tripathi

3.3.3: SET – TELECOMMUNICATIONS FIELD OF STUDY

1. Introduction

A lack of efficient telecommunications networks and the disparity between rural and metropolitan areas in telecommunications capacity are some of the most serious impediments to sustainable development and growth in the Asia-Pacific region. The Telecommunications (TC) field of study aims to foster national development and enhance economic productivity by educating students in the design, implementation and deployment of telecommunications networks and related applications.

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 pro-gram 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.

Dual Degree Program

In addition to the standard program, TC offers dual degree programs in cooperation with two European universities. Students in a dual degree program receive two master's or doctoral degrees, one from AIT and one from the partner university.

Master Degrees:

- Telecom SudParis, France
- Nice University, France

Doctoral Degrees:

- Centre for Wireless Communications, University of Oulu, Finland

Professional Masters:

- This was launched in 2007 for industry professionals to upgrade their knowledge. 1st batch was sponsored by EVN, Vietnam.

Partnerships

Students in Telecommunications have many opportunities to collaborate with specialists from industry, non-governmental organizations and other universities.

1. TSF - Telecoms Sans Frontieres is a United Nations non-governmental organization which provides emergency telecommunication services during disaster response efforts. Students in Telecommunications may volunteer to work with TSF in real disaster situations.

2. Telecommunications hosts a certified training center for Nokia Symbian OS Mobile Application Development. Telecommunications also maintains active research and student exchange collaborations

with a number of universities around the world:

- Center for Personal Communication (CPK), Aalborg University, Denmark
- Helsinki University of Technology (HUT), Finland
- Brunel University, UK
- University of Alberta, Canada
- University of Tokyo, Japan
- University of Saskatchewan, Canada
- University of Texas-Dallas, USA
- Mie University, Japan
- National Institute of Information and Communications (NICT), Japan
- Yokosuka Research Park (YRP), Japan
- Tohoku University, Japan

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.

3. Faculty and Research Staff

Full-time Faculty

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)*

Visiting and Adjunct Faculty

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)*

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]*

ATTAPHONGSE TAPARUGSSANAGORN, B.Eng, Chulalongkorn University, Thailand, M.Sc., Technische Universitat Kaiserslautern, Germany, D.Tech., University of Oulu, Finland.

[Smart energy grids: optimal energy scheduling, smart grid communications using cognitive radio based, spectrum sensing for cognitive radio systems, MIMO-OFDMA cooperative relay systems, cognitive radio based wide coverage rural broadband on TV white spaces, Resource allocation for MIMO-OFDMA systems, Digital image processing.]

4. On-going Grants and Sponsored Research

AIT Open Cellular Training Center Project
Duration: 1-Mar-2019 to 30-Jun-2020
Project Investigator: Dr. Attaphongse Taparugssnagorn
Total Contracted Amount: (THB): 388,660.00

5. Publications

Papers in Refereed Journal

Teerapat Sanguankotchakorn, Ganti V. Sowmya. Reducing the Computational Complexity of Massive MIMO using Pre-coding Techniques under Some Lower Orders. Journal of Communications, Volume 14, pp. 498-593.

Sanika Krishnamali Wijayasekara, Suvit Nakpeerayuth, Robithoh Annur, Hung Yun Hsieh, Teerapat Sanguankotchakorn, Kumbesan Sandrasegaran, Warakorn Srichavengsup, Tharatorn Phromsa-ard. A fast tag identification anti-collision algorithm for RFID systems. International Journal of Comm. Systems, Volume 32:e4108.

Welhenge, A., Taparugssanagorn, A., & Raez, C. P. Performance Comparison of Variants of LMS Algorithms for Motion Artifact Removal in PPG Signals During Physical Activities. Biomedical Journal of Scientific & Technical Research, Volume 13

Papers in Conference Proceedings

Teerapat Sanguankotchakorn, Shiva Kumar Arugonda. Hybrid Controller for Securing SDN from Switched DDoS and ARP Poisoning Attacks. The 20th Asia-Pacific Network Operations and Management Symposium (APNOMS 2019). Sep 18-20, 2019, Matsue, Japan. IEEE.
Teerapat Sanguankotchakorn, Hari Krishna Adda. Dynamic Frequency D2D Communications in Multicell Environment using Modified GADIA Algorithm. The 23rd International Computer Science and Engineering Conference (ICSEC 2019). Oct 30-Nov 1, 2019. Phuket, Thailand.

Anuradhi Welhenge, Attaphongse Taparugssanagorn. Wireless Body Sensor Network with Context Awareness for Heart Rate and Blood Pressure Measurement. The 2nd IEEE International Conference on Knowledge Innovation and Invention 2019 (IEEE ICKII 2019). 13-16 July 2019, Seoul, South Korea.

6. Doctoral Students' Dissertations

Radio Resource Management and Performance Analysis Dual-Hop Relaying with Orthogonal Space-Time Block Code for MIMO System
By: Ms. Tachporn Sanguanpuak
Supervisor: Dr. R.M.A.P. Rajatheva

Wireless Body Sensor Network with Context Awareness for Heart Rate and Blood Pressure Measurement using Nonlinear Signal Processing
By: Ms. Anuradhi Malshika Welhenge
Supervisor: Dr. Attaphongse Taparugssanagorn

7. Masters Students' Theses and Research Studies

Image-Based Spectrum Sensing Using Support Vector Machine and Convolutional Neural Network

By: Mr. Anupam Shrestha
Supervisor: Dr. Attaphongse Taparugssanagorn

Object Localization Using RF Based IEEE 802.11 Frame Transceiving with FER Based RSSI Controlled Calibration
By: Mr. Gorla Praveen
Supervisor: Dr. Teerapat Sanguankotchakorn

5G New Radio Channel Codes Implementation with Concatenated Polar Coding
By: Ms. Welikannage Upeksha Miyurangi Welikanna
Supervisor: Dr. Attaphongse Taparugssanagorn

Real-Time Indoor Navigation and Posture Recognition Using Ultra-Wide Band and Post-Processing Methods
By: Ms. Maldeniya Koralalage Hashini Sachintha Maldeniya
Supervisor: Dr. Attaphongse Taparugssanagorn

Development of a System-Level Simulation Tool Based on a Web Interface for LTE/LET-A
By: Mr. Ghoshana Bista
Supervisor: Dr. Teerapat Sanguankotchakorn

Deep Learning-Based Modulation Recognition in Wireless Channel
By: Mr. Poonyavee Tabyam
Supervisor: Dr. Attaphongse Taparugssanagorn

Network Traffic Classification Using Machine Learning for Software Defined Networks
By: Mr. Jayasuriya Kuranage Menuka Perera
Supervisor: Dr. Attaphongse Taparugssanagorn

3.3.4: SET – INFORMATION AND COMMUNICATIONS TECHNOLOGIES FIELD OF STUDY

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.

The Information and Communications Technologies (ICT) interdisciplinary program provides students with the opportunity to master a breadth of knowledge in a wide range of technologies, including:

- Information infrastructure (telecommunication networks, transmission technologies, switching and routing);
- Information technology (operating systems, programming languages, information storage and retrieval);
- Applications (e-services, knowledge creation and knowledge dissemination);
- Integration of communications, information services and applications with a national ICT infrastructure. By educating students in this broad array of technologies, the ICT program promotes the emergence of effective national ICT infrastructures for accelerated social and economic development. ICT graduates at AIT are prepared to serve the varied needs of the higher-education, public and private sectors, as well as to play a leading role in the sustainable development of the region and its integration into the global economy.

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 collabo-ration; 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.

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.

Adjunct Faculty

TEERAWAT ISSARIYAKUL, B.Eng. Thammasart University, Thailand, M.Eng. Asian Institute of Technology, Thailand, Ph.D. University of Manitoba, Canada.

Assistant Professor [*Markov-based modeling and Analysis; Markov Decision Process, protocol optimization, Cross-layer analysis in cognitive radio networks, scheduling algorithms centralized wireless networks, medium access control protocols in single-hop and multi-hop distributed wireless networks, model analysis using stochastic domination and supermodularity properties]*

From Telecommunications Field of Study

TEERAPAT SANGUANKOTCHAKORN, **Associate Professor**

R M A P RAJATHEVA, **Visiting Faculty**

POOMPAT SAENGUDOMLERT, **Adjunct Faculty**

From Computer Science and Information Management Fields of Study

KANCHANA KANCHANASUT, **Professor**

PHAN MINH DUNG, **Professor**

SUMANTA GUHA, **Professor**

MATTHEW N. DAILEY, **Associate Professor**

VATCHARAPORN ESICHAIKUL, **Associate Professor**

PAUL JANECEK, **Visiting Faculty**

From Remote Sensing and Geographic Information Systems Field of Study

NITIN KUMAR TRIPATHI, **Professor**

KIYOSHI HONDA, **Associate Professor**

SARAWUT NINSAWAT, **Lecturer**

4. Doctoral Students' Dissertation

Computer-Supported Collaborative Learning Using Mind Maps and Linked Open Data
By: Mr. Kitipoom Vipahasna
Supervisor: Prof. Matthew N. Dailey

5. Masters Students' Theses and Research Studies

Invasion Discovery and Prevention Technique for Vampire Attack
By: Ms. Mogili Anitha
Supervisor: Dr. Teerapat Sanguankotchakorn

Modification of LEACH Protocol for Improving the Stability Period and Lifetime of WSN
By: Mr. Vermareddy Sandeep Reddy
Supervisor: Dr. Teerapat Sanguankotchakorn

Testing Deep Neural Networks for Classification Tasks through Adversarial Perturbations on Test Datasets
By: Mr. Ponakala Rajasekhar
Supervisor: Dr. Matthew N. Dailey

Comparison of Total Electron Content with International Reference Ionosphere 2016 Model and Calculation of Positional Error in AIT Region
By: Ms. Penmetsha Mounica
Supervisor: Prof. Sumanta Guha, Dr. Teerapat Sanguankotchakorn

Temporal Extention for Role Based Access Control: A Case Study of AIT
By: Mr. Leela Aditya Annam
Supervisor: Prof. Phan Minh Dung

Sentiment Analysis for Electronic Products Based on YouTube Comments
By: Mr. Vishnu Thulas
Supervisor: Dr. Teerapat Sanguankotchakorn

Integration of Internet of Things and Sustainable Vertical Farming Aquaponic Systems
By: Ms. Melina Tuladhar
Supervisor: Prof. Matthew N. Dailey

An Integrated ICT-Based Application of Satellite Remote Sensing and AHP for Land Suitability Analysis for Urban Development in Khost City, Afghanistan
By: Mr. Muhammad Sharif Haider
Supervisor: Prof. Nitin Kumar Tripathi

Development of One Stop Service System for Education Media and Technology Services based on User Experience Design and AGILE Method
By: Ms. Jaemjan Sriarunrasmee
Supervisor: Dr. Chutiporn Anutar

Chapter 4: SCHOOL OF ENVIRONMENT, RESOURCES AND DEVELOPMENT

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 integ-rates 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

2. Thematic Groups, Fields of Study and Multi-disciplinary Programs

Through a rice and varied curriculum, students have many opportunities for intellectual growth. The School of Environment, Resource and Develop-ment and Technology offers degree and non-degree programs in three thematic groups:

Department of Food, Agriculture and Bioresources

- Agri Business Management
- Agricultural Systems and Engineering
- Aquaculture and Aquatic Resources Management
- Food Engineering and Bioprocess Technology

Department of Energy, Environment and Climate Change

- Climate Change and Sustainable Development
- Energy
- Environmental Engineering and Management
- Urban Water Engineering and Management (SERD and SET)

Department of Development and Sustainability

- Disaster Preparedness, Mitigation and Management (SERD and SET)
- Gender and Development Studies
- Natural Resources Management
- Regional and Rural Development Planning
- Urban Environmental Management

Professional Master Programs (1 Year)

- Environmental Engineering and Management (in Vietnam)
- Urban Management (with HCMUARC)

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 equipment, 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, and 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.

4. School Governance

Dean of School

RAJENDRA PRASAD SHRESTHA, BSc, Haryana Agri. Univ, India; MSc, DTechSc, AIT, Thailand.

Professor (Sustainable Land Management; Natural Resources Degradation and Environmental indicators; Landuse-climate, Geoinformatics)

4.1: SERD – DEPARTMENT OF FOOD, AGRICULTURE AND BIORESOURCES

Background

The global food system today is beset by serious challenges and risks. Food demand is on rise due to population growth and changing consumption patterns a production and prices have become more volatile; hunger and poverty levels remain high and unsustainable practices exacerbate environmental challenges. The fundamental need to boost productivity, especially of small to medium holders, increase access to markets, reduce risks, boost rural employment and provide environ - mental services come in a context where managing the agriculture, livestock and aquaculture practices is challenged by accelerating climate change, population growth, urbanization, environmental degradation, increased market risk, tightening resource constraints, a growing need for engagement of the private sector in delivering public goods, too-slow progress on raising rural incomes and too-slow progress on improving nutrition. World food production needs to be multifold in coming decades, with far less resources (land, water, farmers, energy) available than today. Sustainable agricultural, livestock and aquaculture pro - duction in developing countries are facing ever increasing challenges from high use rate of synthetic fertilizers, over reliance on pesticides and antibiotics, very low adoption of biological pest control, low use rate of animal and green manure and low level of farm diversification.

Similarly, food safety is receiving heightened attention worldwide as the important links between food and health are increasingly recognized. Improving food safety is an essential element of improving food security, which exist when populations have access to sufficient and healthy food through the development of processing industries for sustainable and safer food product development. At the same time, as food trade expands throughout the world, food safety has become a shared concern among both developed and developing countries and need urgent attention farm-to-fork level. Academic and research activities at the Department of Food, Agriculture and Bioresources focus on problem-solving and creating work-ready graduates who are able to take real-life challenges.

Academic Programs Multidisciplinarity is at the very core the department's teaching, research and outreach activities. The students come from multiple disciplines - engineering, technical science, bioscience, social sciences and management.

Department of Food, Agriculture and Bioresources are:

1) Agribusiness Management (ABM)
2) Agricultural Systems and Engineering (ASE)
3) Aquaculture and Aquatic Resources Management (AARM)
4) Food Engineering and Bioprocess Technology (FEBT)

4.1.1: SERD – AGRIBUSINESS MANAGEMENT FIELD OF STUDY

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:

- 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.

- 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.

2. Faculty and Professional Staff

Faculty

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)

ANIL KUMAR ANAL

Assistant Professor, Food Engineering & Bioprocess Technology Field of Study.

(Agriculture and Food Biotechnology; Bionanotechnology; Functional Properties of Proteins and Polysaccharides; Food Colloids and Biopolymers; Encapsulation and Targeted Delivery of Biomolecules)

PEEYUSH SONI

Assistant Professor and ABM Coordinator, Agricultural Systems & Engineering Field of Study.

(Terramechanics; Agricultural Instrumentation; Controlled Environment Agriculture; Agricultural Systems Analysis; Analytical Techniques)

Visiting, Adjunct Faculty/Affiliated Faculty
CHAIYAPHOL KAEWPRAKAISAENGKUL; PhD

Adjunct Faculty *(Agricultural Machinery Design & Testing; Instrumentation & Measurement; Quality Control & Assurance)*

Professional Staff

IMRAN AHMAD

Laboratory Supervisor, Food Engineering & Bioprocess Technology Field of Study. *(Food Enterprises Productivity; Food Process Operations; Food Supply Chain)*

3. Publications

Endro Gunawan, John Kuwornu, Avishek Datta, Loc Thai Nguyen. Factors influencing farmers' use of the warehouse receipt system in Indonesia. Agricultural Finance Review, Volume 75, pp. 536-563.

Apri Wahyudi, John Kuwornu, Endro Gunawan, Avishek Datta, Loc Thai Nguyen. Influencing the Frequency of Consumers' Purchases of Locally-Produced Rice in Indonesia: A Poisson Regression Analysis. Agriculture, Volume 9, 117.

5. Doctoral Students' Dissertation

Dairy Farmers' Cooperative Membership, Perceptions and Choice of Marketing Channels in Thailand
By: Ms. Thitiya Jitmun
Supervisor: Dr. John K.M. Kuwornu

Evaluation of Safety and Quality Standards of Layer Farms for the Production of High-Quality Eggs
By: Ms. Kwanhatai Thongpalad
Supervisor: Dr. Anil Kumar Anal

Assessment of the Warehouse Receipt System for Agricultural Commodities in Indonesia
By: Mr. Endro Gunawan
Supervisor: Dr. John K.M. Kuwornu

6. Masters Students' Theses and Research Studies

Factors Influencing the Adoption of Organic Production Practices by Smallholder Rice Farmers in Thailand
By: Mr. Sanguansak Pithaksenakul
Supervisor: Dr. John K.M. Kuwornu

Factors Influencing the Adoption of Marketing Outlets for Small and Medium Organic Farmers in Chiang Mai Province, Thailand
By: Ms. Ngamjai Boonrahong
Supervisor: Dr. Anil Kumar Anal

Socio-Economic Analysis of Organic Rice Production: A Case Study of Smallholder Farmers in West Java Province, Indonesia
By: Mr. Sujianto
Supervisor: Dr. Avishek Datta

Manufactures' Perceptions of the Effects of Imbalances in Processing Output and the Factors Influencing Buyers' Preferences for Tapioca Starch in Thailand
By: Mr. Wutthipong Jamsai
Supervisor: Dr. John K.M. Kuwornu

Assessment of Sustainable Supply Chain Management Practices of Food Companies in Bangkok, Thailand
By: Ms. Janati Khaipetch
Supervisor: Dr. John K.M. Kuwornu

Evaluation of Food Safety Management Systems in Milk Processing Plants: A Case Study of Ahmedabad in Gujarat, India
By: Ms. Kamakshi Singh
Supervisor: Dr. Anil Kumar Anal

Assessment of Value Chain Development Strategies for Green Tea: A Case Study of Darjeeling, India
By: Ms. Bhairvi Singh
Supervisor: Dr. Anil Kumar Anal

Assessment of Factors Influencing Farmers' Participation in Contract Farming for the Production of Okra in Maharashtra, India
By: Mr. Joshi Amey Atul
Supervisor: Dr. Avishek Datta

Analysis of Milk Marketing System: A Case Study of Pune, India
By: Mr. Sangram Vilas Pawar
Supervisor: Dr. Avishek Datta

Factors Influencing Farmers' Decision to Grow and Consumers' Decision to Purchase Exotic Vegetables: A Case Study of Pune in Maharashtra, India
By: Ms. Raut Nisha Natha
Supervisor: Dr. Avishek Datta

Assessment of Domestic Marketing System of Grapes in Nashik District, Maharashtra, India
By: Mr. Pagar Deven Lalaji
Supervisor: Dr. John K.M. Kuwornu

Consumers' Perceptions of Longan and Smallholders' Choice of Marketing Channels with Special Reference to Marketing Contracts in Thailand
By: Mr. Yukti Buranrom
Supervisor: Dr. John K.M. Kuwornu

Opportunities and Challenges of Grape Exports by Indian Farmers
By: Mr. Malode Vivek Rambhau
Supervisor: Dr. John K.M. Kuwornu

Factors Influencing the Adoption of Good Agricultural Practices by Thailand Durian Farmers
By: Ms. Pakirata Phonmueang
Supervisor: Dr. John K.M. Kuwornu

4.1.2: SERD – AGRICULTURAL SYSTEMS AND ENGINEERING FIELD OF STUDY

1. Introduction

This field of study emphasizes on sustainable agricultural and related technologies development through holistic approach for efficient food production for small holder agriculture.

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 and development, 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 Spectra 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), Arc View 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.

3. Faculty and Professional Staff

Full-time Faculty

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)

PEEYUSH SONI; BEng (MPUAT, India); MS, DEng (AIT, Thailand)

Assistant Professor
(Instrumentation and Measurement Techniques; Design & Testing of Agricultural Machinery; Precision Agriculture; Agricultural Systems Analysis; Analytical Techniques & Decision Tools for Agribusiness)

AVISHEK DATTA; B.Sc., M.Sc. (B.C. State Agri. Univ., India); PhD, University of New England, Australia

Assistant Professor *(Agricultural Environments, Crop Productivity Management, Crop Eco-physiology and Modeling, Advanced Agricultural Experimentation)*

Visiting, Adjunct Faculty/Affiliated Faculty

ALEXANDER KEEN; PhD

Adjunct Faculty *(Agricultural Soil Mechanics; Tillage and Traction; Machine Design)*

CHAIYAPHOL KAEWPRAKAISAENGKUL; PhD

Adjunct Faculty *(Agricultural Machinery Design & Testing; Instrumentation & Measurement; Quality Control & Assurance)*

ANUCHIT CHAMSING; PhD

Adjunct Faculty *(Agricultural Machinery Design & Testing; Agricultural Power & Machinery Management; Agricultural. Systems Engineering)*

Professional Staff

WATTANAPORN MESKUNTAVON, DTechSc

Senior Laboratory Supervisor *(Crop Modeling; Farm Management; Laboratory Analyses of Soil and Plants)*

4. Grants and Sponsored Research Completed in 2019

Innovative Water Conservation Technologies for Enhancing Agriculture/Horticulture Productivity
Duration: 17-Oct-2018 to 16-Oct-2019
Project Investigator: Dr. Avishek Datta
Total Contracted Amount (THB): 150,000.00

5. On-going Grants and Sponsored Research

Baseline Study on Eco-Friendly Water Management for Sustainable Wetland Agriculture in Greater Mekong
Duration: 12-Dec-2018 to 30-Jun-2020
Project Investigators: Dr. Avishek Datta, Prof. Rajendra Shreshtha
Total Contracted Amount (THB): 1,165,150.00

Recent Research & Development Programme in Spice Crops in Thailand
Duration: 12-Jul-2019 to 11-Jul-2020
Project Investigator: Dr. Avishek Datta
Total Contracted Amount (THB): 210,000.00

Drone Technology for Land Suitability Analysis based on Geospatial Data to Determine Agricultural Production Input
Duration: 1-Oct-2019 to 1-Oct-2020
Project Investigator: Dr. Avishek Datta
Total Contracted Amount (THB): 330,000.00

6. Publications

Papers in Refereed Journal

S Maneepitak, H Ullah, A Datta, RP Shrestha, S Shrestha. Effect of water and rice straw management practices on soil organic carbon stocks in a double-cropped paddy field. Communications in Soil Science and Plant Analysis, Volume 50, pp. 2330-2342.

S Maneepitak, H Ullah, A Datta, RP Shrestha, S Shrestha, B Kachenchart. Effects of water and rice straw management practices on water savings and greenhouse gas emissions from a double-rice paddy field in the Central Plain of Thailand. European Journal of Agronomy. Volume 107, pp. 18-29

S Maneepitak, H Ullah, K Paothong, B Kachenchart, A Datta, RP Shrestha. Water and rice straw management practices influence yield and water productivity of irrigated lowland rice in the Central Plain of Thailand. Agricultural Water Management, Volume 211, pp. 89-97

H Ullah, R Santiago-Arenas, Z Ferdous, A Attia, A Datta. Improving water use efficiency, nitrogen use efficiency, and radiation use efficiency in field crops under drought stress: A review. Advances in Agronomy, Volume 156, pp. 109-157.

H Ullah, AZ Rahimi, A Datta. Growth and yield of lowland rice as influenced by potassium application and cultivation method under alternate wetting and drying water regime. Journal of Plant Nutrition, Volume 42, pp. 1529-1542

H Ullah, A Datta, NA Samim, S Ud Din. Growth and yield of lowland rice as affected by integrated nutrient management and cultivation method under alternate wetting and drying water regime. Journal of Plant Nutrition, Volume 42, pp. 580-594

N Sirisuntornlak, S Ghafoori, A Datta, W Arirob. Seed priming and soil incorporation with silicon influence growth and yield of maize under water-deficit stress, Archives of Agronomy and Soil Science, Volume 65, pp. 197-207

A Bundit, K Yamada, H Shigemori, W Laosripaiboon, A Datta, T Pornprom (2019) Potential of trans-p-coumaric acid released from *Rottboellia cochinchinensis* for weed control in vegetable fields. Allelopathy Journal, Volume 46, pp. 184-193

T Jitmun, JKM Kuworn, A Datta, AK Anal. Farmers' perceptions of milk-collecting centres in Thailand's dairy industry. Development in Practice, Volume 29, pp.424-426

Book Chapters

A Datta, H Ullah, Z Ferdous, R Santiago-Arenas, A Attia. Water Management in Cotton. In: K Jabran, BS Chauhan, eds. Cotton Production. John Wiley & Sons. ISBN:9781119385523, pp. 47-59

DT Adu, JKM Kuwornu, A Datta. Smallholder Maize Farmers' Constraints to Climate Change Adaptation Strategies in the Brong-Ahafo Region of Ghana. In: JKM Kuwornu, ed. Climate Change and Sub-Saharan Africa: The Vulnerability and Adaptation of Food Supply Chain Actors, Vernon Press, USA. pp. 271-287

7. Doctoral Students' Dissertation

Effect of Silicon Application on Growth, Physiological Parameters and Grain Yield of Maize under Water-Deficit Stress
By: Mr. Napat Sirisuntornlak
Supervisor: Dr. Avishek Datta

8. Masters Students' Theses

Effects of Planting Date and Nitrogen Application on Yield and Water Productivity of Rice under Alternate Wetting and Drying Irrigation
By: Ms. Han Ni Soe
Supervisor: Dr. Avishek Datta

Effects of Silicon on the Growth, Yield, and Fruit Quality of Cantaloupe Under Drought Stress
By: Mr. Bambang Hariyanto
Supervisor: Dr. Avishek Datta

4.1.3: SERD – AQUACULTURE AND AQUATIC RESOURCES MANAGEMENT FIELD OF STUDY

1. Introduction

AARM promotes research and development through sustainable aquaculture and fisheries. The Aquaculture Program has a broad spectrum of activities enabling it to address the constraints facing sustainable management and utilization of aquatic resources. AARM has a renewed focus on advanced research-based innovations and capacity building for sustainable Asian aquaculture: the advancement of individuals and institutions creating indigenous capacity in education, research and development.

