

CONFERENCE ABSTRACTS

**2019 7th International Conference on Computer and
Communications Management
(ICCCM 2019)**

**2019 3rd International Conference on Communications and Future
Internet
(ICCFI 2019)**

Bangkok, Thailand | July 27-29, 2019

Published by



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WELCOME

Bangkok, Thailand | July 27-29, 2019

Dear professors and distinguished delegates,

Welcome to 2019 7th International Conference on Computer and Communications Management (ICCCM 2019) and 2019 3rd International Conference on Communications and Future Internet (ICCFI 2019) in Bangkok, Thailand.

We wish to express our sincere appreciation to all the Conference Chairs, Program Chairs, and Technical Program Committee as well as all the authors for contributing their latest researches to the conference. This conference program is highlighted by the three keynote speakers and one invited speaker: Prof. Dr. Sergei Gorlatch from University of Muenster, Germany, Prof. Tok Wang Ling, IEEE Senior Life Member from National University of Singapore, Singapore, Assoc. Prof. Phayung Meesad from King Mongkut's University of Technology North Bangkok, Thailand, and Prof. Hongchun Qu from Chongqing University of Posts and Telecommunications, China.

Oral presentations are divided into four parallel sessions. One best presentation will be selected from each parallel session, evaluated from: Originality, Applicability, Technical Merit, Visual Aids, and English Delivery. Wishing you all the very best of luck with your presentations!

We believe that by this excellent conference, you can get more opportunity for further communication with researchers and practitioners with the common interest in computer, communications management, communications and future Internet fields.

We wish you a pleasant and memorable experience at this conference as well as in this city.

Yours sincerely,

Conference Organizing Committee
Bangkok, Thailand



NOTES & TIPS

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Notes:

- ✧ You are welcome to register at any working time during the conference.
- ✧ Please kindly keep your Paper ID in mind so that the staff can quickly locate your registration information onsite.
- ✧ Certificate of Listener can be collected in front of the registration counter. Certificate of Presentation will be awarded after your presentation by the session chair.
- ✧ One *Best Presentation* will be selected from each parallel session and the author of best presentation will be announced and awarded when the session is over.
- ✧ Your punctual arrival and active involvement in each session will be highly appreciated.
- ✧ Please kindly make your own arrangements for accommodations.
- ✧ Please keep all your belongings (laptop and hand phone etc.) with you in the public places, buses, metro.

Warm Tips for Oral Presentation:

- ✧ Get your presentation PPT or PDF files prepared.
- ✧ Regular oral presentation: 15 minutes (including Q&A).
- ✧ Laptop, projector & screen, laser sticks will be provided by the conference organizer.

CHATEAU DE BANGKOK

Add: 29 Soi Ruamrudee, Ploenchit Road, Lumpini, Patumwan - 10330 Bangkok

<http://www.chateaubkk.com/>

Centrally located in the shopping and business districts, the hotel is just a short distance from major shopping malls, embassies, office towers and the main BTS Skytrain public transport.

Chateau de Bangkok having served a myriad of functions and highly flexible in space and layout, the meeting rooms of Chateau de Bangkok is ideal for hosting private board meetings, large conferences, seminars, training's and product launches. Let the Chateau de Bangkok team professionally fulfill your needs whether it would be about setting up your events from scratch, buffet lunches or providing one-on-one service during coffee breaks.

It has different types of rooms. Room Facilities: Safety box, Air conditioning, Desk, Ironing facilities, Sitting area, Walk-in closet, Sofa, Shower, Bathtub, Hairdryer, Bathrobe, Free toiletries, Toilet, Bathroom/Bathtub without jacuzzi, Slippers, Telephone, Satellite channels, Cable channels, Refrigerator.



AGENDA

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<July 27, 2019, Saturday>

 Lobby on G floor	
10:00-17:00	Onsite Registration & Conference Materials Collection

<July 28, 2019, Sunday> Morning

 Larose on 3rd floor		
09:00-09:10	Opening Remarks	Assoc. Prof. Phayung Meesad King Mongkut's University of Technology North Bangkok, Thailand
09:10-09:50	Keynote Speech I	Prof. Dr. Sergei Gorlatch University of Muenster, Germany <i>Speech Title: Distributed Applications Based on Mobile Cloud Computing and Software-Defined Networks</i>
09:50-10:20	Coffee Break & Group Photo	
	Poster Presentations	FM3035, FM3041, FM3046, FM3051, FM3061
10:20-11:00	Keynote Speech II	Prof. Tok Wang Ling IEEE Senior Life Member, National University of Singapore, Singapore <i>Speech Title: Data Models Revisited: Improving the Quality of Database Research with ORA-Semantics in ER Model</i>
11:00-11:40	Keynote Speech III	Assoc. Prof. Phayung Meesad King Mongkut's University of Technology North Bangkok, Thailand

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		<i>Speech Title: Incremental Learning in Deep Learning and Big Data</i>
11:40- 12:10	Invited Speech	Prof. Hongchun Qu Chongqing University of Posts and Telecommunications, China
		<i>Speech Title: Computer Simulation Model for Climate Change and Blueberry Production</i>



Lunch @Restaurant <12:10-13:30>

<July 28, 2019, Sunday> Afternoon

13:30-16:15	Session I-Computer Applications 11 Presentations	 Larose 1
	FM3001, FM3005, FM3006, FM3017, FM3030, FM3045, FM3079, FM1008, FM3018, FM3083, FM3074	
	Session II-Communication System 10 presentations	 Larose 2
	FM3067, FM3059, FM3003, FM3065, FM3053, FM3085, FM1002, FM3034, FM3069, FM3070	
 Coffee Break <16:15---16:30>		
16:30-19:15	Session III-Data Analysis and Data Processing 11 presentations	 Larose 1
	FM3013, FM3076, FM3037, FM3027, FM3080, FM3004, FM3033, FM3031, FM3050, FM3011, FM3015	
	Session IV-Computer Vision 11 presentations	 Larose 2
	FM3060, FM3007, FM3012, FM3049, FM3054, FM3072, FM3077, FM3066, FM3084, FM3058, FM3078	



Dinner @Restaurant <19:15-20:30>

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<July 29, 2019, Monday>

SOCIAL EVENT

* Participants need to sign up by July 13.

Khaosan Road—Chinatown—Siam Square—Maenam Chao Phraya—Damnoen Saduak Floating Market



Gather point: The Lobby of CHATEAU DE BANGKOK

Time: 09:30am



Khaosan Road is a short (410 meter long) street in central Bangkok, Thailand constructed in 1892 during the reign of Rama V. It is in the Bang Lamphu area of Phra Nakhon District about 1 kilometre (0.62 mi) north of the Grand Palace and Wat Phra Kaew.



Bangkok's Chinatown is one of the largest Chinatowns in the world. It was founded in 1782 when the city was established as the capital of the Rattanakosin Kingdom, and served as the home of the mainly Teochew immigrant Chinese population, who soon became the city's dominant ethnic group.

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Siam Square is a shopping and entertainment area in the Siam area of Bangkok, Thailand. The area connects to other shopping centres and links to the other shopping districts by sky bridge, such as Siam Center/Siam Discovery Center, MBK Center, Siam Square One, Siam Paragon, Ratchaprasong shopping district



The Chao Phraya is the major river in Thailand, with its low alluvial plain forming the centre of the country. It flows through Bangkok and then into the Gulf of Thailand.



Damnoen Saduak Floating Market is a floating market in Damnoen Saduak District, Ratchaburi Province, about 100 kilometres (62 mi) southwest of Bangkok, Thailand. It has become primarily a tourist attraction, attracting domestic and foreign tourists. It is often considered the most famous floating market.

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Prof. Dr. Sergei Gorlatch
University of Muenster, Germany

Prof. Sergei Gorlatch has been Full Professor of Computer Science at the University of Muenster (Germany) since 2003. Earlier he was Associate Professor at the Technical University of Berlin, Assistant Professor at the University of Passau, and Humboldt Research Fellow at the Technical University of Munich, all in Germany. Prof. Gorlatch has about 200 peer-reviewed publications in renowned international books, journals and conferences. He has been principal investigator in several international research and development projects in the field of parallel, distributed, Grid and Cloud algorithms, networking and computing, as well as e-Learning, funded by the European Commission and by German national bodies.

