

CONFERENCE ABSTRACT

2019 International Conference on BioMedical Technology (ICBMT 2019)

February 20-23, 2019

Da Nang, Vietnam



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<http://www.icbmt.org/>

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Introduction

Welcome to 2019 International Conference on BioMedical Technology (ICBMT 2019) which is sponsored by Hong Kong Chemical, Biological & Environmental Engineering Society (CBEES) and Biology and Bioinformatics (BBS). The objective of 2019 International Conference on BioMedical Technology (ICBMT 2019) is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in BioMedical Technology.

Papers will be published in the following journal:



International Journal of Pharma Medicine and Biological Sciences (IJPMBBS, ISSN: 2278-5221), which will be included in the Engineering & Technology Digital Library, and indexed by Embase (Under elsevier), ProQuest, Google Scholar, Chemical Abstracts Services (CAS), Indian Science, ICMJE (International Committee Medical Journal Editors), HINARI (World Health Organization), and NYU (Health Sciences Library).

Conference website and email: <http://www.icbmt.org/> ; icbmt@cbees.net

Presentation Instruction

Instruction for Oral Presentation

Devices Provided by the Conference Organizer:

Laptop Computer (MS Windows Operating System with MS PowerPoint and Adobe Acrobat Reader)

Digital Projectors and Screen

Laser Stick

Materials Provided by the Presenters:

PowerPoint or PDF Files (Files should be copied to the Conference laptop at the beginning of each Session.)

Duration of each Presentation (Tentatively):

Regular Oral Presentation: about **12** Minutes of Presentation and **3** Minutes of Question and Answer

Keynote Speech: about **40** Minutes of Presentation and **5** Minutes of Question and Answer

Plenary Speech: about **40** Minutes of Presentation and **5** Minutes of Question and Answer

Instruction for Poster Presentation

Materials Provided by the Conference Organizer:

The place to put poster

Duration of each Presentation (Tentatively):

Poster Presentation: About 5 Minutes of Presentation including Question and Answer Time;
Answer Questions Throughout The Session

Materials Provided by the Presenters:

Home-Made Posters: Submit The Poster To The Staff When Signing In

Maximum poster size is A1

Load Capacity: Holds up to 0.5 kg

Best Presentation Award

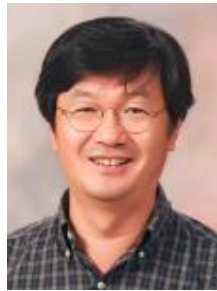
One Best Oral Presentation and one Best Poster Presentation will be selected from each presentation session, and the Certificate for Best Presentation will be awarded at the end of each session on February 21 and 22, 2019.

Dress Code

Please wear formal clothes or national representative of clothing.

Keynote Speaker & Plenary Speaker Introduction

Keynote Speaker I



Prof. Taesung Park

Seoul National University, South Korea

Prof. Taesung Park received his B.S. and M.S. degrees in Statistics from Seoul National University (SNU), Korea in 1984 and 1986, respectively and received his Ph.D. degree in Biostatistics from the University of Michigan in 1990. From Aug. 1991 to Aug. 1992, he worked as a visiting scientist at the NIH, USA. From Sep. 2002 to Aug. 2003, he was a visiting professor at the University of Pittsburgh. From Sep. 2009 to Aug. 2010, he was a visiting professor in Department of Biostatistics at the University of Washington. From Sep. 1999 to Sep. 2001, he worked as an associate professor in Department of Statistics at SNU. Since Oct. 2001 he worked as a professor and currently the Director of the Bioinformatics and Biostatistics Lab. at SNU. He served as the chair of the bioinformatics Program from Apr. 2005 to Mar. 2008, and the chair of Department of Statistics of SNU from Sep. 2007 and Aug. 2009. He has served editorial board members and associate editors for the international journals including Genetic Epidemiology, Computational Statistics and Data Analysis, Biometrical Journal, and International journal of Data Mining and Bioinformatics. His research areas include microarray data analysis, GWAS, gene-gene interaction analysis, and statistical genetics.

Topic: “Hierarchical Component Analysis for Microbiome Data Using Taxonomy Information”

Abstract—The recent advent of high-throughput sequencing technology has enabled us to study the associations between human microbiome and diseases. The DNA sequences of microbiome samples are clustered as operational taxonomic units (OTUs) according to their similarity. The OTU table containing counts of OTUs present in each sample is used to measure correlations between OTUs and disease status and find key microbes for prediction of the disease status. Various statistical methods have been proposed for such microbiome

data analysis. However, none of these methods have used hierarchical structure of taxonomy information that is biologically meaningful. In this paper, we propose a hierarchical structural component model for microbiome data (HisCoM-microb) using taxonomy information as well as OTU table data. The proposed HisCoM-microb consists of two layers: one for OTUs grouped at the lowest taxonomy level and the other for OTUs grouped at the higher taxonomy level. Then we calculate simultaneously coefficient estimates of OTUs of all layers inserted in the hierarchical model. Through this analysis, we can infer the association between OTUs and disease status, considering the impact of taxonomic structure on disease status. Both simulation study and real microbiome data analysis show that our method provides a new testing approach for microbiome data which clearly reveal the relations between each taxon and disease status at the same time as finding the key OTUs of the disease.

Keynote Speaker II



Prof. Mohd Zaid Bin Abdullah

Universiti Sains Malaysia, Malaysia

Prof. Mohd Zaid Bin Abdullah graduated from Universiti Sains Malaysia (USM) with a B. App. Sc. degree in Electronic in 1986 before joining Hitachi Semiconductor as a test engineer. In 1989, he commenced an M.Sc. in Instrument Design and Application at University of Manchester Institute of Science and Technology, UK. He remained in Manchester conducting research in Electrical Impedance Tomography at the same university, and received his Ph.D. degree in 1993. He joined USM in the same year as a lecturer. His research interests include microwave tomography, digital imaging, and ultra wide band sensing. He has published numerous research articles in international journals and conference proceedings. One of his papers was awarded The Senior Moulton medal for the best article published by the Institute of Chemical Engineering in 2002. He is also a recipient of many prestigious international fellowship awards such as the Association of the Commonwealth Universities (UK), the Japanese Society Promotion of Science (Japan), the Royal Society (UK) and the Engineering Physical Sciences Research Council (UK). Presently he is a Professor and Director of the Collaborative Microelectronic Design Excellence Centre (CEDEC), Universiti Sains Malaysia. Professor Mohd Zaid Abdullah is a Chartered Engineer and Fellow of the Institute of Engineering and Technology (IET), UK.

Topic: "Tomographic Imaging with Ultra-Wide Band (UWB) Sensors"

Abstract—One fundamental weakness of microwave imaging is resolution. Good resolution demands a small wavelength and therefore high frequency. Higher frequencies, in the other hand, are attenuated more rapidly, and the adequate depth of penetration dictates a low frequency, no higher than 5 MHz. This is the main problem that plagues almost all microwave systems. The second weakness is small field of view resulting from the non-availability at this time of an efficient miniturised type microwave sensor with large bandwidth. This problem is particularly chronic in organ sensing where at this point and except for specialised area, this type of application requires the size of antenna to be relatively small compared to the field of view. The third drawback is related to the inherent multiple scattering effect. This requires very complicated image reconstruction algorithm and advanced signal processing technique. Currently, most algorithms are based on the beam-forming methods such as the Delay and Sum (DAS) or its variants. The appealing features of this method lies in its simplicity and computational efficiency. However, it only produces approximate solution since the field data

is lost due to the linearisation of the inversion procedures. All these problems put the microwave system at a disadvantage. The advent of ultra wide band (UWB) technology and high frequency dielectric resonator antenna (DRA) stimulated new interest in this field as its potential for new applications was recognised. This keynote addresses the development of UWB research at USM, focusing on two potential applications – breast cancer detection and through-the-wall-imaging.

Keynote Speaker III



Emeritus Prof. Francis Y. L. Chin

The University of Hong Kong, Hong Kong

Prof. Francis Y. L. Chin received his B.A.Sc. degree from the University of Toronto in 1972, and his M.S., M.A. and Ph.D. degrees from Princeton University in 1974, 1975, and 1976, respectively. Prior to joining The University of Hong Kong (HKU) in 1985, he had taught at the University of Maryland, Baltimore County; the University of California, San Diego; the University of Alberta; the Chinese University of Hong Kong; and the University of Texas at Dallas. Professor Chin was the Chair of the Department of Computer Science at HKU and was the founding Head of the Department from its establishment until December 31, 1999. From 2002 until July 31, 2006, he had served as the Associate Dean of the Graduate School. From 2007 to his retirement from HKU in 2015, Prof Chin had served as an Associate Dean of the Faculty of Engineering. Professor Chin is an IEEE Fellow and his research interests include design and analysis of algorithms, machine learning, and bioinformatics including Motif-finding (Motif discovery) and De Novo genome assembly (IDBA). Professor Chin is now an Emeritus Professor of The University of Hong Kong.