2. Research Facilities and Laboratories

Aquaculture Laboratory serves the academic and research programs of AARM Program. It has modern equipment to analyze soil and water quality, nutrients in aquafeed and ingredients, diagnose diseases, and apply molecular biological tools for genomic stock improvement. Some of its major laboratory equipment includes a Real-time Polymerase Chain Reaction (PCR) machine, Gel documentation system, Biosafety cabinets, refrigerated centrifuges, ultrapure water distillation Unit; Extraction Unit; Incubator; UV/Vis Spectrophotometer; Soxtec, Fibertec and Kjeltec system, ovens and incubators, microscopes with camera, multiparameter apparatus for water quality analysis, digital balances, etc. The research infrastructure includes indoor greenhouses installed with fully recirculating aquaculture systems for controlled trials on marine shrimp, marine fish, freshwater prawn, and outdoor recirculating systems with HDPE lined ponds and raceways for intensive shrimp nursery and grow-out.

The AARM Fish Production Unit (FPU) comprises a Hatchery with egg incubation and hatching unit, a fry rearing unit, and a nursery system with tanks and ponds to produce sex-reversed fingerlings of Nile tilapia Chitralada strain. A freshwater prawn hatchery is also set up to produce giant prawn postlarvae for research and supply to farmers. A full-fledged farm at the AIT campus with earthen ponds for holding broodstock and rearing table-sized fish is engaged in producing tilapia and other economically important fish for student research and sales.

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

KRISHNA R. SALIN, B.F.Sc and M.F.Sc, Kerala Agricultural University, India; PhD, Central Institute of Fisheries Education (Deemed University), Mumbai, India.

Associate Professor
(Innovative Aquaculture Systems, Ecosystem-based Aquaculture, Applied Genetics for Improved Aquatic Stocks, Breeding and Hatchery Management, Climate Change adaptation in Aquaculture)

RAM C. BHUJEL, BSc, Institute of Agriculture and Animal Sciences, IAAS, Chitwan, Nepal; MSc and PhD, AIT, Thailand;

Research Associate Professor
(Biostatistics and Research Design, Curriculum Development, Women in Aquaculture, Broodstock Nutrition/ Management and Fry Production, Technology Transfer/ Extension)

Visiting and Adjunct Faculty

AMARARATNE YAKUPITIYAGE, BSc, Univ of Kelaniya, Sri Lanka; MSc, AIT, Thailand; PhD, Univ of Stirling, Scotland.

Visiting Associate Professor
(Aquaculture, Bioenergetics, Fish Nutrition, Statistics, Database Systems Development)

PIKUL JIRAVANICHPAISAL, BSc, Mahidol University, Thailand; MSc, Kasetsart, University, Thailand; PhD, Mie University Graduate School and Faculty of Bioresources, Japan; PhD, Uppsala University, Sweden

Visiting Faculty (*Intestinal immunity in crustaceans, Shrimp and fish pathogenesis, Disease prevention in shrimp and other shellfish)*

4. Grants and Sponsored Research Completed in 2019

GeoServices for Sustainability (GeoS4S)
Duration: 1-Jun -2015 to 31-Dec-2019
Project Investigator (Co-PI):
Dr. K. R. Salin
Total Contracted Amount
(THB): 1,242,500.00

Gender in Aquaculture and Fisheries (GAF7)
Duration: 1-Sep-2015 to 30-Jun-2019
Project Investigator (Co-PI):
Dr. K. R. Salin
Total Contracted Amount
(THB): 2,730,000.00

Asian Aquaculture 2018
Duration: 1-Sep-2018 to 31-Dec-2019
Project Investigator: Dr. K. R. Salin
Total Contracted Amount
(THB): 2,696,796.93

Improve Producer Skills & Knowledge in East African Aquaculture
Duration: 1-Nov-2018 to 31-Dec-2019
Project Investigator: Dr. K. R. Salin
Total Contracted Amount
(THB): 1,276,800.00

Testing of commercial products from Delacon, Austria
Duration: 1-Dec-2018 to 31-Dec-2019
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 559,958.00

Tilapia Workshop-Training & Technical Supports (TTWTS)
Duration: 1-Feb-2019 to 31-Jul-2019
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 719,200.00

Exposure visit to Aquafarms in Thailand & Vietnam
Duration: 24-Feb-2019 to 31-Aug-2019
Project Investigator: Dr. K.R. Salin
Total Contracted Amount
(THB): 837,000.00

Aquaculture Internship for China
Duration: 1-Apr-2019 to 31-Dec-2019
Project Investigator: Dr. K.R. Salin
Total Contracted Amount
(THB): 1,530,000.00

Training & workshop on Sea bass & shell fishes
Duration: 12-May-2019 to 30-Jun-2019
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 372,000.00

Tilapia training Series (TTS)
Duration: 15-Aug-2019 to 31-Oct-2019
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 352,931.00

5. On-going Grants and Sponsored Research

Curriculum development for Sustainable Seafood & Nutrition Security (SSNS)
Duration: 1-Nov-2017 to 31-Oct-2020
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 38,781,777.00

Testing of saponin based feed supplements in in tilapia diet
Duration: 12-Feb-2018 to 12-Feb-2020
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 507,392.00

Testing of commercial products (feed additives) in tilapia diet to replace fish meal
Duration: 2-Apr-2018 to 1-Apr-2020
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 1,558,783.00

AIT-EnerGaia Research Partnership
Duration: 1-Nov-2018 to 31-Oct-2023
Project Investigator: Dr. K. R. Salin
Total Contracted Amount
(THB): 4,640,000.00

Testing of Bioproducts in Tilapia Feed (TBTF)
Duration: 15-Jul-2019 to 14-Jul-2020
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 724,500.00

Sustainable Development of Indian Aquaculture
Duration: 1-Aug-2019 to 31-Jul-2021
Project Investigator: Dr. K. R. Salin
Total Contracted Amount
(THB): 4,000,000.00

GIANT PRAWN 2019
Duration: 1-Sep-2019 to 31-May-2020
Project Investigator: Dr. K. R. Salin
Total Contracted Amount
(THB): 360,000.00

An In Vitro trial on pellet stability of Shrimp feed for Anpario, UK
Duration: 15-Oct-2019 to 13-Jun-2020
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 391,545.00

Technical Assistance to LAARH Agro to Tilapia farm in Pakistan
Duration: 1-Nov-2019 to 31-Oct-2022
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 1,264,776.00

Exchange Visits-Madagascar group
Duration: 2-Dec-2019 to 2-Jun-2020
Project Investigator: Dr. Ram C. Bhujel
Total Contracted Amount
(THB): 842,660.00

6. Publications

Papers in Refereed Journal

Bambaranda B.V.A.S.M, Tsusaka T.W.T., Chirapart A, Salin K R. and Sasaki N, Capacity of *Caulerpa lentillifera* in the removal of fish culture effluent in a recirculating aquaculture system. Processes 2019, 7(7), 440

Bambaranda B.V.A.S.M, Sasaki N, Chirapart A, Salin K R. and Tsusaka T.W.T Optimization of Macroalgal Density and Salinity for Nutrient Removal by *Caulerpa lentillifera* from Aquaculture Effluent. Processes 2019, 7, 303

Parmar I.S., Soni, P., Kuwornu J.K.M., and Salin K.R. Evaluating farmers' access to agricultural information: Evidence from semi-arid region of Rajasthan State, India. Agriculture 9 (3), 60.

K.R, Salin. Biomimicry in aquaculture – Connecting science and practice. In: pp. 121-133. Report of the Special Session on Advancing Integrated Agriculture Aquaculture through Agroecology, Montpellier, France, 25 August 2018. FAO Fisheries and Aquaculture Report No. 1286, 2019. Rome.

Papers in Conference Proceedings

K.R. Salin. Sustainable aquaculture in an era of diversification: Successful examples from Asia, Aqua Aquaria 2019, 30-31 August, MPEDA, Hyderabad, India.

K.R. Salin. Eco-friendly and energy-efficient coastal aquaculture development in Asia. Book of Abstracts, ICFA 2019, 22-23 August, Bangkok, Thailand.

K.R. Salin. Evaluation of growth and digestibility of Asian seabass, Lates calcarifer fed with diets containing insect meal from two-spotted cricket, *Gryllus bimaculatus*. Book of Abstracts, ICFA 2019, 22-23 August, Bangkok, Thailand.

K.R. Salin. Brackishwater Aquaculture in Thailand - Holding Promise for a Sustainable Future. BRACQON 2019, World Brackishwater Aquaculture Conference, 23-25 January 2019, CIBA, Chennai, India

7. Doctoral Students' Dissertation

Application of Phytobiotic Supplementation to Improve Disease Resistance of Nile Tilapia (*Oreochromis niloticus*)
By: Mr. Manoj Tukaram Kamble
Supervisor: Dr. K. R. Salin, Dr. Amararatne Yakupitiyage

8. Masters Students' Theses and Research Studies

Evaluation of the Insect Meal from Two-Spotted Cricket, *Gryllus bimaculatus* as an Ingredient in the Feed of Nile Tilapia, *Oreochromis niloticus*
By: Mr. Pothula Babloo Rohit
Supervisor: Dr. K. R. Salin

Assessing the Potential Escapee Yield and Economic Losses of Enlarging Trawl Mesh Size: A Case Study in the Inner Gulf of Thailand
By: Mr. Weerapol Thitipongtrakul
Supervisor: Dr. Ram C. Bhujel

Evaluation of Growth and Digestibility of Asian Seabass, *Lates calcarifer* fed with Diets Containing Insect Meal from Two-spotted Cricket, *Gryllus bimaculatus*
By: Ms. Shrutika Shridhar Sawant
Supervisor: Dr. K. R. Salin

A Study on the Factors Influencing Cold-anesthetized Giant Prawn *Macrobrachium rosenbergii* (De Man) during Waterless, Live Storage
By: Ms. Andrea Nathaly Pardo Valarezo
Supervisor: Dr. K. R. Salin

Performance and Contributions of Cage Culture of Tilapia to the Community: A Case Study of Ubon Ratana Dam in Thailand
By: Ms. Putsorn Chuntachorn
Supervisor: Dr. Ram C. Bhujel

Evaluation of Commercial Probiotics to Improve Soil and Water Quality for Aquaculture
By: Ms. Araya Netsakul
Supervisor: Dr. K. R. Salin

Systemic and Mucosal Antibody Response of Asian Seabass*, Lates calcarifer* to Monovalent and Bivalent Vaccines Prepared from *Streptococcus iniae* and *Streptococcus agalactiae*
By: Ms. Nguyen Giang Thu Lan
Supervisor: Dr. K. R. Salin

4.1.4: SERD – FOOD ENGINEERING AND BIOPROCESS TECHNOLOGY FIELD OF STUDY

1. Introduction

This field of study focuses on value addition of agricultural commodities by the application of bioconversion in various sectors of industry and agriculture. These include food processing, aquaculture, cosmetics and health care. BPT focuses on the application of microorganism and enzymes to meet the demands of the dev eloping countries of the region. FE focuses on the systems for handling, processing and storage of both durable and perishable food products in developing of 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.

2. *Faculty and Research Staff*

Full-time Faculty

ANIL KUMAR ANAL, DVM., University of Agriculture, Faisalabad, Pakistan; MSc. and PhD., AIT, Thailand

Associate Professor *(Food and Pharmaceutical Biotechnology, Food safety and Risk Assessment; Dairy and Meat Process Technology, Food Colloids and Biopolymer, Functional Foods, Micro-/Nanoencapsulation, Bionanotechnology; Waste Valorization)*

Associate Dean for Research & Outreach, School of Environment, Resources & Development

LOC THAI NGUYEN, BSc., Can Tho University, Vietnam; MSc., AIT, Thailand; PhD., The Ohio State University, USA

Associate Professor *(Non-thermal food processing technologies; Mathematical modeling of foods and food processes; Chemical sensors and biosensors for food safety application; Food waste recycling and utilization)*

ATHAPOL NOOMHORM, BSc, Kasetsart Univ, Thailand; MEng, Lamar Univ, Texas; PhD, Louisiana State Univ, USA.

Professor and Coordinator *(Agro-Industrial Development, Food Process Technology, Post Harvest Technology, Supply Chain; Waste Valorization.)*

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)*

Vice President for Research

MUANMAI APINTANAPONG, BSc, KMITL Ladkrabang, Thailand; MSc,

AIT; Doctor of Technical Science, AIT, Thailand.

Adjunct Faculty *(Food Process Engineering, physical properties of food materials)*

Research & Lab Supervisor

IMRAN AHMAD, B.Tech. (Hons.)- Agric. (Food Science and Technology) NWFP Agric. University Peshawar, Pakistan; M.Sc (Hons.)- Agric. (Food Science and Technology) NWFP Agric. University Peshawar, Pakistan; M.Sc. Postharvest and Food Process Engineering, AIT Thailand; Ph.D. Logistics and Supply Chain Management (Agri-Food), SIIT, Thammasat University, Thailand (On-going)

Research Staff

KSHITIJ PARAJULI, B.Eng. Civil Engineering, Tribhuvan University, Nepal; M.Eng. Water Engineering and Management, AIT, Thailand

Research Associate (SEA EU NET 2 Project, FEBT, SERD)

MEDHA KHATIWADA, B.Eng. Civil Engineering, Tribhuvan University, Nepal; M.Eng. Water Engineering and Management, AIT, Thailand

Research Associate (SEA EU NET 2 Project, FEBT, SERD)

KISHORE KRISHNA KUMAREE, B.Tech, Amity University, India; M.Eng, AIT, Thailand

Research Associate (Food Eng. & Bio-Process technology), SERD, AIT, Thailand

3. Grants and Sponsored Research Completed in 2019

Recycling & Value Addition of Fish Skin Waste to Produce Bioactive Peptides
Duration: 28-Feb-2018 to 31-Mar-2019
Project Investigator: Loc Thai Nguyen
Total Contracted Amount (THB): 31,221.00

Evaluation of Food Loss & Waste & Initiatives for their Utilization as High Value & Development of Draft Strategy in Asia
Duration: 1-Feb-2018 to 31-Aug-2019
Project Investigator: Dr. Anil Kumar Anal
Total Contracted Amount (THB): 2,500,000.00

Development of Anti-Fungal Acrylic Fibre for Novel Applications
Duration: 1-Dec-2018 to 31-Dec-2019
Project Investigator: Dr. Anil Kumar Anal
Total Contracted Amount (THB): 435,138.46

4. On-going Grants and Sponsored Research

Summer School: "Innovations in Food Production Systems"
Duration: 1-Jun-2019 to 1-May- 2020
Project Investigator: Dr. Anil Kumar Anal
Total Contracted Amount (THB): 1,233,765.10

Curriculum Development in Food Processing & Innovation
Duration: 1-Jun-2019 to 1-Dec-2022
Project Investigators: Dr. Anil Kumar Anal, Dr. Loc Thai Nguyen
Total Contracted Amount (THB): 2,466,275.00

Development of Photoactivated Antimicrobial Bio-nanocomposite Packaging Materials
Duration: 15-Jul-2019 to 15-Jul-2020
Project Investigator: Dr. Loc Thai Nguyen
Total Contracted Amount (THB): 350,000.00

5. Publications

Papers in Conference Proceedings

Sigit Marzuki, D Fardenan, Loc Thai Nguyen. Drying Characteristic of Blanched Purple-Fleshed Sweet Potato Under Microwave Vacuum Drying. 2nd International Conference on Agriculture Postharvest Handling and Processing (ICAPHP 2018). 29-31 August 2018. Bali, Indonesia.

6. Doctoral Students' Dissertation

Enhanced Lipid and Carbohydrate Contents of Autotrophic Microalgal Species in Wastewater and Nitrogen Limiting Synthetic Media for Biofuel Production
By: Mr. Zia Ur Rehman
Supervisor: Dr. Anil Kumar Anal

Development and Evaluation of Encapsulated Probiotics (*Lactobacillus plantarum* TISTR 050) in Alginate-Soy Protein Hydrogel Beads in Mango Juice to Enhance their Survival and Functionality
By: Mr. Ong-Ard Praepanitchai
Supervisor: Dr. Anil Kumar Anal, Prof. Athapol Noomhorm

Development and Characterization of Resistant Starch from Pathumthani 80 and Berry Rice and Formulation of Low Glycemic and Gluten Free Noodles
By: Ms. Sujitta Raungrusmee
Supervisor: Dr. Anil Kumar Anal

Assessment of Fungal Contamination in Peanuts and its Prevention by Chitosan Incorporated with Essential

Oils during Various Storage Conditions
By: Ms. Su Hlaing Chein
Supervisor: Dr. Anil Kumar Anal

Assessment of Growth Performance and Phosphorus Regulatory Genes Expression in Broilers Fed with Various Levels of Non-Phytate Phosporous Calcium and Vitamin D3
By: Mr. Tay Zar Aye Cho
Supervisor: Dr. Anil Kumar Anal

Isolation, Identification and Characterization of Probiotics from Raw Buffalo Milk and Evaluation of their Biopreservative Potential
By: Mr. Muhammad Saleem Kalhoro
Supervisor: Dr. Anil Kumar Anal, Dr. Loc Thai Nguyen

Assessment of Physicochemical Characteristics and Nutritional Potentials of Raw, Cooked, Sprouted Underutilized Pulses and Their Bioactive Extracts
By: Ms. Seema Vijay Medhe
Supervisor: Dr. Anil Kumar Anal

7. Masters Students' Theses and Research Studies

Process Optimization of Xylitol Production Through Ultrasound-Assisted Alkaline Pretreatment and Enzymatic Hydrolysis Followed by Fermentation from Sugarcane Bagasse
By: Ms. Sabitri Siris Thapa
Supervisor: Dr. Anil Kumar Anal

Genomic Analysis and Effect of Microbial Diversity on Vertical Aquaponic System
By: Ms. Riya Shrestha
Supervisor: Dr. Anil Kumar Anal

Enzymatic Conversion of Coconut Pulp Residue into Microfibrillated Cellulose and Its Stabilizing Effect on Food Emulsion
By: Mr. Budiyantoro
Supervisor: Dr. Loc Thai Nguyen

Effects of Different LED Wavelengths on the Stability of Anthocyanin Extract from Red Cabbage
By: Ms. Sirinapa Thasak
Supervisor: Dr. Loc Thai Nguyen

Formulation, Optimization and Effects of Hydrocolloids on the Development of Corn and Proso Millet Based Gluten-Free Noodles
By: Ms. Anuja Dahal
Supervisor: Dr. Anil Kumar Anal

Co-Encapsulation of Plant-Derived Carotenoids and Anthocyanins in Octenyl Succinic Anhydride (OSA) Starch Using Fluidized Bed of Inert Particles
By: Mr. Abhishek Pokharel
Supervisor: Dr. Loc Thai Nguyen

Antibiogram Study and Identification of Antibiotic Resistance Gene Patterns in Food Pathogens and Evaluation of Antibacterial Effects of Probiotics
By: Ms. Pariyarat Worasakwuttipong
Supervisor: Dr. Anil Kumar Anal

Ultrasonic-Assisted Extraction of Carotenoids from Banana Peels and Effect of Lights on their Degradation
By: Ms. Laxmi Neupane
Supervisor: Dr. Anil Kumar Anal

Green Technology-Based Process Optimization for the Production of Peptides from Goat's Milk and Assessment of Their Bioactive Potentials
By: Mr. Sushil Koirala
Supervisor: Dr. Anil Kumar Anal

4.2: SERD – DEPARTMENT OF ENERGY, ENVIRONMENT AND CLIMATE CHANGE

Background and Mission

Department of Energy, Environment and Climate Change aims to fulfill AIT's vision of sustainable Asia as Asia is rapidly rising eco - nomically, socially and technologically. The efficient utilization and clean energy resources, leapfrogging environmental technologies and management, preserving local and global environment and conducive consumption and behavioral changes, among others are crucial points that the region must pay attentions to. In these realms, we strive to generate new knowledge and options, support their diffusion and implementation. The Missions of the Department are:

• To develop next-generation leaders who are able to address societal needs of clean energy, utilization of environmental technologies and management and address the burgeoning issue of climate change.

• To serve the society by creating and delivering new solution-oriented knowledge and practices for better energy transitions, challenges to air, water and wastewater related environ-mental problems and the climate change in rapidly changing Asia through research and outreach.

Academic Programs

Multidisciplinarity is at the very core of the department's teaching, research and outreach activities. Our academic activities focus on problem-solving and creating work-ready graduates who are able to take real-life challenges once graduated. The students come from multiple Disciplines-Engineering, Science, Eco - nomics, Management and Humanities.

Department of Energy, Environment and Climate Change are:

1. Energy
2. Environmental Engineering and Management
3. Climate Change and Sustainable Development

4.2.1: SERD – ENERGY FIELD OF STUDY

1. Introduction

Energy related academic program at AIT was established in 1979. So far, over 1,134 students have graduated in the Energy studies. As of September 2012, about one hundred students are enrolled in Energy Field of Study. About thirty percent of the current students are at doctoral level. Apart from teaching and student research, faculty at Energy FoS is involved in a number of 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/energy

2. Research Facilities and Laboratories

Energy Laboratory serves as a facility for conducting experimental studies for courses, carrying out students and sponsored research, and testing of energy equipment as well as providing hands-on training. 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-m^2 outdoor research and demonstration facility equipped with photovoltaic systems, solar thermal (air and water) systems, biomass research and daylighting setups. The meteorological station records 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 colori-meter; and a Gas chromatography.

The SERD Computer Lab IV in the Energy Building has a large number of computers 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.

3. Faculty and Research Staff

Full-time Faculty

SIVANAPPAN KUMAR, BEng, Univ of Madras, India; MEng, AIT, Thailand; PhD, Inst. Natl. Polytechnique, Toulouse, France.