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Prof. Tok Wang Ling

IEEE Senior Life Member, National University of Singapore, Singapore

Dr. Tok Wang LING is a professor in Computer Science Department at the National University of Singapore. He was Head of IT Division, Deputy Head of the Department of Information Systems and Computer Science, and Vice Dean of the School of Computing of the university. He received his PhD and M.Math., both in computer science, from University of Waterloo (Canada) and B.Sc. (1st class Hons) in Mathematics from Nanyang University (Singapore). His current research interests include Database Modeling, Entity-Relationship Approach, Object-Oriented Data Model, Normalization Theory, Semi-Structured Data Model, XML Twig Pattern Query Processing, XML and Relational Database Keyword Query Processing, and Temporal Database Keyword Query Processing. He serves/served on the steering committees of 5 international conferences. He is the steering committee chair of BigComp and was the steering committee chair of both ER and DASFAA. He served as Conference Co-chair of 12 international conferences, including ER 2004, DASFAA 2005, SIGMOD 2007, VLDB 2010, BigComp 2015, and ER2018. He served as Program Committee Co-chair of 6 international conferences, including DASFAA 1995, ER 1998, ER 2003, and ER 2011. He received the ACM Recognition of Service Award in 2007, the DASFAA Outstanding Contributions Award in 2010, and the Peter P. Chen Award in 2011. He is an ER Fellow.

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Assoc. Prof. Phayung Meesad
King Mongkut's University of Technology North Bangkok, Thailand

Dr. Phayung Meesad currently is an Associate Professor at the Faculty of Information Technology, King Mongkut's University of Technology North Bangkok (KMUTNB), Thailand. He also serve as the Dean of the Faculty of Information Technology at KMUTNB. Phayung received Bachelor of Science in Technical Education (Teaching in Electrical Engineering), from KMUTNB in 1994. He received Master of Science (MS) and Doctor of Philosophy (Ph.D.) in Electrical Engineering from School of Electrical and Computer Engineering, Oklahoma State University (OSU), Stillwater, USA, in 1998 and 2002, respectively. His research of interests are Computational Intelligence, Artificial Intelligence, Machine Learning, Deep Learning, Data Analytics, Data Science, Data Mining, Digital Signal Processing, Image Processing, Business Intelligence, Time Series Analysis, and Natural Language Processing.

INVITED

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Prof. Hongchun Qu
Chongqing University of Posts and Telecommunications, China

Prof. Dr. Hongchun Qu has been professor of simulation and modeling in the College of Automation at Chongqing University of Posts and Telecommunications, China since 2013. He is the deputy director of the Key Laboratory of Industrial Internet of Things and Networked Control, Ministry of Education of China. From 2010 to 2012, he was a postdoctoral researcher at the Universität Tübingen Germany. He received his PhD from Chongqing University and Iowa State University in Computer Science in 2009. He served as editors and reviewers for many international journals, including Advances in Fuzzy Systems, IEEE TFS, Methods in Ecology and Evolution, Ecological Modeling, Simulation Modeling Practice and Theory, Complexity, BMC Bioinformatics, International Journal on Artificial Intelligence Tools, as well as program committee members of international conferences, including ICIOT2011, DMCIT 2018/2019, CSMO2018/2019, DMKD2018/2019. His current research interests include agent-based modeling and simulation, predictive modeling, theories and applications for ecological and agricultural systems interacting with environmental disturbances.

Opening Ceremony & Keynote & Invited Speeches

< July 28, 2019 (Sunday) > Morning

Time: 9:00-12:10

Venue: Larose on 3rd floor

Chair: Prof. Dr. Sergei Gorlatch

University of Muenster, Germany

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09:00-09:10	Opening Remarks Assoc. Prof. Phayung Meesad King Mongkut's University of Technology North Bangkok, Thailand
09:10-09:50	<i>Distributed Applications Based on Mobile Cloud Computing and Software-Defined Networks</i> Prof. Dr. Sergei Gorlatch University of Muenster, Germany Abstract-We consider an emerging class of challenging networked multimedia applications called Real-Time Online Interactive Applications (ROIA). ROIA are networked applications connecting a potentially very high number of users who interact with the application and with each other in real time, i.e., a response to a user's action happens virtually immediately. Typical representatives of ROIA are multiplayer online computer games, advanced simulation-based e-learning and serious gaming. All these applications are characterized by high performance and QoS requirements, such as: short response times to user inputs (about 0.1-1.5 s); frequent state updates (up to 100 Hz); large and frequently changing numbers of users in a single application instance (up to tens of thousands simultaneous users). This talk will address two challenging aspects of future Internet-based ROIA applications: a) using Mobile Cloud Computing for allowing high application performance when a ROIA application is accessed from multiple mobile devices, and b) managing dynamic QoS requirements of ROIA applications by employing the emerging technology of Software-Defined Networking (SDN).
 Coffee Break & Group Photo 09:50---10:20	
10:20-11:00	<i>Data Models Revisited: Improving the Quality of Database Research with ORA-Semantics in ER Model</i> Prof. Tok Wang Ling IEEE Senior Life Member, National University of Singapore, Singapore Abstract- The concepts of object class, relationship type, and attribute of object class and relationship type, are the three basic concepts in Entity Relationship Model. They are termed ORA-semantics. In this talk, we first recall the limitations of the relational model and XML data model. One serious limitation of these database models is their inability to explicitly represent ORA-semantics in their schema languages. Without knowing the ORA-semantics in the databases, the quality of some database areas are low. In this talk, we show how ORA-semantics can be used to improve the quality of some database areas significantly such as database schema design, data and schema integration, and database keyword search. We present some limitations in the relational model such as normalization theory. We then briefly describe and compare the 3 common relational database schema design

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	methods, i.e. decomposition method, synthesizing method, and ER Approach. In data and schema integration, entity resolution is widely studied. However, we must also consider relationship resolution which is rarely-mentioned; this is to identify different relationship types between/among same object classes. We highlight and differentiate between primary key vs object identifier (OID), local vs global OID, local vs global functional dependency, etc. All these concepts are related to ORA-semantics and have big impacts on the quality of the integrated databases and schemas. We continue present some serious limitations in XML data model. Existing RDB keyword search approaches are all based on foreign key-key reference and minimal connected data subgraph which contains all the query keywords. Existing XML keyword search approaches are all LCA-based; they only rely on the structural features but not the hidden ORA-semantics in XML document. We identify some serious problems of the existing RDB and XML keyword search approaches such as meaningless answer, missing answer, duplicated answer, incomplete answer, incorrect answer, and schema dependent answer. We exploit the ORA-semantics in RDB and XML data to solve the correctness and completeness of RDB and XML keyword search. We conclude this talk with some suggestions and questions for research topics on schema integration, keyword searches in RDB and XML databases, data mining, data analytics, and deep learning.
11:00-11:40	<i>Incremental Learning in Deep Learning and Big Data</i> Assoc. Prof. Phayung Meesad King Mongkut's University of Technology North Bangkok, Thailand Abstract-In the era of digital economy, data are increasing every second and become big data. Big data are due to users generated like social network data. In addition, big data are also generated from IoT devices. There have been researches and applications of big data in many domains in Engineering, Science, Management, Finance, Education, Entertainment, etc. Using big data, Data Science and Machine Learning play an important role in knowledge extraction, decision making, and control. Deep learning has been one of the top machine learning models applied for learning mechanism in big data. Famous deep learning models are convolutional network (CNN), recurrent neural network (RNN), long short-term memory (LSTM), gated recurrent unit (GRU), and the variants. These networks learn data offline and take long time to optimize weights and biases. In case of new data are available the networks must be retrained again to fit both old and new data. This talk will be focus on the incremental learning in deep learning networks, which are possible to learn new data online real time for a big data framework.
11:40-12:10	<i>Computer Simulation Model for Climate Change and Blueberry Production</i> Prof. Hongchun Qu Chongqing University of Posts and Telecommunications, China Abstract-Wild blueberry is well adapted to Maine's climate. However, commercial production of wild blueberry is restricted to the northern part of it current natural distribution (Maine, New Hampshire, Canadian maritime provinces, Michigan, and

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Quebec), despite the fact that the major species comprising wild blueberry, *Vaccinium angustifolium*, can be found in the forest understory from North Carolina to northern Quebec and west to Minnesota and Manitoba. However, changes in climate are already occurring in Maine. As climate continues to shift, more changes in the ecological interactions of this managed natural occurring food plant are bound to take place. We have developed a computer simulation model to investigate climate shifts in Maine wild blueberry. Our computer simulation model has been developed and parameterized by data collected in the laboratory and in the field in Maine wild blueberry fields. This model currently uses hourly weather conditions to simulate blueberry plant growth and development and the activity and foraging behavior of four different bee pollinator taxa (honeybees, bumble bees, digger bees, and leafcutting bees). The model also incorporates the growth and development of mummy berry disease and its vectoring to flowers by bees. As bees visit flowers throughout the bloom season fruit set likelihoods are generated, mummy berry transmission is estimated and yield (number of fruit and size) is calculated for each stem in the field. This model incorporates state of the art algorithms that allow simulation of a blueberry field across several scales of time (hrs, days, months) and scales of space (stems (sq. cm), clones (sq. m), and fields (sq. km)).



Lunch Time <12:10-13:30> Location: Paparazzi restaurant on 2nd floor

Note: lunch coupon is needed for entering the restaurant.