Topic: "Metagenomic Binning of Next-Generation Sequence (NGS) Reads"

Abstract—Next-generation sequencing (NGS) technologies allow the sequencing of microbial communities directly from the environment without prior culturing. The output of environmental DNA sequencing consists of many reads from genomes of different unknown species, making the clustering together reads from the same (or similar) species (also known as binning) a crucial step. Metagenomic binning remains an important topic in Metagenomic analysis. The difficulties of the unsupervised binning methods for NGS reads are due to the following factors: (1) the lack of reference genomes; (2) uneven abundance ratio of species (especially with some extremely low-abundance species); (3) short NGS reads; and (4) a large number of species. In this talk, the possible approaches for handling these difficulties will be discussed.

Plenary Speaker I



Prof. Chuan-Ming Liu

National Taipei University of Technology, Taiwan

Prof. Chuan-Ming Liu is a professor in the Department of Computer Science and Information Engineering(CSIE), National Taipei University of Technology(Taipei Tech), TAIWAN, where he was the Department Chair from 2013-2017. Currently, he is pointed to be the Head of the Extension Education Center at the same school. Dr. Liu received his Ph. D. in Computer Science from Purdue University in 2002 and joined the CSIE Department in Taipei Tech in the spring of 2003. In the summers of 2010 and 2011, he had held visiting appointments at Auburn University and Beijing Institute of Technology, respectively. He has services in many journals, conferences and societies as well as published more than 80 papers in many prestigious journals and international conferences. He was the co-recipients of ICUFN 2015 Excellent Paper Award, ICS 2016 Outstanding Paper Award, MC 2017 Best Poster Award, and WOCC 2018 Best Paper Award. His current research interests include big data management and processing, uncertain data management, data science, spatial data processing, data streams, ad-hoc and sensor networks, location based services.

Topic: "Recent Topics on Data Management"

Abstract—In these days, many applications of IoT, Big Data, and Cloud computing have been proposed and discussed. One of the common important issues in these applications is data management and processing. The data in the emerging environments, such as the sensed data, may not be accurate and are referred to as uncertain data. The uncertainty complicates the computing or processing on the data and is inherent in many applications. In addition, the data produced or generated are dynamic and continuous. For example, the monitored data on the product lines in a factory are generated and collected ceaselessly. One of the objectives in such a system is to derive the feedbacks from the data streams instantly. Therefore, the data we now face and manipulate have the properties of velocity, veracity, and volume. The conventional approaches for query processing therefore need to be examined, adapted, or re-designed if necessary. In this talk, the recent issues about managing the data with such properties are introduced and the processes of some interesting query types are presented as well, including probabilistic nearest neighbor query, probabilistic skyline query, and probabilistic top-k dominating query.

Plenary Speaker II



Assoc. Prof. Norma Binti Alias

Universiti Teknologi Malaysia, Malaysia

Assoc. Prof. Norma Alias is an Associate Professor at Department of Mathematical Sciences, UTM Johor Malaysia and Research Fellow at Centre for Sustainable Nanomaterials, Ibnu Sina Institute for Scientific and Industrial Research, UTM Johor Bahru (CSNano). She received her Ph.D. in Industrial Computing and Parallel Computing at the Universiti Kebangsaan Malaysia in 2004. She has experience in industrial computing, numerical computation, scientific computing, high performance computing on distributed parallel computer systems, grid computing and software development. Currently, she is a Research Fellow at CSMNano. There are 9 innovations and invention medals received, published more than 200 publications, 4 Intellectual property declarations, 2 patent disclosures, 2 product commercialization. She has completed 20 research grants and handling ongoing task as project leader and principal researcher for 16 number of research grants with more than RM 2,000,000 budget. Thus, the three parallel computer systems laboratories have been developed and connected with LAN and MYREN network at the Ibnu Sina Institute, Center of Excellence, UTM. Principle researcher and leader for GRID Computing lab, mathematical parallel software and multicore computing laboratories. The research plan is to contribute in grid technology and middleware combining the worldwide cluster of distributed computer systems for solving the 4iR grand challenge and big data applications.

Topic: "The Impact of Big Data Model and Simulation for Valuable Concepts of Property Rights in Numerical Perspective"

Abstract—Recently, big data have received greater attention in diverse research in transdisciplinary field. Protecting Property Rights (PR) in a big data model and simulation give impact to the level of innovation and tie key performance indicators to real-world results. The challenges of PR protection for big data lifecycle highlight the database directive, advantages, and eligible for the protection and granted. To ensure a high scientific standard outcome, a big data simulation constructed by a complex system of mathematical modeling, large scale discretization of the model and huge data simulation. Therefore, there are many potential valuable intellectual properties of PRs to be claimed during the process of big data simulation supported by the multiprogramming system on high speed synchronization processors and pertaining to many indicators for performance evaluation. This paper proposed 5 potentially

valuable idea's impact from the transformation process of small to big data simulation in numerical perspective. The categorization of the valuable ideas and concepts will consider a copyright and patent granted. Copyrighting and patenting the parallel procedure, parallel code and high performance user interface may be eligible to be patented. As a conclusion, this paper has the ability to claim 5 potential PRs protection by enhancing the legal conceptual framework, technology fields and its impact in determining the real solution, high quality resolution and accurate solution of big data visualization.

Brief Schedule of Conference

Day 1	February 20, 2019 (Wednesday) Venue Room: Lobby of Emerald (1st floor) Arrival Registration 10:00-17:00
	February 21, 2019 (Thursday)
Day 2	Morning Conference
	Venue: Emerald (1st floor)
	09:00-09:05 Opening Remarks (Prof. Mohd Zaid Bin Abdullah)
	09:05-09:50 Keynote Speech I (Prof. Taesung Park)
	09:50-10:35 Keynote Speech II (Prof. Mohd Zaid Bin Abdullah)
	10:35-11:00 Coffee Break & Group Photo
	11:00-11:45 Plenary Speech I (Prof. Chuan-Ming Liu)
	11:45-12:30 Plenary Speech II (Assoc. Prof. Norma Binti Alias)
	12:30-13:30 Lunch (Orchard Deli)
	Afternoon Conference
Day 3	Session 1: 13:30-15:45
	Venue: Emerald (1st floor)
	Topic: "Data Management and Security"--9 presentations
	15:45-16:05 Coffee Break
	Session 2: 16:05-18:05
	Venue: Emerald (1st floor)
	Topic: "Communication Network and Signal Processing"--8 presentations
	18:30-20:30 Dinner (Orchard Deli)
	February 22, 2019 (Friday)
	Morning Conference
Day 4	Venue: Emerald (1st floor)
	09:00-09:05 Opening Remarks (Prof. Mohd Zaid Bin Abdullah)
	09:05-09:50 Keynote Speech III (Emeritus Prof. Francis Y. L. Chin)
	09:50-10:20 Coffee Break & Group Photo
	Session 3: 10:20-12:05
	Venue: Emerald (1st floor)
	Topic: "Information System and Control Technology"--7 presentations
	Afternoon Conference
	Poster Session: 13:00-15:00
	Venue: Emerald (1st floor)
Day 4	February 23, 2019 (Saturday) 8:00-18:00 Academic Visit & Tour

Tips: Please arrive at the Conference Room 10 minutes before the session begins to upload PPT into the laptop; submit the poster to the staff when signing in.

Detailed Schedule of Conference

February 20, 2019 (Wednesday)

Venue: Lobby of Emerald (1st Floor)

10:00-17:00	Arrival and Registration (Lobby of Emerald)
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February 21, 2019 (Thursday)

Venue: Emerald (1st Floor)

09:00-09:05		Opening Remarks Prof. Mohd Zaid Bin Abdullah Universiti Sains Malaysia, Malaysia
09:05-09:50		Keynote Speech I Prof. Taesung Park Seoul National University, South Korea
09:50-10:35		Keynote Speech II Prof. Mohd Zaid Bin Abdullah Universiti Sains Malaysia, Malaysia
10:35-11:00	Coffee Break & Group Photo	
11:00-11:45		Plenary Speech I Prof. Chuan-Ming Liu National Taipei University of Technology, Taiwan
11:45-12:30		Plenary Speech II Assoc. Prof. Norma Binti Alias Universiti Teknologi Malaysia, Malaysia
12:30-13:30	Lunch (Orchard Deli)	
13:30-15:45	Session 1 Topic: "Data Management and Security"	
15:45-16:05	Coffee Break	

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16:05-18:05	Session 2 Topic: “Communication Network and Signal Processing”
18:30-20:30	Dinner (Orchard Deli)

February 22, 2019 (Friday)

Venue: Emerald (1st Floor)

09:00-09:05		Opening Remarks Prof. Mohd Zaid Bin Abdullah Universiti Sains Malaysia, Malaysia
09:05-09:50		Keynote Speech III Emeritus Prof. Francis Y. L. Chin The University of Hong Kong, Hong Kong
09:50-10:20	Coffee Break & Group Photo	
10:20-12:05	Session 3 Topic: “Information System and Control Technology”	
13:00-15:00	Poster Session	

Note: (1) The registration can also be done at any time during the conference.