Professor *[Renewable energy resources and technologies: Climate change and greenhouse gas mitigation: 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)*

ABDUL SALAM PAKKEERTHAMBY, BSc.Eng (Hons.) University of Peradeniya, Sri Lanka; M.Eng., D.Eng., AIT

Associate Professor *(Bioenergy, Renewable energy; Energy conservation and efficiency); climate change mitigation)*

JAI GOVIND SINGH, BEng., Motilal Nehru Natl. Inst. of Technology, India; MTech., Ph.D., Indian Institute of Technology, Kanpur, India

Associate Professor *(Power system planning; Operation and control; FACTS controllers; Re-structuring of Electric Industry, Demand side management; Grid integration of renewable energy resources; Power distribution systems)*

SHOBHAKAR DHAKAL, BEng., Natl Inst. of Technology, India; MEng., AIT, PhD., The University of Tokyo, Japan

Associate Professor *(Modeling of Energy and carbon Emission, Scenarios Policy Analyses)*

Visiting Faculty

BRAHMANAND MOHANTY, BSc, SAICE, India; MSc, AIT, Thailand; PhD, Institut National Polytechnique of Toulouse, France

Visiting Faculty *[Demand-side management, Energy auditing and management, Energy Efficiency policies; and Rational use of technology]*

CHARLES O. P. MARPAUNG, MSc, Statistics, Bogor Agricultural University, Indonesia; D. Eng, AIT

Visiting Faculty *[Generation expansion planning; Energy economics and environmental modeling]*

Research Staff

Ms. Neriza Cabahug, *Research Assistant GNESD*

Ms. Watcharathorn Chantinmathorn, *Secretary* (GMSARN Project)

Ms. Maria Kathrina Gratuito, *Research Associate* (RERIC)

Ms. Parichart Kammeerak, *Secretary* (RERIC)

Ms. Sireesha Bantu, *Research Associate, EBARA & PM-EBM*

Ms. Pujan Shrestha, *Research Associate UPEA III Project*

4. Grants and Sponsored Research Completed in 2019

ICUE 2018-Green Energy for Sustainable Development International Conference
Duration: 1-Oct-2017 to 31-Mar-2019
Project Investigators: Dr. Jai Govind Singh, Dr. Shobhakar Dhakal, Dr. Weerakorn Ongsakul, Dr. P. Abdul Salama, Prof. S. Kumar
Total Contracted Amount (THB): 1,909,090.00

Evidence based policies for the sustainable use of energy resources in the Asia Pacific Region
Duration: 1-Nov-2018 to 30-Sep-2019
Project Investigators: Dr. Sobhakar Dhakal, Prof. Sivanappan Kumar
Contracted Amount (THB): 1,830,576.00

TNA3-Capacity Building Workshop
Duration: 1-Jan-2019 to 31-Aug-2019
Project Investigators: Prof. S. Kumar, Prof. R.P. Shrestha, Dr. A.P. Salam
Contracted Amount (THB): 1,600,000.00

5. On-going Grants and Sponsored Research

PEA – AIT Scholarship Program
Duration: 15-Feb-2016 to 14-Feb-2020
Project Investigators: Dr. Weerakorn Ongsakul
Total Contracted Amount (THB):20,212,000.00

Bangchak Initiative and Innovation Center at AIT
Duration: 25-Jul-2017 to 24-Jul-2022
Project Investigators: Dr. Weerakorn Ongsakul, Prof. Rajendra P. Shrestha, Dr. Jai G. Singh, Dr. P. Abdul Salama, Dr. Anil K. Anal, Dr. Thammarat Koottatep
Total Contracted Amount (THB): 50,000,000.00

Energy Publications Project 2018
Duration: 1-Jan-2018 to 31-Dec-2020
Project Investigators: Dr. Weerakorn Ongsakul, Dr. Jai Govind Singh, Dr. Shobhakar Dhakal, Dr. P. Abdul Salama, Prof. S. Kumar
Total Contracted Amount (THB): 1,914,400.00

Technology Needs Assessments Phase 3-Technical
Duration: 1-Jun-2018 to 31-May-2021
Project Investigators: Prof. S. Kumar, Dr. P. Abdul Salam.
Total Contracted Amount (THB): 1,267,200.00

Mastering Energy Supply focusing on Isolated Areas
Duration: 15-Nov-2018 to 14-Nov-2021
Project Investigators: Prof. Shobhakar Dhakal, Prof. S. Kumar, Dr. JG Singh
Total Contracted Amount (THB): 3,361,050.00

MEA-AIT Academic Cooperation Program
Duration: 1-Jan-2019 to 31-Dec-2022
Project Investigator: Prof. Weerakorn Ongsakul
Total Contracted Amount (THB): 22,043,144.00

Realizing Smart Cities in The ASEAN Region
Duration: 1-Jun-2019 to 31-Jul-2020
Project Investigator: Prof. S. Kumar
Total Contracted Amount (THB): 1,373,000.00

Development of a database of technology/policy measures & best practices to support the achievement of the SDG7 targets
Duration: 1-Aug-2019 to 31-May-2020
Project Investigator: Prof. S. Kumar
Total Contracted Amount (THB): 732,000.00

ICUE 2020 on Energy, Environment & Climate Change International Conference
Duration: 1-Oct-2019 to 31-Mar-2021
Project Investigators: Dr. JG Singh, Prof. S. Kumar, Prof. Joyashree Roy, Prof. Shobhakar Dhaks, Prof. Weerakorn Ongwsakul, Dr. P. Abdul Salam, Prof. Thammarat Kootatep, Prof. C. Visvanathan, Dr. Ekbordin Winijkul, Dr. Wenchao Xue
Total Contracted Amount (THB): 2,079,990.00

6. Publications

Papers in Refereed Journals

Anongpun Man-In, Weerakorn Ongsakul, Jai Govind Singh, Madhu M.N. Multi-objective optimal power flow considering wind power cost functions using enhanced PSO with chaotic mutation and stochastic weights. Electrical Engineering, Volume 101, pp.699-718

Sachin Murali krishna, Abdul Salam, Manida Tongroon, Nuwong Chollacoop. Performance and emission assessment of optimally blended biodiesel-diesel-ethanol in diesel engine generator. Applied Thermal Engineering, Volume 155, pp. 525-533.

Abdul Ghani Noori, Abdul Salam, Agha Mohammad Fazli. Assessment of Selected Biomass Energy Potential in Afghanistan. European Journal of Engineering Research and Science, Volume 4.

Papers in Conference Proceedings

Shubham Tiwari, Arjun C Uni, R Rajanivedha, Jai Govind Singh, Weerakorn Ongsakul. Harmonic Analysis of Separately Excited DC Motor Drive, 2019 Innovations in Power and Advanced Computing

Technologies (i-PACT), India

Sachin Murali Krishna, Abdul Salam. A comparative study on fuel properties of diesel-biodiesel-ethanol blends. 18th International Conference on Sustainable Energy Technologies. 19-23 October 2019, Kuala Lumpur.

Kumar S. Sustainable village electrification: case studies from SE Asia. Green Energy for Sustainable Development of Kerala - Exploring Opportunities and Challenges for Tran. 22-23 March 2019, Kuttipuram, Kerala, India.

Book Chapters

Nimal Madhu Madhu, Jai Govind Singh, Vivek Mohan, Weerakorn Ongsakul. Transmission Risk Optimization in Interconnected Systems. In: Ala Aldeen Al-Janabi, et.al., eds. Research Advancements in Smart Technology, Optimization, and Renewable Energy. IGI Global

Nguyen Thi Kim, Didin A Permadi, Abdul Salam, Nguyen Nhat HaChi, Pham Khac Lieu, Duong Van Hieu, Prapat Pongkiatkul, Katwalee Kositkanawuth, Kok Sothea, Chea Elian, Phili[Hopke, Chu Thai Hoanh. The benefits of using rice straw-derived solid fuel to reduce open burning emissions in the Mekong Region. In: Chayanis Krittasudthacheewa, Hap Navy, Bui Duc Tinh and SayKham Voladet, eds. Development and Climate Change in the Mekong Region: case studies. SEI. Bangkok, Thailand.

Rotchana Intharathirat, Abdul Salam. Analytical Hierarchy Process-Based Decision Making for Sustainable MSW Management Systems in Small and Medium Cities. In: Ghosh S., eds. Sustainable Waste Management: Policies and Case Studies. Springer, Singapore.

7. Doctoral Students' Dissertation

Multi-Objective Optimal Power Flow Program Considering Wind Power Generation Using Stochastic Weight Trade-off Chaotic Mutation-Based NSPSO
By: Ms. Anongpun Man-Im
Supervisor: Prof. Weerakorn Ongsakul, Dr. Jai Govind Singh

8. Masters Students' Theses and Research Studies

Transmission Expansion Planning by Using Deterministic and Stochastic Approaches: A Case Study of Cambodian Transmission System
By: Mr. Meas Nimol
Supervisor: Dr. Jai Govind Singh

Carbon Capture Potential of a Microalgae Cultivation Systems with Flue Gas from a Coal-Fired Thermal Power Plant in Andra Pradesh
By: Mr. Sreeram Gopal Taninki
Supervisor: Dr. P. Abdul Salam

Improvement of Pollutant Absorption Capacity of Biochar by Using Digestion Leach Method
By: Ms. Annapurna Mishra
Supervisor: Dr. P. Abdul Salam

Valorization of the Producer Gas by Removing Nitrogen Gas in Air Gasification
By: Mr. Bhargab Jyoti Bharali
Supervisor: Dr. P. Abdul Salam

An Approach to Optimal DG Placement and Network Reconfiguration for Active Power Loss Minimization in a Distribution System using PSO and Tabu Search Algorithms
By: Mr. Pullagura Syam Sundar
Supervisor: Dr. Jai Govind Singh

Enhancement of Power Generation from Electromagnetic Scavenging Tile
By: Mr. Somalaraju Kalyan
Supervisor: Dr. Jai Govind Singh

Strategic Cost Optimization in a Microgrid Prosumer Community
By: Mr. Niel Madhav Patamsetti
Supervisor: Prof. Weerakorn Ongsakul

A Study of Algae as a Source of Jet Fuel
By: Mr. Nadimpalli Prudhvi Raju
Supervisor: Dr. P. Abdul Salam

Peak Demand Shaving at the End-Users by using Decentralized Solar-PV Battery Energy Storage Systems
By: Mr. Matham Kirankumar
Supervisor: Prof. Weerakorn Ongsakul

Transmission Congestion Management by Using Generation Shift Factors and Machine Learning Approach
By: Mr. Manish Kumar
Supervisor: Dr. Jai Govind Singh

Optimal Scheduling of Battery Energy Storage Systems of Residential Solar PV System for Reverse Power Flow Mitigation and Peak Load Shaving
By: Mr. Myo Min Htwe
Supervisor: Prof. Weerakorn Ongsakul

Driving Factors Behind Accelerating Energy-Related CO2 Emissions in India: A Decomposition Analysis
By: Mr. Mohammed Umar Mukthaar
Supervisor: Dr. Shobhakar Dhakal

Energy Requirements and Related CO2 Emissions of Filipino Households using Energy Input-Output Analysis and Household Expenditure Survey
By: Mr. Kenneth Daniel H. Quesada
Supervisor: Prof. Shobhakar Dhakal

Very Short-Term Wind Speed Forecasting Using Convolutional Long Short-Term Memory Neural Network

By: Mr. Firuz Ahamed Nahid
Supervisor: Prof. Weerakorn Ongsakul

An Approach to Minimize the Range Anxiety of Electric Vehicles with Different State-of-Charge of the Battery
By: Mr. Akasapu Jyothi Srinivas
Supervisor: Dr. Jai Govind Singh

Energy and Associated CO2 Emissions Requirements based on Vietnamese Household Consumption: An Analysis Using Input-Output Tables and Household Expenditure Surveys
By: Mr. Pham Van Tho
Supervisor: Prof. Shobhakar Dhakal

Barriers and Opportunities in Cross-border Electricity Trading for Bhutan
By: Ms. Tenzin Choden
Supervisor: Prof. Weerakorn Ongsakul

An Analysis of Energy Consumption and CO2 Emission in the Residential Sector: A Case Study of Nonthaburi Province, Thailand
By: Ms. Noppawan Srisatham
Supervisor: Dr. P. Abdul Salam

Duck Curve Problem Solving Strategies with Neuro-Fuzzy Control Method by Using Solar PV, PEVs and Load Shifting
By: Mr. Md. Ariful Islam
Supervisor: Dr. Jai Govind Singh

Deep Learning-Based Approach for State-of-Health Estimation of Lithium-Ion Battery in Electric Vehicle
By: Ms. Aagya Niraula
Supervisor: Dr. Jai Govind Singh

Exploring Option to Lower Dependence on Mechanical Air Conditioning in Thai Houses
By: Mr. Thanawat Pornmingmas
Supervisor: Dr. P. Abdul Salam

A Multi-Objective Approach to Allocate Distributed Generations in Balanced and Unbalanced Distribution Networks by Using Ant Lion Optimizer
By: Mr. Tong Menghour
Supervisor: Dr. Jai Govind Singh

Benefits of Demand Response with Controllable Loads in Smart Grid: A Case Study of Pattaya City, Thailand
By: Mr. Tanit Chanraksa
Supervisor: Dr. Jai Govind Singh

Driving Factors of Carbon Dioxide Emission in Vietnam: An Analysis Using Factor Decomposition Method
By: Ms. Vuong Thi Tram
Supervisor: Prof. Shobhakar Dhakal

Distributed and Autonomous Microgrid System Using Aged Lithium-ion Battery Energy Storage System
By: Mr. Itthipol Udomkitpaibool
Supervisor: Prof. Weerakorn Ongsakul

Impact and Mitigation Analysis of EV Charging System on Transformer Loading and Sizing of the Solar PV Rooftop System and Battery Storage in Commercial Buildings
By: Mr. Prachya Laochoo
Supervisor: Dr. Jai Govind Singh

A Probabilistic Approach to Short-term Solar-Wind-Hydro-Thermal Coordination by using Cumulants and Modified Clustering-based Scenario Reduction Technique
By: Mr. Pham Xuan Dien
Supervisor: Dr. Jai Govind Singh

A Decentralized Primary Frequency Response and Virtual Inertia Control of Energy Storage Units for a Hybrid Renewable Energy Microgrid System
By: Mr. Shubham Tiwari
Supervisor: Dr. Jai Govind Singh

MAED-Based Analysis of Energy Demand in Nepal for 2050 Under Multiple Scenarios
By: Mr. Samrat KC
Supervisor: Prof. Shobhakar Dhakal

Capacitor Study for Minimizing Power Losses on Transmission System of Bhutan
By: Mr. Phuntsho Norbu
Supervisor: Prof. Weerakorn Ongsakul

Assessment of Solar Energy Potential using GIS and Multi Criteria Decision Making-AHP Approach: A Case Study of Bumthang Valley
By: Mr. Ugyen Tempa
Supervisor: Dr. Jai Govind Singh

Power Flow Tracing and Loss Allocation Methods: A Case Study of Bhutan Power System
By: Mr. Sonam Tobgay
Supervisor: Dr. Jai Govind Singh

Improving Energy Efficiency in Bhutan Power Corporation Head Office Building, Thimphu, Bhutan
By: Mr. Sonam Pelden Tshewang
Supervisor: Prof. Sivanappan Kumar

Evaluation of Social, Economic and Environmental Impacts of Rural Electrification in Bhutan
By: Mr. Pushpa Lal Acharya
Supervisor: Prof. Shobhakar Dhakal

Optimal Placement of Distributed Generations and Restoration of Protection Coordination by Modifying Relay Characteristics in Active Distribution Networks
By: Mr. Lim Pila
Supervisor: Dr. Jai Govind Singh

4.2.2: SERD – ENVIRONMENTAL ENGINEERING AND MANAGEMENT FIELD OF STUDY

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.

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. For lab and pilot scale testing purposes, the ambient laboratory has furnished with facility to conduct experiments for treating sludge, sewage, air toxics 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; Micros-cope; Microbalance; Microcentrifuge.

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; Environ-mental Biotechnology; Environmental Impact Assessment; Mathematical Modeling)*

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)*

NGUYEN OANH THI KIM, Dip Eng, Odessa Hydrometeorology Inst, Ukraine; MEng, DEng, AIT, Thailand.

Professor *(Air Pollution Engineering and Management: Modeling, Monitoring, Exposure Assessment; Climate and Air Quality Interaction: Environment Co-Benefit of SLCP Emission Reduction; Industrial Environment Management: General Environment Management, Advanced Emission Control Techniques)*

OLEG SHIPIN, MSc., Univ. of Saratov; DSc., Inst of Biochemistry and Physiology of Microorganisms, Moscow, Russia.

Associate Professor *(Ecological Engineering for climate change adaptation; Environmental Impact Assessment; Microbial biotechnology and nanotechnology; Natural systems (ponds and wetlands) as Wastewater treatment systems; Microbial aspects of Environmental Engineering; Health and Ecological Risk assessment*)

THAMMARAT KOOTATEP, BEng, Chiangmai Univ; MEng, DEng, AIT, Thailand.

Associate Professor *(Decentralized Waste and Wastewater Treatment Systems; Sustainable Sanitation; Eco-engineering Technology for Waste and Wastewater Treatment and Management; Environmental Health and Sanitation)*

Visiting and Adjunct Faculty

CHONGRAK POLPRASERT, BEng, Chulalongkorn Univ, Thailand; MEng, AIT, Thailand; PhD, Univ of Washington, USA.

Adjunct Faculty *(Hazardous Waste Engineering; Resources Recovery; Sanitation)*

DOULAYE KONÉ, MSc, Univ of Cocody, Côte d'Ivoire; MSc & M Advance Studies, Université de Liège, Belgium; PhD, Swiss Federal Institute of Technology Lausanne, Switzerland.

Adjunct Faculty *(Water and Sanitation)*

HUNG NGUYEN-VIET, BSc, Hanoi Univ of Education, Vietnam; MSc, PhD, Univ of Franche-Comté, France.

Adjunct Faculty *(Life and Environmental Sciences)*

KARE HELGE KARSTENSEN, BS, MS, Univ of Oslo; MBA, Heriott Watt Univ, UK; MLaw, Univ of Oslo; DrSc, Norwegian Univ 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)*

KIMBERLY NEIL IRVINE, BSc, Toronto Univ, Canada; MSc, PhD, McMaster Univ, Canada.

Adjunct Professor *(Hydrology and Water Resource Management, with specific emphasis on evaluating water quality in urban-impacted water bodies)*

PREEDA PARKPIAN, BSc, Kasetsart Univ, Thailand; MSc, Mississippi State Univ; PhD, Texas A&M Univ, USA.

Adjunct Faculty *(Ecotoxicology; POPs; Heavy Metals; Micronutrient Chemistry; Remediation of Polluted Soil and Water)*

SHINICHI OKAMOTO, BEng, MEng, DEng, Waseda Univ, Japan.

Visiting Professor *(Statistics and Environmental Management Systems)*
SIDDHARTH K. JABADE, BE and ME, Univ of Pune, India; PhD, IIT Bombay, India.

Adjunct Professor *(Intellectual Property Specialist)*

Affiliated Faculty

JUTAMAAD SATAYAVIVAD, PhD, Mahidol Univ, Thailand.

Affiliated Faculty *(Pharmacology)*

KHUNYING MATHUROS RUCHIRAWAT, PhD, Massachusetts Institute of Technology, USA.

Affiliated Faculty *(Nutrition Biochemistry and Metabolism)*

SKORN MONGKOLSUK, PhD, Univ of Maryland, USA.

Affiliated Professor *(Biological Science)*

AIRADA POMPANWONG, BSc

Research Assistant (Laboratory operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

ARAYA WICHEANSAN, BSc

Research Assistant (Laboratory operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

AROSHA S. KUMARAGE, BA

Research Assistant (Financial management and assist the team in regular research project and training activities) Manages research projects,

prepares technical reports and presentations)

ATITAYA PANUVATVANICH, DEng

Research Specialist (Manages research projects; assists in project coordination, prepares project reports, prepares project budgets and manages project finances; assist team leader in training activities)

CHACHSAKHOL THANADILOK, BSc

Research Assistant (Laboratory operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

CHAIYAPORN IMSAPSANGWORN, MSc

Laboratory Supervisor (Supervises instrumentation and data acquisition, calibration and maintenance of analytical instruments, assistant to senior laboratory supervisor for such as teaching, lab management)

CHALOEMCHAI SAENTIP, BEng

Research Assistant (Laboratory operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

CHANYA LEENASEN, BSc

Secretary (Provide administrative support to faculty, staff and students through conducting and organizing administrative duties and activities)

CHAWALIT CHAIWONG, BSc

Research Assistant (Laboratory operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

CHUTHATHIP SIRIPONG, MEng

Research Associate (Manages research projects, prepares technical reports and presentations)

ILADA PHUAKMOOL, BEng

Research Assistant (Laboratory operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

JARUWAT WATANATANACHART, BEng
Research Assistant (Laboratory operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

JIRAPA DATHONG, MSc

Research Associate (Manages research projects, prepares technical reports and presentations)

JIRARUT PHUANGNUI, MSc

Research Associate (Manages research projects, prepares technical reports and presentations)

KANOKWAN WANGCHINA, BEng

Research Assistant (Laboratory opera-ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)

KIM WON KWON, MEng

Research Associate (Manages research projects, prepares technical reports and presentations)

MINGKWAN WANITCHOW, BSc

Secretary (Provide administrative support to faculty, staff and students through conducting and organizing administrative duties and activities)
MUNU PRADHAN, MBA

Research Associate (Manages research projects, prepares technical reports and presentations)

NAN KHAM SYNE, MSc

Research Associate (Manages research projects, prepares technical reports and presentations)

NATTHAPONG PROYSURIN, MEng

Research Associate (Manages research projects, prepares technical reports and presentations)

NAWATCH SURINKUL, DEng

Research Specialist (Manages research projects; assists in project coordination, prepares project reports, prepares project budgets and manages project finances; assist team leader in training activities)

NGUYEN PHAN DONG, MSc

Research Associate (Manages research projects, prepares technical reports and presentations)

NGUYEN THANH HANG, MSc

Research Associate (Manages research projects, prepares technical reports and presentations)

NIMITR BUNRUANG, BTech (Mech.)

Senior Technician (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)

NUTNICHA TAJAI, BEng

Research Assistant (Laboratory operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

ORATHAI KLUBBARNKOH, BSc

Senior Technician (Chemistry and environmental analysis for environmental samples as well as prepare for chemical and glassware

for laboratory courses and research projects)

PANNAWEE MEKWICHAI, MSc

Research Associate (Manages research projects, prepares technical reports and presentations)

PANNITA SUTTISAWAD, BEng

Research Assistant (Laboratory opera-ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)

PANUPONG BOONYANUN, BTech (Mech.)

Senior Technician (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)

PAUL JACOB, MEng

Research Associate (Manages research projects, prepares technical reports and presentations)

PHANWATT PHUNGSAI, MEng

Research Associate (Manages research projects, prepares technical reports and presentations)

PIYANAD AKSORNPIM, BSc

Research Assistant (Laboratory operating and sample analysis, prepares technical reports and presentations, collaborating with research partners)

PONGSAKORN CHAICHAI, BSc

Research Assistant (Laboratory opera ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)

PRAKRITI KASHYAP, MSc

Research Associate (Manages research projects, prepares technical reports and presentations)
QIUSHI XU, MEng

Research Associate (Manages research projects, prepares technical reports and presentations)

RARI CHONTONG, BSc

Research Assistant (Laboratory opera ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)

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)
SANIRAT SANGMUANG, MSc

Research Associate (Manages research projects, prepares technical reports and presentations)
SAROJ KUMAR CHAPAGAIN, PhD

Senior Research Engineer (Manages research projects, assists in project coordination, prepares project reports, assist team leader in training activities)

SITA CHAIHENG, BSc

Research Assistant (Laboratory opera-ting 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)

SOMPOKE KINGKAEW, MSc

Research Associate (Manages research projects, prepares technical reports and presentations)

SUCHITRA PIEMPINSEST, BEd

Senior Administrative Officer (Overall strategy, planning, coordination and management of academic activities and overall administration of the program)

SUMETH WONGKIEW, MEng

Research Associate (Manages research projects, prepares technical reports and presentations)

SUPAPORN PIROMSRI, BEng

Research Assistant (Laboratory opera-ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)
SUPUSANEE DULYAKASEM, MEng

Research Associate (Manages research projects, prepares technical reports and presentations)

SURADANAI AUNGSORNTUNG, BEng

Research Assistant (Laboratory opera-ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)

T.D.W. RATHNAYAKE, BSc

Research Assistant (Laboratory opera-ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)

TIPPAWAN SINGHOPON, BEng

Research Assistant (Laboratory opera-ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)

UNCHANA SUKJAROEN, BSc

Research Assistant (Laboratory opera-ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)

VAIDEHI A. DEOSTHALI, MBA

Research Associate (Manages research projects, prepares technical reports and presentations)

WARAPHORN KHAJORNFUNG, BSc

Research Assistant (Laboratory opera-ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)

WITCHUDA TASSANASUWAN, BSc

Research Assistant (Laboratory opera-ting and sample analysis, prepares technical reports and presentations, collaborating with research partners)

4. Grants and Sponsored Research Completed in 2019

Innovative Toilet City
Duration: 1-Sep-2016 to 28-Feb-2019
Project Investigator: Dr. Thammarat Koottatep
Total Contracted Amount (THB): 5,044,150.00

AIT - BORDA Collaboration, Regenerative Sanitation Hub
Duration: 1-Jan-2017 to 30-Dec-2019
Project Investigator: Dr. Thammarat Koottatep
Total Contracted Amount (THB): 5,550,000.00

Technical Assistance for Technology Transfer and Commercialization Support of the AIT Toilet Innovations
Duration: 7-Nov-2017 to 30-Apr-2019
Project Investigator: Dr. Thammarat Koottatep
Total Contracted Amount (THB): 51,283,398.95

Short Term Actions 2017, BMGF project
Duration: 22-Nov-2017 to 30-Jun-2019
Project Investigator: Dr. Thammarat Koottatep
Total Contracted Amount (THB): 954,094.00

Assessment of Dioxin Emissions from point sources in Thailand
Duration: 1-Nov-2017 to 31-May-2019
Project Investigators: Prof. Nguyen Thi Kim Oanh, Dr. Ekbording Winijkul
Total Contracted Amount (THB): 865,500.00

Biofuel Production from Innovative Algal Bioreactor Treating Domestic Wastewater
Duration: 2-Jan-2018 to 31-Dec-2019
Project Investigator: Dr. Thammarat Koottatep
Total Contracted Amount (THB): 2,000,000.00

Faecal Sludge Management Toolbox Optimisation
Duration: 1-Jun-2018 to 31-Jul-2019
Project Investigator: Dr. Thammarat Koottatep
Total Contracted Amount (THB): 2,143,384.00

Reports on drinking water services & technologies in Asian countries-Phase IV
Duration: 1-Apr-2018 to 30-Sep-2019
Project Investigator: Dr. C. Visvanathan
Total Contracted Amount (THB): 144,000.00

Effective faecal sludge planning to minimize environmental pollution & protect public health
Duration: 1-Aug-2018 to 31-Dec-2019
Project Investigator: Dr. Thammarat Koottatep
Total Contracted Amount (THB): 5,267,640.00

Evaluating the Performance of Mitsubishi Multi-Layer Hollow Fiber Membrane for Membrane Aerated Biofilm Reactor (MABR) Application
Duration: 1-Jul-2018 to 30-Dec-2019
Project Investigator: Prof. C. Visvanathan
Total Contracted Amount (THB): 148,500.00

Reduced Agrochemicals & Local Food Chain GHG Emissions through Organic Farming & Smart Factories in Thailand
Duration: 4-Dec-2018 to 31-Mar-2019
Project Investigator: Dr. Ekbordin Winijkul
Total Contracted Amount (THB): 300,000.00

Capacity building activity of the Asia Pacific Clean Air Partnership (APCAP)
Duration: 21-Jul-2018 to 31-Mar-2019
Project Investigator: Wenchao Xue
Total Contracted Amount (THB): 2,691,100.00

Forward Osmosis for Nutrient Recovery
Duration: 1-Aug-2018 to 30-Apr-2019
Project Investigator: Prof. Nguyen Thi Kim Oanh
Total Contracted Amount (THB): 50,000.00

Training/capacity building & support to ensure & practice sustainable Faecal Sludge Management in Bangladesh
Duration: 1-Nov-2018 to 31-Oct-2019
Project Investigator: Prof. Thammarat Koottatep
Total Contracted Amount (THB): 408,050.00

Assistance with regard to execution of climate change vulnerability assessment & development of Energy-Climate Action Plan in Far-North of Cameroon
Duration: 1-Apr-2019 to 31-Dec-2019
Project Investigator: Dr. Oleg Shipin
Total Contracted Amount (THB): 190,800.00

Production of High value bioproducts from innovative algal bioreactor treating domestic wastewater
Duration: 1-Jul-2019 to 30-Jun-2019
Project Investigator: Prof. Thammarat Koottatep
Total Contracted Amount (THB): 2,810,000.00

AIT Testing & Demonstration Laboratory
Duration: 1-Apr-2019 to 30-Dec-2019
Project Investigator: Prof. Thammarat Koottatep
Total Contracted Amount (THB): 577,089.92

5. On-going Grants and Sponsored Research

Effects of climate change & variability on community vulnerability & exposure to dengue in South East Asia (DENCLIM)
Duration: 1-Jan-2018 to 31-Dec-2021
Project Investigator: Dr. Oleg Shipin
Total Contracted Amount (THB): 3,678,400.00

Master On New Technologies Using Services
Duration: 1-Nov-2018 to 30-Nov-2021
Project Investigators: Prof. Nguyen Thi Kim Oanh, Dr. Ekbording Winijkul
Total Contracted Amount (THB): 1,570,977.00

Reports on drinking water services & technologies in Asian countries-Phase V
Duration: 1-Apr-2019 to 30-Sep-2020
Project Investigator: Prof. C. Visvanathan
Total Contracted Amount (THB): 104,400.00

Treatment of Domestic Wastewater using a Pilot-Scale Membrane Aerated Biofilm Reactor (MABR)
Duration: 1-Jul-2019 to 30-Dec-2020
Project Investigator: Prof. C. Visvanathan
Total Contracted Amount (THB): 423,630.00

Two-Stage Up-flow Solar Septic Tank
Duration: 1-May-2019 to 30-Apr-2022
Project Investigator: Prof. Thammarat Koottatep
Total Contracted Amount (THB): 2,694,000.00

Transfer of Delft based MSc/GPDP/OLC/OCC programme on Non-sewered Sanitation
Duration: 1-Jul-2019 to 31-Dec-2023
Project Investigator: Prof. Thammarat Koottatep
Total Contracted Amount (THB): 10,278,420.00

The study of emission sources of PM2.5 & precursors of secondary PM2.5 in Bangkok Metropolitan
Duration: 6-Sep-2019 to 31-Mar-2020
Project Investigators: Prof. Nguyen Thi Kim Oanh, Dr. Ekbordin Winijkul
Total Contracted Amount (THB): 500,000.00

Emissions inventory for inland water transport in Bangkok, Thailand
Duration: 14-Oct-2019 to 13-Oct-2020
Project Investigators: Dr. Ekbordin Winijkul, Prof. Nguyen Thi Kim Oanh
Total Contracted Amount (THB): 606,000.00

6. Publications

Papers in Refereed Journal

Sharma, A., Aloysius, V. & Visvanathan, C. Recovery of plastics from dumpsites and landfills to prevent marine plastic pollution in Thailand. Waste Disposal & Sustainable Energy, Volume 1, pp 237–249.