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Session I: Computer Applications

< July 28, 2019 (Sunday) > Afternoon

Time: 13:30-16:15

Venue: Larose 1 on 3rd floor

Chair: Assoc. Prof. Hsu, Shun-Fa

Chung Chou University of Science and Technology, Taiwan

11 Presentations: FM3001, FM3005, FM3006, FM3017, FM3030, FM3045, FM3079,
FM1008, FM3018, FM3083, FM3074

Note:

- ✧ Please arrive 15 minutes ahead of the sessions to prepare and test your PowerPoint.
- ✧ Certificate of Presentations will be awarded to each presenter by the session chair when the session is over.
- ✧ One Best Presentation will be selected from each parallel session and the author of Best Presentation will be announced and awarded when the session is over.

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FM3001 13:30-13:45	Pancasila, Ethos Respect, and Anti-hoaxes on Internet-based Social Media <i>Christian Siregar, Murty Magda Pane and Rusliansyah Anwar</i> Bina Nusantara University, Indonesia Abstract—In its rapid development, social media does not only produces positive impacts, but also the negative ones. As information spreads quickly and broadly, so does hoax. The information filtering process has become more difficult. This study aims to get a comprehensive description on how the values of Pancasila, as have been taught in the Character Building: Pancasila (CB: Pancasila) courses, and of Respect in the ethos of “S.P.I.R.I.T” (Striving of Excellence, Perseverance, Integrity, Respect, Innovation and Teamwork), which is related to Ubinus’ culture, has impacted the students of Bina Nusantara University (UBinus). This research is conducted on 185 Binusian 2021 students, selected from various departments. The result shows that 80.27% of the total respondents have positive speech, attitudes, and behavior in establishing communication in cyberspace (internet-based social media), while 14.90% are neutral. Only 4.83% are still involved in spreading hoaxes through social media.
FM3005 13:45-14:00	Enhancement of Artificial Emotional Neural Network Using JAYA Algorithm and the Investigation of Expanded Feature Selected for Wind Power Forecasting <i>Suthasinee Iamsa-at, Punyaphol Horata and Khamron Sunat</i> Khon Kaen University, Thailand Abstract—The Brain Emotional Learning (BEL) is a novel bio-inspired machine learning approach mentioned as a new class of artificial neural network (ANN). The artificial emotional neural network (AENN) is one of the BEL methods which used the genetic algorithm (GA) to compute proper weights, weights of the amygdala (AMYG), orbitofrontal cortex (OFC) weights and a bias value. AENN trained by GA has been reported that it could produce low error rates. However, AENN still has more rooms to enhance its prediction of performance, especially generalization and the prediction of performance. Therefore, this paper aims to propose a new training method for AENN. The JAYA optimization algorithm optimized the weights and the biases of AENN. Two new proposed models are named as AENN-Max-JAYA and AENN-Mean-JAYA. Their names are according to the way of selecting the additional expanded feature which obtained through either the max or the average of input patterns, respectively. From the experimental results for wind power forecasting dataset, the proposed methods proved that the results are better in generalization performance and give lower error rates which compared to the comparative AENN models and traditional ANNs.
FM3006 14:00-14:15	Decision Support System for Dairy Cattle Management Using Computational Intelligence Technique <i>Anamika Pimpa, Narissara Eiamkanitchat, Chirawath Phatsara and Tossapol Moonmanee</i> Chiang Mai University, Thailand Abstract—The good yield of dairy cattle relies upon the quality of the environment and genetic characteristics. This research created a 2-level data classification model for

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	cattle. The data set contains environment of the animal house, factors related to cattle health, nutrition of food and body integrity scores based on the physiological characteristics of ruminants of Thailand. This article utilized artificial intelligence technology by presenting the application of artificial neural networks to classifying the health of cattle so that farmers can take care for daily cattle properly, since healthy cattle can produce good milk. The results of the predictive health of the model are 3 classes: normal, surveillance and risk. The results showed that the models presented in this research were higher than normal neural network structures. The classification results are verified by experts, indicating that the system can accurately analyze data as much as expert 100%. The developed model applies to web applications to facilitate the utilization of farmers and can be additionally created with future livestock use.
FM3017 14:15-14:30	Client-based Multipoint Media Mixer to Support People with Hearing Impairment in Communication <i>Machigar Ongtang and Nattanun Thatphithakkul</i> Dhurakij Pundit University, Thailand Abstract—To advance the area of accessibility technology that assists people with hearing impairment in communication, we have designed the system that enhances the operation of the relayed communication service center. The scheme allows the middle specialist, who acts as the medium between the hearing-impaired person and other endpoints, to be part of multiple ongoing separate video calls at the same time and combines them or part of them into multi-party video conversations. To offload the server, we have designed and developed media mixer functionality similar to that included in Multipoint Conference Unit (MCU) for multi-party video conference, but implemented on the client-side which is the desktop client used by the middle specialist. Our system has been evaluated to be practical for use and is planned to be deployed to assist people with disabilities in Thailand.
FM3030 14:30-14:45	Response Time of an Apparel Supply Chain <i>Hui Sun, Xu Zhao and Jie Ding</i> Yangzhou University, China Abstract—With the increasingly fierce business competitions, enterprises are beginning to seek for transformation in order to avoid being eliminated by the markets, and the innovations of supply chains have become the top priority of reforms. As one of the industries closely related to people's life, the apparel industry has shown a trend of dynamic changes in the supply chains due to the characteristics of the industry, which makes the apparel supply chains as a hot topic of research. Although Petri net is one of the mainstream methods for formal modeling of supply chains, it cannot well show the interactions between the elements involved in the supply chains. In this paper, we propose to model an apparel supply chain through performance evaluation process algebra (PEPA), a novel formal modeling language for the supply chains, and evaluate an important performance index (response time) of the PEPA models of this apparel supply chain.

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FM3045 14:45-15:00	A Research for Feasibility Analysis and Model Building of e-Tourism Industrial Value Chain with Cooperation of Industry, Government and University in Taiwan <i>Hsu, Shun-Fa, Lee, Yi-In, Hsu, Ching-Tzu and Chen, Chih-Hua</i> Chung Chou University of Science and Technology, Taiwan Abstract—This paper investigates the technical resources of cooperation of industry, government and university, and how industrial value chains (IVC) in e-tourism industry develop in such collaboration. First, the chance of cooperation between small and medium enterprises (SMEs) in tourism industry and information technology developers were discovered inside the national industry policies of Taiwan, and local technological universities could play a key role inside as an official resource importer. Then, theoretical feasibility of industry-government-university cooperation in e-tourism and IVC were testified to build the core concept of e-tourism IVC model with cooperation of industry, government and university. Furthermore, based on prospective framework in e-tourism, the research team, consisting of professionals in various fields, put the concept into practice by endeavoring to collaborate with enterprises in tourism and information and communication technology (ICT) industry. After complying with requirements of grant applying programs, the team acquired funds of 570,000 NTD from Ministry of Education (MOE), companies and universities, making this cooperation model preliminarily practical. As stated above, e-tourism IVC model with cooperation of industry, government and university is an applicable university-industry cooperation (UIC) model technological universities can utilize to enhance competitiveness of ICT and tourism industries, as well as SMEs.
FM3079 15:00-15:15	The Study of Life Cycle Cost Model using Analysis Hierarchy Process for Car Buyer in Thailand <i>Nantika Prinyapol</i> CITE Dhurakij Pundit University, Thailand Abstract—The massive demands in buying the new cars of new generation in Thailand shown that young consumers who start working less than five years have more purchasing power than ever, along with, the support of tax benefits since 2011. However, the abilities to pay installment are less. The household debt have increased significantly high. The new car consumers had not realized for the remaining expenses excluded the capital cost. Therefore, the decision to buy the new car is not suitable for the economic conditions and the real usages. In this paper, researcher characterizes the impact factors of the decision and proposes the possible alternatives for consumers with realistic scenarios. Through a combination of buyer behavior analysis, analytic hierarchy process (AHP) and life cycle cost analysis (LCC), researcher demonstrates the decision support system for car buyers. The participants are sixty new employees who works at most five years in IT department of a food corporate industrial in Thailand. The research found that there are five factors of consumer behaviors. The matrix factors of alternatives (brands) are: Toyota 23.82% from Behavior and 20.19% from Product,