(2) The organizer doesn't provide accommodation, and we suggest you make an early reservation.

(3) One Best Oral and one Best Poster Presentation will be selected from each presentation session, and the Certificate for Best Presentation will be awarded at the end of each session on February 21 and 22, 2019.

Let's move to the sessions!

Session 1

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon, February 21, 2019 (Thursday)

Time: 13:30-15:45

Venue: Emerald (1st Floor)

Session 1: Topic: “Data Management and Security”

Session Chair: Prof. Jung-Sook Kim

<p>D1005</p> <p>Session 1</p> <p>Presentation 1</p> <p>(13:30~13:45)</p>	<p>Sleep Habits and Biological Clocks Determined in Children: Cognitive Fluctuations and Intelligence</p> <p>Sandra Figueiredo, Odete Nunes, João Hipólito and Cécilia Tomás</p> <p>Universidade Autónoma Luís de Camões (UAL), Portugal</p> <p>Abstract—This study presents evidence of the chronotype’ significant influence for the cognitive performance of children aged between 7 and eleven years old, specifically for the attention skills. Two groups of children were identified regarding their chronotypes: morning, intermediate and evening types. The impact of chronotype or diurnal preference was examined concerning the performance in attention subtest of Wechsler Intelligence Scale for Children (WISC). The subtest was administered in two periods of the day – morning and afternoon - during two weeks. The students answered to the same subtest with one-week interval. The statistical analysis for the chronotype identification (through questionnaire) and for the attention test (WISC) followed the procedures and the score calculation of the original version of the instruments. By using the SPSS, version 24, were carried out comparison statistical tests to confirm performance differences. The different biological preferences of children impacted the attention fluctuation in a significant manner ($p < .05$) considering the different hours of tests realization which confirmed that biological clocks are determining and affecting the synchrony effect: the optimal performance according to specific periods of the day. These specific periods are determined biologically and with differences among individuals. Even determined biologically, the chronotype shows variation during lifespan. The results of this study highlight the crucial reflexion for the biological studies on the diurnal preferences and their impact in life of human being. Specifically related to Psychology area in order to understand the effect of biological rhythms in the development of young children and the schedules of the assessment settings where they are assigned.</p>
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D2018 Session 1 Presentation 2 (13:45~14:00)	<p>The Mechanism of Confirming Big Data Property Rights Based on Smart Contract</p> <p>Haijun Zhao, Bang Zhao and Susu Cheng Guangzhou JieXiWanKang Health Management Co., Ltd, China</p> <p>Abstract—The confirmation of data property rights is one of the most important functions of big data trading institutions. This paper builds a specialized classifier which aims to the normalization process of data property confirmation in the process of big data transaction and proposes the mechanism of confirming big data property rights based on Smart Contract.</p>
D2035 Session 1 Presentation 3 (14:00~14:15)	<p>Designing a Dependency Execution of Oracle Jobs</p> <p>Yuanhu Gu and Thelma Domingo Palaoag University of the Cordilleras, Philippines</p> <p>Abstract—Oracle Database includes a job scheduler. It can schedule jobs to run at a designated date and time. Though the Scheduler also includes chains, which are named groups of steps that work together to accomplish a task, there are some disadvantages: job dependency is not good to set, job concurrency is not manageable, and it has no notice by text-message. The researcher designed, built and tested the Dependency execution for Oracle jobs for a long time. It is running smoothly after trial and trial. It is much easy to set a job which depends on other jobs by inserting a row into a configuration table, and the job can be scanned and run by background processes which are designed by researcher. On this way, this system can also record who is the job's creator, how to contact, and the time of created and estimated expires. It has concurrency control and the priority and private channel for the jobs execution of short time. Many companies have a lot of reports to do every day. It depends on the data from all over the systems to be extracted and processed. The database is so stressed every morning that it is needed to property schedule job execution. The designed system shall make a more convenient and easier configuration to create and rerun Oracle jobs. The system administrators can also analysis the log to remind the job creator to optimize the script and improve the execution efficiency and performance of the Oracle database.</p>
D2044 Session 1 Presentation 4 (14:15~14:30)	<p>YapuresPlus: An Optimized Efficient Framework to Guarantee Safety of JavaScript</p> <p>Xiao Liu and Gyun Woo Pusan National University, Korea</p> <p>Abstract—Due to the loosely typed and interpreted features of JavaScript, the attention of type errors is commonly not paid enough when writing code. Our previous work called Yapures provides a convenient way to allow developers to write both the JavaScript and the</p>

	<p>PureScript codes in the same file. This paper introduces YapuresPlus as an upgraded version of Yapures by rationalizing the syntax to improve the compatibility between the JavaScript and the PureScript codes. To verify the performance of YapuresPlus, we compare with general JavaScript code through more experiments.</p>
<p>D3005</p> <p>Session 1</p> <p>Presentation 5</p> <p>(14:30~14:45)</p>	<p>Research on the Construction of Big Data Trading Platform in China Bangbo Yu and Haijun Zhao Guangdong University of Finance and Economics, China</p> <p>Abstract—As a new type of asset, the value of big data resources can only be realized in the transaction circulation. Establishing and improving the big data trading platform market system is a systematic project to transform data from resources into assets. Through the comparative analysis of several typical big data trading platform construction practices in China, this research finds some problems, such as unclear positioning of some platforms leading to overlapping functions, extensive data transaction, lack of unified data pricing methods, unclear data ownership. In addition, there is no difference between the data escrow transaction mode and the aggregate transaction mode, and the rights of the data supply parties cannot be guaranteed. And it also discusses how to promote the construction and improvement of China's big data trading market more systematically, normally and institutionally. Finally, it proposes to build local big data trading platforms according to local conditions, establish a data transaction system based on blockchain, establish a big data transaction pricing index system, and establish a big data standard system.</p>
<p>D0008</p> <p>Session 1</p> <p>Presentation 6</p> <p>(14:45~15:00)</p>	<p>Development and Mining of A Human Biomarker Database Shaikh Farhad Hossain, Mohammad Bozlul Karim, Takematsu Shotaro, Shigehiko Kanaya and Md. Altaf-UI-Amin Nara Institute of Science and Technology, Japan</p> <p>Abstract—Biomarkers are the indicator of a biological state or naturally occurring molecule, gene, or characteristic whose detection indicates the presence of a disease in a living organism. Biomarkers have played an important role in medicine for improving disease diagnosis and prognosis. The biomarker is a key factor in the analysis of diseases and also for analyzing inter disease relations. There is no open source comprehensive online biomarker database. We design and develop a biomarker database based on the preceding research paper, medical report and reliable URL. This biomarker database might be helpful instrumental in identifying a new approach to treat a new disease. This biomarkers database will provide information on different diseases, protein, biochemical, metabolite that cover 5000 above diseases and biomarkers association. Information is gathered from multiple sources which include NBCI, published patents, Clinical Trials, Data from the scientific</p>

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	conference, PMA database, FDA, EMEA, PMDA approved documents, google scholar, PubMed and regulatory-approved documents.
D2048 Session 1 Presentation 7 (15:00~15:15)	<p>Text Classification Based on Keywords with Different Thresholds Tu Cam Thi Tran, Phuc Quang Tran, Dinh Quoc Truong and Hiep Xuan Huynh Vinh Long University of Technology Education, Vietnam</p> <p>Abstract—Text classification is a supervised learning task for assigning text document to one or more predefined classes/topics. These topics are determined by a set of training documents. In order to construct a classification model, a machine learning algorithm was used. The training model is used to predict a class for new coming document. In this paper, we propose a text classification approach based on automatic keywords extraction with different thresholds. We use 3000 Vietnamese text documents, which belong to ten topics, downloaded from two electronic magazines vnexpress.net and vietnamnet.vn to create ten sets of the keywords. These keywords are used to predict the topic of new text document. The experimental results confirm the feasibility of proposed model.</p>
D3006 Session 1 Presentation 8 (15:15~15:30)	<p>Implementation of 4-Bit Data Transmission for Accessing SD Card with FPGA Embedded Soft Processor Gul Munir Ujjan, Abdul Malik, Mohd Zaid Abdullah and Shakil Ahmed Universiti Sains Malaysia, Malaysia</p> <p>Abstract—Secure Digital (SD) cards being removable, non-volatile and flash memory in nature, are highly preferred for use in FPGA based systems as secondary storage. Currently most FPGA developers prefer 1-bit SPI or 1-bit SD mode data transmission as a mean to access the SD card due to the complexity of 4-bit SD mode design. Hence, the speed is significantly compromised. This paper discusses the design and implementation of a firmware for 4-bit SD mode data transmission. A simple hardware application based on switches, buttons, memory and SD card interface is used to illustrate the functionality of proposed firmware, particularly the generation of the required control signal for data access. Meanwhile the Verilog HDL is used for hardware design while the software control is coded in C. The system is implemented on Altera DE-4 board with FPGA Stratix IV GX EP4SGX230 and 32-bits NIOS-II embedded soft processor. In terms of data throughput the new firmware is 57 % much faster compared to a standard 1-bit data transmission when accessing a single block of data.</p>
D2034 Session 1 Presentation 9	<p>KITIKIT: A Mobile App for Searching Hand-Carved Wood Products Amy P. Balcita, Stephan Kupsch and Thelma D. Palaoag Don Mariano Marcos Memorial State University, Philippines</p> <p>Abstract—While the use of mobile apps has been very successful in</p>