Joshi, P., & Visvanathan, C. Sustainable management practices of food waste in Asia: Technological and policy drivers. Journal of Environmental Management, Volume 247, pp 538-550.

Kashyap, P., Jacob, P., Suthapanich, W., & Visvanathan, C. Assessing upcoming touristic town's municipal solid waste flows and characterisation: a case of Phetchaburi Province, Thailand. International Journal of Environment and Waste Management, Volume 24, pp 178-194.

Logan, M., Safi, M., Lens, P., & Visvanathan, C. Investigating the performance of internet of things based anaerobic digestion of food waste. Process Safety and Environmental Protection, Volume 127, pp 277-287.

Li, L., Song, K., & Visvanathan, C. Endogenous respiration process analysis between aMBR and UV/O3-aMBR for polluted surface water treatment. Journal of Water Supply: Research and Technology—AQUA, 68(8), 793-802.

Li L, Geng S, Wu C, Song K, Sun F, Visvanathan C, Xie F, Wang Q. Microplastics contamination in different trophic state lakes along the middle and lower reaches of Yangtze River Basin. Environmental Pollution, 254, 112951.

P Kunlasubpreedee and Chettiyappan Visvanathan. (2020) Performance Evaluation of Membrane Aerated Biofilm Reactor for Acetonitrile Wastewater Treatment. Journal of Environmental Engineering, ASCE. Volume 146, Issue 7.

AS Tabucanon, Wenchao Sue, T Fujino. Assessing Alteration of Leaf Litter Breakdown Rate Influenced by Dam Operation in Nakatsugawa River and Arakawa River, Central Japan. Watershed Ecology and the Environment, Volume 1, pp 1-9.

Books

Faisal I. Hai, Chettiyappan Visvanathan, Ramaraj Boopathy. Sustainable Aquaculture. Springer. ISBN: 978-3-319-73256-5, 2018. 327 p.

Book Chapters

S Tangwanichagapong, M Logan, Chettiyappan Visvanathan. Circular Economy for Sustainable Resource Management: The Case of Packaging

Waste Sector in Thailand. In: SK Gosh, ed., Circular Economy: Global Perspective. Springer

Papers in Conference Proceedings

T Manorom, E Winijkul. Spatial Distribution and Temporal Variations of Non-Road Engine Emission in Thailand. National Conference on Air Quality in Thailand: PM2.5. Bangkok, Thailand.

7. Doctoral Students' Dissertation

Business Model Innovation for Faecal Sludge Management: Collection and Transportation Services
By: Mr. Ta Hung Anh
Supervisor: Prof. Thammarat Koottatep

Development of Integrated Approach to Assess and Prioritize the Emission Reduction Measures of Air Pollution: A Case Study of the Urban Area of Phnom Penh, Cambodia
By: Mr. Kok Sothea
Supervisor: Prof. Nguyen Thi Kim Oanh

8. Masters Students' Theses

Potential of Green 3R Walls/Roofs Retrofitting with Regard to Solid Waste and Liquid Waste Reuse with Co-Benefits on AIT Eco-Campus
By: Mr. Kazi Mannaf Mahbub
Supervisor: Dr. Oleg Shipin

Development of Residential Emission Inventory and Potential Future Emission Reduction Scenarios for Kabul City, Afghanistan
By: Mr. Sayed Kazem Hashmi
Supervisor: Dr. Ekbordin Winijkul

Comparative Assessment of Ecosystem Services Provided by Wetlands in Lower Chao Phraya River Basin (Thailand) and Bago Area (Myanmar)
By: Mr. Pauk Kyaing Sahm
Supervisor: Dr. Oleg Shipin

Rapid Cumulative Impact Assessment of Wetlands of Cascade Hydropower Projects in Mandalay Region
By: Ms. Khin Sandar Myint
Supervisor: Dr. Oleg Shipin

Sea Salt Bittern-Driven Forward Osmosis for Nutrients Enrichment and Recovery from Black Water
By: Ms. May Zaw
Supervisor: Dr. Wenchao Xue

Assessment of Fecal Sludge Management Practices using FSM Planning Tools: A Case Study of Yangon City, Myanmar
By: Mr. Koki Takano
Supervisor: Dr. Thammarat Koottatep

Co-Fueling of Plastic Waste in the Cement Industry
By: Mr. Avi Sharma
Supervisor: Prof. Chettiyappan Visvanathan

Evaluation of Thermophilic Anaerobic Co-Digestion of Food Waste and Chicken Manure
By: Mr. Wachiranon Chuenchart
Supervisor: Prof. Chettiyappan Visvanathan

Development of Real-time Spatial and Temporal Distribution of Traffic Emission Using Google Maps API in Bangkok
By: Mr. Supiya Naiudomthum
Supervisor: Dr. Ekbordin Winijkul

Assessment of the Spatiality and Intensity of Sediment and Topsoil Metals and the Correlation with Development Pattern in Lower Chao Phraya River Watershed
By: Ms. Natchaya Namngam
Supervisor: Dr. Wenchao Xue

Development of a Functional Green 3R Wall Biotechnology for the Use in Public Urban Settings
By: Mr. Santipong Grailert
Supervisor: Dr. Oleg Shipin

Effect of Anthropogenic Land Use Pattern on Nutrient Distribution in River Surface Sediment and Catchment Topsoil: A Study of the Lower Chao Phraya Watershed
By: Ms. Husna Lhaetee
Supervisor: Dr. Wenchao Xue

Enhancement of Organic Matter and Total Nitrogen Removal in a Membrane Aerated Biofilm Reactor using Bio-Carriers
By: Mr. Nandana Hewawasamge Sajith Madhawa Premarathna
Supervisor: Prof. Chettiyappan Visvanathan

Modeling of Traffic-Related Pollutant Concentration at the Signalized Intersection and Possible Emission Reduction Scenarios in Bangkok
By: Ms. Su Myat Kyaw
Supervisor: Dr. Ekbordin Winijkul

Membrane Aerated Biofilm Reactor Performance for Xenobiotic Compound Removal
By: Ms. Patthranit Kunlasubpreedee
Supervisor: Prof. Chettiyappan Visvanathan

Role of Attached-Growth Media in Algal Biomass Productivity and Domestic Wastewater Treatment of Algal-Bacterial Photobioreactor
By: Mr. Prutchaya Wisakum
Supervisor: Prof. Thammarat Koottatep

Performance of Air Membrane Bioreactor for Gas Phase Methanol Removal Under Steady and Transient State Conditions
By: Ms. Kamonkarn Prikyai
Supervisor: Prof. Chettiyappan Visvanathan

Effect of Organic Loading Rates and Carbon/Nitrogen Ratio on the Performance of Upflow Thermophilic Septic Tank for Treating Toilet Wastewater
By: Mr. Pharatthakorn Pukwapee
Supervisor: Prof. Thammarat Koottatep

Development of Air Pollution Emission Inventory for Shipping Activities in Ha Long Bay, Vietnam
By: Ms. Truong Thi Huyen
Supervisor: Dr. Ekbordin Winijkul

Health Risk Assessment of Air Pollution using the World Health Organization AirQ+ Model
By: Ms. Thanattha Bunwichai
Supervisor: Dr. Ekbordin Winijkul

Development of a Vehicle Population Model Using the System Dynamic Approach for On-Road Particulate Matter Emission Projection in Sri Lanka
By: Mr. Rashminda Bandara Attanayake
Supervisor: Dr. Ekbordin Winijkul

Evaluation of Circular Economy Potential of Plastic Waste in Sri Lanka
By: Mr. Keshan Lakmal Samarasinghe
Supervisor: Prof. Chettiyappan Visvanathan

Performance of Functional Green 3R Roof/Wall Biotechnology for Urban Waste Recycling with Co-benefits
By: Ms. Utpala Shrestha
Supervisor: Dr. Oleg Shipin

Removal of Methylene Blue from Textile Synthetic Wastewater using Conventional, Natural and Nanoparticles Adsorbents
By: Ms. Kritiya Kaspanich
Supervisor: Prof. Chettiyappan Visvanathan

Performance Evaluation of Attached-Growth High Rate Algal Pond Equipped with an Artificial Light Source
By: Ms. Kesirine Jinda
Supervisor: Prof. Thammarat Koottatep

Analysis of Faecal Sludge Management in Selected Urban and Peri-Urban Areas in Chiangmai Province, Thailand
By: Ms. Jula Chaingphukor
Supervisor: Prof. Thammarat Koottatep

Performance of Functional Green 3R Wall Biotechnology in High Profile Urban Areas
By: Ms. Alisara Phocharoen
Supervisor: Dr. Oleg Shipin

Development of Emission Inventory for Air Pollutants in Hanoi Metropolitan Region in 2010 for Health Effect Assessment
By: Ms. Vu Bich Ngoc
Supervisor: Dr. Ekbordin Winijkul, Prof. Nguyen Thi Kim Oanh

4.2.3: SERD – CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT

1. Introduction

Climate change is the most important international agenda kept at the forefront of everybody that requires mitigation and adaptive solutions for coping with current and changing scenario of the future. The associated issues and concerns are many from local to global level that raises a common question of sustaining our living planet. The issues are primarily linked with carbon emissions leading to global warming, extreme weather events, increasing trend and intensities of natural hazards and disasters, melting of glaciers, loss of biodiversity, threatened ecosystems, uncertainty of water and food security, etc. CCSD program focuses on climate change mitigation, impacts and adaptation at the cross-cutting issues.

2. What should graduates expect?

- Work with sectorial experts in the areas of CCSD with critical thinking
- Carry out climate change induced impact assessment, scenario building and identification of potential impacts,
- Initiate climate change induced impact assessment and adaptive measures,
- Undertake policy analysis and development (integration, application and mainstreaming),
- Negotiate and communicate effectively,
- Acquire methods, tools and techniques for analysis, understanding and dissemination, and
- Conduct technology assessment and adopting climate friendly technology for mitigation and adaptation

3. Research Areas:

- Technologies and policies for greenhouse gas emission mitigation energy and sustainable development
- Biomass and Bioenergy for climate change mitigation, Clean Coal Technologies, Carbon Capture and Storage
- Participatory scenario design
- Energy and climate policies, economics of climate change, cities and climate change
- International development, NGOs, adaptation to climate change
- Climate change and water resources, climate change impact and adaptation assessment

5. Preferred Background for:

MASTER'S PROGRAM

Undergraduate degree in geography, agriculture, economics, architecture, sociology, engineering, anthropology, planning, political science, development studies, humanities, biosciences, environmental sciences, energy and forestry.

DOCTORAL PROGRAM

Master's degree in one of the above fields and detailed dissertation research outline must be submitted with application.

For more information, please contact: Climate Change and Sustainable Development
+66 (0)2 524 6165
+66(0)2 524 6431
EECC-HoD@ait.asia
EECC-secretary@ait.asia

6. Masters Students' Theses

Effects of Seeding Rate and Nitrogen Application on Yield and Water Productivity of Rice under Alternate Wetting and Drying Irrigation
By: Mr. Subesh Dhakal
Supervisor: Dr. Avishek Datta

Flood Risk Assessment under Climate Change Scenarios in Hanumante River Basin, Nepal
By: Ms. Ayushmita Pokhrel
Supervisor: Dr. Sangam Shrestha

Business Models for and Barriers to Scaling Up Rooftop Solar Photovoltaics in Thailand
By: Mr. Franz Andre Brandenberger
Supervisor: Prof. Shobhakar Dhakal

4.3: SERD – DEPARTMENT OF DEVELOPMENT & SUSTAINABILITY

Background and Mission

Department of Development and Sustainability aims to respond to emerging challenges to sustainable development in Asia. Asia is changing rapidly economically, socially, politically as well as culturally. In order to effectively address emerging issues in the region, we need to have critical and deep analysis of contexts under a multiplicity of identities - be it by gender, religion, ethnicity, class, age, geographical location, livelihood, nation, etc. The region urgently needs people who are able to organize a multi-disciplinary approach to problem solving, with in-depth understanding and responsiveness to the various needs of local women and men. We strive to generate research and knowledge to meet these needs.

The Missions of the Department are:

• To develop next-generation-leaders able to address emerging and rapidly changing development needs involving various resources – be it natural, human, social, economic, and political, who are equipped with knowledge and attitudes that can contribute to problem solving in practice.

• To serve the society by producing analysis and grounded knowledge that would contribute to improved practices for sustainable development.

Academic Programs

Multidisciplinarity is at the very core of department's teaching, research & outreach activities. Our academic activities focus on problem-solving and creating work-ready graduates who are able to take real-life challenges once graduated. The students come from multiple disciplines economics, geography, anthropology, sociology, architecture, agriculture, forestry, science, political sciences, management, and humanities. Those with professional development experience are preferred candidates, and hence the programs have experienced students and peer learning is also an important part of our learning.

Department of Development and Sustainability are:

1) Gender and Development Studies
2) Natural Resources Management
3) Pulp & Paper Technology Field of Study
4) Regional & Rural Development Planning
5) Urban Environmental Management
6) Disaster Preparedness, Mitigation and Management

4.3.1: SERD – GENDER AND DEVELOPMENT STUDIES

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 (GDS) as an academic 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.

2. Faculty and Research Staff

Full-time Faculty

KYOKO KUSAKABE, BA, Sophia University, Tokyo, Japan; MSc, PhD, AIT, Thailand.

Professor and Field Coordinator *(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.

Associate Professor *(New Technologies, Industrialization and Gender HIV/AIDS; Gender Politics, Civil Society and Human Rights; Gender, Migration and Trafficking in Asia)*

Visiting Faculty

BERNADETTE RESURRECCION, BSc, Assumption College, Philippines; MA, PhD, Inst of Social Studies, the Hague, the Netherlands.

Associate Professor *(Gender, natural resource management and climate change, multi-local livelihoods and migration, discourses and practices of gender mainstreaming*)

DONNA L. DOANE, M. A. Anthropology, M.A., M. Phil. Economics, Yale University, and Ph.D. Economics, Yale University

Adjunct 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

Senor Research Specialist and **Affiliated 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*)

REINA ICHII, B.A Economics, Tokyo Women's Christian University, Tokyo, Japan; M.A International Studies, Sophia University Tokyo Japan; Ph.D Economics, University of South Australia, Adelaide, Australia, Ph.D preliminary Studies, Economics Hitotsubashi, University, Tokyo, Japan,

Visiting Faculty *(Selected Topic: Gender and Development Economics)*

Research Staff
JULAIKHA BENTE HOSSAIN

Research Specialist and **Affiliated Faculty**, *Rockefeller Foundation*

DR. DONNA L. DOANE

Senior Researcher, *AusAid funded project on women's economic empowerment and social protection in the Greater Mekong Sub-region*

MANRAJ GREWAL

Managing Editor, *of Gender, Technology and Development*

RUTMANEE ONGSAKUL

Programme Coordinator, *Adapting to Climate change in Peri-Urban Southeast Asia*

JHOZINE DAMASO

Program Officer, *Adapting to Climate change in Peri-Urban Southeast Asia*

CHALISARA SUPARAT

Research Associate *Training Workshop Ochanomizu*

Administrative Staff

Ms Agnes Pardilla, Program Officer

3. Grants and Sponsored Research Completed in 2019

Organizing expert consultation work-shop on land tenure and disaster and its social and gender impact
Duration: 8-Jul-2013 to 31-Dec-2019
Project Investigators: Kyoko Kusakabe, Rajendra P Shrestha
Total Contracted Amount (THB):1,450,000.00

Migration and Collectives/ Networks as Pathways out of Poverty: Gendered Vulnerabilities and Capabilities of Fishing Communities in Asia
Duration: 1-Mar-2016 to 28-Feb-2019
Project Investigator: Prof Kyoko Kusakabe
Total Contracted Amount (THB): 7,118,648.00

National Survey on Attitudes towards Sexual Orientation, Gender Identity & Gender Expression (SOGIE) in Thailand
Duration: 18-Oct-2017 to 31-Mar-2019
Project Investigators: Dr. Joyee Chatterjee, Dr. Philippe Doneys
Total Contracted Amount (THB): 131,000.00

7th Global Symposium on Gender in Aquaculture & Fisheries (GAF7)
Duration: 1-Jun-2018 to 31-Dec-2019
Project Investigators: Dr. Kyoko Kusakabe, Dr. K.R. Salin
Total Contracted Amount (THB): 1,242,500.00

Capacity Building for increasing economic opportunity through participation of women entrepreneurs in Private Sector
Duration: 1-Aug-2018 to 30-Nov-2019
Project Investigator: Dr. Julaikha B. Hossain
Total Contracted Amount (THB): 400,200.00

Training Workshop Ochanomizu University-2018
Duration: 1-Jun-2018 to 30-Jun-2019
Project Investigator: Prof. Kyoko Kusakabe
Total Contracted Amount (THB): 230,791.07

4. On-going Grants and Sponsored Research

Building Policy Research Capacity in Myanmar
Duration: 1-Jan-2018 to 31-Dec-2020
Project Investigators: Prof. Kyoko Kusakabe, Dr. Philippe Doneys, Dr. Joyee Chatterjee
Total Contracted Amount (THB): 7,950,523.04

Understanding Barriers & Working Pathways to Women's Political Participation in Myanmar
Duration: 1-Jun-2018 to 31-Aug-2021
Project Investigators: Dr. Philippe Doneys, Prof. Kyoko Kusakabe, Dr. Joyee Chatterjee
Total Contracted Amount (THB): 1,784,590.00

Child Marriage, Nutritional Status Mental Health in Rural Bangladesh: Accelerating SDG Progress through Evidence & Local Project
Duration: 15-Jul-2019 to 31-Jul-2020
Project Investigator: Dr. Julaikha B. Hossain
Total Contracted Amount (THB): 1,240,000.00

Demographic changes in small-scale fishing communities in Cambodia & Thailand
Duration: 1-May-2019 to 30-Aug-2020
Project Investigator: Dr. Kyoko Kusakabe
Total Contracted Amount (THB): 1,372,500.00

Training Workshop Ochanomizu University-2019
Duration: 1-Jul-2019 to 30-Jun-2020
Project Investigator: Dr. Kyoko Kusakabe
Total Contracted Amount (THB): 386,206.07

5. Publications

Papers in Refereed Journal

L Gantz, A Calvo, M Hess-Holtz, F Gonzales, L Alguero, S Murphy, M Moran, L Frank, J Chatterjee, A Amezola De Herrera (2019) Predictors of HPV Knowledge and HPV Vaccine Awareness among Women in Panama City, Panama, World Medical & Health Policy, Volume 11.

6. Doctoral Students' Dissertation

Gender-Based Analysis of Vulnerability and Adaptability to Flood: The Case of Char-Farming Households in Bangladesh
By: Ms. Farha Naz
Supervisor: Dr. Philippe Doneys

Gender Dimensions of Telemedicine Application in Rural Nepal
By: Mr. Rajan Parajuli
Supervisor: Dr. Philippe Doneys

7. Masters Students' Theses and Research Studies

Why Do We Buy Jewelry? A Gender Analysis of Jewelry Purchase: A Case in Taizhou, China
By: Mr. Jiaqi Wang
Supervisor: Prof. Kyoko Kusakabe

Perceptions and Experiences of Workplace Harassment: A Study of Women Police Officers in Kathmandu, Nepal
By: Ms. Suzana Kansakar
Supervisor: Dr. Joyee S. Chatterjee

Migration Bans and Their Impact on Nepalese Women Migrants to the Gulf Countries
By: Ms. Novela Acharya
Supervisor: Dr. Philippe Doneys

Women's Agency and Teenage Marriage in Cirebon, Indonesia
By: Ms. Widia Sulistiana
Supervisor: Dr. Philippe Doneys

Depictions of Gender Microaggression in Thai Reality Singing Competitions and Gendered Reactions of Thai Urban Youth
By: Mr. Sirayuth Thongprasert
Supervisor: Dr. Joyee S. Chatterjee

The Impact of Male Out-Migration on Gender Roles and Gender Power Relations in the Rural Areas of Mrauk U Township, Rakhine State, Myanmar
By: Ms. Aye Nyein Hlaing
Supervisor: Dr. Philippe Doneys

Gender Relation in Community-Based Tourism and Social EnterpriseTourism: A Case Study of Akha Ethnic Community in Chiang Rai Province, Thailand
By: Mr. Thundanai Yoosamran
Supervisor: Prof. Kyoko Kusakabe

Constraints and Barriers in Accessing Social Services Among Victims of Intimate Partner Violence: A Case Study of Working Women in Mandalay, Myanmar
By: Ms. Kay Thi Kyaw
Supervisor: Dr. Joyee S. Chatterjee

Women's Economic Empowerment: A Case Study of IDP Women's Small and Microenterprises in Myitkyina, Kachin State, Myanmar
By: Ms. Tein Wan
Supervisor: Prof. Kyoko Kusakabe

4.3.2: SERD – NATURAL RESOURCES MANAGEMENT FIELD OF STUDY

1. Introduction

This field of study emphasizes natural resources, including land, forest and wild animal 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.

2. Faculty and Research Staff

Full-time Faculty

CLEMENS GRUNBUHEL, MA, PhD, University of Vienna, Austria

Assistant Professor (Ecological Anthropology, Resource Use Indicators, Smallholder Agriculture, Integrated Land Use Management)

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 PRASAD SHRESTHA, BSc, Haryana Agri. Univ, India; MSc, DTechSc, AIT, Thailand.

Associate Professor (Sustainable Land Management; Natural Resources Degradation and Environmental indicators; Landuse-climate, Geoinformatics)

Visiting Faculty

SYLVAIN ROGER PERRET, MS and PhD, University of Montpellier III, France; DSc, Ecole Polytechnique de Lorraine, Nance, France.

Visiting Associate Professor (Water management/institutions, governance, economics/sustainability in rural development/dynamic modeling)

DAMIEN JOURDAIN, BEng, MSc, Ecole Nationale Superieure Agronomique de Montpellier, France; PhD, University of Montpellier I, France.

