2018 CBEES-BBS SEOUL, SOUTH KOREA CONFERENCE ABSTRACT

2018 3rd International Conference on Biomedical Signal and Image Processing (ICBIP 2018)

August 22-24, 2018

Seoul National University, Seoul, South Korea

Sponsored by

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Published and Indexed by

http://www.icbip.org/

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Introduction

Welcome to 2018 3rd International Conference on Biomedical Signal and Image Processing (ICBIP 2018) which is sponsored by Hong Kong Chemical, Biological & Environmental Engineering Society (CBEES), Biology and Bioinformatics (BBS) and Department of Statistics, Seoul National University. The objective of 2018 3rd International Conference on Biomedical Signal and Image Processing (ICBIP 2018) 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 Signal and Image Processing.

Papers will be published in one of the following journals:

International Conference Proceedings by ACM (ISBN: 978-1-4503-6436-2), which will be archived in the ACM Digital Library, indexed by Ei Compendex and Scopus, and submitted to be reviewed by Thomson Reuters Conference Proceedings Citation Index (ISI Web of Science).

Journal of Image and Graphics (JOIG, ISSN: 2301-3699), which will be included in Ulrich's Periodicals Directory, Google Scholar, Crossref, Engineering & Technology Digital Library and Electronic Journals Digital Library.

Conference website and email: http://www.icbip.org/; icbip@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

Instruction for Poster Presentation

Materials Provided by the Conference Organizer:

The place to put poster

Materials Provided by the Presenters:

Home-made Posters
Maximum poster size is A1
Load Capacity: Holds up to 0.5 kg

Best Presentation Award

One Best Oral Presentation will be selected from each presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on August 23, 2018.

Keynote Speaker Introduction

Keynote Speaker I

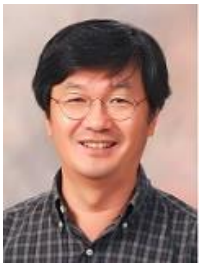
Prof. Kiyoshi Hoshino
University of Tsukuba, Japan

Prof. Kiyoshi Hoshino received two doctor's degrees; one in Medical Science in 1993, and the other in Engineering in 1996, from the University of Tokyo respectively. From 1993 to 1995, he was an assistant professor at Tokyo Medical and Dental University School of Medicine. From 1995 to 2002, he was an associate professor at University of the Ryukyus. From 2002, he was an associate professor at the Biological Cybernetics Lab of University of Tsukuba. He is now a professor. From 1998 to 2001, he was jointly appointed as a senior researcher of the PRESTO "Information and Human Activity" project of the Japan Science and Technology Agency (JST). From 2002 to 2005, he was a project leader of a SORST project of JST. He served as a member of the "cultivation of human resources in the information science field" WG, Special Coordination Funds for the Promotion of Science and Technology, MEXT, a member of "Committee for Comport 3D Fundamental Technology Promotion", JEITA, and the chairman of the 43rd Annual Meeting of Japanese Society of Biofeedback Research.

Topic: "*Simultaneous Estimation of the Line-of-Sight and Rotational Eye Movement*"

***Abstract*—**The line-of-sight, which rotates around the x or y axis, provides information on what and how long a person gazes at. In addition, this measurement is expected to be effective in screening schizophrenia and dementia, as well as identifying patients with sick-house syndromes and drug addicts. Moreover, the other hand, the biometry of the eye rotational movement, where the eyeball rotates around the z axis, is expected to be useful in detecting and quantifying visually-induced motion sickness, 3D sickness, car sickness, dizziness, discomfort, sudden development of poor physical condition, and so on. To meet these expectations, the author has developed a method focusing on the images of blood vessels in the white part of the eye (the conjunctiva and the sclera), where the blood vessel images are tracked to estimate simultaneously both the sight-line direction and the eye rotational movement with high accuracy. The method enables the sight-line direction and the eye rotational movement to be separately quantified with high accuracy in the environment, for instance, where gravitational acceleration may affect the human visual system, as seen in car driving, or in the condition where sight-line tracking is performed with the head or the body trunk tilted, as seen in playing sports.