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	Proton 13.51% from Price, Honda 19.21% from Distribution channel and 33.18% from Market promotion. From the research results, each alternative brand has influence different aims on the usage when calculated with the LCC, then the consumers are able to choose the right cars more efficiency.
FM1008 15:15-15:30	Utilization of 5 Senses as Composition of Network Communication for Format of Future Travelling Chutima Rungrojpanichkul and Ko-Chiu Wu National Taipei University of Technology, Taiwan Abstract—Nowadays, using the Communication Technology for travelling is continuously more progressive advance and important that the technology for travelling can incur the interaction between the local people and outsiders, which can change ideas or knowledge easier and faster. Map is one of the communication tools that obviously transforms Analog to Digital in this period. Most people use the map in mobile phone from travelling to find information of such place. If the place substitution format is transformed into Sense of Place from 5 senses of human, which will be travelling by the recognition via sight, taste, smell, hearing, and touch, these abstract recognition will be transformed into material object by using graphics as communication tool. Herein, the researcher had experimented in some area of Bangkok and Taipei to be prototype of travelling to other places in another format through 5 senses, and the result appeared the Area Identity or Social History of such area.
FM3018 15:30-15:45	A Framework For Website Security Assessment Nguyen Duc Thai and Nguyen Huu Hieu Ho Chi Minh City University of Technology, Vietnam Abstract—Nowadays, the Internet plays a crucial role in our society. Among Internet services, web-based services are very popular that become the target of security attacks. Hence, securing websites and connection to the users is important. If we own or manage a website, we certainly concern about how secure it is. For assessing the security level of a website, we usually take some action, including testing the website using security scanning tools. Unfortunately, most of scanning tools have limitations and need to be updated frequently for new vulnerabilities. Using only one scanning tool is sometime not enough to determine security level of a website. In this paper we propose a framework supporting website security assessment. The idea of this framework is to integrate different scanning tools into the framework. We then write a program to implement this framework with a real website. We guide the users how to add a new scanning tool to this framework, manage it and generate a final report.
FM3083 15:45-16:00	A BPM-based Emerald Factory Information System: Redesigning Emerald Crafting Process in Myanmar Charoenchai Wongwatkit and Sai Won Mar Mae Fah Luang University, Thailand Abstract—In the emerald factory business, the crafting process plays a crucial role in driving the quality of products. However, such a process has limitations and difficulties

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	in monitoring the working progress, determining the factory hours to complete the products, reporting the completed tasks, and reporting the defects. This causes cost and time inefficiency in managing this business. To reach this aim, this study, therefore, addresses such issues by employing business process management strategy to help analyze and redesign the existing crafting process for better performance, where the information system was developed to help improve the certain tasks. Hence, the swimlane diagram was used to visualize the business tasks and flows; moreover, the information system was developed and implemented for employees and managers accordingly. The overall structure and screenshots of the proposed system were presented in the paper. After being deployed on the cloud server, the system was used for weeks and evaluated by the users. The results show that both group of users highly accepted the system, while the managers had a significantly better attitude in analyzing and managing the emerald crafting process. Finally, the findings of this study shed light of the implications of understanding and redesigning the business process with the benefits of the information system to enhance business success.
FM3074 16:00-16:15	Distributed Shared Memory with CAN-Based Prioritized Mutual Exclusion for Embedded Control Systems <i>Hiroki Fujishima, Takanori Yokoyama and Myungryun Yoo</i> Tokyo City University, Japan Abstract—The paper presents distributed shared memory (DSM) for embedded control systems with CAN (Controller Area Network), which is widely used in various control domains. DSM provides a location-transparent environment, in which distributed tasks exchange data through the DSM. There are a few DSM for distributed embedded control systems, which, however, do not provide efficient inter-node mutual exclusion. The paper presents DSM with prioritized mutual exclusion, which is efficiently implemented using the CAN arbitration mechanism. The DSM is based on a multiple reader/multiple writer model and supports entry consistency. The mutual exclusion also supports the multiprocessor priority ceiling protocol to avoid deadlocks and reduce the blocking duration. We have built the DSM in a RTOS, which is an extension to an OSEK OS. We have also evaluated the performance of the DMS and we think that the performance is acceptable for practical embedded control systems.



Coffee Break <16:15---16:30>

SESSION II

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Session II: Communication System

< July 28, 2019 (Sunday) > Afternoon

Time: 13:30-16:00

Venue: Larose 2 on 3rd floor

Chair: Assoc. Prof. Pannee Suanpang

Suan Dusit University, Thailand

10 Presentations: FM3067, FM3059, FM3003, FM3065, FM3053, FM3085, FM1002,
FM3034, FM3069, FM3070

Note:

- ✧ Please arrive 15 minutes ahead of the sessions to prepare and test your PowerPoint.
- ✧ Certificate of Presentations will be awarded to each presenter by the session chair when the session is over.
- ✧ One Best Presentation will be selected from each parallel session and the author of Best Presentation will be announced and awarded when the session is over.

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FM3067 13:30-13:45	Quadrotor Stabilization and Tracking using Sliding Mode Observer and Control Hyukwoo Lee, Kyunghyun Lee and Kwanho You Sungkyunkwan University, Korea Abstract—We consider the stabilization and tracking of a quadrotor system. Recently, as the utilization for unmanned aerial vehicle (UAV) has increased, various approaches have been proposed for a quadrotor control system. Quadrotor, a type of UAV, is a sensitive system that is highly influenced by external environmental factors such as wind and humidity. For improving the performance of a quadrotor system, we propose a sliding mode observer (SMO) and sliding mode control (SMC) based quadrotor stabilization and tracking system. To minimize the measurement error of a quadrotor system, we apply SMO to the augmented model. Also, for robust control of quadrotor, we use SMC, a robust control methodology for the model uncertainty and disturbance, with Lyapunov function. In this paper our proposed method is applied to quadrotor stabilization and tracking control. We show the proposed control performance with some simulation results.
FM3059 13:45-14:00	QoS aware Trusted Service Discovery Architecture for Optimization in MANETs Suchithra M and M. Ramakrishna Vel Tech High Tech Dr.Rangarajan Dr Sakunthala Engineering College, India Abstract—During service discovery architecture designing in MANET, some of the critical services requested by the clients should be provided within short deadlines. Moreover, the QoS constraints of the service provider such as; battery power, stability, trust, load, capacity, etc., should also be considered while selecting the servers. In this QoS aware trusted service discovery architecture, a set of backbone nodes are selected based on the relative mobility, residual energy and available bandwidth. The selected backbone node collects the information related to server and its services. When the service is availed by a client, the backbone node then updates the trust value of that server. By simulation results, we show that the proposed technique enhances quality of services through minimizing the delay.
FM3003 14:00-14:15	Facial Expression Recognition Using Local Composition Pattern Abu Kalam, Md. Enamul Haque, Mohammad Jashem, Mahamudul Hasan, Muhammad Ibrahim and Taskeed Jabed East West University, Bangladesh Abstract—One or more motions or positions of the muscles under the skin of the face is a facial expression. Here, a new image feature descriptor is proposed which is more efficient than LBP and LDP. Each pixel of an image by thresholding the neighboring pixel values with the central pixel is leveled in state of the art work. In our proposed method, edge response is used to detect edges in a radial direction. The directional derivative is computed in the horizontal and vertical direction which is used to extract more discriminatory features. Using neighboring pixels, a new smart threshold is determined. Experimental results show that our method gives a better recognition rate than the existing method. The result proves that it is better than the state of the art descriptors.

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FM3065 14:15-14:30	Towards A Rooted Subgraph Classifier for IoT Botnet Detection Huy-Trung Nguyen, Doan-Hieu Nguyen, Quoc-Dung Ngo, Vu-Hai Tran and Van-Hoang Le Graduate University of Science and Technology, Vietnam Abstract—The Internet of Things (IoT) devices provide various benefits for our modern life. However, in recent years, commercial-off-the-shelf devices such as IP-Camera, Router, Smart-TV, etc. are being targeted more and more by IoT Botnet. Therefore, the detection of IoT botnet malware is essential. Recently, some of the studies have used machine learning and deep learning for the automatic detection of malware. However, machine learning and deep learning also have their own advantages and disadvantages. Therefore, in this paper, we have proposed a method that combine deep learning and machine learning to generate a novel feature-based PSI-Rooted sub-graph for detecting cross-architecture IoT botnet malware. This feature is robust enough for various common machine learning classifiers that achieved an accuracy of about 97% and F-score about 98%.
FM3053 14:30-14:45	A Fast IoT Service Composition Scheme for Energy Efficient QoS Services Osama Alsaryrah, Ibrahim Mashal and Tein-Yaw Chung Yuan Ze University, Taiwan Abstract—Recently, service-oriented architecture (SOA) is considered as a key enabler of Internet of Things (IoT) where it can provide cooperation between heterogeneous smart IoT objects and give it the ability of integration in a flexible manner. One of the important issues in SOA-IoT when a huge number of smart IoT objects are deployed is how to select the most appropriate set of smart IoT objects to create a complex service when considers both energy and Quality of Service (QoS). The issue can be formulated as a multi-objectives optimization problem and hence is time consuming in solving. To speed up the IoT service composition finding, this work introduced a new iteration based relaxation technique based on user preferences and end-to-end QoS localization. Extensive experiments show that the proposed approach has short execution time in various complex service profiles with good performance in energy consumption and maintains a reasonable QoS level.
FM3085 14:45-15:00	Design of Disaster Management Based on Artificial Neural Network and Logistic Regression Balamurugan MS and Manojkumar R Vellore Institute of Technology, India Abstract—Low Power Wireless Area Network (LPWAN) has been used as one on the prominent Internet of Things (IoT) based protocol for various IoT services. It has been used in monitoring and transmitting the data to a remote server without any need of backhaul internet which makes it more preferred form on network in IoT technologies. Long Range Wireless Area Network (LoRa or LoRaWAN) is one such protocol that can be used to establish a system implementation using an IoT based data acquisition system. LoRaWAN can be used even in remote area to monitor data and send it to a remote server without the need of backhaul internet. Due to its inherent capability of