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(15:30~15:45)	<p>developed countries around the globe, in Pugo La Union, Philippines especially in the wood carving industry, it does not have a significant presence. This research was conceptualized for the benefit of the woodcarving industry stakeholders, i.e., the wood carvers, market vendors, distributors, wholesalers, shop owners, and the government. Through this study, the researchers made an effort to examine the problems encountered by the woodcarving business owners and put forth a desirable recommendation, the design of a mobile application that is beneficial to the woodcarving industry. The researchers developed the KITIKIT, a mobile application to ease the searching for hand-carved wood products. KITIKIT has integrated Google Maps to allow users to trace the location of an establishment selling hand-carved wood products. Also, KITIKIT provides a facility for establishment owners to advertise by enabling them to upload pictures of their establishments and products, and provide relevant information such as price, contact details, customizations options. It is very significant for the woodcarving industry to develop and offer mobile apps to satisfy the purpose and needs of customers. Future researchers are encouraged to conduct a usability testing of the proposed mobile application.</p>
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15:45-16:05

Coffee Break

Session 2

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon, February 21, 2019 (Thursday)

Time: 16:05-18:05

Venue: Emerald (1st Floor)

Session 2: Topic: “Communication Network and Signal Processing”

Session Chair: To Be Added

<p>D2009</p> <p>Session 2</p> <p>Presentation 1</p> <p>(16:05~16:20)</p>	<p>Using Emulab for Deep Learning Performance Comparisons Among Network Topologies GiBeom Song, SeungSoo Park and ManHee Lee Hannam University, Korea</p> <p>Abstract—Emulab is a versatile research framework proposed and implemented by Utah University, instantly providing a dedicated cluster system using real systems and switches upon a user request. As machine learning has been used in most areas, it is also natural to try to use Emulab for machine learning. However, there has been no study on how to configure Emulab nodes to run machine learning. In particular, our research focuses on comparing the performance of TensorFlow, one of the most widely used tools in deep learning field, to find out which network topology has the best performance. In our experiments, the star topology cluster running the data parallelism model of TensorFlow showed the best performance. In addition, to our best knowledge, this study is the first research to investigate to figure out the relationship between cluster interconnects and deep learning performance by using Emulab.</p>
	<p>Approaches to Secure Communication in Substation Automation Systems Sugwon Hong Myongji University, Korea</p> <p>Abstract—Recently the cyber security issue in the critical infrastructure such as substation automation systems draw much attention from many organizations and researchers. The paper addresses the security problem in the substation automation system. First, we analyze the vulnerabilities to be taken advantage of by the sophisticated attacks like the Stuxnet in the context of the substation environment. To meet these kinds of attacks, it is essential to maintain the chain of trust based on message protection. For message</p>

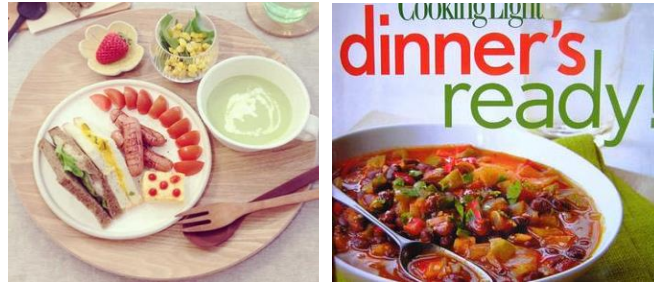
D2041 Session 2 Presentation 2 (16:20~16:35)	<p>authentication and integrity, the hashed key algorithm is preferable because it can meet the performance requirement for the GOOSE message communication between the intelligent electronic devices (IEDs). For the implementation of the hashed key algorithm, we propose a three-party server-based key distribution protocol. In addition to the hashed key algorithm, the security monitoring is a viable solution to meet the security challenges in the current substation system, since the intrusion detection system (IDS) as a main tool for security monitoring can be easily deployed without any change of the substation configuration. We analyze and explain how to design the domain-specific IDS reflecting network features and application protocols of the target system. We show that these approaches are indispensable methods to achieve the secure communication in the substation automation system.</p>
D0010 Session 2 Presentation 3 (16:35~16:50)	<p>Two-Dimensional DICOM Feature Points and Their Mapping Extraction for Identifying Brain Shifts Hiroshi Noborio, Shota Uchibori, Masanao Koeda and Kaoru Watanabe Osaka Electro-Communication University, Japan</p> <p>Abstract—In order to model organ deformation precisely, we extract numerous feature points and also their mapping correspondences from two layered two-dimensional Digital Imaging and Communications in Medicine (DICOM) images. In this study, we first selected the same image twice (the 68th image) from 124 layered two-dimensional DICOM images, and then two consecutive images (the 68th and 69th) and two that were far apart (the 55th and 80th). Next, two-dimensional feature points were extracted from these images, and their mapping was searched. We utilized the two-dimensional image feature point extraction/correspondence algorithms scale-invariant feature transform (SIFT), KAZE, Accelerated KAZE (AKAZE), and oriented FAST and rotated BRIEF (ORB) from OpenCV with real DICOM files to confirm that the aforementioned extraction and mapping was possible. According to our results, although the method for searching for matches by only looking for similar feature points in the vicinity of a certain feature point required slightly more calculation time than the method of looking for matches across the entire DICOM area, in the end it did decrease the number of mistaken matching correspondences.</p>
	<p>Unique Characteristics of Heart Rate Variability Obtained From Pulse Wave Signals During Work Emi Yuda, Junichiro Hayano, Tetsuya Tanabiki, Shinichiro Iwata, and Katsumi Abe Nagoya City University Graduate School of Medical Sciences, Japan</p>

<p>D2006</p> <p>Session 2</p> <p>Presentation 4</p> <p>(16:50~17:05)</p>	<p>Abstract—To examine the basic characteristics of pulse rate variability (PRV) during work, pulse wave signals during work hours were recorded by wristband-type wearable sensors in 8 office workers for 1-3 months together with the signals of physical activity, skin temperature, and the amount of conversation and with subjective emotions. A total of 1,544 hours of data were obtained. Pulse rate increased during physical activity and decreased during dozing. Although high frequency (HF) component of heart rate variability (HRV) is known as an index of parasympathetic function and increases during rest and sleep, HF amplitude of PRV during work increased with mild physical movement detected at the wrist and decreased during dozing. Factor analysis revealed that there were two factors, reflecting slow and fast variations, respectively, among the indices of PRV indices (the amplitude of very low, low, and HF components and their standard deviations). While factor 1 score decreased during walking and increased with mild physical movement, it also increased when subjects reported angry emotion. While factor 2 score also increased with mild physical movement, it also increased with happiness and relax compared with sad and angry emotions. This study suggests on one hand that HF amplitude of PRV at least that obtained through wristband-type sensors during work cannot be used as the indices of parasympathetic function and resting. On the other hand, PRV may provide unique information from that of HRV. The HF amplitude of PRV may reflect positive feeling for work, while an increase in slow variation of PRV may reflect their conflict and dissatisfaction during work.</p>
<p>D2012</p> <p>Session 2</p> <p>Presentation 5</p> <p>(17:05~17:20)</p>	<p>Supervised Classification of Geriatric Anxiety Mun-Taek Choi and Jae-Kyeong Sim Sungkyunkwan University, Korea</p> <p>Abstract—Anxiety is a common symptom in elderly people and is associated with dementia. In this study, we apply the machine learning methods to classify anxiety patients based on GAI. We confirm the possibility of reducing the number of GAI questionnaires, which is to make GAI testing easier for the elderly. As a result, we showed that classification is possible without using all standard GAI questionnaires.</p>
	<p>CAPTCHA: Impact of Website Security on User Experience Nitirat Tanthavech and Apichaya Nimkoompai Thai-NichiInstitute of Technology, Thailand</p> <p>Abstract—As currently many people use the Internet to access websites, Internet security becomes an important topic. One popular security mechanism is Captcha or Completely Automated Public Turing Computer and Humans Apart, which determine whether or</p>