Keynote Speaker II



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 Structural Components Models for High Dimensional Omics Data*"

***Abstract*—**Identification of good biomarkers is one of the most challenging issues in personalized medicine era. Although many methods have been developed to identify candidate biomarkers using only the omics data available, it is well known that the use of biological hierarchical information would increase of the power of identifying biomarkers. We proposed hierarchical structural components models (HisCoM) for taking into account the hierarchical structure of biological data. In our earlier work, HisCoM was shown to perform well by considering the hierarchical structure of genetic variants, genes and pathway. We extended HisCoM for the analysis of miRNA and mRNA data. We show that HisCoM can successfully take into account the hierarchical inhibition relationship between one miRNA and multiple mRNAs. In real data analysis, our HisCoM successfully identified more informative miRNA-mRNA integration sets for survival time of pancreatic cancer patients, compared to the other existing methods. Through this application to pancreatic cancer data, our proposed model was shown to effectively identify integrated miRNA/target mRNA sets as markers for prognosis, providing a much broader biological interpretation.

Keynote Speaker III

Prof. Hiroshi Fujita
Gifu University, Japan

Prof. Hiroshi Fujita received the B.S. and M.S. degrees in electrical engineering from Gifu University, Japan, in 1976 and 1978, respectively, and Ph.D. degree from Nagoya University in 1983. He became a research associate in 1978 and an associate professor in 1986 at Gifu National College of Technology. He was a visiting researcher at the K. Rossmann Radiologic Image Laboratory, University of Chicago, in 1983-1986. He became an associate professor in 1991 and a professor in 1995 in the Faculty of Engineering, Gifu University. He has been a professor and chair of intelligent image information since 2002 at the Graduate School of Medicine, Gifu University. He is now a Research Professor of Gifu University. He is a member of the Society for Medical Image Information (Honorary President), the Institute of Electronics, Information and Communication Engineers (Fellow), its Technical Groups on Medical Image (Adviser), the Japan Society for Medical Image Engineering (Director), and some other societies such as SPIE. He has been also served as scientific committee or program committee members, such as in International Workshop on Digital Mammography (Breast Imaging), SPIE Medical Imaging, and Computer Assisted Radiology and Surgery (CARS). He was worked as a General co-chair of Asian Forum on Medical Imaging 2007 held in Cheju National University, Korea, and as a General Chair of International Workshop for Breast Imaging (IWDM2014, Gifu). He has also worked as a Guest Editor-in-Chief in Special Section Editorial Committee for Medical Imaging, issued in April, 2013, from IEICE Society in Japan, and also as a Guest Editor-in-Chief in the Special Issue on Advanced Image Technologies in Diagnostic Imaging in 2018 in the Journal of Medical Imaging and Health Informatics. His research interests include computer-aided diagnosis system, image analysis and processing, and image evaluation in medicine. He has published over 1000 papers in Journals, Proceedings, Book chapters and Scientific Magazines.

Topic: "*Current Status and Future of Computer-Aided Diagnosis (CAD) in Clinical Imaging in the New Era of Artificial Intelligence (AI)*"

***Abstract*—**Computer-aided detection/diagnosis, so-called CAD, is rapidly entering the radiology mainstream. It has already become a part of the routine clinical work especially for the detection of breast cancer with mammograms, in which the computer output is used as a "second opinion" in assisting radiologists' image interpretations. Recent powerful AI technology such as deep learning advances the development and improving performance of CAD to the next stage, sometimes called as AI-CAD. In this talk, current status and future of AI-CAD will be explained and discussed.

