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CONFERENCE ABSTRACTS

2018 International Conference on Information Science and System

(ICISS 2018)

Jeju Island, South Korea | April 27-29, 2018

Published by

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CONTENT

WELCOME

Dear professors and distinguished delegates,

Welcome to 2018 International Conference on Information Science and System (ICISS 2018) in Jeju Island!

We wish to express our sincere appreciation to all the Conference Chairs, Program Chairs, and Technical Committees as well as all the authors for contributing their latest research to the conference.

This conference program is highlighted by the three keynote speakers and one invited speaker: Prof. Guo Song, the Hong Kong Polytechnic University, Hong Kong; Prof. Dong Hwa Kim, Hanbat National University, South Korea; Prof. Dong Hwa Kim, Hanbat National University, South Korea; Prof. Vitaliy Mezhuyev, University Malaysia Pahang, Malaysia.

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 information science and system areas to exchange ideas and applications.

In order to hold more professional and significant international conferences, your suggestions are warmly welcomed.

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

Yours sincerely,

Conference Organizing Committee
Jeju Island, South Korea

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.

VENUE

Jeju Island, South Korea | April 27-29, 2018

Hotel RegentMarine The Blue

Add: 20, Seobudu 2-gil Jeju-si, Jeju-do, Korea

www.hotelrmblue.com

Location:

In front of Tap-dong Square in Jeju where the beautiful sea and sky spread out, Hotel RegentMarine The Blue welcomes you. Hotel Regent Marine The Blue is located in front of Jeju Tap-dong Square, a major cultural center in Jeju. Go straight via Yongmun-ro from Jeju International Airport intersection Turn right toward Jejumokkwana at Yongmun rotary Pass through Jejumokkwana, turn left toward Tap-dong and go straight 500m (0.3mile) Turn right toward Seobudu and go straight 160m (0.1mile) Arrive at Hotel Regent Marine The Blue (4.7km/2.9mile, 15 minutes).

AGENDA

<April 27, 2018, Friday>

📍 The Lobby	
10:00-17:00	Onsite Registration & Conference Materials Collection

<April 28, 2018, Saturday> Morning

📍 Blue Hall		
09:00-09:10	**Opening Remarks**	**Prof. Dong Hwa Kim** Hanbat National University, South Korea
09:10-09:50	**Keynote Speech I**	**Prof. Guo Song** The Hong Kong Polytechnic University, Hong Kong
		Speech Title: AI in Geo-Distributed Systems: From Cloud to Edge
09:50-10:20		Coffee Break & Group Photo
10:20-11:00	**Keynote Speech II**	**Prof. Dong Hwa Kim** Hanbat National University, South Korea
		Speech Title: The Impact of Artificial Intelligence in 4th Wave Era of 21C?
11:00-11:40	**Keynote Speech III**	**Prof. Franklin Bien** Ulsan National Institute of Science and Technology, South Korea
		Speech Title: Realizing the IoT Age: How to power up various sensors?
11:40-12:10	**Invited Speech**	**Prof. Vitaliy Mezhuyev** University Malaysia Pahang, Malaysia
		Speech Title: Metamodelling Approach for Modelling Domains having Different Mathematical Structure

AGENDA

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

<April 28, 2018, Saturday> Afternoon

13:30-15:30	**Session I- Computer Theory and Software Engineering** 8 Presentation	**Regent Room**
	IS002, IS0006, IS047, IS037-A, IS005, IS016, IS046, IS025	
	Session II- Image Processing and Recommendation System Design 8 presentations	**Blue Hall**
	IS023, IS024, IS031, IS040, IS021, IS055, IS054, IS019	
	Poster Session	**Blue Hall**
	IS026, IS008, IS029,IS044,IS030	
Coffee Break <15:30---15:50>		
15:50-17:50	**Session III- Information Network and Application Technology** 8 presentations	**Regent Room**
	IS0005, IS034, IS045, IS056, IS041, IS053, IS0002-A, IS032	
	Session IV- Computer Science and Information Engineering 8 presentations	**Blue Hall**
	IS0001, IS012-A, IS017, IS022, IS035, IS050-A, IS051-A, IS052	

Dinner @ Latif <17:50-20:00>

<April 29, 2018, Sunday>

SOCIAL EVENT
* Participants need to sign up in advance.
Manjang Lava tube ➡ **Maze Land**
Korean Lunch
Sunsan sunrise peak ➡ **Seopjikoji** ➡ **Seongeup Folk Village** ➡ **Ecoland**

Gather point: Lobby of Hotel RegentMarine The Blue

Time: 08:25am

Note: Please arrive in time to join in the tour

The Manjanggul Lava Tube is located in Gimnyeong-ri, Gujwaeup, Jeju City and is 23 m in breadth and 30 m in height. As the lava tube stretches for as far as an approximate 8,928 m, its length ranks amongst the top 10 in the world.

Seopjikoji is located at the end of the eastern shore of Jeju-do Island. "Seopji" is the old name for the area, and "Koji" is Jeju dialect meaning a sudden bump on land. On Koji hill which is wide and flat, there stands a stone Bongsudae called "Hyeopjayeondae" with a 4m height and 9m length

Prof. Guo Song
The Hong Kong Polytechnic University, Hong Kong

Song Guo received his Ph.D. in computer science from University of Ottawa. He is currently a full professor at Department of Computing, The Hong Kong Polytechnic University. Prior to joining PolyU, he was a full professor with the University of Aizu, Japan. His research interests are mainly in the areas of cloud and green computing, big data, wireless networks, and cyber-physical systems. He has published over 300 conference and journal papers in these areas and received multiple best paper awards from IEEE/ACM conferences. His research has been sponsored by JSPS, JST, MIC, NSF, NSFC, and industrial companies. Dr. Guo has served as an editor of several journals, including IEEE Transactions on Parallel and Distributed Systems (2011-2015), IEEE Transactions on Emerging Topics in Computing (2013-), IEEE Transactions on Green Communications and Networking (2016-), IEEE Communications Magazine (2015-), and Wireless Networks (2013-). He has been actively participating in international conferences as general chair and TPC chair. He is a senior member of IEEE, a senior member of ACM, and an IEEE Communications Society Distinguished Lecturer.

Prof. Dong Hwa Kim
Hanbat National University, South Korea

Dr. Dong Hwa Kim received Ph.D from Ajou University in Korea and also got Ph.D from Dept. of Computational Intelligence and Systems Science, TIT (Tokyo Institute of Technology, K. Hirota Lab.), Tokyo, Japan.

He has experience in many areas such as Visiting Professor, Mechanical, Optic, Engineering Informatics, Budapest University of Technology and Economic (March 20, 2012-2013), President, Korea Institute HuCARE (President of Hu-CARE (Human-Centered Advanced Technology Research/Education, 2009 –), EU-FP NCP (ICT) in Korea (Nov. 2009-), Korea Atomic Energy Research Institute (Nov., 1977-March, 1993), President, Daedeok Korea-India Forum (March 1, 2010 –), Vice-president of the recognition board of the world congress of arts, sciences and communications, IBC (Sept. 1, 2007, UK), Co-editor, Japan Society for Fuzzy Theory and Intelligent Informatics, executive committees (June 2, 2007 -2009), Co-editor, Journal of Advanced Computational Intelligence and Intelligent Informatics (JACIII, Fujii press, Japan (2006-), Director of National Science Foundation (2006-2008).