Visiting Assistant Professor (Water Management and Economics, Natural Resources Economics and Valuation, Farm Household Economics)

Adjunct Faculty

DIETRICH SCHMIDT-VOGT, BSc, Freiburg University, Germany; MSc, University of Saskatoon, Canada; PhD, Heidelberg University, Germany.
Adjunct Faculty (Landscape Ecology; Integrated Land Use Systems; Sustainable Forest Management; and Human Impact on Vegetation)

ROLAND COCHARD, BSc (Hons in Environmental Science), James Cook University of North Queensland; DSc, Institute of Geobotany, Swiss Federal Institute of Technology ETH, Switzerland.

Assistant Professor (Savanna ecosystem dynamics, landscape ecology, biodiversity, mangrove, risk management)

Research Staff

Soe Soe Htway, B.Ag.Sc., Soil & Water Management, Yezin Agricultural University; M.Sc., Natural Resources Management, Asian Institute of Technology.

Research Associate (Strengthening institutional capacity, extension services and rural livelihood in the Central Dry Zone and Ayeyarwaddy Delta regions of Myanmar.

3. Grants and Sponsored Research Completed in 2019

OCeAN's Annual Conference on "Redefining Diversity & Dynamism of Natural Resources Management in Asia"
Duration: 1-Jul-2019 to 31-Dec-2019
Project Investigators: Prof. Rajendra Shrestha, Prof. Ganesh Shivakoti
Total Contracted Amount (THB): 1,025,818.00

4. On-going Grants and Sponsored Research

Forest restoration and water availability for smart agriculture: a case study of Cambodia
Duration: 1-Jan-2017 to 31-Dec-2020
Project Investigator: Dr. Nophea Sasaki
Total Contracted Amount (THB): 4,955,518.36

5. Publications

Papers in Refereed Journal

Manori B.V.A.S. Bambaranda, Takuji W. Tsusaka, Anong Chirapart, Krishna R. Salin, Nophea Sasaki. Capacity of *Caulerpa lentillifera* in the Removal of Fish Culture Effluent in a Recirculating Aquaculture System. Processes, Volume 7, 440.

Manori B. V. A. S. Bambaranda, Nophea Sasaki, Anong Chirapart, Krishna R. Salin, Takuji W. Optimization of Macroalgal Density and Salinity for Nutrient Removal by *Caulerpa lentillifera* from Aquaculture Effluent. Processes, Volume 7, 303.

T Tieng, S Sharma, R A R A MacKenzie, M Venkattappa, Nophea Sasaki, A Collin. Mapping mangrove forest cover using Landsat-8 imagery, Sentinel-2, Very High-Resolution Images and Google Earth Engine algorithm for entire Cambodia. IOP Conference Series: Earth and Environmental Science, Volume 266.

Manjunatha Venkatappa, Nophea Sasaki, Rajendra Prasad Shrestha, Nitin Kumar Tripathi, Hwan-Ok Ma. Determination of vegetation thresholds for assessing land use and land use changes in Cambodia using the Google Earth Engine cloud-computing platform. Remote Sensing, Volume 11, 1514.

Supattra Yamsrual, Nophea Sasaki, Takuji W. Tsusaka, Ekbordin Winijkul. Assessment of local perception on eco-industrial estate performances after 17 years of implementation in Thailand. Environmental Development, Volume 32.

Siagian DR, Shrestha RP, Shrestha S, Kuwornu JKM. Factors Driving Rice Land Change 1989–2018 in the Deli Serdang Regency, Indonesia. Agriculture, Volume 9, pp. 186-196.

B. Liu, Y. Zhan, R. Zie, H. Huang, K. Li, Y. Zheng, R. P. Shrestha, N. T. Kimoanh, E. Winijkul. Efficient photocatalytic oxidation of gaseous toluene in bubbling reactor of water. Chemosphere, Volume 11, pp. 754-761.

R. P. Shrestha, B. Pasakhala, S. Qasim. Assessing household vulnerability to climate variability in the Far-West Nepal. Journal of Sustainable Development Studies. Volume 12, pp. 83-118.

K. Sakarayote, R. P. Shrestha. Simulating Land Use for Protecting Food Crop Areas in Northeast Thailand Using GIS and Dyna-CLUE. Journal of Geographical Sciences, Volume 29, pp. 803-817.

R. P. Shrestha, A. A. Thinn, S. Qasim. An Assessment of Soil Fertility Management Practices in Central Dry Zone of Myanmar. Journal of Agricultural Sustainability, Volume 12, pp. 152-174.

Book Chapters

Nophea Sasaki, Samnang Sot. Re-Assessment of Forest Reference Emission Level and Carbon Sequestration in Cambodia. In: Korea Environment Institute (KEI) Environmental Sustainability in Asia: Cambodia: Publication Series. Seoul, South Korea.

Papers in Conference Proceedings

Sasaki, N. Impact Investment and Green Financing. International Training Workshop on Low Carbon Development Opportunities created by Forest Carbon Project. 16-23 March 2019, Siem Reap, Cambodia.

Sasaki, N. Reviews of Paris Agreement and Development Opportunities for ASEAN Member States. International Training Workshop on Low Carbon Development Opportunities created by Forest Carbon Project. 16-23 March 2019, Siem Reap, Cambodia.

Sasaki, N. and Venkatappa, M. Krumap–Detect and stop deforestation and forest degradation. Geo for Good Summit, 15-18 Sep 2019, San Francisco.

Venkatappa, M., Sasaki, N. Applications of GEE for Forest Carbon Stocks Assessment. International Training Workshop on Low Carbon Development Opportunities created by Forest Carbon Project. 16-23 March 2019, Siem Reap, Cambodia.

Sasaki, N. Technovation for Smart Agriculture – Cases Study on Forest Restoration and Fish Farming. International Training Workshop on Low Carbon Development Opportunities created by Forest Carbon Project. 16-23 March 2019, Siem Reap, Cambodia.

6. Doctoral Students' Dissertation

Coping with Drought: Farmers' Actions and Public Policies in Suphanburi Province, Thailand
By: Ms. Surutwadee Pak-Uthai
Supervisor: Dr. Nicolas Faysse, Prof. Rajendra Prasad Shrestha

Effects of Water and Rice Straw Management Practices on Yield, Water Productivity, Greenhouse Gas Emissions and Soil Organic Carbon Stocks in a Double-Cropped Paddy Fields in the Central Plain of Thailand
By: Ms. Sumana Maneepitak
Supervisor: Prof. Rajendra Prasad Shrestha, Dr. Avishek Datta

Impact Assessment of Land Use Change on the Future Rice Production Vulnerability in Deli Serdang Regency, Indonesia
By: Mr. Deddy Romulo Siagian
Supervisor: Prof. Rajendra Prasad Shrestha

Effects of Green Seaweed Caulerpa lentillifera Culture on Water Quality in Aquatic Environment: Implications for Wastewater Treatment
By: Ms. B.V.A.S. Manori Bambaranda
Supervisor: Dr. Nophea Sasaki

Estimation of Land Availability for Forest Restoration and Smart Agriculture using Google Earth Engine: A Case Study of Siem Reap Province, Cambodia
By: Mr. Manjunatha Venkatappa
Supervisor: Dr. Nophea Sasaki

7. Masters Students' Theses and Research Studies

Local Community Participation in Ecotourism: A Case Study of Khlong Khone Mangroves in Samut Songkhram Province, Thailand
By: Ms. Thanyalak Ratanadilok Na Phuket
Supervisor: Dr. Nophea Sasaki

Carbon Sequestration Through Restoration of Degraded Forests by Three Native Species: A Case Study of Sagaing Region in Myanmar
By: Ms. Phyo Ei Hlaing
Supervisor: Dr. Nophea Sasaki

Analysis of Farm Structures and Farm Management Practices as Drivers of the Adoption of Sustainable Land Management Practices in the Northeastern Region of Thailand
By: Ms. Phastraporn Salaisook
Supervisor: Dr. Nicolas Faysse

Changes of River Water Level and Downstream Local Livelihood Affected by Forest Cover Changes in Phnom Kulen National Park, Siem Reap Province, Cambodia
By: Ms. Oum Somaly
Supervisor: Dr. Nophea Sasaki

Assessing the Effects of Deforestation on the Livelihoods of Local People in Rupandehi District, Nepal
By: Ms. Laxmi K.C.
Supervisor: Dr. Takuji Tsusaka

Farmers' Experiences and Perspectives on Acacia Plantation in Thua Thien Hue Province, Central Vietnam
By: Mr. Vu Thanh Bien
Supervisor: Prof. Rajendra Prasad Shrestha

Natural Regeneration and Management Cost of Shorea robusta Forest in Terai Region, Nepal
By: Ms. Durga Karki
Supervisor: Dr. Nophe, Dr. Takuji Tsusaka

Effects of Conservation Agriculture Practices on Local Livelihood in the Central Dryzone, Myanmar
By: Ms. Kyawt Yin Min Thein
Supervisor: Dr. Takuji Tsusaka

Assessment of Total Economic Values of Ecotourism Resources of Bangkunthian Mangrove Forest, Thailand
By: Ms. Kerati Sawangwongtham
Supervisor: Dr. Takuji Tsusaka

4.3.3: SERD – REGIONAL AND RURAL DEVELOPMENT PLANNING FIELD OF STUDY

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 sub-district 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.

2. Faculty and Research Staff

Full-time Faculty

MOKBUL MORSHED AHMAD, BSc, MSc, Dhaka University, Bangladesh; MSc, AIT, Thailand; PhD, University of Durham, UK.

Associate Professor *(Economic geography; regional and rural development planning; community development; Non-Governmental Organizations (NGOs); civil society; and globalization; etc)*

SOPARTH PONGQUAN, BSc, Chiang Mai University; MSc, AIT, Thailand; DSc, University 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)*

JAYANT K ROUTRAY, BSc (Hons), Ravenshaw College; MSc, PhD, Utkal University; MRP, Indian Institute of Technology, Kharagpur, India.

Professor (Regional and Rural Development Planning; Rural-Urban Relations; Regional Planning Methods and Techniques; Disaster Risk Reduction and Management; Climate Change Induced Adaptation; and GIS Applications)

GOPAL BAHADUR THAPA, BSc, Tribhuvan University, Nepal; MSc, DTechSc, AIT, Thailand.

Professor (Natural Resources Management; Sustainable Agricultural Development and Planning; and Watershed Management)

Professional Staff

VITOON NIL-UBOL, MSc, AIT, Thailand

Field Lab Supervisor, Regional and Rural Development Planning

3. Research Completed in 2019

Farming systems & route of institutions in transition towards sustainable management in Prachinburi Province, Thailand
Duration: 1-Jul-2018 to 31-Aug-2019
Project Investigators: Dr. Thi Phuoc Lai Nguyen, Dr. Sylvia Szabo
Total Contracted Amount (THB): 412,604.00

GCRF networking grant
Duration: 1-Jan-2019 to 31-Dec-2019

Project Investigators: Dr. Abdul Salam, Dr. Sylvia Szabo
Total Contracted Amount (THB): 1,050,000.00

Introducing sustainability to the textile engineering
Duration: 1-Mar-2019 to 1-Jun-2019
Project Investigator: Dr. Mokbul Morshed Ahmed
Total Contracted Amount (THB): 553,950.00

UKRI GCRF Living Deltas Hub Meeting
Duration: 26-Aug-2019 to 31-Dec-2019
Project Investigators: Dr. Sylvia Szabo, Dr. Indrajit Pal
Total Contracted Amount (THB): 145,316.97

4. On-going Grants and Sponsored Research

The UKRI GCRF Trade, Development & the Environment Hub
Duration: 13-Feb-2019 to 12-Feb-2024
Project Investigator: Dr. Sylvia Szabo, Dr. Takuji W Tsusaka
Total Contracted Amount (THB): 15,326,457.00

UKRI GCRF Living Deltas Hub
Duration: 1-Sep-2019 to 31-Dec-2024
Project Investigators: Dr. Sylvia Szabo, Dr. Indrajit Pal
Total Contracted Amount (THB): 21,500,000.00

STEM Education: Conceptions & Practices for Sustainable Development in Vietnam
Duration: 1-Oct-2019 to 30-Sep-2021
Project Investigator: Dr. Thi Phuoc Lai Nguyen
Total Contracted Amount (THB): 456,000.00

5. Publications

Papers in Refereed Journal

Pornwisa Prasertsaeng, Jayant K Routray, Mokbul Ahmad, JKM Kuwornu. Factors influencing farmer's satisfaction with the activities of horticultural cooperatives in Thailand. International Journal of Value Chain Management, Volume 11, pp. 42-62.

Surasak Jotaworn, Mokbul Ahmad, Supadet Themrat. Legal Status and Consequences Exploration: The Case of Non-Registered NGOs in Thailand. ASEAN Journal of Management and Innovation, Volume 6, pp.168-184

Shahab Saqib, MM Ahmad, Sanaullah Panezai. Care and social support from family and community in patients with pulmonary tuberculosis in Pakistan. Family Medicine and Community Health, Volume 1.

Sanaullah Panezai, MM Ahmed, SE Saqib. Gender Differences in Client Satisfaction and its Relationship with Utilization of Primary Health Care Services in Pakistan. Journal of Geography and Social Sciences., Volume 1, pp. 30-43

Apipoonyanon, C., Szabo, S., Kuwornu, J.K.M. et al. Local participation in community forest management using theory of planned behaviour: evidence from Udon Thani Province, Thailand. The European Journal of Development Research, 32, 1–27

FA Hussain, MM Ahmad. Effects of Climate Finance on Risk Appraisal: A Study in the Southwestern Coast of Bangladesh. Advances in Meteorology, Volume 9

Phuong, N.Q. and Ahmad, M.M. 2019, An exploratory study of the migration pathways by international labour migrants from Vietnam", International Journal of Sociology and Social Policy, Vol. 39 No. 3/4, pp. 311-323.

Nguyen Thi Phuoc Lai, Seddaiu Giovanna, Roggero Pier Paolo. Declarative or procedural knowledge? Knowledge for enhancing farmers' mitigation and adaptation behaviour to climate change. Journal of Rural Studies, Volume 67, pp. 46-56.

Petcho W, Szabo S, Kusakabe K, Yukongdi V. Farmers' Perception and Drivers of Membership in Rice Production Community Enterprises: Evidence from the Central Region, Thailand. Sustainability, Volume 11(19), 5445.

Papers in Conference Proceedings

Ahmad, MM. Proceedings of the International Forum on Education for Rural Transformation. IFERT, 13-15 November 2019, AIT, Bangkok.

Book Chapters

Ahmad, MM. Salinity Intrusion in South-western Bangladesh: The Continuing Struggle. In: Khatun, H. Baqee, A. and Kabir, H. eds. People at risk - Disaster and Despair. Dhaka: DRTMC/Dhaka University. pp. 97-114.

6. Doctoral Students' Dissertation

International Contract Labour Migration: The Experience of Returned Vietnamese Migrants from Taiwan
By: Ms. Nguyen Quynh Phuong
Supervisor: Dr. Mokbul Morshed Ahmad

Land Use Planning for Urban Agriculture: A Comparative Study of Three Communities in a Medium City of Pakistan
By: Mr. Hafiz Syed Hamid Arshad

Supervisor: Prof. Jayant Kumar Routray

Health Needs and Coping Strategies of the TB Patients in Khyber Pakhtunkhwa, Pakistan: A Multidimensional Assessment with Strategies
By: Mr. Shahab-E-Saqib
Supervisor: Dr. Mokbul Morshed Ahmad

Performance Assessment of Agricultural Cooperatives in the Upland Chiang Mai Region of Thailand
By: Ms. Pornwisa Prasertsaeng
Supervisor: Dr. Mokbul Morshed Ahmad

Profile of Multidimensional Poverty and Potential Interventions for Alleviation in Deqin County of Southwest China
By: Ms. Yao Lu
Supervisor: Prof. Jayant Kumar Routray, Dr. Mokbul Morshed Ahmad

7. Masters Students' Theses and Research Studies

An Assessment of the Role of Social Capital in Sustainable Agriculture: A Case Study of Prachinburi and Saraburi Provinces, Thailand
By: Ms. Nitchakan Inkong
Supervisor: Dr. Thi Phuoc Lai Nguyen

Impacts of Rural Electrification on Households' Well-Being and Productivity: Evidence from Magway Region in Myanmar
By: Ms. Thein Mwe Khin
Supervisor: Dr. Sylvia Maria Szabo

4.3.4: SERD – URBAN ENVIRONMENTAL MANAGEMENT FIELD OF STUDY

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 program, UEM provides opportunities of graduate level education and research at master (M.Sc.) and doctoral (PhD) level. It also provides certificate and diploma programs, as well as post-doctoral research opportunities. It draws on and integrates theories and perspectives in established disciplines of urban planning, urban and regional development, urban economics, sustainable 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 sectors as well as international development agencies and civil society organizations engaged in urban development and environmental management.

2. Research Facilities and Laboratories

In this Field of Study, any researcher gets modern computer lab and other facilities for communication. There is also a workshop room for students which can accommodate about 24 students in four clusters at a time. The workshop room also has audio-visual facilities for presentation. A new Regional Urban Resource Center (R-URC) has been established for compiling and disseminating knowledge related to urban development and environmental management issues.

3. Faculty and Research Staff

Full-time Faculty

VILAS NITIVATTANANON, BEng, Chulalongkorn Univ; MA, Thammasat University; Meng, AIT, Thailand
PhD, University of Pittsburgh, USA.

Associate Professor *(Management of Infrastructure and Services, Waste Recycling and Systems Management, Urban Environmental Management, Water Engineering and Management, Economic and Environmental Assessment, Climate Change Risk Assessment and Adaptation)*

Visiting Faculty

L. A. S. RANJITH PERERA, BSc, MSc, University of Moratuwa, Sri Lanka; MSc, PhD, AIT, Thailand.

(Urban Architecture and Environmental Design; Urban Planning and Housing; Urban Environmental Management, Results-based Project Management and Evaluation)

EDSEL SAJOR, BSc, University of the Philippines; MA, PhD, ISS, The Hague, The Netherlands.

(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)

SAEED ZAKIAHMED, PhD, Asian Institute of Technology, Thailand.

(Urban Environmental and Planning and Design)

LE THI THU HUONG, PhD, Asian Institute of Technology, Thailand.

(Urban Housing and Living Environment)

BHARAT DAHIYA, PhD, University of Cambridge, UK.

(Cities and Climate Change)

Research Staff

Dr. RUTMANEE ONGSAKUL

Project Manager

Mr. CLAUDIUS CAEZAR GABINETE

Research Associate

Ms. JHOZINE DAMASO

Program Officer

Administrative Staff

Ms. JITRA LUCKANAPITAK, Senior Administrative Officer

4. On-going Grants and Sponsored Research

Comparative Risk Assessment of Hydrologic Hazards & Adaption Policy in Jiulong River & Chao Phraya River Basins-Phase 2
Duration: 21-Jan-2019 to 21-Oct-2020
Project Investigator: Dr. Vilas Nitivattananon
Total Contracted Amount (THB): 1,326,555.00

5. Doctoral Students' Dissertation

Impact Assessment for Sustainable Tourism Development: A Case of Implementing a Low Carbon Tourism Program in Sukhothai City, Thailand
By: Ms. Machima Thongdejsri
Supervisor: Dr. Vilas Nitivattananon

Assessment of Local Perception on Eco-Industrial Estate Performances in Thailand
By: Ms. Supattra Yamsrual
Supervisor: Dr. Nophea Sasaki

Key Constraints of Private Housebuilders' Role in the Middle-Income Group (MIG) Market Segment in Yangon, Myanmar
By: Mr. Myint Naing
Supervisor: Dr. Vilas Nitivattananon

6. Masters Students' Theses

Urban Planning Incentive Measures for Floodplain Preservation in Bangkok
By: Mr. Nopanat Meeruksa
Supervisor: Dr. Sohee Minsun Kim

A Comparative Study of Urban Population Density Trends and Patterns in Hanoi and Ho Chi Minh City
By: Ms. Luong Thi Thuy
Supervisor: Dr. Sohee Minsun Kim

The Assessment of Urban Carrying Capacity: A Case Study of Nakhon Sawan Metropolitan Areas, Thailand
By: Ms. Chanyanut Raksapakdee
Supervisor: Dr. Vilas Nitivattananon

Gender Roles and Urban Informal Livelihood: Analysis of Their Interrelationship with Land Use in Bhaktapur, Nepal
By: Ms. Anupa Bhatta
Supervisor: Dr. Sohee Minsun Kim

Urban Risk Assessment Based on Integrating Natural and Anthropogenic Factors Using Spatial Multi-Criteria Decision Approach: A Case Study of Flood and Seismic Hazards in Kathmandu Valley
By: Ms. Anjana Tiwari
Supervisor: Dr. Vilas Nitivattananon

The Implications of Solid Waste Management and Urban Green Space to Urban Flood Management in Phnom Penh City, Cambodia
By: Mr. Mach Tola
Supervisor: Dr. Vilas Nitivattananon

Assessment of Adaptation Strategies to Flooding Impacts in Informal Settlement: A Case Study in Yangon City, Myanmar
By: Mr. Khant Htoo Kyaw
Supervisor: Dr. Sohee Minsun Kim

Urban Resilience Assessment of Kandahar City, Afghanistan
By: Mr. Athiqullah Hayat
Supervisor: Dr. Vilas Nitivattananon

4.3.5: DISASTER PREPAREDNESS, MITIGATION AND MANAGEMENT FIELD OF STUDY

1. Introduction

The world in the recent past has witnessed over 35 major conflicts and some 2,500 disasters. Approximately, it impacted two billion people, and millions have lost their lives. That is not all; the most destructive disasters that could occur are still to happen yet. Rapid escalation and intensity in the incidence of severe disaster events have become a huge threat to the global community.

Asia-Pacific, on the other hand, with 85% of all the people affected by disaster in the world, is in the center stage of all disasters. The highest amount of displacement in the world in 2011 owing to disaster also happened in this region. Due to rapid rate of population growth, urbanization, poverty, climate change and geographical location, most of the Asian countries have become highly susceptible to natural disasters; some of them, per se: flood, cyclone, drought, earthquake, landslide, extreme tempera-ture, heavy rain, epidemics, etc. It has been felt that there is limited capacity at global, regional and national levels in terms of knowledge base, skills training, long-term planning, emergency preparedness and policy development to respond to such severe disaster events. Consequently, to address these issues in innovative ways, it gave way to a program on Disaster Preparedness, Mitigation and Management (DPMM) at Asian Institute of Technology (AIT) in August 2008. AIT being located at the center of this region provides a strategic insight into the happenings in the world of disasters and development.

DPMM program uses interdisciplinary capacities (engineering, medicine, natural and social science, as well as management) to manage and minimize the effects of disasters in people on the front lines of disaster response and preparedness. It provides professional education and short term training for the capacity building of the Asia-Pacific as well as neighboring regions.

The courses at DPMM are designed and developed by AIT Faculties and experts from partner institutions having more than a decade of experience in this particular field. The program is being successfully run with students from Bangladesh, Canada, China, France, India, Indonesia, Iran, Maldives, Myan-mar, Pakistan, Philippines, Singapore, South Africa, Sudan, Thailand, Tibet and Vietnam. DPMM has recruited 58 students till date out of which 34 students have already graduated.

DPMM works closely with its partners for sharing knowledge and expertise. DPMM Faculties, Staff and Students get special invitation to attend workshops, seminars, symposiums, conferences, etc. They also get involved with the partners as volunteers, interns and consultants.

Currently, DPMM is working closely with the following partners.

- Asian Disaster Preparedness Center (ADPC)
- Department of Disaster Prevention and Mitigation (DDPM), Thailand
- HelpAge International
- Integrated Research on Disaster Risk (IRDR)
- International Federation of Red Cross and Red Crescent Societies (IFRC)
- Télécoms Sans Frontières (TSF)

- The Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES)
- UN Regional Agencies based in Thailand such as, UN International Strategy for Disaster Reduction for Asia & the Pacific (UNISDR-AP); UN World Food Programme (WFP), United Nations Economic and Social Commission for Asia and the Pacific (ESCAP); United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA)
- World Society for the Protection of Animals (WSPA)

DPMM is now planning to work further at the national, regional and global level along with its future partners that may include:

- Action Aid
- Agreement on Disaster Management and Emergency Response (AADMER)
- ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (AHA Center)
- Asia Foundation
- AusAid
- Care
- Oxfam
- Plan
- Save The Children
- USAID
- World Vision

Networks

Asia Pacific Initiative on Disaster Management and Humanitarian Assistance (API: DMHA)

It is a hybrid online disaster training course via video conferencing and content on an e-course management system. This course is offered through a multiple site video teleconference system that connects all participating educational institutions with students on their respective campuses. More than ten institutions around the globe continue to collaborate and share resources in the planning, organizing and delivering of the course. It has been offered at AIT since the inception of DPMM in August 2008.

The partners and participating institutions are :

1. Asian Institute of Technology (AIT), Thailand
2. Bangladesh University of Engineering and Technology (BUET)
3. Gadjah Mada University, Indonesia
4. Kieo University, Japan
5. National Institute of Social Work and Social Sciences (NISWASS), India
6. Okayama University, Japan
7. School of the Internet (SOI – ITB), Japan
8. The Energy and Resources Institute (TERI), India
9. The National University of Samoa, IA IO Samoa
10. United Nations University, Japan
11. University of Hawaii, Manoa
12. University of Ryukyus, Japan

Asian University Network of Environment and Disaster Management (AUEDM)

To enhance the objectives of the HFA, and to contribute to higher education and research process, Kyoto University in partnership with 19 other universities and organizations from 13 Asian countries has agreed to form the Asian University Network for Environment and Disaster Management (AUEDM) in a meeting in July 2008 in Kyoto, Japan.