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	sub 1 GHz spectrum usage and not blocking the air traffic spectrum of regular 2.4 GHz it can be thought of replacing the traditional networks which depends of WiFi or Zigbee based systems. Also, since the new paradigm shift in Artificial Intelligence which has strides in deploying ANN in various monitoring and prediction systems, which were mostly depending on traditional approaches.
FM1002 15:00-15:15	Spontaneous Service Provision in Cyber-Physical Interaction Environments Byungseok Kang and Kijong Yoo University of Derby, United Kingdom Abstract—In the advent of the future Internet environment, where many sensors, smart objects and personal devices are interconnected through high-bandwidth networks, we are envisioning a new service infrastructure where services from the physical world and cyber space are fused together to bring more proactive and sustainable features to the users. Under the infrastructure, a user's situation in the physical world is recognized via the rich contextual information gathered by using many sensors and by interpreting various social relationships. Value-added services then can be identified and composed in the cyber space and brought to the user spontaneously and proactively for the situation.
FM3034 15:15-15:30	A Modified Method for General LDPC Bit-flipping Decoding Ruizhen Wu, Lin Wang, Hua Feng and Wei He Intel Mobile Communications Technology (Xi'an) Ltd, China Abstract—A modified method for general LDPC bit-flipping decoding is proposed in this paper. The proposed method consists of two parts: multi-bit flipping judgement algorithm and multi-bit flipping compensation algorithm, the first part trying to find the maximum acceptable number of bits to flipping at the same time to accelerated convergence process, and the second part to compensates the new errors introduced by the first part. The proposed decoding method can be easily used to modify different BF algorithms which means the hardware implementation is simple. The simulation results show that the proposed method can achieve 2.75% to 36.05% of bit-flipping timing reduction, 3.0% to 18.1% of BER reduction at SNR 0.2dB to 4dB compared with classic BF, IMWBF, LCWBF, and RRWBF.
FM3069 15:30-15:45	A Smart Farm Prototype with an Internet of Things (IoT) Case Study: Thailand Pannee Suanpang and Pitchaya Jamjuntr Suan Dusit University, Thailand Abstract—This paper presented the design for smart farm prototypes by using sensors for measuring the temperature and humidity using the Internet of Things (IoT) as a case study in Thailand. The system is designed to be a part of an automatic water control system using IoT devices. There are two main components including the hardware and a web-based application. The hardware system consists of two main devices, which includes a Raspberry Pi board installed in a control box to collect data from the field using a DHT22 sensor. This is used to collect temperature and humidity data from the environment of the plant that is sent by the control unit in the control box. The second component is a web application that was designed and implemented

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	to collect and display useful, real-time data for users. This system is very important for the automatic control water system because it is used to collect the data necessary for controlling optimal water quantity for plant growth. The system was tested and worked effectively on a rice farm in Suphan Buri Province, Thailand. The results showed the system was useful for Agricultural 4.0, in which technology can help farmers to increase their productivity while significantly decreasing costs.
FM3070 15:45-16:00	Non-cooperative and Cooperative Game Approaches for Load Balancing in Distributed Systems Ferdy Mulyadi and Khajonpong Akkarajitsakul King Mongkut's University of Technology Thonburi, Thailand Abstract—Distributed system is a system consisting of groups of servers and clients where they are connected together to do specific tasks. In order to optimize the system, a load balancer can be used to mitigate the effect of imbalance of the number of clients and servers. Without the load balancer, the servers might be overwhelmed due to response many requests of clients. To implement a load balancer, several methods or algorithms, such as Round-Robin, Least Connection, and Response Time have been applied. In this paper, we focus on game-theoretic load balancing algorithms in a cloud system. We formulate non-cooperative and cooperative game-theoretic models to be used as load balancing algorithms. Clients are the players in each game and the players' strategies are based on the current status of resource utilization of the servers. To obtain the solution, iterative algorithms combined with Discrete-Time Markov Chain (DTMC) are presented. Moreover, the comparison between non-cooperative and cooperative approaches is presented. The evaluation results of both the games are compared with the ones from common techniques, such as round-robin, randomization method, and least connection for effectiveness in terms of request completion time and balancing time.



Coffee Break <16:15---16:30>

SESSION III

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Session III: Data Analysis and Data Processing

< July 28, 2019 (Sunday) > Afternoon

Time: 16:30-19:15

Venue: Larose 1 on 3rd floor

Chair: Assoc. Prof. Erma Suryani
ITS, Indonesia

11 Presentations: FM3013, FM3076, FM3037, FM3027, FM3080, FM3004, FM3033,
FM3031, FM3050, FM3011, FM3015

Note:

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FM3013 16:30-16:45	Predicting and Classifying Software Faults: A Data Mining Approach <i>Shamse Tasnim Cynthia and Shamim H Ripon</i> East West University, Bangladesh Abstract—In the field of software engineering, the detection of fault in the software has become a major topic to explore. With the help of data mining and machine learning approaches, this paper aims to denote whether a software is fault prone or not. In order to accomplish that this paper gives importance to compare between different machine learning approaches and by observing their performances we can conclude which models perform better to detect fault in the selected software modules. The dataset we have chosen to work on has imbalanced data. This paper research also worked with the imbalanced dataset and what results the imbalanced dataset gave when examined. The accuracy comparison, the performance of the different metrics can broadly help in software defect detection mechanism.
FM3076 16:45-17:00	WebGIS for Managing Household Data within a Provincial Big Data Project <i>Wichai Puarungroj, Suchada Phromkhot, Narong Boonsirisumpun, Pathapong Pongpatrakant and Satith Sangpradid</i> Loei Rajabhat University, Thailand Abstract—The government agencies require decision support information before commencing their community development projects in rural areas. However, such information is not always available or does not meet their requirements. This research presents the design and development of the WebGIS, which is intended to store and provide spatially related household information for government agencies. This research has been conducted as a part of a provincial big data project. In this research, the spatial database system and the data visualization of the database were designed and developed by focusing on the details of each house in the targeted villages. The data were collected by the researchers from the study areas, which comprised 5 villages in Loei and Khonkaen Provinces in Thailand. The important household and location data were collected and combined with the community data from the Community Development Office. The GIS was developed using QGIS where the geolocation of each house in the villages was applied on the map derived from Google map. The data were analyzed and visualized in different formats such as color, table, and graph in order to establish the data classification and summarization. The system and data were finally evaluated by the Community Development Office and community leaders in terms of system performance and data accuracy.
FM3037 17:00-17:15	Performance Measurements of Machine Learning Approaches for Prediction and Diagnosis of Chronic Kidney Disease (CKD) <i>Anik Saha, Abir Saha and Tanni Mittra</i> East West University, Bangladesh Abstract—Chronic Kidney Disease (CKD) is indicated by gradual degradation of kidney function. Long time complications include heart disease, high blood pressure, bone disease and death of hundreds and thousands of people each year. However,

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	automated early detection of this disease can diminish the mortality rate. More efficient and accurate analysis and models are mandatory to be implemented to negotiate with this situation. To do so, this paper analyzes the key parameters of this disease to be strengthened by incorporating machine learning and data mining approaches together. For early classification of this disease Random Forest, Naïve Bayes, Multilayer Perceptron, Logistic Regression and Neural Network optimized by Adam optimizer have been concentrated on. For further statistical analysis and induction of relationships between attributes, J48 and WEKA tool have been used. Moreover, association rules have been extracted to assist expertise to diagnose this disease. Comparative analysis and experiment depict that Adam-Deep learning outperforms all the approaches by predicting accuracy of 97.34% and J48 demonstrates accurate association rules.
FM3027 17:15-17:30	Musical Rendering Models by Sequential Tension Rules Tetsuya Mizutani and Yuki Nakata University of Tsukuba, Japan Abstract—Music informatics, especially study of musical rendition models is one of the most important areas in computer science and artificial intelligence. In order to investigate and develop musical rendition models, musical expressions of piano performances using hierarchical tonal tension rules have been analyzed by the authors. The rules are very complicated and hence it is hard to analyze large amount of music pieces. In this article musical expression is analyzed using sequential tension rules which are very simpler than the hierarchical ones. The results of the analyses by these two kinds of rules are also compared. From these comparisons, some notable results are obtained, i.e. though the results of the analyses in hierarchical rules are more precise than ones in sequential ones, the results in the latter are also useful to construct musical rendition models.
FM3080 17:30-17:45	Predicting Crime Using Time and Location Data <i>Jesia Quader Yuki, Md.Mahfil Quader Sakib , Zaisha Zamal, Khan Mohammad Habibullah, Shamse Tasnim Cynthia and Amit Kumar Das</i> East West University, Bangladesh Abstract—To have a better response towards criminal activity, it is very important that one should understand the patterns in crime. We analyze this pattern by taking crime datasets from the Chicago Police Department's CLEAR (Citizen Law Enforcement Analysis and Reporting) system. This dataset includes different blocks of the city of Chicago. The major aim of this mission is to expect which category of crime is most probably to take place at a detailed time and places in Chicago. Finally, this paper uses a different algorithm like Random Forest, Decision Tree and different ensemble methods such as Extra Trees, Bagging and AdaBoost to evaluate the accuracy given by each algorithm.