He wrote many columns about science & technology strategy and policy in major newspaper in Korea. He also had ever have lecture and keynote speaker in over 100 University and conference or forum over the world. He was Book Author in Hybrid Evolutionary Algorithms (Computational Intelligence 75), Springer, Germany, 2007, and published 200 papers in international Journal and awards 2000 Outstanding Intellectuals of the 21st Century, Top 100 Engineers 2008 (UK), International Einstein Award for Scientific achievement.

He got also best innovation award from Hankook Illbo (Korea major daily newspaper) on 2009. He is now working at Hanbat National University (2009 –).

KEYNOTE

Prof. Franklin Bien
Ulsan National Institute of Science and Technology, South Korea

Professor Franklin Bien received the B.S. degree from Yonsei University in 1997.

He received his M.S. and Ph.D. degrees from the Georgia Institute of Technology at Atlanta, GA in 2000 and 2006 respectively. Dr. Bien's heritage roots from Dr. Joy Laskar. This also means Dr. Bien's heritage roots from a Nobel laureate and the father of 'transistor', Dr. John Bardeen as you can see from the 'People' tab.

Prior to joining UNIST in 2009, Dr. Franklin Bien was with Staccato Communications, San Diego, CA as a Senior IC Design Engineer working on analog/mixed-signal IC and RF front-end blocks for Ultra-Wideband (UWB) products such as Wireless-USB.

Before working at Staccato, Dr. Bien was with Agilent Technologies and Quellan Inc., developing transceiver ICs for enterprise segments that improve the speed and reach of communication channels in consumer, broadcast, enterprise and computing markets.

In the early stage of his career including the Ph.D. work, Dr. Bien's research interests included signal integrity improvement with alternate modulation schemes, cross-talk noise cancellation, and equalization techniques for 10+Gb/sec broadband communication applications. Dr. Bien's research and design experiences includes CMOS RF front-end circuits for UWB wireless communications, adaptive circuits for wireless power transfer (WPT) applications, and electronics design for future automobiles and electric vehicles. For more, please visit http://bicdl.unist.ac.kr/UNIST_ECE_Franklin_Bien/Home.html.

INVITED

Prof. Vitaliy Mezhuyev
University Malaysia Pahang, Malaysia

Vitaliy Mezhuyev received BS and MS degrees in physics and informatics from Berdyansk State Pedagogical University (BSPU), Ukraine, in 1997. In 2002, he received a PhD in Physics Instruction from Kiev National Pedagogical University and, in 2012, a ScD in Information Technologies from Odessa National Technical University, Ukraine. From 2004 until 2014, he was a Head of the Department of Informatics and Software Engineering at BSPU, Ukraine. Now he is Professor at Faculty of Computer Systems and Software Engineering in University Malaysia Pahang, Head of the Software Engineering Research Group. During his career, Vitaliy Mezhuyev participated in the multiple international scientific and industrial projects, devoted to formal modelling, design, and development of advanced software systems as a network-centric real-time operating system; IDEs for the automation of development of parallel real-time applications; tools for specification, verification and validation of software products; visual environment for metamaterials modelling and others. His current research interests include formal methods, metamodeling, safety modelling and verification of hybrid software systems, and the design of cyber-physical systems.

ABSTRACT

Opening & Speeches April 28, 2018, Saturday Time: 09:00-12:10 📍 **Blue Hall**
09:00-09:10	Opening Remarks **Prof. Dong Hwa Kim** Hanbat National University, South Korea
09:10-09:50	*AI in Geo-Distributed Systems: From Cloud to Edge* **Prof. Guo Song** The Hong Kong Polytechnic University, Hong Kong Abstract- When accessing cloud-hosted modern applications, users often suffer a significant latency due to the long geo-distance to the central cloud. Edge computing thus emerges as an alternative paradigm that can reduce this latency by deploying services close to users. In this talk, we will analyze the methodology and limitations of popular approaches for supporting AI services on geo-distributed systems along the evolution from cloud computing to edge computing. In particular, we shall discuss how to deal with different sets of challenges in training and inference, the two phases of machine learning based applications, over heterogenous geo-distributed systems. We shall also present our recent studies on data driven resource management among networked collaborative edges.
	Coffee break & group photo 09:50---10:20
10:20-11:00	*The Impact of Artificial Intelligence in 4th Wave Era of 21C?* **Prof. Dong Hwa Kim** Hanbat National University, South Korea Abstract- Many experts have been mentioning the impact of AI technology in the Fourth Industrial Revolution. And they prospect that this technology will change the social situation such as life style, product method, city, education, and etc. It means that our life pattern will be changed by artificial intelligence for IoT (Internet of Things), smart city, smart education, and autonomous vehicles. Of course, these technologies will lead economy and can give opportunities to get a job and product method will be changed by these technologies. So, as researcher and engineer, we should create on how an institution is organized, how it defines operation, how it relates to surrounding communities or teams, how it responds to research solutions or the results, and how it takes part in the strategies and plan. With the results, technology will go to convergences and smart which gives an impact to works in plan for research, education. For that we need to connect research

	experiences and create idea.
	This lecture deals with research motivation and hybrid artificial intelligence for student, young professor and researchers, offers various research materials about hybrid artificial intelligence method and emotional technology as artificial intelligence obtained from research experience.
	Conclusion suggests many possible approaches and why it is important at this point to introduce artificial intelligence, especially why we should recognize and study emotion technology earlier.
	And this lecture also gives why we should innovate and how we can obtain a good idea for emotion as topic of 4th wave through experience.
11:00-11:40	*Realizing the IoT Age: How to power up various sensors?* **Prof. Franklin Bien** Ulsan National Institute of Science and Technology, South Korea Abstract- Everyone has been talking about the Internet of Things (IoT) for several years now. From users point of view, life style can change drastically with various sensors planted everywhere helping each users in many different ways. Sensors can talk to each other to enhance the quality of life by automatically actuating different modules. However, it becomes a vary practical question to ask: How are we going to power up various sensors that enable the true IoT age? In this keynote, several data sets will be shown to convince the forth coming IoT age. Not only to enhance the life style of users, but also to strive telecommunication business. Then from a hardware realization point of view, different technologies to send power to remotely located sensors will be introduced along with the limitations and possibilities of each technologies.
11:40-12:10	*Metamodelling Approach for Modelling Domains having Different Mathematical Structure* **Prof. Vitaliy Mezhuyev** University Malaysia Pahang, Malaysia Abstract- The methodology of Domain Specific Mathematical Modelling (DSMM), which implementation aims to overcome the shortcomings of an existing methodology of Domain-Specific Modelling is proposed. DSMM introduces an additional level of the metamodelling architecture, which allows us to take into account the mathematical structure of the modelled domains, and to apply mathematical operations for the development of new effective methods for solving domain-specific problems. The concepts of the metamodel, metamodelling, levels of the metamodelling architecture and the formal semantics of the DSMM metamodels are defined. Examples of DSMM application for the development of metamodels and their use for the domains modelling are discussed.