The objectives of the network are:

- To share and work together (bilaterally or multilaterally) in promoting environment and disaster management in higher education (focusing on, but not restricted to, post-graduate education)
- To seek possibilities of mutual collaboration on field-based action research
- To broaden the scope of education and learning in the environment and disaster management field through collaboration with other stakeholders like NGOs and local governments.

Disaster Risk Certificate (DRC) Program

The Consortium of International Human Resource Development for Construction of Disaster Resilient Countries – an initiative of Kyoto University and ASEAN Alliance Universities. This program is for 5 Years starting from 2012 to 2017.

- Asian Institute of Technology (AIT), Thailand
- Chulalongkorn University, Thailand
- Kasetsart University, Thailand
- Institut Teknologi Bandung, Indonesia
- University of Malaya, Malaysia
- Vietnam National University, Vietnam

Details regarding DPMM program are available at http://dpmm.ait.ac.th

2. Faculty and Research Staff

Coordinating faculty members

School of Environment, Resources & Development (SERD)

Field of Study

Regional and Rural Development Planning (RRDP)

JAYANT K ROUTRAY, B.Sc. (Hons), M.Sc., PhD, Utkal University; MRP, Indian Instituute of Technology, India.

Professor *[Regional and Rural Development Planning, Rural-Urban Relations, Regional Planning Methods and Techniques, Disaster Risk Reduction and Management, Climate Change Induced Adaptation, and GIS Applications]*

School of Engineering & Technology (SET)

Field of Study

Structural Engineering (STE)

PENNUNG WARNITCHAI, B.Eng. (Hon), Chulalongkorn University, Thailand; D.Eng., M.Eng., University of Tokyo, Japan.

Associate Professor *[Earthquake Engineering]*

Contributing faculty members

School of Engineering & Technology (SET)

Field of Study

Remote Sensing and Geographic Information Systems (RS & GIS)

KIYOSHI HONDA, B.Agr., D.Eng., University of Tokyo, Japan.

Professor *[Real-time Mapping and Simulation of Geological Processes]*

NITIN KUMAR TRIPATHI, B.Tech., National Institute of Technology, Warangal, India; M.Tech., IIT; PhD, IIT, Kanpur, India.

Professor *[Remote Sensing and GIS for Disaster Mitigation]*

Water Engineering and Management (WEM)

MUKAND S BABEL, B.Eng., Rajasthan Agricultural University, India; M.Eng., D.Eng., AIT, Thailand.

Professor *[Drought Forecasting and Management]*

ROBERTO CLEMENTE, BSAE, University of the Philippines at Los Baños; M.Eng., AIT, Thailand; PhD, McGill University, Canada.

Professor *[Floods and Droughts]*

Geotechnical and Geoenvironmental Engineering (GTE)

NOPPADOL PHIEN-WEJ, B.Eng., Chulalongkorn University, Thailand; M.S., PhD, Illinois at Urbana-Champaign, USA.

Associate Professor *[Geological Hazards]*

School of Environment, Resources & Development (SERD)
Field of Study

Environmental Engineering and Management (EEM)

AJIT P ANNACHHATRE, B.Tech., PhD, Indian Institute of Technology, Kanpur, India.
Professor *[Health and Ecological Risk Management]*

CHETTIYAPPAN VISVANATHAN, B.Tech., IIT, Madras, India; M.Eng., AIT, Thailand; PhD, InstNatlPolytech, Toulouse, France.

Professor *[Environmental Hazards Mitigation]*

OLEG V SHIPIN, PhD, Institute of Biochemistry and Physiology of Microorganisms, Moscow, Russia.

Associate Professor *[EIA & Disaster Management]*

Gender and Development Studies (GDS*)*

KYOKO KUSAKABE, B.A., Sophia University, Tokyo, Japan; M.Sc., PhD, AIT, Thailand.

Associate Professor ***[****CBDRM & Gender Issues]*

Regional and Rural Development Planning (RRDP)

MOKBUL MORSHED AHMAD, B.Sc., M.Sc., Dhaka University, Bangladesh; M.Sc., AIT, Thailand; PhD, University of Durham, UK.

Associate Professor *[NGO Management, Community and Rural Development]*

Energy

SIVANAPPAN KUMAR, B.E., University of Madras, India; M.Eng., AIT, Thailand; PhD, Inst Natl Polytechnique, Toulouse, France.

Professor *[Climate Change Mitigation]*

Urban Environmental Management (UEM)

VILAS NITIVATTANANON, B.Eng., Chulalongkorn University; M.A., Thammasat University; M.Eng., AIT, Thailand; PhD, University of Pittsburgh, USA.

Assistant Professor *[Disaster Management in Urban Infrastructure Planning]*

Adjunct Faculty

JAYARAMAN K V POTTY, B.Sc. University of Kerala, India; M.Sc., Cochin University of Science and Technology, India; PhD, Indian Institute of Technology, New Delhi, India.

Chief Scientist, Regional Integrated Multi Hazard Early Warning

Systems (RIMES), *[Climate Prediction and Early Warning System]*

TAWATCHAI TINGSANCHALI B.Eng. (Hon) Chulalongkorn University, Thailand; M.Eng., Asian Institute of Technology, Thailand; D.Eng., Asian Institute of Technology, Thailand.

Chair Professor of Water Resources Engineering, Nakhon Pathom Rajabhat University *[Floods]*

Affiliated Faculty

AKIYUKI KAWASAKI PhD, Yokohama National University, Japan; M.S., Yokohama National University, Japan; B.S., Yokohama National University, Japan.

Visiting Faculty *[Geospatial Technologies for Multidisciplinary Disaster & Water research]*

A R SUBBIAH

Director, Regional Integrated Multi Hazard Early Warning Systems (RIMES), *[Climate Risk Management]*

LAL SAMARAKOON, B.Sc., University of Kelaniya, Sri Lanka; M.Sc., Saga University, Japan, PhD, Ehime University, Japan.

Director, Geoinformatics Center *[Geospatial Technology for Disaster Management]*

MANZUL KUMAR HAZARIKA, PhD, University of Tokyo, Japan; M.Eng., Asian Institute of Technology, Bangkok, Thailand; M.Tech., Indian Institute of Technology, Kharagpur; B.Tech., J N Krishi Vishwa Vidyalaya (J. N. Agriculture University), India.

Associate Director, Geoinformatics Center *[Disaster Risk Assessment, Managing Disasters and CBDRM]*

SUTAT WEESAKUL, D.Eng., M.Eng., Asian Institute of Technology; B.Eng., Chulalongkorn University, Thailand.

Affiliated Faculty *[Tsunami and Coastal Engineering]*

3. Grants and Sponsored Research Completed in 2019

Evidenced Based analysis of Flood Risk Management & Social Vulnerability-A System Approach in Sakon Nakhon Province, Thailand
Duration: 1-Feb-2018 to 30-Sep-2019
Project Investigator: Dr. Indrajit Pal
Total Contracted Amount (THB): 489,629.00

Disaster Resilience & Sustainable Development Education Network in Asia
Duration: 15-Mar-2018 to 30-Jun-2019
Project Investigators: Dr. Indrajit Pal, Dr. Sangam Shrestha
Total Contracted Amount (THB): 567,708.00

Training Program on Disaster Risk Management & Governance for Kenya officials
Duration: 7-Dec-2018 to 6-Dec-2019
Project Investigator: Dr. Indrajit Pal
Total Contracted Amount (THB): 1,360,795.20

4. On-going Grants and Sponsored Research

International Symposium on Disaster Resilience & Sustainable Development
Duration: 22-Feb-2019 to 31-Jul-2021
Project Leader: Dr. Indrajit Pal
Total contracted amount (THB): 150,000.00

Capacity Building through Curriculum Development: Conduct Various Trainings for Provincial & District Disaster Management Authorities & Line Department Government Officials
Duration: 15-Oct-2019 to 15-Jan-2021
Project Leader: Dr. Indrajit Pal
Total contracted amount (THB) 1,750,000.00

5. Publications

Papers in Refereed Journal

Itesh Dash, Masahiko Nagai, Indrajit Pal, Forecast Customization System (FOCUS): A Multimodel Ensemble-Based Seasonal Climate Forecasting Tool for the Homogeneous Climate Zones of Myanmar, Advances in Meteorology, Volume 2019. 15 pp.

Indrajit Pal, P Doydee, T Utarasakul, P Jaikaew, K AB Razak, G Fernandez, T Huang, C S Chen. System approach for flood vulnerability and community resilience assessment at the local level a case study of Sakon Nakhon Province, Thailand. Kasetsart Journal of Social Sciences.

K Munjuluri, Indrajit Pal. Geo-spatial Techniques for rapid Post Disaster Needs Assessment (rPDNA). International Journal of Recent Technology and Engineering, Volume 8.

Books

Indrajit Pal, Jason von Meding, Sangam Shrestha, Iftekhar Ahmed, Thayaparan Gajendran. An Interdisciplinary Approach for Disaster Resilience and Sustainability. Springer Singapore. Published Online in 2019, Printed Copy Published in 2020. ISBN 978-981-329-527-8

Book Chapters

T Sekac, SK Jana, Indrajit Pal, DK Pal. Application of Geospatial Technology in Earthquake Risk Assessment in Papua New Guinea. In: Pal I., von Meding J., Shrestha S., Ahmed I., Gajendran T, eds. An Interdisciplinary Approach for Disaster Resilience and Sustainability, pp 185-218. Springer Singapore.

A Khadka, Indrajit Pal. Post-earthquake Lessons for Improving Disaster Resilience of Cottage and Small Enterprises in Nepal. In: Pal I., von Meding J., Shrestha S., Ahmed I., Gajendran T, eds. An Interdisciplinary Approach for Disaster Resilience and Sustainability, pp 267-288. Springer Singapore.

A Parven, Indrajit Pal, C Wuthisakkaroon. Climate Smart Disaster Risk Management for a Resilient Community in Satkhira, Bangladesh. In: Pal I., von Meding J., Shrestha S., Ahmed I., Gajendran T, eds. An Interdisciplinary Approach for Disaster Resilience and Sustainability, pp 477-496. Springer Singapore.

6. Doctoral Students' Dissertation

Assessment of Earthquake-Induced Health Risks and Vulnerabilities in Khyber Pukhtunkhwah, Pakistan
By: Mr. Junaid Ahmad
Supervisor: Dr. Mokbul Morshed Ahmad

7. Masters Students' Theses and Research Studies

Community Perception of Flood Induced Health Risk in Sharg AL-Neel Locality, Khartoum, Sudan
By: Mr. Ahmed Abdelgadir Babiker
Supervisor: Dr. Indrajit Pal, Dr. Tahani Amin Mahmoud

Temporal Analysis of Short and Long-term Impacts of Drought on Public Health: A Case Study of North Kordofan, Sudan
By: Ms. Asrar Fadulelsied Adam Rabeah
Supervisor: Dr. Indrajit Pal, Dr. Heitham M.I. Awadalla

Health and Socioeconomic Impacts of Road Traffic Injuries among the Victims and their Families in Khartoum State (2010-2017), Sudan
By: Ms. Razan Abdalla Taha
Supervisor: Dr. Mokbul Morshed Ahmad, Dr. Tahani Amin Mahmoud

Assessing Flood Risk in the Rural Areas of Khyber Pakhtunkhwa in Pakistan
By: Mr. Farman Ullah
Supervisor: Dr. Mokbul Morshed Ahmad

Assessing the Gaps in the Current Operational Disaster Management Process through the Development of an Integrated Decision Support System in the Mozambique Context
By: Ms. Epifania Gercia Sacadura Huate
Supervisor: Dr. Indrajit Pal

Risk-Informed Decision Support System for Disaster Risk Management of Hydro-Meteorological Disasters in Fiji
By: Ms. Salote Salaiwalu Mounga Finemateaki Sarasau
Supervisor: Dr. Indrajit Pal

A Multi-Hazard Risk-Informed Decision Support System for Fiji: A Review of Tools and Technology
By: Ms. Savaira Vudele Sigawale
Supervisor: Dr. Indrajit Pal

Chapter 5: SCHOOL OF MANAGEMENT

1. Introduction

AIT School of Management (SOM) was established in October 1987 to meet the growing needs in Asia for graduate management education. In line with AIT's mission, SOM's objective is to make a difference in the quality of management education and practices in the Asia-Pacific region leading to sustainable development, technological leadership, entrepreneurial spirit, wealth creation and pride. SOM believes in the development of corporate leaders not just for the present but also for the future to face the challenges posed by the dramatic social, economic, political and technological changes in Asia. The programs at SOM offer a unique competitive advantage to managers and future leaders in the region.

Currently, SOM has students from over 40 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 or more 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.

2. Mission & Vision

Mission

To develop socially responsible global leaders who will enhance organizational performance for the growth and sustainable development of economies "and societies in Asia in particular and the world in general.

Vision

"To become the leading creator and disseminator of Asian management knowledge, practices and values"

3. School Governance

Dean of School

DONYAPRUETH KRAIRIT, BSc, Thammasat Univ, Thailand; MSc, Univ of Colorado at Boulder; PhD, Massachusetts Inst of Tech, Cambridge, USA.

Associate Professor *(Technology, Management, Management of Telecommunications Technologies and Public Policy)*

4. Management Development 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:

1. Corporate relationship management
2. Executive development programs
3. Organizing executive forums, workshops, seminars, and conferences
4. Other activities contributing to SOM's objectives

5. SOM Research Focus

SOM primary area of research focuses, but not limited to,

"THE BUSINESS AND INNOVATION MODELS FOR A GREEN ECONOMY".

Under this thematic area, there are five sub-thematic areas, including:

1. Sustainability and Corporate Social Responsibility in Business
2. Climate Change Policy and Corporate Compliance
3. Social responsibility, Behavioral Change and Social Impact
4. Innovation in Green Products and Services
5. Technology needs assessment and transfer

6. 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, built-in desktop PC, laptop and wireless internet connection.

The School of Management 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.
Computer Lab 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.

7. Faculty and Research Staff

Full-time Faculty

YUOSRE F. BADIR, BSc., University of Garyounis, Libya; M.Sc., University of Putra Malaysia; M.Sc., Ph.D (MOT), EPFL Lausanne, Switzerland

Associate Professor *(Technology, International Strategic Alliance, Organization Theory and Design)*

BARBARA IGEL, BA, MA, Technical Univ, Berlin; PhD, Freie Univ, Berlin, Germany.

Associate Professor *(High-tech Entrepreneurship; Industrial Economics; Knowledge Management; Management of Innovation)*

SUPASITH CHONGLERTTHAM, B. Eng., Chulalongkorn Univ, Thailand; MBA Finance, Tulane Univ, USA; PhD, Univ of Hawaii, Manoa, USA

Senior Instructor *(Corporate Finance, Derivatives, Corporate Governance, Financial Accounting)*

JUTHATHIP JONGWANICH, BA, MA, Thammasat Univ, Thailand; PhD, The Australian National University, Australia

Assistant Professor *(International Economics, Multinational Enterprises, Managerial Economics and Business environment)*

DONYAPRUETH KRAIRIT, BSc., Thammasat Univ, Thailand; MSc., Univ of Colorado at Boulder; PhD, Massachusetts Inst of Tech, Cambridge, USA.

Associate Professor *(Technology, Policy and Management)*

SUNUNTA SIENGTHAI, BA, Chulalongkorn Univ, Thailand; MA, PhD, Univ of Illinois at Urbana-Champaign, USA,

Associate Professor *(Labor & Industrial Relations, HRM, Wages & Productivity)*

VATCHARAPOL SUKHOTU, BEng, Kasetsart Univ, Thailand; MEng, Univ of Houston, Texas, USA; PhD, Texas A&M Univ, College Station, Texas, USA

Assistant Professor *(Operation Management and Supply Chain Management)*

WINAI WONGSURAWAT, B.A.S (Econ & Math., Comp. Sc.) Stanford University, USA; PhD. (Managerial Econ and Strategy), Kellogg School of Management, Northwestern University, USA

Assistant Professor *(Strategic Management)*

Visiting and Adjunct Faculty

EVANGELOS ANGELOS AFENDRAS, B.A., M.A, Ph.D (Humanities-Linguistics) The John Hopkins Univ., USA.

Adjunct Faculty *(Cross-Cultural Management, Organization Behavior, Management of Change)*

Prof. HITENDRA BARGAL, MBE, LLM, PhD Indore University, India,

Visiting Professor (*Marketing & Entrepreneurship)*

URS BUMBACHER, M.A, Ph.D (Economics & Business Admin.), Univ. of Basel, Switzerland.

Adjunct Professor *(International Business)*

Dr. GAUTAM KMAR DUTTA, B.E, MBA, Ph.D. – IIT, India

Visiting Associate Professor (*International Marketing, Marketing Management, Technology Innovation Management, Entrepreneurship and Small Business Development*)

Prof. GEETIKA GOEL, Ph.D University of Allahabad- India

Visiting Professor *(Technology & Development, High Tech Entrepreneurship)*

RUDOLF GRUENIG, Ph.D (BA), University of Bern, Switzerland.

Adjunct Faculty *(Strategic Management)*

ROLAND AMOUSSOU-GUENOU, LL.B in Business Law, National Univ. of Benin. LL.M in International Business Law, Univ. of Toulouse. Ph.D. in International Law, Univ of Paris, France.

Adjunct Faculty (*Policy and Legal Issues)*

NAZRUL ISLAM, BScEEng, BUET, Bangladesh; MEng, DEng, AIT, Thailand.

Visiting Professor (*Management of Technology; Technology and Development; Technology Policy; Technology Transfer*)

LALIT M JOHRI, BSc (Hons), MSc, MBA, PhD, Univ of Delhi, India.

Adjunct Faculty (*International Business; International Joint Ventures; Marketing; Negotiations; Strategic Management*)

ILKKA KAURANEN, MS Engg, Lic Tech, DTech, Helsinki University of Technology, Finland.

Adjunct Professor *(Development and Management in Industry)*

ROBERT S. KIETEL, BA, Univ. of Colorado; Ph.D, De La Salle University, The Philippines.

Adjunct Faculty (*HRM, Leadership*)

TRITOS LAOSIRIHONGTHONG, Ph.D., (Management of Technology) School of Management, AIT, Thailand

Adjunct Faculty *(Manufacturing Strategy and Supply Chain Management)*

Prof. KALPANA MATHUR, PhD in Human Resource Management, Jai Narain Vyas University (JNVU) - India

Visiting Professor *(Human Resource Management)*

PETER MOSER Ph.D., M. Econ., University of St. Gallen, Switzerland

Visiting Faculty (*European Integration and International Trade Policy)*

LOGAN MULLER, Ph.D (Sustainability), Kennedy Western University, USA.

Adjunct Faculty *(International Business)*

INDRA M PANDEY, MComm, PhD, Univ of Delhi, India.

Adjunct Professor *(Corporate Finance, Emerging Capital Markets)*

ASHISH SADH, M.B.A., A.P.S. Univ., Rewa. Ph.D (Marketing) Devi Ahilya Univ., Indore.

Adjunct Faculty *(Sales and Marketing)*

RAGNAR THOR GRUNDTVIG SEGAARD, Ph.D, London School of Foreign Trade, England, Master of Business Administration, University of Gothenburg, Sweden

Adjunct Faculty *(Finance)*

FREDRIC W SWIERCZEK, BA, Temple Univ, USA; MA, PhD, Univ of Pittsburgh, Pennsylvania, USA.

Visiting Associate Professor *(Behavioral Science; Organizational Development)*

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*)

ALLAN WILLIAM, B.Ed., Univ. of Tasmania; MSc., Ph.D (Organization Development) MITASH Univ., USA.

Adjunct Faculty (*Organization Behavior, Leadership & Business Performance)*

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)*

8. Grants and Sponsored Research Completed 2019

Doctor of Business Administration
Duration: 1-Aug-2012 to 31-Jun-2019
Project Investigator: Winai Wongsurawat
Total Contracted Amount (THB): 19,440,000.00

International Week-Uniglobe College
Duration: 28-Jan-2019 to 31-Jan-2019
Project Investigator: Prof. Nazrul Islam
Total Contracted Amount (THB): 267,300.00

9. On-going Grants and Sponsored Research

International Executive MBA-Vietnam for Hanoi 16
Duration: 1-Oct-2015 to 31-Dec-2020
Project Investigators Prof. Nazrul Islam
Total Contracted Amount (THB): 9,520,000.00

International Executive MBA-Vietnam for HCMC#12
Duration: 1-Aug-2015 to 1-May-2020
Project Investigator: Prof Nazrul Islam
Total Contracted Amount (THB): 9,520,000.00

10. Publications

Papers in Refereed Journals

M Dost, Y Badir. Generation or adoption? The role of social capital. Management Decision, Volume 2, pp. 1457-1471

Adeel Tareq, Umar Safdar. Linking firms' life cycle, capabilities, and green innovation. Journal of Manufacturing Technology Management, pp. 284-305

Adeel Tareq, Y Badir, Supasith Chonglerttham. Green innovation and performance: moderation analyses from Thailand. European Journal of Innovation Management, Volume 3, pp. 446-467

Appinya Kamolsook, Y Badir, B Frank. Consumers' Switching to Disruptive Technology Products: The Roles of Comparative Economic Value and Technology Type. Journal of Technological Forecasting & Social Change. Volume 140, pp. 328-340.

V Yukongdi, J Canete. The Influence of Family, Human, Social Capital & Government Support Services on Women Entrepreneurial. The Interdisciplinary Approach to Research, Innovation and Practice. 9-10 June 2019, Bangkok, Thailand. Society of Interdisciplinary Business Research.

V Yukongdi, P Shrestha. The Influence of Affective Commitment, Job Satisfaction and Job Stress on Turnover Intention: A Study of Nepalese Bank Employees. The Interdisciplinary Approach to Research, Innovation and Practice. 9-10 June 2019, Bangkok, Thailand. Society of Interdisciplinary Business Research.