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<p>D2011</p> <p>Session 2</p> <p>Presentation 6</p> <p>(17:20~17:35)</p>	<p>not the user is human. Nowadays there exist many forms of Captcha with different testing mechanisms. In this study, the researcher would like to determine a form of Captcha that improves user experience on websites. Captcha is divided into 5 types in this study: Invisible Captcha, reCaptcha by Google, Text-based Captcha, Game-based Captcha and Math Captcha, which were tested on 40 people aged 25-34 years as according to surveys people in this age group were the largest group of Internet users. After passing all 5 Captcha tests, the researcher was able to conclude that reCaptcha by Google was the fastest to pass (3.09 seconds), while Captcha that granted the best user experience was Math Captcha because of its entertainment and intuitiveness. Another interesting issue is Invisible Captcha, although being convenient, was not trusted by the majority of the sample users due to its perceived insecurity. Conversely, reCaptcha by Google was deemed the safest.</p>
<p>D2002</p> <p>Session 2</p> <p>Presentation 7</p> <p>(17:35~17:50)</p>	<p>Energy-Efficient Cooperative Routing in Underwater Acoustic Sensor Networks</p> <p>Hoa Tran-Dang and Dong-Seong Kim Kumoh National Institute of Technology, Korea</p> <p>Abstract—This paper investigates performance of multi-hop underwater acoustic sensor networks when they deploy routing algorithms combining with cooperative communication. Taking into account energy efficiency, the routing schemes are discriminated by different policies of selecting next hop nodes as well as relay nodes of one-hop cooperative communications such that the transmission energy of routing paths is minimized. In order to take full advantage of broadcast nature in wireless communication, we propose to use a node exploited as a joint relay for two hop cooperative communication. Simulation results show that under specific conditions of acoustic channel, the network employing the proposed scheme achieves higher energy efficiency and balance of energy consumption among nodes while guaranteeing the desired data rate.</p>
<p>D2023</p> <p>Session 2</p> <p>Presentation 8</p> <p>(17:50~18:05)</p>	<p>Development of the IoT-Based Remote Monitoring System of Sleeping Hours</p> <p>Jung-Sook Kim, Junho Jeong and Tae-Sub Chung Kimpoo University, Korea</p> <p>Abstract—In today's aging society, the need for effective health care for the elderly living alone is increasing enormously. Therefore, it is required to establish a system to cope with daily health check and emergency situation. And, we introduce you to IoT services in the manufacturing industry, in which IoT is expected to have the greatest impact. Of various requirements, sleep is the most important part of health since we spend 1/4 of a day's time for sleep.</p>

Accordingly, healthy sleep management and periodic confirmation of sleep are the most important. In this paper, we propose an IoT-based Smart Mat with multiple sensors connected for remote monitoring of the elderly living alone or healthcare users and a system model that can collect data on bedtime, wakeup time, and sleep quality, and develop the recorded contents through it and send them to the smartphone application of the guardians in real time for remote monitoring.



Dinner	
18:30-20:30	Orchard Deli

Session 3

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Morning, February 22, 2019 (Thursday)

Time: 10:20-12:05

Venue: Emerald (1st Floor)

Session 3: Topic: “Information System and Control Technology”

Session Chair: To Be Added

D0003 Session 3 Presentation 1 (10:20~10:35)	<p>Relation Between Mini-Mental State Examination and Motor Control Function Examination on Dementia Kyota Aoki, Kenji Niijima and Tsutomu Yoshioka Utsunomiya University, Japan</p> <p>Abstract—The authors developed a performance measuring method for motor control function. Using the method, patients suspected of dementia were measured the performance of their motor control function. The method used needs only 25 seconds to complete. It is safe, simple and non-invasive. The relation between the performance of motor control function and mini-mental state examination is discussed. Some parameters of the measurements of motor control function and the score of MMSE shows high correlation. MMSE sub-problem that represents the function of unevenly distributed in cerebellum, link to the parameter of the hand dominated by the brain dominant hemisphere.</p>
D0005 Session 3 Presentation 2 (10:35~10:50)	<p>Isolation and Molecular Identification of Potential Probiotic Yeast Strains Found in Malaysian Kefir Drinks Samples Mohd Akmal Azhar and Mimi Sakinah Abdul Munaim Universiti Malaysia Pahang, Malaysia</p> <p>Abstract—Kefir drink is a product from the fermentation process of milk using symbiotic mixture of bacteria and yeast consortium. Saccharomyces and lactobacillus are the major genera found in the kefir drink. The present work involves the isolation and identification of potential probiotic yeast strains in the kefir drink samples from Malaysia. The molecular identification was done by PCR using ITS1 and ITS4 amplified regions. Nine different yeast strains were isolated, and the strains were successfully identified based on the sequence analysis. Saccharomyces and Kodamaea were found to be the major population in the kefir drink samples. Lastly, kefir milk is</p>

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	<p>one of the excellent sources of probiotic yeast strains and could be used as a new yeast probiotic formulation or in food supplements. Moreover, the amplification of ITS region can be used as a useful method to identified yeast strains.</p>
<p>D2010 Session 3 Presentation 3 (10:50~11:05)</p>	<p>Intelligent Vision System for Multi-Rotor UAVs in SAR Operations Trung-Thanh Ngo and Dong-Seong Kim Kumoh National Institute of Technology, Korea</p> <p>Abstract—This paper investigates the impacts of using an automatic zoom lens-equipped camera system on increasing UAVs’ flight time in search-and-rescue (SAR) operations. The superzoom digital single-lens reflex (DSLR) camera system mounted on multi-rotor UAVs can capture high-quality photos of SAR targets from a long distance. An automatic lens calibration algorithm is proposed to control the camera lens intelligently. A benefit of this approach is that UAVs’ battery life and flying range can be improved because the UAV can utilize the zoom capability to identify the target from a far distance without the need of flying closer to them. Experimental results have demonstrated that if a multi-rotor UAV is equipped with the proposed camera system, shorter travel distance and flight time can be achieved.</p>
<p>D2029 Session 3 Presentation 4 (11:05~11:20)</p>	<p>A Combination of Transfer Learning and Deep Learning for Medicinal Plant Classification Nghia Duong-Trung, Luyl-Da Quach, Minh-Hoang Nguyen and Chi-Ngon Nguyen Can Tho University, Vietnam</p> <p>Abstract—Medicinal plants are an important element of indigenous medical systems in Viet Nam. These resources are usually regarded as a part of culture’s traditional knowledge. One of the prerequisites for any medical recommendation systems and/or applications is accurate identification and classification of medicinal plants. Hence, leveraging technology in automatic classification of these curative herbs has become essential. Unfortunately, building and training a machine learning model from scratch is next to impossible due to the lack of hardware infrastructure and finance support. It painfully restricts the requirements of rapid solutions to deal with the demand. For this purpose, this paper exploits the idea of transfer learning which is the improvement of learning in a new prediction task through the transferability of knowledge from a related prediction task that has already been learned. By utilizing state-of-the-art deep networks re-trained with our collected data, our extensive experiments show that the proposed combination performs perfectly and achieves the classification accuracy of 98.7% within the acceptable training time.</p>

<p>D2039</p> <p>Session 3</p> <p>Presentation 5</p> <p>(11:20~11:35)</p>	<p>Deep Neural Network for Partial Discharge Diagnosis in Gas Insulated Switchgear Minh-Tuan Nguyen, Viet-Hung Nguyen, Suk-Jun Yun and Yong-Hwa Kim Myongji University, Korea</p> <p>Abstract—Analysis of partial discharge (PD) signals has been identified as a standard diagnostic tool for monitoring the condition of different electrical apparatuses. This study proposes an approach to detect PD patterns in gas-insulated switchgear (GIS) using a long-short-term memory (LSTM) recurrent neural network (RNN). The proposed method uses phase-resolved PD (PRPD) signals as input, extracts low-level features, and finally classifies faults in GIS. In the proposed method, LSTM networks can learn temporal dependencies directly from PRPD signals. Most existing models use the support vector machines (SVMs) and mainly focus on improving feature representation and extraction manually to analyze PRPD signals. However, the proposed model captures important temporal features with the help of its low-level feature extraction capability from raw inputs. It outperforms the conventional SVMs and achieves 96.74% classification accuracy for PRPDs in GIS, achieving better performance than other neural network structures such as Fully-connected Neural Network (FNN) and Convolutional Neural Network (CNN).</p>
<p>D2045</p> <p>Session 3</p> <p>Presentation 6</p> <p>(11:35~11:50)</p>	<p>Super-Twisting Sliding Mode Control Based Attitude Control of The VTOL Fixed-Wing UAV Hoseung Lee, Seung-Mook Baek and Chang-Ho Hyun Kongju National University, Korea</p> <p>Abstract—In this paper, Super-Twisting Sling Mode Control (STSMC) is proposed for attitude control of VTOL fixed-wing UAV. In general, the most commonly used control method for UAV is a sliding mode controller. However it is very well known that the sliding mode control method has a chattering problem. Whereas, the proposed control method reduces the chattering phenomenon. In addition, it does not affect the performance or robustness of systems. The stability of the proposed method is analyzed by Lyapunov stability analysis. Consequently, some simulation demonstrates the performance of the control system.</p>
	<p>The Application of Machine Learning on Categorizing Defects in 3D Printing Knowil Kim, Jeehong Kim and Jeyeon Oh, Hak-Sung Lee, Eun-Ah Kim and Ji-Hun Yu, Korea Institute of Materials Science, Korea</p>