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FM3004 17:45-18:00	Analysis of Urban Service Reliability and Its Effect on Traffic Congestion <i>E. Suryani, R.A. Hendrawan, A. Wibisono, B. Widodo, P.F.E. Adipraja and Lily Puspa Dewi</i> ITS, Indonesia Abstract—Urban service reliability represents the level of service in the aspects of travel time, arrival time, and seat availability from the user's perspective. Service reliability focuses on the demand and supply sides of transportation systems. The supply side consists of services provided by the operator, hence it affects the travel time. Meanwhile, demand side focuses on passenger side which includes passenger behavior and experience. The main objective of this research is to analyze urban service reliability and its impact on traffic congestion. Several main factors impacting the service reliability were evaluated using system dynamics simulation model. It has been used to test and evaluate the alternatives of future strategies to increase service reliability and to mitigate the traffic congestion. Simulation results show that service reliability is influenced by two factors, those are passenger's perception and public transportation agency performance. Travel time and waiting time are two important factors of passenger's perception. Meanwhile, some factors such as the ratio of public transportation supply and demand as well as the service effectiveness are the important factors of public transportation agency performance. Based on the existing condition, service reliability in public transportation sector is around 44%. This service reliability is projected could be increased to 76% by conducting a strategy such as the addition of public transportation facilities, which aims to decrease the passenger's waiting time and to increase the ratio of public transportation supply and demand. All of these efforts will increase the passenger's perception and public transportation agency performance. With the increased in service reliability, traffic congestion is projected could be reduced to 40% - 75%.
FM3033 18:00-18:15	Analysis & Automated Prediction of Myocardial Infarction Disease Using Optimized Deep Learning Architecture <i>fthakhar Ahmed, Fahima Qasim and Md. Nawab Yousuf Ali</i> East West University, Bangladesh Abstract—Myocardial infarction (MI) leads to heart attack which is a potentially fatal threat. Therefore, early, automated, efficient and accurate determination of this fatal disease can save thousands of lives throughout the world. Efficient incorporation of data mining and machine learning techniques can contribute a lot to reduce negative impact of this disease. Realizing the worth of this situation, this paper proposes an automated approach by incorporating machine learning and data mining techniques for classification as well as illustration of the relationships between the key parameters of this disease. For classification purpose, Convolutional Neural Network architecture has been optimized using Ant Colony Optimization (ACO) by replacing back propagation. Moreover, for conducting comparison between CNN optimized with ACO and other well know existing approaches; Support vector machine, multilayer perceptron, random forest and additive regression have also been implemented.

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	Additionally, for rule generation, filtered association and J48 approaches have been implemented and applied on the dataset. Overall analysis and experiment depicts accurate classification ability of our approach (CNN-ACO) than other approaches predicting accuracy of 95.78%.
FM3031 18:15-18:30	Robotic Process Automation and Opportunities for Vietnamese Market Le Van Chuong, Phan Duy Hung and Vu Thu Diep FPT University, Vietnam Abstract—The Industrial Revolution 4.0 is a trend that has a strong impact on all aspect of socio-economic life in almost all human-related fields as finance, banking, manufacturing, back-office, etc. Robotic Process Automation (RPA) is one of the breakthrough solutions. A key advantage of RPA is that unlike previous IT transformations such as Enterprise Resource Planning (ERP's), RPA does not require a massive upfront investment or a significant change to the current IT systems and processes. In fact, RPA can be implemented relatively quickly when compared to previous digital transformations, as it requires minimal capital or infrastructure. RPA can act as an additional employee that can work between the IT systems and with the back-office processes in various functions. Similarly, to humans, RPA can learn from people and copy their processes, eventually taking over the processes that humans once completed, at a much faster pace. RPA is being more and more developed to work with increasingly complex processes and tasks. In this paper we analyze opportunities of applying RPA to the Vietnam market and fields which RPA can be applied.
FM3050 18:30-18:45	Virtual Machine Integration & Fault Recovery in Crowd-Resourcing Virtual Laboratory Johannes Harungguan Sianipar, Christian Willems and Christoph Meinel Hasso Plattner Institut, Germany Abstract—Crowd-Resourcing virtual laboratory (CRVL) uses some resources which were shared by the crowd as the contributors to run virtual laboratory exercises. The shared resource is in the form of a virtual machine (VM) that must be automatically integrated into the virtual laboratory system. In this paper, we propose a mechanism of integrating a VM into a CRVL system. It starts with verifying the VM integrity, followed by configuring the VM until the VM is ready to be used to run a Virtual Laboratory exercise. We use WebSocket for communication between the VM and the Virtual Laboratory Server, to be able to monitor the VM Integrity. We also propose a VM fault recovery approach that could automatically divert user connections to other VMs. For the fault recovery purpose, we use SSHFS to mount a remote file system on a file server to store the data of a VM. Our experiments showed that our approaches could work appropriately, and the time for Team Recovery is similar to the time for Team Creation.
FM3011 18:45-19:00	A New Criterion for Stability of Neutral-Type Neural Networks with Discrete Delays Ruya Samli, Eylem Yucel and Sabri Arik Istanbul University-Cerrahpasa, Turkey

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	Abstract—This paper deals with the stability problem for the class of neutral-type neural networks including discrete time delays in states and discrete neutral delays in time derivative of states. By using a generalized Lyapunov functional, a sufficient criterion is derived for the global asymptotic stability of delayed neutral-type neural networks. The proposed stability criterion is independently of the values of the time delays and neutral delays and establishes some easily verifiable algebraic mathematical relationships involving the values of the elements of the interconnection matrices and the other network parameters.
FM3015 19:00-19:15	Tuberous Sclerosis Complex (TSC) Disease Prediction Using Optimized Convolutional Neural Network <i>Md. Golam Sarowar, Fahima Qasim and Shamim H. Ripon</i> East West University, Bangladesh Abstract—Tuberous sclerosis Complex (TSC) disease is a multi-system genetic disorder that broadly affect the central nervous system resulting in Epilepsy, seizures, behavior problems, skin abnormalities, kidney disease etc. This hazardous disease is caused by defects or mutations of two genes: TSC1 and TSC2. The key challenge is to analyzing the hidden information that lies into TSC1 and TSC2 gene sequence which can reveal significant information to properly diagnosis the disease. Efficient data mining techniques can play a pivotal role in analyzing the attributes of TSCs in an automatic manner. For efficient classification of TSC, this paper proposes an optimized-CNN algorithm which is a hybridization of Convolution Neural Network (CNN) with Particle Swarm Optimization (PSO). Experimental analysis reveals that the proposed algorithm outperforms other traditional data mining techniques. The paper also generates analysis rules by applying Apriori and Decision Tree algorithms. The promising result of the proposed algorithm makes it a suitable candidate to be used by the medical experts for the diagnosis of the disease.