11. Doctoral Students' Dissertation

DBA

Change Management and Automation in the Public Sector: An Exploratory Case Study of Sri Lanka Customs
By: Mr. Manuelpillai Rajkumar Rajmohan
Supervisor: Dr. Winai Wongsurawat, Dr. Yuosre F. M. Badir

Crisis Leadership Competencies: The Facility Management Sector in Thailand
By: Mr. Boonkiat Wisittigars
Supervisor: Prof. Sununta Siengthai

Factors Influencing Managed Services Adoption in the Telecommunication Industry: A Case of Mobile Telephone Operators in Sri Lanka
By: Mr. Mohamed Ismail Abdul Hassan
Supervisor: Prof. Nazrul Islam

Knowledge Transfer from International Consultants to Local Partners in Metro Projects in Vietnam
By: Mr. Nguyen Ngoc Son
Supervisor: Prof. Nazrul Islam

The Effects of Organizational Culture and Commitment on Employee Innovation in Vietnam's IT Industry
By: Mr. Nguyen The Vinh
Supervisor: Prof. Sununta Siengthai

Vital Characteristics of Successful Entrepreneurs: Self-Perception of Selected Entrepreneurs in Northeastern Thailand
By: Ms. Amornwan Rangkoon
Supervisor: Dr. Winai Wongsurawat, Dr. Vimolwan Yukongdi

Housing Demand for Bangkok Metropolis and Vicinities
By: Mr. Pairote Srivarasat
Supervisor: Dr. Vimolwan Yukongdi, Dr. Winai Wongsurawat

Exchange Rate Estimation and Identifying the Critical Factors: A Case Study of AUD/USD
By: Ms. Jae-huei Jan
Supervisor: Dr. Arun Kumar Gopalaswamy, Dr. Yuosre F. M. Badir

PhD

The Dynamics of Trust and Control in the Governance of University-Firm R&D Alliances for NPD in a Developing Economy
By: Mr. Somchai Ruangpermpool
Supervisor: Prof. Barbara Igel

Corporate Social Responsibility (CSR) Managers' Skills and Competencies: The Best Cases in Thailand
By: Ms. Nadhakan Shinnaranantana
Supervisor: Prof. Sununta Siengthai

Challenges for Biorefinery Development in Thailand
By: Mr. Burin Sukphisal
Supervisor: Dr. Winai Wongsurawat

Consumer Switching to Disruptive Technology Products: The Roles of Comparative Economic Values and Technology Types
By: Ms. Apinya Kamolsook
Supervisor: Dr. Yuosre F. M. Badir

Determinants of Capital Structure and Firm Performance: Evidence from Asia
By: Ms. Qurat-Ul-Ain Zafar
Supervisor: Dr. Yuosre F. M. Badir, Dr. Winai Wongsurawat

Firm Life Cycle, Green Innovation and Firm's Financial Performance: The Role of a Firm's Resources and Environmental Factors
By: Mr. Adeel Tariq
Supervisor: Dr. Supasith Chonglerttham, Dr. Yuosre F. M. Badir

Public Sphere Deliberation as an Approach to Local Public Enterprise Reform: Evidence from Naga City People's Mall in the Philippines
By: Ms. Rhea Ledesma Gumasing
Supervisor: Dr. Yuosre F. M. Badir, Dr. Willi Zimmermann

Using Extended Universal Theory of Acceptance and Use of Technology (UTAUT) to Explain the Impacts of ICT Instructors' Characteristics on Students' Performance
By: Ms. Idorenyin Idorenyin Thomas Ukut
Supervisor: Dr. Donyaprueth Krairit

Determinants of Foreign Direct Investment (FDI) in the Power Sector: Evidence from Bangladesh
By: Mr. Tareq Mahbub
Supervisor: Dr. Juthathip Jongwanich

12. Masters Students' Theses, Research Studies and Projects

The Role of External Debt on Economic Growth: An Econometric Analysis on Bangladesh
By: Mr. Rajib Hassan
Supervisor: Prof. Shyamal Roy

Critical Success Factors for Public-Private Partnerships in Bangladesh: Evidence from the Field
By: Ms. Nazia Haque
Supervisor: Dr. Sundar Venkatesh

An Analysis of Issues Related to the Development of G-Sec Market in Bangladesh
By: Ms. Tamzida Monowara
Supervisor: Mr. Weerakoon A. Wijewardena

Streamlining the Remittance Flow: Issues, Prospect and Suggestions for Bangladesh
By: Ms. Afsana Chowdhury
Supervisor: Mr. Weerakoon A. Wijewardena

Analyzing Bangladesh Country Risk Report and its Impact on Foreign Direct Investments (FDI)
By: Mr. Md. Anwarul Haque
Supervisor: Dr. Sundar Venkatesh

Macroeconomic and Socio-Political Determinants of Private Sector Investment in the Context of Bangladesh
By: Mr. Mustafa Sadee Sabereen Towhid
Supervisor: Prof. Shyamal Roy

Regulation and its Impact on the Service Quality of Commercial Banks: The Case of Know Your Customer (KYC)
By: Mr. N. A. M. Sarware Akhtar
Supervisor: Dr. Sundar Venkatesh

The Impact of Branch Network on Bank Performance in Bangladesh
By: Mr. Mohammad Saiful Islam
Supervisor: Dr. Sundar Venkatesh

Foreign Exchange Reserve Management in Central Banks: Adequacy and Risk-Return Appetite Related to Bangladesh Bank
By: Mr. Md. Jaynul Abedeen
Supervisor: Mr. Weerakoon A. Wijewardena

Capacity Building for Managing Non-Performing Loans (NPLs) in Bhutan: A Case Study of Bhutan Development Bank (BDB)
By: Mr. Namgay Rinchen
Supervisor: Mr. Weerakoon A. Wijewardena

Strategies to Strengthen Sustainable Community Centre Operations: A Study of Bhutan Development Bank
By: Mr. Yeshey Jamtsho
Supervisor: Dr. Sundar Venkatesh

A Market Development Strategy for Bao Tin Minh Chau Limited Company
By: Ms. Hoang Thu Hong
Supervisor: Prof. Sununta Siengthai

Solutions to Improve Human Resource Management in the Mechanical and Energy Division of VIETSOVPETRO
By: Mr. Pham Minh Duc
Supervisor: Dr. Fredric W. Swierczek

Improving Information Technology Service Quality at Ho Chi Minh Power Company (EVNHCMC)
By: Mr. Le Chi Dung
Supervisor: Dr. Fredric W. Swierczek

A Differentiation Strategy for Golden Gate Restaurant Group
By: Mr. Ha Thuc Tu
Supervisor: Dr. Fredric W. Swierczek

Market Research for the Development of G3 a Dietary Supplement Product of Nu Skin Vietnam Co. Ltd.
By: Ms. Do Thi Thanh Binh
Supervisor: Dr. Fredric W. Swierczek

Management of Organizational Change in Vietsovpetro
By: Mr. Duong Hoang Hai
Supervisor: Dr. Fredric W. Swierczek

Improving EPC Project Management System of Vietsovpetro: A Case Study of the Beluga Project
By: Mr. Dang Duc Phong
Supervisor: Dr. Do Ba Khang

Developing a Strategy for the Petroleum Equipment Assembly and Metal Structure JSC (PVC-MS)
By: Mr. Tran Sy Huan
Supervisor: Dr. Fredric W. Swierczek

A Change Strategy for Long-Term Development of VIETSOVPETRO Joint Venture (Vietnam)
By: Mr. Nguyen The Kim
Supervisor: Dr. Fredric W. Swierczek

Analyzing the Failure of a Startup in Vietnam: A Case of Sensecom Vung Tau Center
By: Mr. Vu Ngoc Bao
Supervisor: Dr. Fredric W. Swierczek

An Analysis of the Performance of PTSC CGGV Geophysical Survey Co., Ltd.
By: Mr. Nguyen Hoang Hai Minh
Supervisor: Dr. Fredric W. Swierczek

Safety Management Improvement in Shoe Majesty Plant in Vung Tau, Vietnam
By: Ms. Le Thuy Vu Linh
Supervisor: Dr. Fredric W. Swierczek

Improvement of PVGAS D's Firm Performance by Enhanced Management of Technology and Human Resources
By: Mr. Nguyen Nhat Quoc Toan
Supervisor: Prof. Marie-Therese Claes

Employee Motivation and Corporate Performance at Honda Vietnam
By: Mr. Nguyen Duc Toan
Supervisor: Dr. Fredric W. Swierczek, Prof. Sununta Siengthai

Marketing Strategy with Facebook: The Key Success Factor of Lazada and FAB
By: Mr. Ngo Manh Cuong
Supervisor: Dr. Huynh Trung Luong, Dr. Fredric W. Swierczek

A New Hydropower Project Management Board in Vietnam Electricity: A Case Study of Son La
By: Mr. Bui Phuong Nam
Supervisor: Dr. Fredric W. Swierczek

A Strategic Plan for the System and Market Operator in Vietnam: A Case Study of National Load Dispatch Center
By: Mr. Khuat Tuan Anh
Supervisor: Dr. Fredric W. Swierczek

Financial Management Solutions in the Vietnam Electricity Corporation
By: Ms. Nguyen Minh Hang
Supervisor: Dr. Fredric W. Swierczek

Operational Improvement of Customer Service Performance in Vina Kraft Paper Company Limited
By: Ms. Nguyen Thanh Thien Van
Supervisor: Dr. Fredric W. Swierczek

A Business Model for Solar Rooftop Power Investment in Ready Built Factories in Amata Industrial Park
By: Mr. Nguyen Huu Nghi
Supervisor: Dr. Fredric W. Swierczek

Improving Work Climate to Enhance Employee Retention and Increase Organization Performance: .A Case Study of TPC VINA Plastics & Chemical Corp., Ltd.
By: Mr. Nguyen Huu Nghia

Supervisor: Dr. Alan Williams

PSO-based Decision Tools to Optimize Operation of Thac Mo Hydropower Reservoir in Vietnam Electricity Market
By: Mr. Le Minh Tuan
Supervisor: Dr. Do Ba Khang

Identifying Stategic Partner for Hanoi Construction Consultant and Urban Development Investment Joint Stock Company (HACID)
By: Ms. Nguyen Thi Hau
Supervisor: Dr. Fredric W. Swierczek

Improving the Performance of VNPT Pay
By: Mr. Pham Hai Quan
Supervisor: Dr. Fredric W. Swierczek

Digital Transformation in Vietnam Posts and Telecommunications Group from Strategy to Implementation
By: Mr. Hoang Trong Tu
Supervisor: Dr. Fredric W. Swierczek

Project Management Solutions for the 110v Substation at Long Thanh High Tech Industrial Park
By: Mr. Chu Phuong Hong
Supervisor: Dr. Fredric W. Swierczek

A Recycling Plastic Waste Business Model for Mahachem
By: Ms. Tran Bui Du Ty
Supervisor: Dr. Fredric W. Swierczek

Developing a Business Process Management Solution: The Case of Phu Nhuan Jewelry Joint Stock Company
By: Mr. Nguyen Duc Doanh
Supervisor: Prof. Barbara Igel

HR Digital Transformation in Saigon Hanoi Commercial Bank
By: Ms. Pham Thi My Duyen
Supervisor: Dr. Yuosre F. M. Badir

Increasing Retention by Improving Employee Engagement in the Olympia Schools
By: Ms. Nguyen Hanh Chi
Supervisor: Dr. Fredric W. Swierczek

Attracting Young Readers to the Dan Tri Online Newspaper
By: Ms. Le Thu Lan
Supervisor: Dr. Fredric W. Swierczek

A Design for Advanced Analytics to Improve Customer Loyalty in Techcombank
By: Mr. Nguyen Ngoc Thanh
Supervisor: Dr. Fredric W. Swierczek

The Influence of Quality of Work Life and Job Motivation on Job Satisfaction: Evidence from a Ready-Made Garment Organization in Bangladesh
By: Ms. Arshada Parven
Supervisor: Dr. Vimolwan Yukongdi

The Role of Migration and Remittances in Poverty Reduction: The Case of Nepal, 2009-2017
By: Mr. Ajaya Kusum Adhikari
Supervisor: Dr. Winai Wongsurawat

The Influence of Resilience, Commitment and Coping Strategies on Organizational Citizenship Behavior Among Filipino Employees
By: Mr. Christopher Arcite Landicho
Supervisor: Dr. Vimolwan Yukongdi

Impact of Primary and Secondary Colors on Marketing Communication: A Study of Postgraduate Students from South and Southeast Asia
By: Ms. Roshlina Bajracharya
Supervisor: Prof. Barbara Igel

Determinants of Job Satisfaction: A Study of Commercial Bank Employees of Nepal
By: Ms. Suprabha Sharma
Supervisor: Dr. Vimolwan Yukongdi

Customer Satisfaction on Electronic Banking Services of Nepalese Commercial Banks
By: Ms. Shristi Tamrakar
Supervisor: Dr. Winai Wongsurawat

The Impact of Corporate Social Responsibility on Brand Image in Nepal's Commercial Banking Sector
By: Ms. Avashana Poudyal
Supervisor: Dr. Vimolwan Yukongdi

Organizational Resources and Green Performance: The Role of Board of Directors' Composition, Slack Resources and R&D Intensity
By: Ms. Gayani Madhushanthi Ranasinghe
Supervisor: Dr. Yuosre F M Badir

Factors Influencing Consumer Purchasing Decision Towards Snack Food in Pokhara City, Nepal
By: Mr. Bijay Sigdel
Supervisor: Prof. Nazrul Islam

Caste-based Business in Nepal: A Case Study of the Garment Business
By: Mr. Ashish Tuladhar
Supervisor: Dr. Winai Wongsurawat

Students' Entrepreneurial Intention Towards Social Entrepreneurship and the Role of Human Capital, Social Capital and University Environment: A Study of University Students in Bangladesh
By: Mr. H.M. Kamrul Hassan
Supervisor: Dr. Vimolwan Yukongdi

Determinants Affecting Consumers' Perceived Value of Circular Economy Products: A Case Study of Postal Packaging in Thailand
By: Mr. Ekachai Lojanaphiwat
Supervisor: Dr. Yuosre F M Badir

Impact of Intellectual Capital on External Technology Acquisition: The Moderating Role of Organizational Slack and Competitive Intensity
By: Mr. Manish Shrestha

Supervisor: Dr. Yuosre F M Badir

Does Gamification Enhance the Learning Performance of Postgraduate Students? A Case Study of Management Students in a Multinational University
By: Mr. Sudeep Manandhar
Supervisor: Prof. Barbara Igel

Role of Family, Human Capital, Social Capital and Government Support Services on Women Entrepreneurial Start-Up Decisions: A Qualitative Study
By: Ms. Jennyvi Mosuta Ca?ete
Supervisor: Dr. Vimolwan Yukongdi

Consumer Decision-Making Process on Electric Vehicles in Thailand
By: Ms. Tina Marie Rodvong
Supervisor: Dr. Winai Wongsurawat

The Effect of Capital Structure on the Financial Performance of Thailand's Food and Beverage Sector
By: Mr. Cornelius Susanto
Supervisor: Dr. Supasith Chonglerttham

Factors Affecting the Purchase Intention Towards Counterfeit Fashion Products: An Enquiry among Working Professionals in Nepal
By: Ms. Sirapa Malla
Supervisor: Dr. Vimolwan Yukongdi

The Influencing Factors of Higher Education Planning in the Northeastern Region of Thailand
By: Ms. Benchawan Saengwato
Supervisor: Dr. Vatcharapol Sukhotu

E Rickshaw Adoption in Guwahati-India: A Study of Customer Perceptions
By: Ms. Swagata Bardoloi
Supervisor: Prof. Barbara Igel

The Influence of Affective Organizational Commitment, Job Satisfaction and Job Stress on Turnover Intention: A Study of the Employees of Bank of Kathmandu Lumbini Ltd.
By: Ms. Pooja Shrestha
Supervisor: Dr. Vimolwan Yukongdi

Factors Affecting Employee Motivation in the Workplace: A Study based on JAC Recruitment, Vietnam
By: Ms. Nguyen Thuy Duong
Supervisor: Dr. Vimolwan Yukongdi

Service Quality and Customer Satisfaction Analysis for Online-to-Offline Food Delivery Service Commerce: A Case Study of Meituan Waimai in Beijing
By: Ms. Zhang Yingying
Supervisor: Dr. Winai Wongsurawat

Attitudes Towards Non-Deceptive Online Counterfeit Consumption of Luxury Clothing: The Case of Young Chinese Consumers
By: Ms. Xiaochi Gu
Supervisor: Dr. Willi Zimmermann

Customers' Adoption of Banking Channels in Nepal
By: Ms. Dristi Silwal
Supervisor: Dr. Sundar Venkatesh

Assessment of Brain Drain and Its Impact on the Sending Economy: A Case Study of Nepal
By: Ms. Apresha Silwal
Supervisor: Dr. Winai Wongsurawat

Implementing Social Marketing on Job Ability for People with Autistic Spectrum Disorder: A Case Study of Autistic Thai Foundation
By: Ms. Nuttha Kraisit
Supervisor: Dr. Winai Wongsurawat

Integrated Marketing Communications (IMC) in Suburban Businesses Operated by Entrepreneurs in Nongchock, Thailand
By: Ms. Patcharin Bamrung
Supervisor: Prof. Barbara Igel

Disruptive Innovation in Fast Fashion Retailing: A Case Study of OWNDAYS in Thailand
By: Mr. Bishal Raj Paudyal
Supervisor: Dr. Yuosre F. M. Badir

The Impact of Workplace Environment on Employees' Performance in Commercial Banks in Nepal
By: Ms. Narayani Bista
Supervisor: Dr. Vimolwan Yukongdi

Factors Affecting Consumer Purchase Intention Toward VINFAST Cars in Vietnam Applying the Concept of Complex Decision Making Process
By: Miss Pham Thi Ngoc Lien
Supervisor: Dr. Winai Wongsurawat

Improving the Vietnam-German Development Cooperation by Making Coordination and Communication More Effective in Power Distribution Projects in Vietnam
By: Ms. Pham Thu Hang
Supervisor: Dr. Willi Zimmermann

Consumer's Intention to Use the QR Code Mobile Payment System in Restaurants in Bangkok, Thailand
By: Mr. Minnat Joshi
Supervisor: Prof. Nazrul Islam

The Influence of Customer Experience Clues on Customer Satisfaction in the Tourism and Hotel Industry of Nepal
By: Mr. Ashav Shrestha
Supervisor: Dr. Vimolwan Yukongdi

Effect of Personality Traits and Social Interaction on Satisfaction with Investment Performance: An Empirical Study of Nepalese Individual Investors
By: Ms. Shriya Buddhacharya
Supervisor: Dr. Vimolwan Yukongdi

Factors Affecting Customers' Switching Behavior in the Nepalese Banking Sector
By: Mr. Krishna Bhattarai
Supervisor: Dr. Vimolwan Yukongdi

Analysis of Capital Structure in Power Companies in Asian Economies
By: Mr. Ashish Shrestha
Supervisor: Dr. Sundar Venkatesh

Impact of National Culture on Entrepreneurial Intention in Least Developed Country: The Case of Nepal
By: Mr. Rochak Bohora
Supervisor: Prof. Barbara Igel

The Influence of Service Quality and Price Fairness on Customer Satisfaction of a Low-Cost Carrier in Vietnam
By: Ms. Nguyen Thi Hang Nga
Supervisor: Dr. Vimolwan Yukongdi

The Effect of Rewards and Employee Motivation on Performance: A Study of Employees in the Banking Industry in Nepal
By: Ms. Prithiviya Thapa
Supervisor: Dr. Vimolwan Yukongdi

Options to Replace Disposable Plastic Mugs - A Consumer Study in Thailand
By: Ms. Cecile Marchasson
Supervisor: Prof. Barbara Igel

The Actual French Tech Ecosystem's Ability to Create Unicorns
By: Mr. Erwin Saleur
Supervisor: Prof. Barbara Igel

Financial Risks in Hydropower Investments in Southeast Asia: Identification, Analysis and Mitigation
By: Mr. Martin Peter Bieri
Supervisor: Dr. Sundar Venkatesh

Chapter 6: AIT EXTENSION

6.1 Introduction

AIT Extension's programs and services complement those of AIT's graduate degree programs, and contribute to AIT's mission by enabling a flexible, innovative, and client-oriented response to emerging and changing needs in the region.

AIT Extension is the Institute-wide center principally responsible for continuing professional and executive development, with a mission that complements that of the Schools. It specializes in customized capacity building and professional development services for practicing professionals, and has expertise in designing and implementing programs for diverse clients in many sectors. Expert resources include internal staff, AIT faculty members, and experts in relevant fields based in Thailand and the region. AIT Extension also provides support services and staff development programs to other units at AIT.

6.2 Mission

To design and deliver continuing, professional and executive education, and other capacity development services required by our clients by drawing on the expertise of AIT faculty and experts in AIT's network.

6.3 Unit Governance

Courses and Services

AIT Extension is led by an Executive Director. In collaboration with the AIT President, to whom he reports, the Executive Director is responsible for defining the strategic direction of AIT Extension, and executing its programs.

Senior colleagues each lead a client portfolio, and are responsible for client relationship management and leading program design teams that respond to clients' requirements. Program work is supported by an administrative and technical team, led by a Coordinator, and by a Client Management and Marketing team.

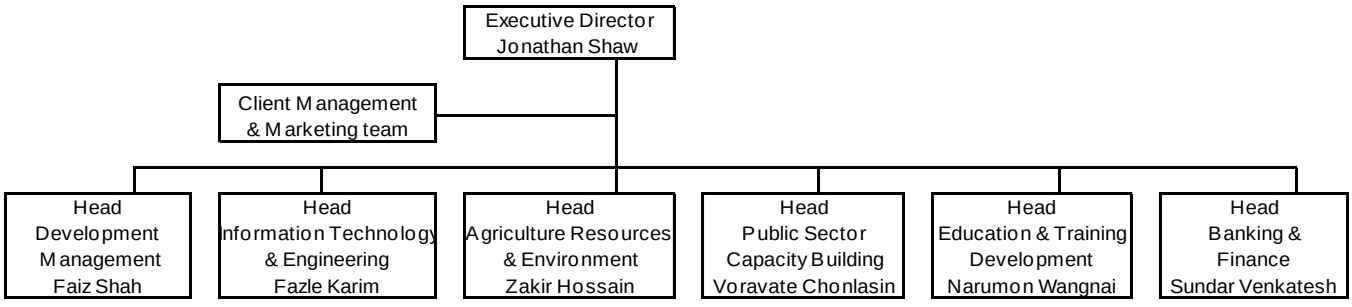
AIT Extension offers courses in the following specializations:

- Agriculture and Food Processing
- Environment and Natural Resources Management
- Education and Training Development
- Poverty Reduction and Livelihoods Development
- Business Performance, Management and Strategy
- Development Effectiveness
- Public Sector Services and Management
- Private Sector Development
- Information and Communication Technologies
- Information and Communication Management
- Banking and Finance.

Most international training courses usually last from one to three weeks.

Customized Courses

AIT Extension specializes in designing, developing and implementing short courses to the specifications of particular client



organizations. Every organization with which we work is unique; and change interventions required by our clients are most usually specific to that organization. Wherever required, therefore, we work closely with our clients to develop unique training solutions that meet their specific needs. This process will usually start with the clients' own terms of reference, to which AIT Extension responds. Meetings are scheduled with the client to discuss all aspects of the required training, and to ensure that the client's needs are met.

Exposure Visit Programs

Many professionals are interested in field visits to observe best practices in their field. Exposure visits are designed to provide senior government officials and decision makers with opportunities to visit and observe current technology and practices in their fields, to exchange information, to exchange experiences with local counterparts, project personnel and beneficiaries on development and management of similar projects, and to exchange views with participants from other countries. At the end of each program, a seminar is conducted at AIT to enable participants to reflect on what has been learned and what can be adapted to their own development contexts.

Thailand provides numerous examples of best practice in a wide diversity of fields. AIT Extension is also experienced in organizing exposure visit programs to many countries in the region, with recent experience in Vietnam, Laos, Malaysia, Korea, Philippines, Indonesia, Singapore and the UK.

Consulting Services

AIT Extension professional staff offer a wide range of technical assistance and consulting services. These include:

• Human Resource Development: Development of human resource development (HRD) programs and projects; assessment of training needs in organizations; evaluation of training courses, projects or plans; review and evaluation of the management and operation of training centers; management and implementation of training development projects.

• Educational Development: Curriculum design and development; evaluation of educational programs and projects; management and implementation of educational development projects; report writing and documentation.

• Organizational change and development: Strategic planning.

• Information Technology: Strategic information technology. Planning; information system analysis and design; IT project management.

6.4 Learning Approach

Our teaching and learning approach is to apply best practices in training, based on established principles of adult learning.

AIT Extension training strategies are consistent with the principles of adult learning: peer learning, reflective thinking, problem-based learning, participatory learning and experiential learning. We aim to maximize learning by mixing these approaches appropriate to each learning context.

Methods used include short presentations, group discussions, case studies, workshops, individual exercises, simulation, role plays, project work, peer learning and exposure visits. Training sessions are designed to allow participants the scope to interact with resource persons and actively engage in the learning process.

Participants benefit from close personal attention by AIT Extension staff. Our courses provide five to six hours of workshop sessions every weekday, with extensive social and cultural trips organized at the weekends in courses of two weeks or longer. IT relevant and appropriate to every group of participants are incorporated into the course design.

Feedback from participants in one course is a critical input to subsequent courses. All our training courses are undertaken with the aim of continuous quality improvement.

All AIT Extension activities take advantage of AIT's academic and social environment, and the Institute's multicultural English-speaking academic community.

6.5 Training Resources

AIT Extension's professional staff members are specialists in continuing professional education, assessments, and monitoring & evaluation, learning facilitation, and related disciplines.

AIT Extension academic and professional Resource Persons are drawn principally from AIT's schools, and from leading international and local organizations based in Thailand.

For specific technical expertise, AIT Extension enters into

complementary partnerships with organizations and individuals with relevant technical expertise. For courses in third countries, AIT Extension works with country partners with relevant local knowledge.

Most courses are delivered in the AIT Hotel and Conference Center, which has hotel accommodation for almost 200 participants, an auditorium seating 300, and 10 training rooms for groups ranging in size from 10 to 50 participants. AIT's campus also has student dormitory accommodation, a medical clinic, an international cafeteria, several restaurants and sports facilities, including tennis and squash courts, football and cricket fields, a golf course and a swimming pool.