ABSTRACT

Lunch Time <12:10-13:30>   Location: Latif

Note: lunch coupon is needed for entering the restaurant.

	Session I- Computer Theory and Software Engineering Time: 13:30-15:30 📍 Regent Room Chair: Prof. Dong Hwa Kim Hanbat National University, South Korea
IS002 13:30-13:45	A Scalable Network Area Storage with Virtualization: Modelling and Evaluation using Stochastic Reward Nets *Luyao Zou, Xuhua Rui, Tuan Anh Nguyen, **Dugki Min**, Eunmi Choi, Tran Duc Thang and Nguyen Nhu Son* Konkuk University, South Korea Abstract—Modelling and analysis of storage system in data centers for availability prediction is of paramount importance. Many studies in literature proposed different architectures and techniques to enhance availability of the storage system. In this paper, we proposed to incorporate virtualization techniques on a network area storage. We used stochastic reward nets to model the system's architecture and operational scenarios. Furthermore, we investigated various measures of interests including steady state availability, downtime and downtime cost, and sensitivity of the system availability with respect to impacting parameters. The analysis results show that the proposed storage system with virtualization can obtain an acceptable level of service availability. Furthermore, the sensitivity analysis also points out complicated dependences of service availability upon system parameters. This paper presents a preliminary study to help guide the development of a scalable network area storage with virtualization in practice.
IS0006 13:45-14:00	Security and Device Control Method for Fog Computer using Blockchain ***Jun Woo Jeong**, Bo Youn Kim and Ju Wook Jang* Sogang University, Korea Abstract—Fog computing has emerged due to the problem that it becomes difficult to store every data to the cloud system as the number of Internet of Things increases. In this fog computing, a vast amount of data generated from the Internet of Things is transmitted to the cloud system located at a remote place, and is processed by a fog computer such as a sensor or a router located nearby, so that only the necessary data is transmitted to the cloud system. However, the above-mentioned fog computer has some drawbacks like being shut down due to an attack by a malicious user in advance, and a method of processing when a fog computer is down or restored. In this paper we

	describe a fog computing with blockchain that enables fog computers to share transaction generated by processing transaction information of a device controlled by a blockchain method to a security and device control method of a fog computer utilizing the technology. Furthemore by using security properties of blockchain such as authentication, non-repudiation and data integrity, fog computing using blockchain has advantage of security comparing to previous Cloud and fog computing system using centralized database or P2P networks.
IS047 14:00-14:15	Network-based VM Migration Architecture in Edge Computing ***Kyoungjae Sun*** *and Younghan Kim* Soongsil University, South Korea Abstract—In this paper, we consider network-based VM migration in the Edge Computing environment, which provides minimized downtime and user processing load. The architecture and interfaces for network-based VM migration in an edge computing environment are defined based on 3-tiered network architecture to support various VM migration scenarios depending on network capability and stateful application. We classify the possible migration scenarios in the edge computing architecture and design the functional blocks required for the edge devices to support them.
IS037-A 14:15-14:30	Analysis of Natural Language Query Structures to Construct SPARQL for Ontology-Based QA System: Focused on Music Ontology *Haemin Jung, Hyesoo Kong,* ***Minsik Lee*** *and Wooju Kim* Yonsei University, South Korea Abstract—In our recent research, we suggested a methodology for an ontology-based QA (query and answering) system, which changes natural language queries into SPARQL, a query structure for semantic web, and retrieves answers of the query. When a query comes in, the system apply morpheme analyzer to earn a list of keywords. Then, each keyword goes through a NER (Named Entity Recognition) process and are mapped to a proper instance, literal or class in the ontology. Using this mapping information, we could find a set of shortest paths that connects all of the named entities, and triples constituting those paths. These triples are used to make SPARQL of the input query. But not all the queries are in the same structure; some of them has more constraints than others. We decided a few patterns and if the input query matches one of them, we add more triples or functions to the SPARQL. But this was a temporary method. So in this research, we analyze and observe many natural language queries that people really ask to our QA system, and classify them into a few categories based on their grammatical structure. Then, we find specific keywords that have semantic meaning which requires some additional elements to be reflected in the process of constructing SPARQL. We make operations to handle these keywords using functions for ordering, counting, limiting and filtering. By this process, more varied natural language queries can be processed, and we expect that questioners of an ontology-based QA system is more likely to get their desired answer.

IS005 14:30-14:45	Pandora: A Multi-Encryption Software *Jayson J. Cruz, Russell D. Fernandez, Carlo M. Palicpic, Dominick L. Uyehara and **Ronina C. Tayuan*** University Of Santo Tomas, Philippines Abstract—Privacy and security have never been more important. The need for these things are on the rise considering that more and more reports of digital theft and massive unsolicited government surveillance are surfacing. The project, Pandora, is a solution created by the proponents to provide an encryption scheme that is a combination of the new and the old. Pandora is an integration of AES-256 and modified ciphers. You can use it to encrypt and decrypt files, just like typical AES encryption, but with the added complexity offered by the ciphers. The system is primarily developed using Java programming language using NetBeans IDE. The program will ask for a file input which will then be processed through multi-level encryption. Running parallel with this, the system will ask for a key which will be used for decryption. The final output will be a ".pxt file". All of these are presented to a user with a graphical user interface (GUI). Added security elements were also implemented to ensure the confidentiality of the files. The key is required to be between eight to thirty-two mixed alphanumeric characters which will then be processed through separate hashing algorithm. This scheme ensures that it would take at least 3 to $3.914349685892112e+43$ years to brute force or to perform dictionary attack on the key.
IS016 14:45-15:00	TIP EXPRESS: An Android School Navigation Application ***Reynaldo Castillo***, *Maria Christina Aragon, Paula Jean Castro and Henry Macugay* Technological Institute of the Philippines Quezon City, Philippines Abstract—Problems of new students or visitors are not familiar in a school campus grounds. They tend to navigate by themselves and even they ask security personnel, still they tend to take time to reach their destination or most often they get lost. The students and/or visitors may come late in their classes and/or meetings. The study is for new students and visitors to explore and navigate the campus grounds thru a mobile application. The mobile application provides a user-friendly interface which considers user experience. The mobile application serves as a guiding tool in navigating around the school campus grounds. In the study, the mobile application used Google Map to track the current location of the user and plot the route from the origin to the destination inside the Technological Institute of the Philippines Quezon City campus using fuzzy logic algorithm to get the shortest route and channel selection algorithm to get the nearby user within a perimeter. The study used the Rapid Application Development model in order to deliver expected outputs. Surveys using a questioner drafted from ISO 25010 were conducted to determine the effectiveness of the developed mobile application in terms of its functionality, reliability and efficiency. It was concluded that the mobile application is an effective tool in giving navigation and campus information for its users. For the result, the average mean of all the criteria