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<p>D3007</p> <p>Session 3</p> <p>Presentation 7</p> <p>(11:50~12:05)</p>	<p>Abstract—In Korea, there are great concerns on machine learning for the forth industrial revolution. Machine learning was regarded as a promising technology to solve issues on metal additive manufacturing. It is a new technology but there are still significant weak points: productivity, price competitiveness and reproducibility. There are a lot of studies and approaches to develop high speed and powerful laser, low-cost powders and new design of metal 3d printing machine. However, the reproducibility is a still challenging issue because there are too many processing parameters to determine the properties of final products. Especially, the defects are too complex to examine with conventional approaches. So, the computer vision and machine learning can be a new candidate.</p> <p>In this study, commercial pure titanium cubes were fabricated with metal 3D printer. For investigating the defects in three dimensions, X-ray tomography was applied with high resolution. Moreover, the defects with 2D or 3D images can be categorized primitively, which can be improved the possibility of mass production using metal 3D printer.</p> <p>This work was supported by the World Class 300 Project(R&D)(S2641289, Development of High Value-added Forging Flange for Extreme Environment based on Intelligent Forging System) of the MOTIE, MSS(Korea).</p>
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Poster Session

February 22, 2019 (Friday)

Time: 13:00-15:00

Venue: Emerald (1st Floor)

<p>D2001 Poster 1</p>	<p>A Study on Realistic Audio Sound Generation According to User's Movement in Virtual Reality System Kwangki Kim, Kiho Kim and Jinsul Kim Korea Nazarene University, Korea</p> <p>Abstract—Generally, a virtual reality (VR) system cannot provide the realistic sound formed by the multi-channel audio signals to a user with the stereo headphone environment. In addition, the VR system has a gap between the visual scene and the sound because it supplies the audio signal having only a constant sound scene without respect to the change of the user's position. To solve these problems, we introduce the sound scene control of binaural sound. Binaural sound is a stereo realistic sound that can be generated by convolving a 10.1 channel audio signal with a head related transfer function (HRTF) coefficients which features all the paths from the multi-channel speaker layout to the ears in free space. However, since a binaural sound is generated using a fixed multi-channel layout and HRTF coefficients, the binaural sound has a constant sound scene and cannot reflect the user's movements. So, we apply the sound scene control scheme that modifies the binaural sound to allow the user's movement in the VR system. Initially, a multichannel layout is re-created according to the user's azimuth change and the original multi-channel signal is mapped to a new ultra multi-channel layout using a constant power panning law. Secondly, the sound level of the new multichannel audio signal is controlled by the user's distance change, using the characteristics of the sound level inversely proportional to distance. Finally, the final multi-channel audio signal is convolved with the HRTF coefficients to produce a binaural sound with the controlled sound scene. As a result, the proposed realistic audio sound generation method allows the current VR system to provide true VR service without distinction between the visual scenes and sounds.</p>
<p>D2008 Poster 2</p>	<p>Method of Motion Detection Based on Hall Sensor Module for Geared Motors Seong Tak Woo, Young Bin Park, Chun Soo Han and Ju Young Kim Gyeongbuk Institute of IT Convergence Industry Technology, Korea</p> <p>Abstract—With evolving technology, research on industrial parts is continuously being carried out to enhance convenience in daily life. A position recognition sensor that detects the state of a mechanical part is classified as a core technology. Especially, the use of geared motor modules, installed in automatic doors to optimize the stability, efficiency, and manufacturing costs</p>

	<p>related to automatic door opening and closing, has been attracting scientific attention. Generally, signal processing and the sensor circuit board inserted in the geared motor have been widely used in optical systems. However, the optical system is disadvantageous in that it is susceptible to external shock, humidity, and dust. In this paper, a magnetic impulse ring and hall sensor based motion detection circuit board simpler in structure than the existing optical systems, has excellent durability against external environments, and can be miniaturized is proposed. Experimental results show that the module has an average error of ± 0.2 RPM, which is equivalent to that of a conventional optical module. In addition, evaluation of the EMI environment based on industry specifications was performed through an accredited testing laboratory.</p>
<p>D0023 Poster 3</p>	<p>For End Effector of Surgical Robot 5 Axis Master System Development Sungmin Cho, Taishin Chung, Jung-Soo Lee, Ki-Cheol Yoon and Kwang Gi Kim Gachon University & Gachon University Gil Medical Center, Korea</p> <p>Abstract—Recently, the number of patients who prefer robotic surgery to minimize the incision site and shorten the recovery period has been increasing due to the development of surgical robot technology. However, many surgical robots use a robot arm with a low degree of freedom and it is difficult to operate in a narrow radius. Using an articulated robot arm will widen the radius of the surgery and shorten the operation time. In addition, single - port surgery using a multi - joint sur-gical robot can increase the patient 's recovery speed. However, it is difficult to manipulate the robot and the complexity of the mechanism increases the size of the system. In this paper, we develop a new concept master system technology applying the ergonomic mechanism that can intuitively analyze and manipulate the operation of the articulated robot arm.</p>
<p>D2015 Poster 4</p>	<p>Using Deep Learning Approach for Computer Vision with the Abilities of Classification, Incrementing, and Accumulation Ta-Cheng Chen, Peng-Sheng You and Yi-Chih Hsieh National Formosa University, Taiwan</p> <p>Abstract—Deep learning is an emerging approach and one of the machine learning algorithms. Deep nets are really good at finding patterns in data sets so that deep learning has been proving useful for a variety of scientific tasks. These deep learning systems mimic human learning by changing the strength of simulated neural connections on the basis of experience. However, the utilization of enormous amounts of data is an essential element in the deep learning. The shortage of training data may limit the size and learning ability of such models, especially when it is expensive to obtain fully labeled data. In this research, the proposed deep learning methodology is with the ability of grouping or classification, and the ability to generate new object categories adequately. Such learning process is similar to human's learning behavior. The proposed approach with the ability of adaptive learning can accumulate the</p>

	<p>images in the current categories and increase the new category for images which does not belong any of current categories. There is no need to retrain the deep learning networks by using our approach. According to the numerical results, it indicates that the proposed approach is with better efficiency and effectiveness than those in literature.</p>
<p>D2037 Poster 5</p>	<p>Korean Dependency Parsing with Proper Noun Encoding Seung-Shik Kang, Gyu-Hyeon Nam and Hyun-Young Lee Kookmin University, Korea</p> <p>Abstract—Dependency parsing is the process of analyzing the linguistic relationship of words that make up a sentence. In natural language processing using deep learning, previously registered words are represented in a continuous vector space. However, if proper noun exists in a sentence, it is difficult to represent it in a continuous vector space, and there may be a problem in the dependency parsing. To solve these problems, we propose a dependency parsing method including proper noun in Korean. Before representing words in a continuous vector space, we replaced the proper noun with a special token and learned the environmental features using the multilayer bidirectional LSTM. We distinguished neural networks according to the presence of proper noun, and compared the performance with the Malt parser using the same transition-based method for the entire sentence. We show that the proposed model is 1.7%p better in UAS and 2.1%p better in LAS than Malt parser.</p>
<p>D3003 Poster 6</p>	<p>Discrete-Time Modelling and Bifurcation Analysis for Finite-Control-Set Model-Predictive-Controlled Power Converter with Unity Horizon Length Mohana Sundar, Ashraf Ahmed and Joung-Hu Park Soongsil University, Korea</p> <p>Abstract—In this paper, we present the discrete-time modelling and bifurcation analysis for a power converter controlled by finite control set-model predictive control (FCS-MPC). The discrete-time model is essential to analyze the nonlinear dynamical behavior of the converter state parameters, especially at high-frequencies. Therefore, the aforementioned closed-loop system is modelled as a discrete hybrid automata (DHA). DHA enables to incorporate all the continuous, discrete and logical components presented in the closed-loop system and convert them to desired piecewise affine (PWA) mathematical model. Furthermore, the resulting discrete-time PWA model equations are simulated and verified for accuracy. Bifurcation analysis is performed using the discrete-time model to observe the effect of multiple power stage and control parameters on qualitative behavior of the system. Finally, the control parameters are chosen to eliminate the undesirable attractors presented in the closed-loop system.</p>
	<p>Band-Pass Filter for Fluorescein Interference Rejection Using Microscope with Surgical Robot Applications Ki-Cheol Yoon, Tae-Hyeon Kim, Hyun-Woo Jeong, Seung Hoon Lee, Kwang</p>