Dinner Time <19:15-20:30> Location: Paparazzi restaurant on 2nd floor

Note: dinner coupon is needed for entering the restaurant

Session IV: Computer Vision

< July 28, 2019 (Sunday) > Afternoon

Time: 16:30-19:15

Venue: Larose 2 on 3rd floor

Chair: Prof. Tein Yaw Chung

Yuan Ze University, Taiwan

11 Presentations: FM3060, FM3007, FM3012, FM3049, FM3054, FM3072, FM3077,
FM3066, FM3084, FM3058, FM3078

Note:

- ✧ Please arrive 15 minutes ahead of the sessions to prepare and test your PowerPoint.
- ✧ Certificate of Presentations will be awarded to each presenter by the session chair when the session is over.
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FM3060 16:30-16:45	Hybrid Moth-Flame and Salp Swarm Optimization Algorithm Orachun Udomkasemsub, Khajonpong Akkarajitsakul, and Tiranee Achalakul King Mongkut's University of Technology Thonburi, Thailand Abstract—In this paper, the hybrid moth-flame and salp swarm algorithm is proposed to enhance the performance of the original moth-flame algorithm. As a moth moves spirally around a flame, the chance of investigating a distance between the moth and the flame is reduced. This paper attached a salp chain to each moth in order to investigate with such distance. The proposed algorithm was evaluated on benchmark functions and compared to the original Moth-Flame optimization algorithm and Particle Swarm Optimization algorithm. The results showed that the proposed algorithm could generate better minimum fitness value up to almost 100% for most functions compared to other algorithms. Moreover, the convergence rate of the proposed algorithms converged to a global optimum faster for most functions compared to other algorithms.
FM3007 16:45-17:00	The Comprehensibility Assessment of Visualization of Semantic Data Representation (VSDR) Reflecting User Capability of Knowledge Exploration and Discovery Natanun Kanjanakuha, Paul Janecek and Churee Techawut Chiang Mai University, Thailand Abstract—The visual representations of search result querying from encyclopedia by semantic searching tools are rarely found on the internet. Most of the available tools require SPARQL to make some specific queries which are difficult to use, and the visual representation of results on a screen is too complicated to comprehend. The necessity of reducing the complexity of visual structure, supporting user interaction, and increasing the perception of knowledge discovery is considerable. The framework of Visualization of Semantic Data Representation (VSDR) is designed by using the 3-layer approach based on the hyperbolic tree model for visual representation of results from the encyclopedia. The architecture of the searching tool is also designed for novice users. This study presents the result of VSDR usage to the extent of the VSDR's capabilities in terms of comprehensibility, and how the user can perceive a VSDR structure with discoverable knowledge. The result shows that VSDR is an effective searching tool for knowledge exploration and discovery. It has a recognition support reflected in users' perception. It also helped users find answers, learn and gain new knowledge through the representation.
FM3012 17:00-17:15	Thai Sign Language Recognition Using 3D Convolutional Neural Networks Nutisa Sripairojthikoon and Jaturon Harnsomburana King Mongkut's University of Technology Thonburi, Thailand Abstract—Translating sign language is a complicating and challenging task due to complexity of sign language structures including hand shapes, hand orientation, hand movements, and facial expression. Existing approaches generally used complex handcrafted features to recognize a sign language. However, to build a model based on

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	those features is a difficult task. To deal with this problem, we proposed a model of Thai sign language recognition using 3D Convolutional Neural Network (3DCNN) which can automatically learn both temporal and spatial features from data. Our data is a collection of 64 isolated Thai signs language vocabulary as video stream using Microsoft Kinect to acquire information of color, depth, skeleton, hand shapes, and whole body movement. To evaluate our proposed approach, different kind of stream and information are tested with the best empirical model. The selected model is 3DCNN with kernel 3×3×3. The experimental results demonstrated that the accuracy of different input and information is as high as the highest 97.7% with the lowest accuracy at 1.7% which belong to skeleton dataset and grayscale dataset respectively.
FM3049 17:15-17:30	Sentiment Analysis on Twitter Data: A Survey Abhilash Mittal and Sanjay Patidar Delhi Technological University, India Abstract—Twitter is the popular micro blogging site where thousands of people exchange their thoughts daily in the form of tweets. The characteristics of tweet is to be short and simple way of expressions. Though this paper will focus on sentiment analysis of twitter data. The research area of sentiment analysis are text data mining and NLP. In different form we can perform the sentiment analysis on twitter data. This research paper will focus on techniques of sentiment analysis where we will perform how to extract tweets from twitter. Eventually we will compare different sentiment analysis techniques and also the approaches containing twitter dataset.
FM3054 17:30-17:45	Agile Solution of Color Image Encryption Using Random Permutation Algorithm Nguyen Ngoc Son and Phan Duy Hung FPT University, Vietnam Abstract—The requirements of Internet security are likely to be increased while technology is developing hour by hour. It's the reason why nowadays scientists are trying to study, invent solutions to prevent hacking, personal data leakage and make an effort to solve many other troubles. Among them, image encryption is also a very crucial challenge in 4.0th Industry Revolution period. In this paper, a simple but effective solution is proposed. The spirit of this one is to contribute a solution that the parameter's locations of an image will be changed continuously at every turn of transmission activities. Pixels parameters locations will be mixed-up together irregularly. Besides, the key number values that using for decryption process are changed and hid right into the image matrix. The experiment result shows that there are might be a lot of development base on this idea that can be extended to encrypt an image instead of using one formula to change entire of the picture at one time. In fact, the content is not focused on the complication or breakthrough of the method. This paper focuses on the coordination, development and expansion capabilities. That's Agility.
FM3072 17:45-18:00	Patch Relational Covariance Distance Similarity Approach for Image Ranking in Content-Based Image Retrieval Piyavach Khunsongkiet, Jakramate Bootkrajang and Churee Techawut Chiang Mai University, Thailand

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	Abstract—Content-Based Image Retrieval (CBIR) is an information retrieval framework for retrieving similar images based on objects in the images. Machine learning based CBIR consists of object detection, the majority of which rely on Convolutional Neural Network (CNN) as object detector, and image similarity ranking. However, object detection with CNN requires expensive retraining when new set of the images is added to the database, while current ranking techniques focus on visual characteristics without considering object's spatial information. In this work, we propose a new CBIR framework to alleviate the aforementioned problems. We employ the Hierarchical Deep Convolutional Neural Network (HD-CNN) for single object detection. HD-CNN has been shown to be more efficient in model retraining on partitions of large dataset. In addition, a new similarity measure based on the covariance descriptor called Patch Relational Covariance Distance Similarity (PRCDS) is proposed. PRCDS summarizes the low-level visual features as well as object's spatial information (patch arrangement descriptor) to rank the candidate images from the HD-CNN. Finally, the proposed framework was validated on a subset of ImageNet dataset, and the experimental results showed that the ranking based on the newly proposed similarity measure is consistent with human perception.
FM3077 18:00-18:15	Bird Species Classification from an Image Using VGG-16 Network <i>Shazzadul Islam, Sabit Ibn Ali Khan, Md. Minhazul Abedin, Khan Mohammad Habibullah, Shamse Tasnim Cynthia and Amit Kumar Das</i> East West University, Bangladesh Abstract—Birds are an integral part of any environment and they are of the utmost importance to nature. Considering this, it is clear how necessary it is to be able to identify birds in the wilderness. This paper proposes a Machine Learning approach to identify Bangladeshi birds according to their species. We used VGG-16 network as our model to extract the features from bird images. In order to perform the classification, we used a data set that contains pictures of different bird species of Bangladesh which were used as they are, without any annotation. We then used various classification methods, where each method gave us different results. However, compared to other classification methods such as Random Forest and K-Nearest Neighbor (KNN), Support Vector Machine (SVM) gave us the maximum accuracy of 89%.
FM3066 18:15-18:30	Movie Genre In Multi-label Classification Using Semantic Extraction From Only Movie Poster <i>Sorratat Sirattanajakarin and Panita Thusaranon</i> Dhurakij Pundij University, Thailand Abstract—In this paper, we present the framework, SEMP (the Semantic Extraction of Movie poster based on fundamental of poster Design) for multi-label genre classification in the state of insufficient data, included only movie poster. In order to get manageable semantic tags, we use a combination of fundamental movie poster design in order to understand the result of movie genre. With the collection of a movie poster, we decompose into twelve meaningful features. Then, eight-teen genres are

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	classified by using multi-label prediction algorithms. The results proved that our semantic features perform better than without any information. The experiment has shown that applying Multinomial Naïve Bayes with Label Power Set can perform Jaccard score 41.78% compared with baseline 1.11% without any meaningful information. On the other hand, a movie poster can be collected with more manageable features in order to enhance multi-label genre classification.
FM3084 18:30-18:45	Prediction of 3D Rotation and Translation from 2D Images Bhattarabhorn Wattanacheep and Orachat Chitsobhuk King Mongkut's Institute of Technology Ladkrabang, Thailand Abstract—The prediction of three-dimensional (3D) rotation and translation can be retrieved from two-dimensional (2D) images to build 3D models from large collections of images. In this paper, the process starts by extracting the features of images via transfer learning approach from Deep Neural Network model called VGG19. Even though the features extracted from VGG19 are usually adopted in image recognition application; in this research, we apply these features to the prediction model to obtain rotation and translation parameters. Due to the large size of the feature dimensions, it is necessary to perform dimensional reduction technique called latent semantic analysis (LSA) to decrease the feature dimensions and remain only the important ones. Then, the regression estimation technique based on the idea of Support Vector Machine (SVM) is used to predict the rotation and translation parameters. The accuracy is estimated by comparing the prediction results with the corresponding ground truth set. The average errors of rotation and translation of 3D prediction from 2D images are approximately 0.2419 degrees and 1.35 meters respectively.
FM3058 18:45-19:00	Physical Property Analysis of Sweet Potatoes Using Computer Vision Panitnat Yimyam Burapha University Sakaeo Campus, Thailand Abstract—This paper demonstrates the performance of using computer vision for sweet potato grading. Different qualities of sweet potatoes can lead to different prices. Better-grade fruits can be sold at a higher price. Therefore, they should be graded before they are transferred to sell. 471 pictures of sweet potatoes are employed for the experiment. The experimental sweet potatoes are divided into four groups. The first group contains good quality with required shapes. The second group also includes good quality roots but undesired shapes. Experimental samples of the third group have no defects, but they are too small, short or thin shaped. Moreover, for the last group sweet potatoes have defects. The samples are inspected from their physical properties including shape, color and texture features. Top-view pictures are captured and used for feature extraction. Various 184 physical properties are extracted. As using a large number of features may cause high computational cost, so important extracted features are selected. The effective features are used for classification based on k-nearest neighbour and neural network theories. The experiments comprise of twenty sub-experiments. About half the numbers of samples are randomly chosen for training sets, the remaining samples