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	yields 4.12 interpreted as very effective using the 5 point Likert's Scale. Thus, the mobile application is useful reliable, functional, and efficient to serve its purpose.
IS046 15:00-15:15	Malware Family Classification based on Novel Features from Frequency Analysis **_Changhee Choi_**_, Kyeongsik Lee, Hwaseong Lee, Ilhoon Jeong, and Hosang Yun_ Agency for Defense Development, South Korea Abstract—In the past, the number of malware was small, and signature-based anti-virus program could be used to effectively protect the system. Cyber attackers create a large number of variants of malwares with automated tools to avoid signature-based anti-virus programs. Creating signature for all the variants is quite expensive task. To solve this problem, defensive side has been tried to automatically detect the malware variants. Classifying malware families can be one way to solve them. In this paper, we extract novel features from frequency analysis of malware to classify malware family. We separate the malware into section level and apply DCT/DFT to each section. Experimental results show that the proposed method can achieves high accuracy and low operation cost.
IS025 15:15-15:30	Detecting Phone The Using Machine Learning **_Xinyu Liu_**_, David Wagner and Serge Egelman_ University of California, Berkeley, United States of America Abstract—Millions of smartphones are stolen in the United States every year,putting victims' personal information at risk since many users often do not lock their phones. To protect individuals' smartphones and the private data stored on them, we developed a system that automatically detects pickpocket and grab-and-run theft, in which a thief grabs the phone from a victim's hand then runs away. Our system applies machine learning to smartphone accelerometer data in order to detect possible theft incidents. Based on a feld study and simulated theft scenarios, we are able to detect all thefts at a cost of 1 false alarm per week. Given that many smartphone users refuse to enable screen locking mechanisms over complaints that it takes too long to unlock their devices, our system could be used in conjunction with these systems in order to drastically decrease the number of times a user is asked to provide a lock code. That is, our system could be used to prompt smartphone users for PINs or passcodes only when theft events have been detected.

Session II- Image Processing and Recommendation System Design Time: 13:30-15:30 Blue Hall Chair: Prof. Maria Christina Aragon Technological Institute of the Philippines Quezon City, Philippines

IS023 13:30-13:45	BlockSight: A Mobile Image Encryption Using Advanced Encryption Standard and Least Significant Bit Algorithm **_Reynaldo Castillo_**_, Paula Jean Castro, Gerald Cayabyab, Ma. Rachel Aton_ Technological Institute of the Philippines Quezon City, Philippines

Abstract—In this paper, we developed a new mobile application designed to protect your images stored on your mobile phone using Advanced Encryption Standard algorithm to secure images by encrypting it and Least Significant Bit algorithm to process the encrypted image and embed it into another image. To achieve high level of encryption, a 256 bit length key of Advance Encryption Standard is used to maximize protection and Diffie-Hellman algorithm to secure the processed key to both parties without interference from outside. In steganography, the encrypted image will be invisible into the cover image in which potential hackers do not have any idea about the original image embedded inside of the cover image, and with this even if the hacker got the image it will still need the correct key to decrypt it or else the image will be deleted The study used Rapid Application Development Model as the project development methodology, which allows the preceding phase to iterate until the application is refined, requirements are gathered and allows early testing of the prototypes during every iteration to reduce the risk of any major issues in the final deployment of the application. With the use of ISO/IEC/IEEE 29119 Testing Standards, the application was evaluated in terms of its security, usability and reliability. Based on the evaluation results, the application satisfied the respondents and possible users with an overall mean rating 4.17 or acceptable.

IS024
13:45-14:00

FEDSecurity: Implementation of Computer Vision Thru Face and Eye Detection

Roxanne A. Ancheta, *Felizardo C. Reyes Jr, Jasmin A. Caliwag and Reynaldo E. Castillo*
Technological Institute of the Philippines Quezon City, Philippines

Abstract—Closed-Circuit Television (CCTV) cameras are placed everywhere in both public and private areas and used in a broad range of applications, especially for security purposes. CCTVs are managed by CCTV operators for twenty-four hours to ensure that there are no excessive activities in the area. FEDSecurity is a monitoring system that alarm and capture the images of CCTV operator whenever falls slumbering during the time of work. Face and eye detection used Haar-Cascade Algorithm, and Microsoft SQL Server Express used as storage. FEDSecurity is also capable of determining whether the user in front of the camera is a real human or a picture by gauging the time that a user is not blinking eyes. Worst case scenarios could prevent possible suspicious activities when using the system. The system acquired was an asset to the homeowners, companies and any other business firms. Agile Software Development Method adapted in developing the system. In testing the system's acceptability, the questionnaires were based on the ISO 9126 Standard. The respondents of the study are the IT professionals, CCTV operators such as security guard or security officers, and the management such as administrator or security head. The result of evaluation interpreted as very acceptable based on Likert's scale.

IS031
14:00-14:15

A Review on Iris Recognition in Non-Cooperative Environment

*Nurul Amirah Mashudi and **Md Jan Nordin***
Universiti Kebangsaan Malaysia , Malaysia

Abstract—Nowadays, researcher is focus in developing reliable iris recognition systems for non-cooperative situations. The demand for iris recognition is increasing due to its

	reliability, accuracy and uniqueness. There are major factors involved in unconstrained environment such as obstruction by eyelids, eyelashes, glass frames, hair, off-angle, presence of contact lenses, poor illumination, motion blur, lighting and specular reflections, partially eye image, etc. The performance of the iris will be deteriorated and this results in lower recognition rate. In this paper, an overview of iris recognition for noisy imaging environments is presented included various related databases for iris recognition systems.
IS040 14:15-14:30	Learning Convolutional Neural Network Using Data from Other Domains in case of Insufficient Data *Jeonghyo Ha, Jung Eun, **Pyunghwan Ahn**, Dong Hoon Shin and Junmo Kim* Korea Advanced Institute of Science and Technology, South Korea Abstract—In this paper, we describe a training methodology of convolutional neural networks(CNNs) using data from a different domain when the number of training data in the test domain is small. Training a CNN for classification without enough data might lead to serious problems of overfitting and thus fail to generalize. In this case, if large data of the same object categories is available in another domain, this problem can be alleviated. We propose a method to train a CNN with small data in the test domain and large data in another. Since training a single network using data from different domains could lead to performance degradation, we consider this problem as cross-domain image similarity learning. In our experiment, we train a Siamese network to compute similarity between a pair of images from different domains, which are natural photos and 3D model projections. We design the network to output the probability that the input image pair belongs to the same category. Thus, the network can calculate similarity between the input pair and also classify a natural photo by comparing it with each images in the 3D model database. Since the network output represents similarity, we can greatly reduce testing time for classification compared to other methods (such as NN classification) in which distances between feature vectors must be calculated for every pair of images.
IS021 14:30-14:45	A Geo-Mapped Street Crime Alert Notification and Alternative Route Recommender System using Collision Detection and Best Path Algorithms ***Maria Christina Aragon**, Reynaldo Castillo, Melissa Juanillo and Stefanie Lyana Asuncion* Technological Institute of the Philippines Quezon City, Philippines Abstract—Crime rates in the Philippines are high and pose significant threats to pedestrians' welfare. With the advancement of mobile technology, this idea was conceptualized as the new way to address the issue. This study describes the analysis, design, and implementation of GeoSCAN, a mobile application aimed to keep pedestrians well informed of the on-going crimes and crime history to prevent the possibility of being victimized or experience inconveniences when traveling along the streets. The application is helpful so that pedestrians can be more cautious about the place they are traveling especially those who are unfamiliar with the area. GeoSCAN notifies pedestrians of the crime-related activities that can be on-going or have recently