6.6 Trainings Completed in 2019

Bangchak Social Business Design Project
Duration: 1-Jun-2018 to 29-Apr-2019
Project Leader: Panchica Koonchaimang
Total contracted amount (THB): 629,999.99

SDGs Entrepreneurship Field Study Program
Duration: 3-Aug-2018 to 20-Apr-2019
Project Leader: Panchica Koonchaimang
Total contracted amount (THB): 472,480.00

Comprehensive Financial Solutions for City Resilience Conference
Duration: 21-Jun-2018 to 8-Feb-2019
Project Leader: Panchica Koonchaimang, Parichad Nuntavong
Total contracted amount (THB): 2,474,236.80

Procurement & Contract Management FIDIC Batches 2 & 3
Duration: 21-Mar-2018 to 30-Mar-2019
Project Leader: Rowena C. Alcoba
Total contracted amount (THB): 8,808,800.00

Customer Service Management Provident Fund Nepal
Duration: 11-Apr-2018 to 28-Feb-2019
Project Leader: Suthida Phosuwan
Total contracted amount (THB): 900,000.00

Leadership Development for Research Managers
Duration: 15-May-2018 to 7-Apr-2019
Project Leader: Md. Anishur Rahman
Total contracted amount (THB): 878,400.00

Leadership & Organizational Renewal
Duration: 22-May-2018 to 31-Dec-2019
Project Leader: Chatchata Prasongsuk
Total contracted amount (THB): 851,840.00

Public Finance & Risk Management (Batch 3)
Duration: 18-Jun-2018 to 11-Jan-2019
Project Leader: Phyu Sin
Total contracted amount (THB): 843,500.00

Governance & Anti-corruption: The Methods & Tools behind & Effective Corruption
Duration: 18-Jun-2018 to 5-Jan-2019
Project Leader: Worawan Sumroetrum
Total contracted amount (THB): 1,032,000.00

Training Course on: planning, Implementation & Management of Effective Signal & Traffic Control Systems with Awareness
Duration: 21-Jun-2018 to 9-Jan-2019
Project Leaders: Kanlaya Muangsan, Dr. Pradeep Kumar Dash
Total contracted amount (THB): 816,000.00

Pump Technology for Water Supply
Duration: 21-Jun-2018 to 4-Mar-2019
Project Leader: Worawan Sumroetrum
Total contracted amount (THB): 576,000.00

Road Design & Construction Engineering
Duration: 21-Jun- 2018 to 9-Jan-2019
Project Leader: Tharakorn Chanlapa
Total contracted amount (THB): 775,000.00

Aquaculture Development & Aquatic Resources Management in South & Southeast Asia
Duration: 4-Jul-2018 to 31-Jan-2019
Project Leader: Chatuphol Pholwan
Total contracted amount (THB): 1,650,994.15

Management Development Workshop (Batch 8) for the Medical Supplies Department MoH SL
Duration: 18-Jul-2018 to 19-Jan-2019
Project Leader: Parichad Nuntavong, Panchica Koonchaimang
Total contracted amount (THB): 1,120,320.00

Advanced Public Sector Management for Effective Policy Implementation Batch 2
Duration: 31-Jul-2018 to 12-Feb-2019
Project Leader: Chatchata Prasongsuk
Total contracted amount (THB): 1,203,413.00

Training Course on: Improvement & Management of National Accounts Statistics
Duration: 20-Aug-2018 to 27-Feb-2019
Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 430,000.00

The Practical Aspects of Reinsurance
Duration: 19-Sep-2018 to 20-Mar-2019
Project Leader: Worawan Sumroetrum
Total contracted amount (THB): 257,184.00

Professional Development Course on Public Administration, Performance-Based Management & Citizen-Centered Service Delivery
Duration: 30-Sep-2018 to 9-Apr-2019
Project Leader: Warindhorn Wachirasiri
Total contracted amount (THB): 1,298,560.00

AULIA National Resource Persons' Masterclass
Duration: 10-Oct-2018 to 29-Apr-2019
Project Leader: Rowena Alcoba
Total contracted amount (THB): 2,641,000.00

Offshore Drilling & International Financial Standards
Duration: 27-Oct-2018 to 6-May-2019
Project Leader: Mahbooba
Total contracted amount (THB): 864,000.00

Planning, Management & Execution of Effective Defense Policy
Duration: 12-Nov-2018 to 15-May-2019
Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 1,631,200.00

Project Management
Duration: 5-Nov-2018 to 30-Aug-2019
Project Leader: Furqan Ali Shaikh
Total contracted amount (THB): 1,087,250.00

Professional Development Course on Training of Trainers on Environment Education
Duration: 17-Dec-2018 to 19-Jun-2019
Project Leader: Warindhorn Wachirasiri
Total contracted amount (THB): 377,600.00

Best Practices in Managing State-Owned Water Supply Organizations for NWSDB officials
Duration: 2-Dec-2018 to 6-Jun-2019
Project Leader: Phyu Sin
Total contracted amount (THB): 506,998.00

General Management Skills
Duration: 3-Dec-2018 to 8-Jun-2019
Project Leader: Mr. Furqan Ali, Tharakorn
Total contracted amount: THB 848,125.00

Advanced Shrimp Farming
Duration: 9-Dec-2018 to 14-Jun-2019
Project Leader: Chatuphol Pholwan
Total contracted amount: THB 360,600.00

Database Development for Foreign Aid Project
Duration: 27-Jan-2019 to 31-Jul-2019
Project Leader: Ms. Worwan Sumroetrum
Total contracted amount (THB): 270,999.68

Advanced Public Sector Management for Effective Policy Implementation, BPATC of Bangladesh
Duration: 28-Jan-2019 to 10-Aug-2019
Project Leader: SK Shahin Hossain
Total contracted amount (THB): 1,094,800.00

Innovative Irrigation Engineering Techniques
Duration: 21-Jan-2019 to 3-Aug-2019
Project Leader: Furqan Ali Shaikh
Total contracted amount (THB): 1,503,000.00

Expert Consultation Meeting
Duration: 1-Feb-2019 to 6-Aug-2019
Project Leader: Rowena Alcoba
Total contracted amount (THB): 650,000.00

Social Business Day
Duration: 11-Feb-2019 to 27-Dec-2019
Project Leader: Panchica Koonchaimang
Total contracted amount (THB): 4,000,023.00

Good Aquaculture Practices (GAP) & Advanced Aquaculture in Thailand
Duration: 13-Feb-2019 to 26-Aug-2019
Project Leader: Chatuphol Pholwan
Total contracted amount (THB): 667,970.00

Professional Development Course on Modern Medical Treatment & Health Care in Public Hospital
Duration: 13-Feb-2019 to 8-Sep-2019
Project Leader: Warindhorn Wachirasiri
Total contracted amount (THB): 992,000.00

17th Policy Planning & Management Course of BPATC
Duration: 13-Feb-2019 to 28-Aug-2019
Project Leader: Worawan Sumroetrum
Total contracted amount (THB):

808,799.93

Fish Marketing & Value Chain Management in Thailand & Vietnam (Batch I & II)
Duration: 14-Feb-2019 to 13-Oct-2019
Project Leader: Phyu Sin
Total contracted amount (THB): 1,060,000.00

2nd CLMVT Professional Development in Nonlife Insurance
Duration: 4-Mar-2019 to 4-Sep-2019
Project Leader: Worawan Sumroetrum
Total contracted amount (THB): 426,951.00

Strategic Human Resource Management & Business Leadership
Duration: 11-Mar-2019 to 25-Sep-2019
Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 684,560.00

NUST Executive MBA Case Writing Workshop
Duration: 14-Mar-2019 to 2-Oct-2019
Project Leader: Rowena Alcoba
Total contracted amount (THB): 235,800.00

Environmental Impact Assessment for Decision Makers & Strategic Human Resource Mgt & Business Leadership
Duration: 29-Mar-2019 to 23-Oct-2019
Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 837,000.00

Management & Implementation of Rural Road Project (Thailand & Vietnam)
Duration: 9-Apr-2019 to 23-Oct-2019
Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 651,000.00

Advanced Public Sector Management for Effective Policy Implementation, MoPA of Bangladesh
Duration: 9-Apr-2019 to 18-Nov-2019
Project Leader: SK Shahin Hossain
Total contracted amount (THB): 884,500.00

Gas Reservoir Management with Production Optimization for Engineers
Duration: 1-Apr-2019 to 6-Oct-2019
Project Leader: Tharakorn / Furqan
Total contracted amount (THB): 540,000.00

18th Policy, Planning & Management Course for BPATC of Bangladesh
Duration: 25-Apr-2019 to 31-Oct-2019
Project Leader: Sufian Etea
Total contracted amount (THB): 661,237.20

Performance Management & Innovation
Duration: 25-Apr-2019 to 3-Nov-2019
Project Leader: Tharakorn
Total contracted amount (THB): 620,000.00

Management & Implementation of Large Scale Engineering Projects
Duration: 21-Apr-2019 to 2-Nov-2019
Project Leader: Furqan Ali Shaikh
Total contracted amount (THB): 747,250.00

Governance & Anti-Corruption: The Methods & Tools behind an Effective Corruption-Eradication Strategy
Duration: 21-May-2019 to 7-Dec-2019
Project Leader: Worwan Sumroetrum
Total contracted amount (THB): 1,080,450.00

Advanced Insurance Policy Management & Practices
Duration: 24-Jun-2019 to 25-Dec-2019
Project Leader: Worwan Sumroetrum
Total contracted amount (THB): 724,800.00

Annual Performance Agreement & Innovation
Duration: 21-Jun-2019 to 27-Dec-2019
Project Leader: Mahbooba Amin
Total contracted amount (THB): 1,304,400.42

6.7 Ongoing Grant and Sponsored Trainings

Capacity Building Project for Ministry of Public Work & Transport, Lao PDR
Duration: 1-Aug-2018 to 29-May-2020
Project Leader: Chatchata Prasongsuk
Total contracted amount (THB): 2,552,320.00

Sindh Irrigation Department Capacity Building Project
Duration: 1-Jan-2018 to 29-Jun-2021
Project Leader: Furqan Ali Shaikh
Total contracted amount (THB): 9,747,960.00

Professional Masters in Banking & Finance, Inter Semester 2018 Intake (PMBF Batch 6)
Duration: 1-Jun-2018 to 31-May-2020
Project Leader: Dr. Sundar Venkatesh
Total contracted amount (THB): 7,704,000.00

Information Technology Strategy & Security
Duration: 17-Jun-2019 to 30-Aug-2020
Project Leader: Md Omar Faouk
Total contracted amount (THB): 900,000.00

Aquaculture Development & Aquatic Resources Management in South & Southeast Asia
Duration: 7-Jul-2019 to 23-Jan-2020
Project Leader: Chatuphol Pholwan
Total contracted amount (THB): 1,813,500.00

Leadership & Financial Risk Management
Duration: 24-Jul-2019 to 21-Jan-2020
Project Leader: Thaniya Jirasathitpornpong
Total contracted amount (THB): 2,177,200.00

Education Project Management, Monitoring & Evaluation
Duration: 10-Jul-2019 to 20-Jan-2020
Project Leader: Narumon Wangnai
Total contracted amount (THB): 994,200.00

Innovation
Duration: 18-Jul-2019 to 23-Jan-2020
Project Leader: Md Omar Faouk
Total contracted amount (THB): 675,000.00

Planning, Management & Execution of Effective Defense Policy in Australia & Malaysia
Duration: 30-Jul-2019 to 19-Feb-2020
Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 1,631,000.00

Implementation & Management of Quality & Safety in Healthcare Services
Duration: 30-Jul-2019 to 12-Feb-2020
Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 424,025.00

Social Venture Youth Exchange Program
Duration: 5-Aug-2019 to 7-Feb-2020
Project Leader: Panchica Koonchaimang
Total contracted amount (THB): 645,219.00

Entrepreneurship Week 2019: Entrepreneurship & Innovation for a Sustainable Belt and Road Region
Duration: 7-Aug-2019 to 4-Mar-2020
Project Leader: Panchica Koonchaimang
Total contracted amount (THB): 703,600.00

Pump Technology for Flood Control
Duration: 15-Aug-2019 to 2-Mar-2020
Project Leader: Worawan Sumroetrum
Total contracted amount: THB 675,000.00

The Practical Aspects of Reinsurance (Batch 2)
Duration: 20-Aug-2019 to 25-Mar-2020
Project Leader: Worawan Sumroetrum
Total contracted amount (THB): 457,650.00

New Public Sector Management Policy, Administration & Governance
Duration: 6-Sep-2019 to 18-Mar-2020
Project Leader: Kanlaya Muangsan
Total contracted amount: THB 783,750.00

Business Email Writing for Insurance
Duration: 6-Sep-2019 to 2-Apr-2020
Project Leader: Chatchata Prasongsuk
Total contracted amount (THB): 250,002.00

Best Practices in Public Financial Management
Duration: 12-Sep-2019 to 19-Mar-2020
Project Leader: Thaniya Jirasathitpornpong
Total contracted amount (THB): 1,015,000.00

Sindh Provincial Disaster Management Authority Capacity Building
Duration: 2-Sep-2019 to 27-Aug-2021
Project Leader: Furqan Ali Shaikh
Total contracted amount (THB): 9,737,857.50

Project Development Contract in Practice
Duration: 25-Sep-2019 to 3-Apr-2020
Project Leader: Sufian Etea
Total contracted amount (THB): 661,200.00

Strategic Human Resource Management & Business Leadership
Duration: 3-Oct-2019 to 13-May-2020
Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 887,000.00

Leadership, Office Management & Communication Skills
Duration: 13-Oct-2019 to 17-Apr-2020
Project Leader: Thaniya Jirasathitpornpong
Total contracted amount: THB 485,444.00

Multidimensional Poverty Measurement & Analysis
Duration: 17-Oct-2019 to 26-May-2020

Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 880,000.00

Assisting the Development of a National Strategic Plan for Pre-service Training in Health Sector in Cambodia
Duration: 4-Nov-2019 to 29-Jun-2021
Project Leader: Chatchata Prasongsuk
Total contracted amount (THB): 1,500,000.00

Short-Term International Exposure Visit Program on Evaluation & Assessment of Annual Performance in Public Sector-Experiences from Vietnam & Japan
Duration: 25-Nov-2019 to 29-Apr-2020
Project Leader: Md. Anishur Rahman
Total contracted amount (THB): 1,278,000.00

Advanced Shrimp Farming
Duration: 30-Oct-2019 to 8-May-2020
Project Leader: Chatuphol Pholwan
Total contracted amount (THB): 550,000.00

Sustainable Agriculture, Agri-Business & Human Resource Development
Duration: 30-Oct-2019 to 1-Jun-2020
Project Leader: Phyu Sin
Total contracted amount (THB): 428,000.00

Public Sector Financial Management & Good Governance
Duration: 11-Nov-2019 to 20-May-2020
Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 301,200.00

Advanced Course on Administrative & Development (ACAD), Bangladesh
Duration: 11-Nov-2019 to 25-May-2020
Project Leader: SK Shahin Hossain
Total contracted amount (THB): 1,265,400.00

Planning, Implementation & Management Guideline for Inclusive Public Toilet Development
Duration: 4-Dec-2019 to 10-Jun-2020
Project Leader: Kanlaya Muangsan
Total contracted amount (THB): 276,000.00

Experience Learning Program for International Maritime Business Department at Massachusetts Maritime Academy
Duration: 23-Dec-2019 to 19-Aug-2020
Project Leader: Thaniya Jirasathitpornpong
Total contracted amount (THB): 1,084,600.00

Governance & Anti-Corruption: The Methods & Tools behind an Effective Corruption-Eradication Strategy
Duration: 23-Dec-2019 to 18-Jul-2020
Project Leader: Worawan Sumroetrum
Total contracted amount (THB): 1,032,600.00

Chapter 7: INTERNET EDUCATION AND RESEARCH LABORATORY (intERLab)

7.1 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 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.

7.2 Mission

To become one of the leading Internet regional centers of excellence; establishing intERLab/ AIT name, as one of the leading Internet infra-structure 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.

7.3 Unit Governance

Dr. Mongkol Ekpanyapong
IntERLab Director

PROF. KANCHANA KANCHANASUT
Research Professor

7.4 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

7.5 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 Queens-land, 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]*

Affiliates

MONGKOL EKPANYAPONG, Ph.D., Georgia Institute of Technology. M.Eng., Asian Institute of Technology, Thailand. B.Eng., Chulalongkorn University, Thailand.

Assistant Professor School of Engineering and Technology [*VLSI design, physical design automation, micro architecture, compiler, and Embedded Systems]*

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

Associate Professor School of Engineering and Technology *[Areas of Communication Theory; Optical networks; Resource Allocation Problems and Array Processing]*

TEERAPAT SANGUANKOTCHAKO-RN, 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

TANACHAI KONGPOOL, Bachelor's Degree of Computer Science, KMUTNB King Mongkut's University of Technology North Bangkok
Assistant Researcher National Electronics and Computer Technology Center (NECTEC) *[Network management; Network engineering; Ad hoc Network]*

AIMASCHANA NIRUNTASUKRAT, Ph.D. in Electrical Engineering, University of Maryland (College Park), Master of Engineering in Electrical Engineering, Chulalongkorn University, Bachelor of Engineering (with honors) in Electrical Engineering, Chulalongkorn University

Researcher National Electronics and Computer Technology Center (NEC-TEC) *[Network congestion control; Network performance modeling; Application of AI; Biomedical signal processing]*

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]

ONNO W. PURBO, Ph.D., University of Waterloo, Canada. M.Eng., McMaster University, Canada.

Retired Lecturer from Institute of Technology Bandung (ITB) & Retired Indonesian Civil Servant. He is an Eisenhower Fellow & Ashoka Senior Fellow. In the last 20 years, dedicate his time to educate Indonesians on Information technology, open source, Internet Telephony & Low Cost "Wireless" Internet Access. He has published 40+ books & thousands of articles in IT. He is active in 170+ mailing lists and moderate 10+ mailing lists. His vision is "To See Knowledge Based Society in Indonesia"

THIRAPON WONGSAARDSAKUL, D.Tech.Sc. in Computer Science, Asian Institute of Technology Master of Science in Telecommunications and Computers, George Washington University Bachelor of Engineering in Computer Engineering, Kasetsart University Associate Dean, School of Science and Technology, Bangkok University *[Voice over IP; Mobile Ad Hoc Network; Peer to Peer; Distributed Hash Table; Intelligent transport system]*

Research Staff

PREECHAI MEKBUNGWAN, Master of Engineering in Information and Communications Technologies (ICT), Asian Institute of Technology, Thailand. Bachelor of Engineering in Computer Engineering, Kasetsart University, Bangkok, Thailand.

Research Associate *[Mobile Ad Hoc Network, Delay Tolerant Networking]*

NUNTHAPAT WESHSUWANNARUGS, Master of Science in Information and Communications Technologies, Asian Institute of Technology, Thailand. Bachelor of Science in Computer Science, Payap University, Chiang Mai

Research Associate *[Mobile ad hoc networking; Vehicular ad hoc networking; Disaster emergency networking]*

APINUN TUNPAN, Ph.D. and M.S. in Computer Science, University of Maryland College Park, USA. B.Eng. in Computer Engineering, Chulalongkorn University, Thailand.

Senior Research Specialist *[Mobile ad hoc networking; Vehicular ad hoc networking; Robotic ad hoc networking; Disruption tolerant networking; Disaster emergency networking; Intelligent transportation system; Network Coding; Information retrieval; Multimedia databases]*

7.6 Grants and Sponsored Research Completed in 2019

Mobile application for Real-time Incident Alert
Duration: 1-Oct-2017 to 28-Feb-2019
Project Investigators: Dr. Mongkol Ekapanyapong, Dr. Matthew N. Dailey Kanchanasut
Total Contracted Amount (THB): 500,000.00

Smart City Deployment & Accuracy Improvement
Duration: 1-Oct-2017 to 31-Dec-2019
Project Investigators: Dr. Mongkol Ekapanyapong, Dr. Matthew N. Dailey
Total Contracted Amount (THB): 2,600,000.00

The Research on The Automatic Electrical Measurement of Lead Acid Battery for Power System
Duration: 1-Feb-2018 to 31-Dec-2019
Project Investigator: Dr. Mongkol Ekapanyapong
Total Contracted Amount (THB): 1,991,000.00

Mobile application for Real-time Incident Alert
Duration: 01-Oct-2017 to 28-Feb-2019
Project Investigators: Dr. Mongkol Ekapanyapong, Dr. Matthew N. Dailey Kanchanasut
Total Contracted Amount (THB): 500,000.00

Smart City Deployment & Accuracy Improvement
Duration: 01-Oct-2017 to 31-Dec-2019
Project Investigators: Dr. Mongkol Ekapanyapong, Dr. Matthew N. Dailey
Total Contracted Amount (THB): 2,600,000.00

The Research on The Automatic Electrical Measurement of Lead Acid Battery for Power System
Duration: 01-Feb-2018 to 31-Dec-2019
Project Investigators: Dr. Mongkol Ekapanyapong
Total Contracted Amount (THB): 1,991,000.00

Digital Ubiquitous Mobile Broadband OLSR IX
Duration: 1-Jan-2019 to 31-Dec-2019
Project Investigators: Prof. Kanchana Kanchanasut, Dr. Adisorn Letsinsrubtavee
Total Contracted Amount (THB): 1,000,000.00

Internet Infrastructure Research
Duration: 1-Jan-2019 to 31-Dec-2019
Project Investigators: Prof. Kanchana Kanchanasut, Mr.Viraphan Samadi
Total Contracted Amount (THB): 1,000,000.00

Baengpun: Resource Sharing Platform for Communities
Duration: 01-Jun-2018 to 30-Nov-2019
Project Investigator: Nisarat Tansakul
Total Contracted Amount (THB): 2,505,100.00

intERLab Training 19
Duration: 1-Jul-2019 to 31-Dec-2019
Project Investigators: Prof. Kanchana Kanchanasut, Mr. Viraphan Samadi
Total Contracted Amount (THB): 2,000,000.00

intERLab ITServ 2019
Duration: 1-Jan-2019 to 31-Dec-2019
Project Investigators: Mr. Viraphan Samadi, Prof. Kanchana Kanchanasut
Total Contracted Amount (THB): 7,664,240.00

7.7 On-going Grants and Sponsored Research

Low-cost Real-time Monitoring of Haze Air Quality Disasters in Rural Communities in Thailand & Southeast Asia (SEA-HAZEMON)
Duration: 1-Sep-2018 to 31-Jul-2021
Project Investigators: Dr. Mongkol Ekapanyapong
Total Contracted Amount (THB): 950,000.00

Asian Internet Engineering Conference 2019
Duration: 1-May-2019 to 30-Apr-2020
Project Investigators: Prof. Kanchana Kanchanasut, Dr. Adisorn Letsinsrubtavee
Total Contracted Amount (THB): 1,314,938.00

Real-Time Haze Monitoring & Forest Fire Detection Information
Duration: 1-Jul-2019 to 30-Jun-2021
Project Investigator: Dr. Adisorn Letsinsrubtavee
Total Contracted Amount (THB): 4,298,090.00

Chapter 8: INSTITUTE-WIDE SPONSORED AND CONTRACTED PROJECTS

8.1 Grants and Sponsored Research Completed in 2019

AI Research & Development Service
Duration: 1-Dec-2018 to 31-Dec-2019
Project Investigators: Dr. Matthew N. Dailey, Dr. Mongkol Ekpanyapong
Total Contracted Amount (THB): 726,000.00

Simulation & Nanotechnology to enhance selected Solar Cell Materials
Duration: 1-Jan-2018 to 31-Jul-2019
Project Investigator: Dr. G. Louis Hornyak
Total Contracted Amount (THB): 1,500,000.00

Climate Change Risk Assessment ADB-Vietnam
Duration: 1-Jan-2018 to 31-Mar-2019
Project Investigator: Dr. Manzul K. Hazarika
Total Contracted Amount (THB): 1,612,800.00

Support for organization of "4th International Forum on Sustanaible Future in Asia/4th NIES International Forum"
Duration: 22-Jan-2019 to 30-Jun-2019
Project Investigator: Ms. Naharuethai Supakarn
Total Contracted Amount (THB): 292,152.00

Acid Deposition Monitoring Network in East Asia 2018
Duration: 3-Oct-2018 to 30-Jun-2019
Project Investigator: Ms. Naharuethai Supakarn
Total Contracted Amount (THB): 6,539,023.92

SANDEE Summer School in Environmental & Resource Economics 2019
Duration: 15-Mar-2019 to 15-Aug-2019
Project Investigator: Ms. Naharuethai Supakarn
Total Contracted Amount (THB): 1,193,100.00

8.2 On-going Grants and Sponsored Research

Drone Application & Training
Duration: 1-Feb-2018 to 31-Dec-2022
Project Investigators: Dr. Manzul Kumar Hazarika
Total Contracted Amount (THB): 1,200,000.00

Risk Assessment of 58 Districts in Tajikistan (43-2018-REP-UNEP-DRMP)
Duration: 10-Nov-2018 to 31-Jan-2020
Project Investigator: Dr. Manzul Kumar Hazarika
Total Contracted Amount (THB): 462,080.00

Elder Care Project
Duration: 1-Dec-2018 to 1-Jul-2021
Project Investigators: Dr. Matthew N. Dailey, Dr. Mongkol Ekpanyapong
Total Contracted Amount (THB): 4,053,160.00

Development of Automatic Seat Belt Detection system with Deep Learning
Duration: 1-Jan-2019 to 30-Jun-2020
Project Investigator: Dr. Mongkol Ekpanyapong
Total Contracted Amount (THB): 800,000.00

Development of Computer Vision Parcel Sorting
Duration: 17-Apr-2019 to 17-Apr-2020
Project Investigator: Dr. Mongkol Ekpanyapong
Total Contracted Amount (THB): 770,000.00

Evaluation of KBTG Facial Recognition Engine
Duration: 1-May-2019 to 31-May-2020
Project Investigator: Dr. Mongkol Ekpanyapong
Total Contracted Amount (THB): 684,000.00

FOG Computing Platform Using AI in The Box Equipment
Duration: 1-Aug-2019 to 31-Jul-2022
Project Investigators: Prof. Matthew N. Dailey, Dr. Mongkol Ekpanyapong
Total Contracted Amount (THB): 15,332,400.00

100 Innovations & Entrepreneurs
Duration: 1-Jun-2019 to 1-May-2020
Project Investigator: Dr. Naveed Anwar
Total Contracted Amount (THB): 10,470,000.00

Enterprise & alumni engagement
Duration: 1-Sep-2019 to 30-Nov-2020
Project Investigator: Dr. Naveed Anwar
Total Contracted Amount (THB): 4,700,000.00

Uttarakhand Disaster Recovery Project
Duration: 1-Jan-2019 to 30-Jun-2020
Project Investigators: Dr. Manzul Kumar Hazarika, P.V. Gopi Krishna, Dr. Eden Woon
Total Contracted Amount (THB): 18,125,700.00

Acid Deposition Monitoring Network in East Asia 2019
Duration: 30-Jul-2019 to 28-Feb-2020
Project Investigator: Ms. Naharuethai Supakarn
Total Contracted Amount (THB): 6,081,766.00

Development of Capacity for the Substitution & the Environmentally Sound Management (ESM) of Mercury-containing Medical Measuring Devices
Duration: 1-Sep-2019 to 30-Apr-2021
Project Investigator: Guilberto Borongan
Total Contracted Amount (THB): 14,616,384.00

Atmospheric Brown Cloud (ABC) activities at the Maldives Climate Observatories (MCOH)
Duration: 1-Jul-2019 to 30-Jul-2021
Project Investigator: Dr. Ram Lal Verna
Total Contracted Amount (THB): 3,034,156.00