D0021 Poster 7	<p>Gi Kim and Taishin Chung Gachon University & Gachon University Gil Medical Center, Korea</p> <p>Abstract—Recently, the diagnosis technique is rapidly growth. The diagnosis method has CT, MRI, surgical navigator, and surgical microscopy. The surgical robot is connected to diagnosis system. However, the diagnosis system is impossible to division of tumor and normal tissue due to similar formation and color. The fluorescein dying method can be diagnosis for division between tumor and normal tissue due to fluorescein color staining. Therefore, the tumor removal surgery is used for fluorescein dying diagnosis using surgical robot. However, fluorescein dying is generated interference. Therefore, the fluorescein diagnosis resolution is not good due to auto-fluorescein. Thus, the interference must be rejection through the filter usage. In this paper, the new optical filter for interference suppression using fluorescein diagnosis method in the surgical robot. The designed filter is used for coating layer method.</p>
D2019 Poster 8	<p>Video Tutoring System with Automatic Facial Expression Recognition: An Enhancing Approach to E-learning Environment Christopher John R. Llanda Abra State Institute of Sciences and Technology, Philippines</p> <p>Abstract—In the past decades, new technologies were introduced and adopted in the e-learning environment to facilitate the learning process. It is commonly acknowledged that emotions are significant factor in gaining cognition which influences information processing, memory and performance. Up until now, affective computing and computer vision are hot research topics in the industries and especially in the field of education. This paper presents the level of performances for two group of students at the same class enrolled in programming course. A Video Tutoring System with Facial Expression Recognition (VTSFER) was developed as teaching tool to facilitate instructions in programming course. The system is intelligent enough to identify emotions through face recognition and was used by BSIT 3rd year students. The students was group into two in which second half of students utilized the VTSFER. An assessment was conducted and determined the level of performances to both group of students. A statistical tool t-test was used to determine the significant difference. The t-value showed a highly significant with a value of 2.1827 and a probability of 0.0382. The result presented that the second half of the students gain more knowledge in using the video tutoring system with facial expression recognition compare to the first half of students who uses a traditional video tutorial. With the intervention of face expression recognition embedded in video tutorial, students were engaged and gained more knowledge in learning.</p>
D2021 Poster 9	<p>Data Hiding in Digital Images for Digital Rights Ki-Hyun Jung KIU, Korea</p>

	<p>Abstract—Security system is very important to protect the assets of individuals or organizations. Cryptography and data hiding techniques are emerging in the data security. Data hiding is related to conceal the existence of secret data. In this paper, a new data hiding method is proposed to be suitable for gray images such as computerized tomography and magnetic resonance imaging. A pixel of the cover image is divided into two blocks having 4-bit value and then the length of embedding bits is decided. Then, the secret bits can be hidden into the least significant bits. The experimental results show that the proposed method has a high embedding capacity and good image quality.</p>
D0025 Poster 10	<p>Factors Associated with the Acceptance of a Quality Improvement Information System by Care Workers in Nursing Homes Taecheon Lee and Hongsoo Kim Seoul National University, Korea</p> <p>Abstract—This study applies the Unified Theory of Acceptance and Use of Technology (UTAUT) model, reliable instrument and its variables to explore the factors related to the acceptance of a newly developed quality improvement information system based on computerized resident assessments (hereafter QIIS) by long-term care staff. A multicenter cross-sectional study was conducted in a representative sample of 89 long-term care organizations in Korea. A randomized stratified sampling approach was used to recruit 126 long-term care workers, mostly nurses, who received training and assessed long-term care residents using QIIS for at least one week. A structured questionnaire was used to assess their acceptance of QIIS and its factors. Structural equation modeling (SEM) techniques were applied for analysis. The study determined that performance expectancy, social influence, satisfaction, cost effectiveness ($p < 0.05$) had a significant effect on the subjects' behavioral intention, whereas effort expectancy and facilitating conditions ($p < 0.05$) had no significant effects. Age and education showed moderating effect on these variables. The long-term care workers' intentions to use QIIS were particularly influenced by personal belief on increased performance or reduced cost by using the system. Age and education were found to be important moderating factors, institutional factors such as ownership, size were not significant.</p>
D2040 Poster 11	<p>Subjective Evaluation of the 360-Degree Projection Formats Using Absolute Category Rating Tran Thi Hai Uyen, Seungcheol Choi and Oh-Jin Kwon Sejong University, South Korea</p> <p>Abstract—Recently, the 360-degree image is widely used in the expanding virtual reality market. The 360-degree image has the advantage of creating a virtual space that is similar to the real scene easily and quickly in the existing multimedia market. Many projection formats, which generate 2D plane from 3D space, are being published and studied along with the rapidly spreading 360-degree image applications. However, the equi-rectangular projection (ERP) format is merely being used in many applications based on its ease of use</p>

	<p>whereas the quality evaluation for various projections is not actively carried out. In this study, four projection formats including ERP are briefly described and a subjective test of the four projection formats is conducted. We defined a subjective test procedure for evaluating the image quality of the 360-degree image using an absolute category rating method. We proposed a methodology for the subjective test of 360-degree images and conducted the subjective test performed by 22 observers. Interestingly, the subjective test results show that the ERP format is not marked as the high-quality format. The octahedron projection format shows the best quality. Our research will help market efforts to provide the best quality 360-degree image services.</p>
<p>D2038 Poster 12</p>	<p>Korean Song-Lyrics Generation by Deep Learning Sung-Hwan Son, Hyun-Young Lee, Gyu-Hyeon Nam and Seung-Shik Kang Kookmin University, Korea</p> <p>Abstract—In order to create a lyrics based on the characteristics of Korean, we reversed the K-pop lyrics data and use them as learning data. It transforms the incoming data to use certain elements of the sentence, such as predicates and conjunctions, as starting points of the string generation. The proposed song lyrics generation method considers the context between lyrics. Every time the model generates the lyric, the model goes through upper randomization based on a blank. It was confirmed that the lyrics generated using the reverse data, have a more natural context than the lyrics generated using the forward data. It is also possible to generate new lyrics similar to certain lyric structure.</p>
<p>D2031 Poster 13</p>	<p>An Evaluation of Three Representative 360-Degree Image Projection Formats in Terms of JPEG2000 Coding Efficiency Ikram Hussain, Oh-Jin Kwon and Seungcheol Choi Sejong University, Korea</p> <p>Abstract—360-degree contents are becoming more popular nowadays since they create new and promising segments in entertainment, education, professional training, and other markets. These contents are spherical in nature and are mapped to a two-dimensional representative plane using various projection formats. Due to the increased resolution to support the wide field of view, efficient compression of 360-degree content become crucial. The Joint Video Exploration Team (JVET) is investigating various projection formats, adapting to the input of existing video coding systems. Where it is of significant interest to see how different projection formats impact the compression efficiency of the 360-degree images. In this paper, we evaluate the performance of three well-known 360-degree image projection formats. Objective performance is evaluated by coding the 360-degree images projected on the two-dimensional representative plane using various projection formats such as equi-rectangular, cylindrical and cube-map projection format, with JPEG2000, a well-known still image coding standard. Our experimental results have proved that cubemap projection format is the appropriate solution considering the coding efficiency of JPEG2000.</p>