	happened in a specified area or barangay. The pedestrians are provided with geo-mapped crime history, appropriately pinned with descriptive icons and crime details; GeoSCAN recommends alternate shortest and safest path using Dijkstra's Algorithm and Haversine Formula. There is a separate crime data management interface for police officers to ensure valid and reliable information dissemination and a separate interface for bystanders to report on-going crime (crowd sourcing) to facilitate faster information dissemination. The Spiral model was the basis for system development to reduce the degree of risk in the software evolution process. Result of the survey conducted, based on ISO 25010, GeoSCAN is very acceptable in terms of functional suitability, reliability, performance efficiency, compatibility, usability, security, transferability, and maintainability.
IS055 14:45-15:00	New Location Recommendation Technique on Social Network ***Sutarat Choenaksorn*** *and Saranya Maneeroj* Chulalongkorn University, Thailand Abstract—With the availability of current modern technologies, decisions making in an everyday life can be assist in many different ways. Many researches in the past decade has studied about recommendation systems. Recommendation systems can base on different variables with location-based services is one of the more interesting factor to a recommendation system. Recommendations on Location based Network is a service for assisting people to locate locations of their interests. A large number of recorded checked-in histories was gathered to make the prediction according to the desired preferences of each user. Furthermore, determinations have shown a social relationship leading to availability of information will assist in making better recommendations based on the locations. Recently, the recommendation system on location-based domain usually combines either content-based technique and collaborative technique, or collaborative technique and social-based techniques. It is difficult to find the way to combine those three techniques. So there is no research that combine those techniques on location-based recommendation system. This study proposes a new method that combines content-based technique, collaborative technique, and social-based techniques; to produce more efficient result results than location-based RS methods. The evaluation results show that the proposed method provide higher accuracy and coverage than two current location methods by measuring with the Normalized Discounted Cumulative Gain (NDCG) and coverage matrix.
IS054 15:00-15:15	Music recommendation model by analysis of listener's musical preference factor of K-pop ***Ji Yun Chung*** *and Moung Jun Kim* Ewha Womans University, South Korea Abstract—Recently, the popularity of Korean pop music (or K-pop) has been increasing, due to technological developments in digital devices. According to the IFPI, 59% of Koreans regularly listen to music on their smartphones and other related devices [1]. Thus, the present study proposes a music recommendation model that predicts listeners' music preferences and recommends customized music lists. For this purpose,

	two pilot tests (with one participant in each test) were conducted and linear regression analysis was performed by using the Tensorflow application. The first test determined the participant's song preferences, based on a sample of 200 K-pop songs, while the second test added a neutral response option when considering a sample of 200 additional K-pop songs. The results indicate that the prediction accuracy of the participant's song preferences in the first test was 71.5%. However, after adding the neutral response option in the second pilot test, the prediction accuracy increased to 84.0%. The implication of the findings is that this model can be used to predict the music preferences of listeners on a wider scale.
IS019 15:15-15:30	A Mobile Expert System Utilizing Fuzzy Logic for Venereal and Sexually Transmitted Diseases *Jasmin A. Caliwag, Felizardo C. Reyes Jr.,* **Paula Jean M. Castro,** *Reynaldo E. Castillo* Chu Hai College of Higher Education, Hong Kong Abstract—According to American Social Health Association, more than half of all people in the world will have Sexually Transmitted Infection (STI) or popularly known as STD at some point in their lifetime. This paper presents the work of developing a mobile expert system to provide information about the most common venereal and sexually transmitted diseases in the Philippines. The mobile application developed is capable of diagnosing the user based from the different physical manifestations of symptoms and usual signs that occur in their body. The source of data used to build the expert system was collected from various related literature studies and interviews with experts in venereology. The information provided by the application will help users in identifying early signs and symptoms of VD/STD and will also improve their knowledge regarding these infectious diseases. Detection of the VD/STD at a primary stage is essential as to increase people's survival rate. A fuzzy logic algorithm was utilized to filter different symptoms and provide an accurate result of the diagnostic testing. The system was evaluated by venereal disease expert, venereal disease/ sexually transmitted disease patients and IT Professionals through its functionality, efficiency, and portability. The results of the evaluation showed that the application was able achieved the defined objectives from the outcome of the survey given to the experts and other evaluators.

Coffee Break <15:30---15:50>

	Session III- Information Network and Application Technology Time: **15:50-17:50** Regent Room Chair: Prof. Vitaliy Mezhuyev Universiti Malaysia Pahang, Malaysia
IS0005 15:50-16:05	Data Managing and Service Exchanging on IoT Service Platform Based on Blockchain with Smart Contract and Spatial Data Processing *Bo Youn Kim,* **Seong Seok Choi,** *Ju Wook Jang* Sogang University, Korea Abstract—Expectation of cryptocurrencies has been increased rapidly and all of these cryptocurrencies are generated on blockchain platform. This means not only the paradigm is changing in the field of finance but also the blockchain platform is technically stable. Based on the stability of blockchain, many kind of crypto currencies or application platforms are being implemented or released and world famous banks are applying blockchain on their financial service[1]. Even law for exchanging cryptocurrencies is being discussed. Furthermore, blockchain platforms also run programmed source code which is called as smart contract on its distributed platform. Smart contract extends usage of blockchain platform. So in this paper, we propose an algorithm for recording and managing location data of IoT service provider and user based on blockchain with smart contract. Our proposal records data of participants in network by blockchain which ensures security and match with other optimized participant by spatial data processing.
IS034 16:05-16:20	Game Theoretic Equilibrium Analysis of Energy Auction in Microgrid *Sanjoy Das, M. N. Faqiry, A, K. Zarabie, H-Y Wu.* Kansas State University, Manhattan, USA Abstract—The future energy grid is expected to be a decentralized network where household units acting as agents can trade energy with others within local neighborhoods by means of an action mechanism. When agents can establish their own price of energy, it is essential to analyze the auction from a market equilibrium standpoint. This paper provides a proof that such a mechanism, although previously formulated as a gradient ascent algorithm to maximize the welfare (i.e. the sum of the utilities of all the agents), converges to the generalized Nash equilibrium (GNE) under physical grid operating constraints, where no agent is incentivized to deviate from its bid. The theoretical analysis is accompanied by simulations of a modified IEEE 37 node system showing convergence towards the equilibrium.
IS045 16:20-16:35	Adaptive Bit-rate Video Streaming on Named Data Networking with Active Throughput Estimation *Kanin Poobai, Suphakit Awiphan and Jiro Katto* Chiang Mai University, Thailand Abstract—Named Data Networking (NDN) has been recently introduced as a new future network architecture. The end-to-end throughput estimation for adaptive bit-rate video streaming on NDN is one of the most challenging topics. Specifically, the