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	being employed for test sets. The experimental results show that in the average of the k-nearest neighbor and neural network classifiers achieve 97.14% and 96.46% accuracy respectively. Nevertheless, the difference of the classifier performances is insignificant that is proved by the paired sample t-test.
FM3078 19:00-19:15	Attention Guided Relation Network for Few-Shot Image Classification <i>Imranul Ashrafi, Muntasir Mohammad, Arani Shawkat Mauree and Khan Mohammad Habibullah</i> East West University, Bangladesh Abstract—Few-shot Learning is an object categorization problem where the classifier attempts to distinguish new classes with very few labeled examples. There has been significant progress in this field, which includes complex network architectures. Most of the works done in this field were focused on small datasets and longer training. In this paper, the experimentation was done with limited episodic training architecture, which consists of Relation Network as classification network, ResNet Embedding as embedding module, and Self Attention as attention mechanism. The experimentation and comparison with the state-of-the-art models show that attention with metric-based meta-learning generalizes quicker in short training and yields good results. The architecture was tested on the complex dataset miniImageNet. The accuracy was found to be 62.9%, which is close to the state-of-the-art architecture described on metric based meta-learning.



Dinner Time <19:15-20:30> Location: Paparazzi restaurant on 2nd floor

Note: dinner coupon is needed for entering the restaurant.

Poster Presentations

< July 28, 2019 (Sunday) > Morning

Time: 09:50-10:20

Venue: Larose on 3rd floor

5 Presentations: FM3035, FM3041, FM3046, FM3051, FM3061

Note:

- ✧ Suggested Poster with size of A1 (594mm×840mm width*height), with conference short name and paper ID on right up corner.
- ✧ Posters are required to be condensed and attractive. The characters should be large enough so that they are visible from 1 meter apart.
- ✧ During poster presentations, the author should stand by your poster, explaining and answering doubts or questions.

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FM3035	Building a Biomedical Ontology for Respiratory Tract Infection <i>Khawaja Sarmad Arif, Usman Qamar, Kanwal Wahab and Muhammad Qasim Riaz</i> National University of Sciences & Technology, Pakistan Abstract—Respiratory tract infections are most common disease which can affect any human during any part of their age. According to sources almost 60% of all antibiotic prescription is due to Respiratory tract infection. The concepts and their relations related to Respiratory tract infection are need to be explained with the help of biomedical literature as well as historical records. But these literature or records cannot be efficiently managed by users due to their unstructured representation. Biomedical Ontologies are best way to identify the concepts and their respective relations from huge amount of unstructured data. Our research aimed to create a biomedical Ontology for the domain of Respiratory tract infection using UMLS as a data source, which contains concepts, subtypes, their relationships, and semantic types. As a result ontology contains 26 main and sub types of Respiratory tract infections, also 234 broad relations with 107325 relation counts and 1151 narrow relation with 34580 relation counts. The ontology created is evaluated by domain experts and results are formulated.
FM3041	A Systematic Literature Review on Factors Impacting Agile Adaptation in Global Software Development <i>Areebah Altaf, Urooj Fatima, Wasi Haider Butt, Muhammad Waseem Anwar and Maryum Hamdani</i> National University of Sciences & Technology, Pakistan Abstract—Agile practices are considered as a major attraction for global software development (GSD) projects owing to its flexible nature. Beside the major benefits it offers to GSD, there are few challenges that hinders its implementation across the global software industry. This study contributes in constructing a systematic literature review for exploring the major factors impacting the agile adaptation at global level. We have identified and analyzed 28 research studies (2015-2019). These selected studies have revealed Scrum and Extreme Programming (XP) as the most popular agile practices that are adapted irrespective of the software type and organizational structure. Furthermore 5 tool categories are also presented i.e. modeling, requirement elicitation, data tracking tools etc. that are commonly used while practicing agile. The major findings of this study conclude that these agile methodologies are heavily adapted due to their iterative model and quick code delivery but basic challenges like poor customer involvement and lack of documentation are badly affecting its growth at global level.
FM3046	A Model-Driven Approach for Creating Storyboards of Web Based User Interfaces <i>Yawar Rasheed, Farooque Azam, Muhammad Waseem Anwar and Hanny Tufail</i> National University of Sciences & Technology, Pakistan Abstract—The primary essence of storyboarding, reducing complexity in uncertain environments and creating an early visualization of complex system, makes it one of innovative requirement elicitation techniques. Based on the initial sketchy

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	requirements, an abstract level storyboard may be created depicting user interactions with distinct scenes and scenarios for web-based User Interfaces (UI). Multiple rounds of elicitations and storyboards creations will develop initial sketchy storyboard into a refined depiction of user needs. The advent of Model-Driven Software Engineering (MDSE) and Model-Driven Architecture (MDA), as against code centric approaches, presents an abstract view of software products in the shape of models as primary artifacts for automated design development and implementation. In this article, the concepts of Storyboarding and Metamodeling are merged to introduce a Storyboard Metamodel regarding Web-based UI. This leads to automatically develop an evolutionary prototype of a given system from initial requirements. The application of proposed meta-model is demonstrated through a web application case study. The results prove that the proposed meta-model is capable of generating both simple as well as complex storyboards that can be transformed to evolutionary prototype of a given system.
FM3051	Investigation of Modern Tools and Techniques provided by Modeling Editors: A Survey <i>Nazish Yousaf^{1,2}, Abrar Ahmad¹, Maryum Hamdani^{1,2}, Maryum Ashfaq² and Hania Siddiqui²</i> ¹National University of Sciences & Technology, Pakistan; ² University of Wah, Pakistan Abstract—The modern era of digital world has increased the multitude of defining various domain knowledge. Domain-specific-modeling-languages (DSMLs) propose an efficient manner to incorporate the knowledge of domain expert in software system development. The aim of this paper is to perform a survey in order to investigate the domains in which modeling editors are being used, the tools and techniques supported by specified modeling editors and lastly the features provided by specified modeling editors in the particular identified researches. Consequently, we have identified 5 categories, 28 tools/languages, 8 techniques and 4 features from selected 78 research studies published since 2011 to answer the research questions. This paper also focuses towards the detailed comparison between the identified techniques on the basis of features provided by modeling editors.
FM3061	The Star Selecting and Distributing Algorithm of Beidou/Ground Pseudo-Satellite Integrated System <i>Huang Ying</i> Armed Police Force Engineering University, China Abstract—The number of the traceable satellites and their GDOP(geometric distribution of precision) has significant influence on precision, reliability and availability of Beidou navigation system. Therefore, it is concluded that the construction of the ground pseudo-satellite systems can be solved the bottleneck of the vulnerable navigation signal interfered in the complex electromagnetic environment. However, there are two problems of Beidou/pseudo-satellite system to be solved, one is the increased amount of calculation and satellite positioning fault due to the increased amount of satellites, the other is how to effectively deploy ground pseudo-satellite position.

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	So, the paper provide an effect algorithm. It is directly selected the most similar satellite station location from the optimal GDOP in order to reduce the amount of location solution computation owe to the increased number of Pseudo-satellite, the positioning accuracy can be ensured by optimal GDOP shape, and then the balance between positioning accuracy and rapid positioning is found, and the positioning accuracy can be ensured based on the rapidity. Secondly, to avoid the GDOP time-consuming traversal, the maneuvering satellite station distribution algorithm is deduced through the matrix decomposition and the matrix eigenvalue, and the simulation result is shown that the algorithm without calculating inverse matrix is simple and stable, which can be effectively guided the pseudo-satellites distributing in the specially appointed area. Thus the effectiveness of Beidou satellite navigation system can be effectively enhanced. For all, this result would be great practical significance for promoting the application of the development of the Beidou satellite navigation system.
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