<p>D0006</p> <p>Poster 14</p>	<p>Fabrication of Biodegradable Shaped Fibers for Tissue Engineering Scaffolds Sung Jea Park Korea University of Technology and Education, Korea</p> <p>Abstract—Objective of this study is to increase the SA:V (high surface-area-to-volume ratio) of scaffold fibers while the maintaining the mechanical strength. To increase the SA:V, we altered the cross-section of fibers to a non-circular shape using spinnerets with circular, triangular and cruciform apertures. The spinnerets were fabricated by X-ray lithography and subsequent electroforming. The fibers with non-circular cross-section, namely shaped fibers, were extruded with polycaprolactone (PCL) by the fabricated spinneret. Though the tensile and indentation tests, the maintenance of fiber mechanical strength were verified. The results of cell experiments showed that the fiber scaffold with high SA:V enhanced the cell proliferation. This work has supported by the National Research Foundation of Korea(NRF) grant funded by the Korea government(MSIT) (No. 2017R1C1B5017763 and No.2018R1A6A1A03025526)</p>
<p>D2033</p> <p>Poster 15</p>	<p>Hiding Vulnerabilities of Internet of Things Software Using Anti-Tamper Technique Ara Hur, Joeeun Kim and Yeonseung Ryu Myongji University, Korea</p> <p>Abstract—With the advancement of Field Programmable Gate Array (FPGA) technology, the Internet of Things (IoT) devices are cheaply equipped with FPGA. In this work, we study a FPGA-based hiding technique of security vulnerabilities which are inevitably residing in the IoT software. When software engineers develop software code and perform static security testing, they could find vulnerabilities which cannot be removed from source code. For example, an IoT device needs to have hard-coded password in the source code in order to communicate with server. The proposed method isolates the parts of the source code that contain the security vulnerability, and then converts them to bitstream of specific FPGA circuit. It is difficult for attackers to find vulnerabilities that are implemented as a hardware circuit such as FPGA.</p>
<p>D0020</p> <p>Poster 16</p>	<p>Finite Element Analysis Evaluating Function of LCP System for Osteoporotic Humerus Fracture Jung-Soo Lee, Eunji Kim, Kwang Gi Kim and Yong-Cheol Yoon Gachon University & Gachon University Gil Medical Center, Korea</p> <p>Abstract—In this study, we developed a 3 parts fracture model of osteoporotic humerus by reconstructing the four structures of the humerus (cortical bone, trabecular bone, articular cartilage, sub-chondral) using a CT image for 3D CAD modeling. 3D CAD modeling of the fractured humerus and locking compression plate (LCP) system were done with the use of SolidWorks 2017. Finite element analysis (FEA) of the osteoporotic humerus 3 parts fracture, LCP system was analyzed by ANSYS Workbench 19.0, and the stress such as</p>

	<p>Maximum shear stresses on locking screw-cortical bone interface area, Maximum von Mises stresses at LCP and LCP-locking screw assembly was obtained with FEA. In torsion force applied load condition, the stress occurred in with calcar screw was 50% to 200% lesser than without calcar screw, effect of calcar screws was confirmed.</p>
<p>D3004</p> <p>Poster 17</p>	<p>Design of Vision-Based Machine Learning System for Automatic Quality Inspection J. Jay Liu Pukyong National University, Korea</p> <p>Abstract—A great number of industrial machine learning problems have several critical issues that cannot be handled properly with many learning methods. Among them, data imbalance and conflicting multiple objectives are representative examples. The goal of this work is to propose a simple and effective approach to address those issues and validate the proposed approach in design of vision-based machine learning system for a real-world problem – inline inspection of defects on the surface of glass substrates for flat panel display (FPD). Three major steps of decision support in the automatic inspection system are: (1) extraction of only defect-relevant features through two-dimensional wavelet transform, (2) use of cost-sensitive classifiers to handle data imbalance, and (3) utilization of classifier ensemble to achieve conflicting multiple inspection objectives while maintaining low computational complexity. When applied to the industrial case study, the achieved overall inspection accuracy shows that utilization of the proposed approach in automatic defect inspection of glass substrates for FPD would be a viable alternative to manual inspections.</p>
<p>D0004</p> <p>Poster 18</p>	<p>Evaluation of the Ion Torrent S5 XL Platform and Oncomine Workflow for the Detection of BRCA Germline Mutations A-Jin Lee and Chang-Ho Jeon Daegu Catholic University School of Medicine, Korea</p> <p>Abstract—The objective of this study was to validate a next-generation sequencing (NGS) platform, Ion Torrent S5 XL (Thermo Fisher Scientific, Waltham, MA, USA) with the Ion Oncomine BRCA Research Assay. We validated the NGS approach using 20 samples that were previously validated by Sanger sequencing. We used the bioinformatics pipelines, the Torrent Suite with a plug-in Torrent Variant Caller (Thermo Fisher Scientific). All previously identified single nucleotide variants (SNV), small indels were accurately called with complex variant caller. The Ion Torrent S5 XL/Oncomine workflow combination had 100% sensitivity for the 249 known variants. One SNV, c.7397T>C within exon 14 of BRCA2 gene, which was not detected in Sanger sequencing, was called in NGS data due to the different reference genome sequence. The Ion Torrent S5 XL and Oncomine workflow has enough performance for use in a clinical laboratory.</p>

D0018 Poster 19	<p>Study on the Morphology and Adhesive Characteristic of Acrylic Pressure Sensitive Adhesive for Medical Patch Application Sangkug Lee, Woong Cheol Seok, Seong Won Park, Minsung Song, Jong Tae Leem, Se Jin Kwon, Ju Hui Kang and Ho Jun Song Korea Institute of Industrial Technology, Korea</p> <p>Abstract—The acrylic pressure-sensitive adhesive (acrylic PSAs) are composed for hard segment, soft segment, and functional group, it is easy to synthesize and has excellent adhesive characteristics. Therefore, acrylic PSAs used in various application, such as electronics, automobile and so on. The adhesive characteristics of acrylic PSA are determined not only by the type and ratio of acrylate monomers but also by the surface morphology like crystallinity, hydrophilicity or hydrophobicity and surface roughness. For this reason, we focused and studied on surface morphology analysis to characterize the adhesive property of acrylic PSAs with the monomer ratio. Acrylic PSAs were synthesized by fixing the soft segment and controlling ratio of the hard segment with functional group. The surface morphology and adhesive property of synthesized acrylic PSAs were characterized by FT-IR, DSC, TGA, XRD, XPS and peel tester. Biocompatibility was confirmed by cytotoxicity experiments. As a results, It was confirmed that the adhesive property and morphology of synthesized acrylic PSAs were controlled by the ratio of monomer, hard segment and functional group, and the biocompatibility was excellent, so that it could be applied as a medical patch.</p>
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Listener

Listener 1 Daehee Kim , Soonchunhyang University, Korea
Listener 2 Choon Seong Leem , Yonsei University, Korea
Listener 3 Laihyuk Park , Chung-Ang University, Korea
Listener 4 Yunseong Lee , Chung-Ang University, Korea
Listener 5 Kyupil Yeon , Hoseo University, Korea
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Conference Venue

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Tips: The registration fee does not cover the accommodation. It should be booked by participants themselves.

Academic Visit & Tour

February 23, 2019 (Saturday) 8:00~18:00

Tip: 1. Please arrive at the Lobby before 8:00. The following places are for references, and the final schedule should be adjusted to the actual notice.

2. The quotation only includes paid area at Bana Hills. Lunch is not included.

3. The following places are for references, and the final schedule should be adjusted to the actual notice.

1. (8:00) Assemble at Lobby of Stay Hotel

2. Visit University of Science and Technology-The University of Da Nang

The University of Danang-University of Science and Technology (UD-DUT), the former University Institute of Danang was established on July 15th, 1975. In October 1976, Danang Polytechnic University was established based on the foundation of the University Institute of Danang. In April, 1994, Danang Polytechnic University was renamed University of Engineering and became a member of the University of Danang. On March 9th 2004, Ministry of Education and Training (MOET) issued the Decree No. 1178/QĐ-BGD&ĐT-TCCB to rename as University of Science and Technology- a member of the University of Da Nang.



3. Visit Bana Hills



Bà Nà Hills is a hill station and resort located in the Trường Sơn Mountains west of the city of Da Nang, in central Vietnam. The station, advertised as "the Da Lat of Danang province" by local tourism authorities, was founded in 1919 by French

colonists. The colonists had built a Resort to be used as a leisure destination for French Tourists. Being located above 1500 meters above sea level, it has a tremendous view of the East Sea, and the surrounding mountains.

Owned by amusement brand SunWorld and just 20km away from the downtown of Danang City, SunWorld Ba Na Hills is a top-notch resort, recreational and amusement complex of Vietnam.

Especially, in a day, there are 4 times of change in temperature, the weather is like 4 seasons in a year of Northern Vietnam. In the early morning, Ba Na temperature is the same as Spring. At noon, Ba Na temperature is sunny as in the Summer. From 3:00 PM – 6:00 PM, Ba Na falls in the autumn. At night, Ba Na weather becomes colder as in the winter.



4. Visit Hoi An Ancient Town

Hoi An Ancient Town has retained its traditional wooden architecture and townscape in terms of plot size, materials, façade and roof line. Its original street plan, with buildings backing on to the river, with its infrastructure of quays, canals and bridges in its original setting, also remains. The historic landscape setting is also intact, consisting of a coastal environment of river, seashore, dunes and islands.

Because most of the buildings were constructed in wood it is necessary for them to be repaired at intervals, and so many buildings with basic structures from the 17th and 18th centuries were renewed in the 19th century, using traditional methods of repair. There is currently no pressure to replace older buildings with new ones in modern materials such as concrete and corrugated iron.

Hoi An Ancient Town was classified as a National Cultural Heritage Site in 1985 and subsequently as a Special National Cultural Heritage Site under the Cultural Heritage Law of 2001 amended in 2009.



5. (18:00) Back to Stay Hotel

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ICBMT 2019 CONFERENCE ABSTRACT

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Any Other Suggestions/Comments	

Thank you for taking time to participate in this conference evaluation. Your comments will enable us to execute future conferences better and tailor them to your needs!