	end-to-end throughput estimation on NDN appears to be unreliable, since the provider of content is unknown to the consumer. Moreover, partial caching on NDN router's Content Store could temporarily lead to packet loss due to throughput overestimation. In this paper, we present an active Interest adaptation scheme which operates by proactively estimating the throughput in a hop-by-hop fashion. The consumer node is then assisted with the most recent available end-to-end bandwidth. Therefore, the video player can promptly adapt to the change of network condition. The implementation evaluation using NDN-JS and DASH-JS on the setup network demonstrate that our proposed solution provides better average stream bit-rate and consumes less network bandwidth than the traditional system.
IS056 16:35-16:50	An Extended Virtual Network Functions Manager Architecture to Support Container *Phuoc Hoang Cong, Thanh Dinh Ngoc and Young-Han Kim* Soongsil University, South Korea Abstract—Network function virtualization (NFV) is a network architecture concept that decouples network functions from hardwares. With NFV, virtual network functions (VNFs) can easily be instantiated and deployed on standard servers using virtual machines (VMs). To facilitate VNFs' deployment and management, Tacker is developed as a NFV manager (NFVM) and orchestrator (NFVO) in OpenStack environments. Recently, container is proposed as a promising virtualization technology for deploying and running distributed applications without launching an entire VM for each application, which helps increase cloud agility and accelerate the deployments of cloud technologies and VNFs. Unfortunately, the current VNF manager and orchestrator, Tacker, do not support container-based VNFs, thus introduces limitations to integrate container-based VNFs to the current NFV infrastructure (NFVI). In this paper, we design an extended Tacker architecture to support managing and orchestrating container-based VNFs. The Kubernetes cluster is integrated to support launching container-based VNFs and provide high availability for VNFs. Through test-bed results, we show the advantages of container-based VNFs using our architecture compared to VM-based VNFs in terms of instantiation time in Tacker.
IS041 16:50-17:05	Motion Trajectory for Human Action Recognition using Fourier Temporal Features of Skeleton Joints *Naresh Kumar and Nagarajan Sukavanam* Indian Institute of Technology Roorkee, India Abstract—Spatial and temporal dynamics of human being create a rich set of information to process and analyze very important human activities that can attract the attention of various discipline of real life applications. Finer view of data modality for human body can be characterized by skeleton, contour, silhouette and articulated geometrical shapes. All modalities of a video are be affected by challenging vision problems like view invariance, occlusion and camera calibration at varying scale. In this work, we focused skeleton based human activity recognition and proposed motion trajectory computation scheme using Fourier temporal features from the interpolation of skeleton joints of human body. This is accomplished by considering human motion as

	trajectory of skeleton joints. Experimental observations ensures that this approach outperforms many of state of the arts. The proposed algorithm is tested on MSRAction3D benchmark dataset. For this we have experimented on three action sets AS1, AS2 and AS3 categorized from the dataset. After different training and testing samples this gives overall accuracy 95.32% for human action recognition.
IS053 17:05-17:20	Performance Analysis of POX and Ryu with Different SDN Topologies *Jehad Ali,* **Seungwoon Le**e, *Byeong-hee Roh* Ajou Univ. Suwon-si, South Korea. Abstract—This paper deals with the performance comparison of two python-based Software Defined Network (SDN) controllers i.e. POX and Ryu under different network topologies such as Single, Linear, Tree, Dumbbell, Data Center Networks (DCN) and Software-Defined Naval Networks which use satellite communication systems (SATCOM) i.e. SDN-SAT [1]. Experimental results, validated through Mininet has clearly indicated that Ryu has superior performance i.e. A TCP throughput increase of 25.56%, 282.54%, 44.85%, 19.88%, 45.45% and latency decrease of 93.48%, 99.96%, 99.90%, 97.08%, 99.33% in single, linear, tree, dumbbell and DCN topologies respectively. Similarly, in SDN-SAT topology Ryu has 0.21% increase in TCP throughput and 34.62% decrease in latency as compared to POX controller.
IS0002-A 17:20-17:35	The Title Computer Science, Information Technology, Communication & Network solutions **Camara Abdoul Latif** University of California, San Diego, United States Abstract—Computer Science, Information Technology, Communication & Network I have been very useful for capturing knowledge as In Computer Science, Information Technology, Communication & Network, a prime challenge has been to develop Computer Science and ICT function given only partial Information Technology knowledge and Communication & Network and inconsistency in how this knowledge is curates by experts., Again Towards A Data-driven Computer Science, Information Technology, Communication & Network solutions Current Research in Computer Science, Information Technology have been very useful for capturing knowledge as a hierarchy of concepts and their interrelationships. In data Information Technology, a prime challenge has been to develop Computer Science and Technology function given only partial Communication & Network knowledge and inconsistency in how this knowledge is curates by experts. I will discuss how large networks Information Technology interactions, as are being mapped systematically for many Network, can be transformed to assemble an Science and Information Technology with equivalent coverage and power to the manuallycurates- Vacuum Scientific waves supply to network-extracted Information Technology, Communication & Network concepts.
IS032 17:35-17:50	Metamodel for the development of geometrical modelling languages ***Vitaliy Mezhuyev,****Vladimir Lavrik,Ravi Samikannu,Yurii Gunchenko* Universiti Malaysia Pahang, Malaysia Abstract—Paper discusses a potential of the metamodelling technology to improve

computer-based methods of geometrical modelling. The meta-metamodel for the development of the geometrical modelling languages is proposed. It is defined as a formal system, which consists of geometrical metatypes, grammar and operations. The grammar rules are expressed as logical formulas, setting constraints on the geometric structure of a model. Paper proposes an additional system of relations for constructing the grammatical rules of geometrical languages. It is shown that use of the metamodeling makes the process of a geometrical design more effective.

Session IV-   Computer Science and Information Engineering

Time: **15:50-17:50**

📍 Blue Hall

Chair: Prof. Hyunsung Kim, Kyungil

University, South Korea

IS0001
15:50-16:05

Research on Port Efficiency Measurement Based on Three-stage Cascade Data Envelopment Analysis Control Strategy

Xiaoling Huang, Huanping Chen, Yawei Wang and Huishu Piao

Dalian Maritime University, China

Abstract—In order to measure the port efficiency, this paper uses the three stage DEA cascade control strategy to measure the relative efficiency of the port.First, the original input-output value is used to measure the port efficiency. Secondly, the stochastic frontier analysis method is used to analyze the influence of random error and environmental variables on the input difference value. Then, the result of the model is used to adjust the input value. Finally,the adjusted input value is used to re-measure the relative efficiency. Compared with the traditional DEA, this method eliminates the influence of random errors in the DEA model and the different external environmental factors in the port so as to make the measured efficiency more objective and accurate. At the same time, it analyzes the influence of different environmental factors on the port efficiency impact.

IS012-A
16:05-16:20

Impact of Computerized Simulation-Based Learning Experiences on Student Self-confidence and Physical Assessment Skills

Yun Ying Hung and Ying Chieh Liu

Chung Hwa University of Medical Technology, Taiwan

Abstract—AIM The aim of this study is to find the impact of a high-fidelity patient simulation on self-confidence and physical assessment skills of nursing students.

A Chinese Proverb states: Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand. In healthcare, nursing focus on providing patient centered care, as well as giving safe care to patients. Nursing education, preparing nurses to face inconsistent complex practical experiences that require a much higher level of self-confidence, professional knowledge and clinical skills are in needed. Therefore, simulations allow for the practice of this valued goal in an interacting and

safer environment. A computerized human patient simulation program was designed for nursing students to apply principles of communication skills, team work and physical assessment skills under patients' safety and an interactive learning environment. By using a computerized human patient simulation (high-fidelity simulations) as a teaching strategy, participants act out their assigned roles in a true-to-life clinical setting under limited time, and their decision-makings and skills pile up to the realism of the simulation. Paired sample t-tests was used to examine the differences between midterm and final ratings of self-confidence and physical assessment skills of nursing students. An asthma patient with respiratory distress simulation was programed and implemented for study participants. The scenarios included a team work experiences in respiratory and physical assessment, provided medications under limited time situation. 30 nursing students participated in this course. In each section, each group of 3 students participated in simulation for 12 minutes and debriefing for 15 minutes. The nursing students spent approximately 15 hours in the simulator work in total. Each scenario obtained 3 roles for a leader, a primary nurse, a staff nurse who are arranged to complete assigned tasks. Participants also completed reflection papers on their simulation learning experiences. The result revealed some statistically significant differences of self-confidence and physical assessment scores between midterm
and final measurements of nursing students. Participants described they have undergone emotion changes at the first time, such as so real, shock, can't think of anything, acceptances, and calmness. They also felt that they overcome the panic and have completed one advanced task. They all mentioned, unforgettable, somewhere in the self-reflection. CONCLUSION A computerized human patient simulation serves as a teaching strategy enhance self-confidence and the accuracy clinical skills operation of nursing students.

IS017 16:20-16:35	The Modular Quality Transfer Effect of Service-oriented Manufacturing Network ***Liangqing Feng,***Yuqing Yin,Kunkun Zeng Nanchang Hangkong University, China Abstract—The goal of this study is to research the relations on quality among the productive service module(PSM), service production module (SPM)and customer effect module(CEM) in service-oriented manufacturing network(SMN). The relationships among the modules are explored according to a structural equation model (SEM) put forward by this paper. The empirical data of the SEM were collected from a service-oriented manufacturing enterprise in China. PSM and SPM both have obvious interaction on quality, PSM and SPM have obvious positive quality transfer effect on service integration module(SIM) and CEM, SIM also has positive quality relationship with CEM. And in the whole, the interaction effect between PSM and SPM is the most obvious. This study contributes a new perspective which will help the service-oriented manufacturing enterprise to better understand the quality influence and the function relationship among the different value quality in a SMN, and find out its advantages and disadvantages to improve competitiveness.

IS022 16:35-16:50	Predicting Basketball Results Using Cascading Algorithm *Jasmin A. Caliwag, Maria Christina R. Aragon, Reynaldo E. Castillo, Ellizer Mikko S. Colantes* Technological Institute of the Philippines Quezon City, Philippines Abstract—Anybody can guess the winners of a basket game. The question is how big the chances are in predicting the real winners. Relying only on the experts' experiences and intuition could not discover all the value and potential of the collected data. Driven by the increasing comprehensive data in sports datasets and data mining technique successfully used in different areas, sports data mining technique emerges and enables us to find hidden knowledge to impact the sports industry. A more scientific approach is needed to use for these data that are collected. Some predictors based only on winning records and some based only on statistical records of both teams. There are also predictors which use both types of data, but the accuracy of applying different individual algorithms is only ranging about 60% – 70%. To achieve better prediction rates and deal with that complexity, a lot of machine learning methods have been implemented over these data. This paper presents an improved technique for predicting basketball game results implementing cascading algorithm. The researchers combined Naive Bayes, Four Factor Analysis, and Fuzzy Logic Algorithms to predict basketball game result in an acceptable level of 69% - 70% accuracy. The researchers tested several times using data sets from NBA game Season 2015-2016, and the cascading algorithm result manages to reach 70% prediction accuracy. The result of this system can be used to assist basketball coaches in making plans for possible team developments. Also, the forecasted results can serve as an aid in building effective gameplay.
IS035 16:50-17:05	An Agent Based-Model and Equilibrium Analysis of Academic P&T Decisions: The Effects of Inbreeding *Sanjoy Das* Kansas State University, Manhattan, USA Abstract—In academic institutions, merit based promotion & tenure decisions have always been beset with controversy. This paper suggests an agent based model of the decision making process using spectral graph theory, where the voting agents are the vertices of the graph, and edge weights are determined based on the extent of collaborative research between the agents, as well as their estimated levels of social interactions. The model assumes that agents with lower research productivities tend to interact more often with one another. Using the graph theoretic spectrum, the paper applies a multi-dimensional representation that maps the voting agents into points on a low-dimensional grid, where agents that are likely to influence each other more are closely spaced. A multi-agent system model is proposed, where votes are determined based on very small randomly assigned initial values, and the mutual interaction during the decision making process. The model incorporates limited collusive voting within academically inbred agents. The proposed model is able to accurately reproduce a known promotion decision making from a department of a research oriented university

	which involved a sizable number of voting agents with low research output.
IS050-A 17:05-17:20	Predictive Academic Analytics for Student Admission, Support and Retention ***Cherry Lyn Sta. Romana***, *Larmie Feliscuzo and Elmer Maravillas* Cebu Institute of Technology - University, Philippines Abstract—Predictive analytics is being increasingly used to analyze data stored in academic management systems to predict student success and to come up with policies that will help increase graduation rate and increase retention rate. Cebu Institute of Technology – University (CIT-U) is a private university located in Cebu City, Philippines. The school employs a liberal admission policy but supports students using various mechanisms like bridging, peer-learning and learning enhancement programs. Despite these student support programs, attrition rate remains high and graduation rate remains low. There is thus a need to craft data-driven policies in order to have a more targeted and systematic program for student admission, support and retention. The data used in the study are the student records of BS Computer Science (BSCS) and BS Information Technology (BSIT) students of the College of Computer studies, one of the colleges of CIT-U with a high attrition rate. Data of students who entered the University from 2010 to 2013 were extracted. Based on the data, graduation rate is only 34% while retention rate going into the 3rd year level is only at 50%. The data were analyzed using R, a programming language used for data mining and statistical analysis. Logistic regression was used to come-up with a model for predicting successful graduation based on Math (3 courses) and English grades (2 courses). The model when tested yielded an accuracy rate of 75%. Linear regression was also used to establish a university predicted general weighted average (gwa) based on these Math and English grades. The model yielded an adjusted R^2 of 0.81 and a root-mean-squared error of 0.21. Both of these models can be used by the administration as possible bases for student admission to the BSCS and BSIT students this June 2018 and the establishment of targeted bridging programs. Grades from the first two years of College which includes grades in math and computer courses were also used to predict retention and to come up with a university predicted gwa. The logistic regression model yielded an accuracy rate of 93% while the linear regression model when tested obtained a R^2 of 0.89 and root-mean-squared error of 0.16. These results can be used by the administration in coming up with policies and support programs for admission, retention and intervention.
IS051-A 17:20-17:35	Knowledge Mavenism in Enterprise Social Media ***L.G. Pee*** Nanyang Technological University, Singapore Abstract—Social media is often used as a source of diverse and up‐to‐date information. In enterprise social media, this information can catalyse new ideas or innovations and keep organizations abreast with emerging trends and developments. It is thus valuable to understand social media users who broadcast new knowledge. This study proposes the concept of knowledge mavenism, which refers to employees' volitional tendency to acquire and actively diffuse new or emerging knowledge on

	social media. Mavenism is developed based on the concept of market mavenism in consumer research and is characterized in terms of the diversity of one's knowledge sources, proactiveness in accessing new knowledge, posting of new knowledge, and reposting of new knowledge shared by other social media users. This study identifies and assesses the motivations of knowledge mavenism in enterprise social media through a survey of 255 employees. Results indicate that knowledge mavenism is driven by demonstrable and emotional utilities, rather than familial utility. For research, this study looks beyond a general notion of knowledge sharing and identifies an important behavioural tendency that maintains the currency and usefulness of enterprise social media as a knowledge sharing platform and seedbed of new ideas. For practice, the findings indicate potential approaches for driving the sensing and sharing of new knowledge on enterprise social media.
IS052 17:35-17:50	Enhanced User Authentication with Privacy for IoT-based Medical Care System *Donghwan Ku and **Hyunsung Kim*** Kyungil University, South Korea Abstract—With the rapid development of wireless communication technologies and the growing prevalence of smart devices, medical care system allows patients to receive medical treatments from the doctors in remote over wireless sensor networks via Internet of things (IoT). However, the medical data transmission through IoT concerns the privacy issue of patient. To solve this problem, Li et al. proposed an efficient user authentication and user anonymity scheme for medical care system over IoT and claimed their scheme is provably secure. This paper shows that Li et al.'s scheme has some security weaknesses and presents an enhanced scheme to solve the problems in Li et al.'s scheme. The proposed scheme has a bit of overhead in computation but provides security with privacy.

	Poster Session Time: **13:30-15:30** 📍 Blue Hall
IS026	Neural Network Priority Use Of BTS For Optimizing Telecomunication In Indonesia *Henny Harumy, Akhyar Lubis and Muhammad Iqbal* University Pembangunan Pancabudi , Indonesia Abstract—Artificial Neural Network Backpropogation is used to measure the Utilization Priority of BTS (Base Transceiver Station) to Optimize Telecommunication in 3T Disadvantaged, Outermost, Inside Areas based on 7 variables that are dujikan namely Population Density/thousand, User/User, Climate/Geography(Air temperature, rainfall, altitude), Environment, Culture/Community Attitudes, Cost of manufacture/billion, service range. By using Backpropogation method finally found the best architectural pattern yatu architecture 7 - 7 - 1 from 3 architecture which have been tested. MSE

	obtained for Trainning of 0.0001000609 and MSE testing of 0,0027164812 and Epoch obtained is 2164 From the pattern is then predicted telecommunication network users in 2017 that is equal to 317.912.790 million soul, and from the variables that become input the measurement was obtained that the polewali mandar village variable is the priority village of installation of BTS (Base Transceiver Station) with value 0.9298 next is South Nias district with value 0.9242, West Nias 0.9055, Sorong 0.8860, and Sorong jaya 0.8569
IS008	Comparative Assessment of Static Analysis Tools for Software Vulnerability *Peter Miele,Mohammed Alquwaisem,Dae-Kyoo Kim* Oakland University, USA Abstract—Software security is a continuous and growing field within software development, maintenance, and operation. Vulnerabilities in software provide significant risk to the operation of software. Software tools have been developed over time to assist in identification and rectification of software vulnerabilities through static analysis of source code. Static analysis tools provide a software development team a means to rapidly review their project for the vulnerabilities that exist, but unknown to the team. In this paper, we present comparative assessment of three commonly used static analysis tools for software vulnerability using open source software for the purpose to aid software developers in choosing a suitable tool for their needs.
IS029	Demographic Variables in Knowledge Sharing Behavior among IT Engineers in Taiwan *Chiang Hsing Tien* Fuzhou University, Taiwan Abstract—The purpose of this study was to investigate demographic variables in knowledge sharing. The study conducted a quantitative study, and the participants were IT engineers. Random sampling was used. The questionnaires were sent to 25 IT companies by mails. The cover of the questionnaire explained the purposes of the study. A self-addressed stamped envelope was enclosed. 250 copies of questionnaires were sent and 84 copies were returned. The response rate was 33.6%. The data was analyzed by the independent t-test and One-way ANOVA in IBM SPSS 22. The findings of the study show (1) knowledge sharing behavior differs in terms of education level, (2) knowledge sharing behavior has significant influence in terms of profession, and (3) knowledge sharing behavior does not have significant influence in gender, age group, position grade, job tenure, workplace, marital status, and number of children.
IS044	Genetic Algorithm Modification: Addition Of The Population Improvement Stage *Torchinskii V.E., Logunova O.S., Sibileva N.S. and Romanov P.Yu.* Nosov Magnitogorsk State Technical University, Russia Abstract—The genetic modification of the algorithm is based on the introduction of a new stage consisting in improving the individual by inversion of the bit vector and eliminating the mutation stage. A necessary attribute of the improvement of the individual is the exceeding of the measure of the Hamming distance between the selected individuals by more than n/2, where n is the Hamming distance, which in the bit representation is the same as the number of genes in the individual. In this case, the

	"worse" the "non-ideal" individual is, the "better" it becomes after the inversion. Partially, this is compensated by the elimination of the mutation stage, and the overall effect in speed is achieved due to increasing the rate of convergence. The proposed improvements to the classical genetic algorithm allow increasing the convergence rate by 25-35% and the algorithm speed by 15-25%.
IS030	Estimating Earthquake Fault Lines In Panay Island Using Regression Analysis of 2D Earthquake Datasets *Joeblas Diaz* Northwestern Visayan Colleges, Philippines Abstract—Estimating fault lines is the main concern of this study, which provides an analysis of the possible faults that may occur on areas particularly in Panay Island. This study makes use of data mining and regression analysis using two dimensional datasets to estimate possible fault lines. Clustering algorithm with scientific visualization to analyze and map fault lines was used. Datasets from 2011 to 2014 occurrence of earthquake in Panay Island were gathered and recorded. Scientific visualization criteria were employed to test the estimated fault line. This study conducted had been checked and affirmed by domain experts from PHIVOLCS, Geographer and Environment Specialist.

➢ Listener

Jehad Ali Ajou University, South Korea	**Kalu Johnson Agwu** Abgann Global Concept Limited, Nigeria
Donghee Han Sogang University, South Korea	**Niyas Ahamed Syed** Alight Solutions, India
Chidiebere Okeke Khomanani Business College, South Africa	**Younghoon Kim** Sungkyunkwan University, South Korea
Sun-Hee Kim Korea University, South Korea	**Donggyu Sim** Kwangwoon University, South Korea
Huishu Piao Dalian Maritime University, China	**Lingaraj Deepak Malli** Nuance Communications, India
Ashwini Murugan Adhiyamaan College of Engineering, India	

Dinner Time <17:50-20:00>   Location: Latif

Note: dinner coupon is needed for entering the restaurant.