Keynote Speaker IV

Prof. Tae-Seong Kim
Kyung Hee University, Republic of Korea

Tae-Seong Kim received the B.S. degree in Biomedical Engineering from the University of Southern California (USC) in 1991, M.S. degrees in Biomedical and Electrical Engineering from USC in 1993 and 1998 respectively, and Ph.D. in Biomedical Engineering from USC in 1999. After his postdoctoral work in Cognitive Sciences at the University of California at Irvine in 2000, he joined the Alfred E. Mann Institute for Biomedical Engineering and Dept. of Biomedical Engineering at USC as Research Scientist and Research Assistant Professor. In 2004, he moved to Kyung Hee University in Korea where he is currently Professor in the Department of Biomedical Engineering. His research interests have spanned various areas of biomedical imaging, bioelectromagnetism, neural engineering, and assistive biomedical lifecare technologies. Dr. Kim has been developing advanced signal and image processing methods, pattern classification, machine learning methods, novel medical imaging modalities, and rehabilitation technologies. Dr. Kim has published more than 300 papers and seven international book chapters. He holds ten international and domestic patents and has received nine best paper awards.

Topic: "*Deep Learning Methodologies in Smart Assistive Lifecare Technologies*"

***Abstract*—**Due to the rapid increase in the elderly population, the field of assistive lifecare technologies is also advancing rapidly. The goal of assistive lifecare technology is to increase the quality of life and promote the health of residents proactively for ambient assisted living. In general, smart sensors and devices are active components in smart assistive lifecare technologies. Also they provide alternative means of e-healthcare over caregivers or institutional care. In this presentation, how deep learning methodologies can be applied to smart multi-modal sensors and devices for smart assistive living. Various topics including human activity recognition, human motion recognition, life event detection, lifelogging, etc. are covered.

Keynote Speaker V

Prof. Hyoungseop Kim
Kyushu Institute of Technology, Japan

Prof. Hyoungseop Kim received his B.A. degree in electrical engineering from Kyushu Institute of Technology in 1994, the Masters and Ph.D. degree from Kyushu Institute of Technology in 1996 and 2001, respectively. He is a professor in the department of control engineering at Kyushu Institute of Technology. His research interests are focused on medical application of image analysis.

Topic: "*Computer Aided Diagnosis Based on Pattern Recognition Technique*"

***Abstract*—**For reducing the load to radiologist and improving of detection accuracy, a CAD (Computer Aided Diagnosis) system is expected from medical fields. In the medical image processing fields, some related works are reported to develop the CAD system as helpful technical issues. In this talk, I will introduce why CAD is required in medical field. Then I would like to some CAD systems for supporting to radiologists based on pattern recognition techniques.

Brief Schedule for Conference

<table>
<tr><td rowspan="4">Day 1</td><td colspan="3">August 22, 2018 (Wednesday)
Venue: Lobby of Building 25-1 (1F)
Arrival Registration 10:00-17:30</td></tr>
<tr><td colspan="3">Afternoon Conference (Building 25-1)</td></tr>
<tr><td colspan="3">Venue: International Conference Hall (국제회의실 1F)
13:30-13:35 Opening Remarks (Prof. Taesung Park)
13:35-14:20 Keynote Speech I (Prof. Kiyoshi Hoshino)
14:20-15:05 Keynote Speech II (Prof. Taesung Park)
15:05-15:30 Coffee Break & Group Photo</td></tr>
<tr><td colspan="3">Session 1: 15:30-17:30
Venue: International Conference Hall (국제회의실 1F)
Topic: “Pharmacology and Medicinal Chemistry”
8 presentations</td></tr>
<tr><td rowspan="5">Day 2</td><td colspan="3">August 23, 2018 (Thursday) 09:00-18:40</td></tr>
<tr><td colspan="3">Morning Conference (Building 25-1)</td></tr>
<tr><td colspan="3">Venue: International Conference Hall (국제회의실 1F)
09:00-09:05 Opening Remarks (Prof. Taesung Park)
09:05-09:50 Keynote Speech III (Prof. Hiroshi Fujita)
09:50-10:15 Coffee Break & Group Photo
10:15-11:00 Keynote Speech IV (Prof. Tae-Seong Kim)
11:00-11:45 Keynote Speech V (Prof. Hyoungseop Kim)
11:45-12:00 Poster Session</td></tr>
<tr><td colspan="3">Lunch: 12:00-13:20 Venue: Restaurant</td></tr>
<tr><td colspan="3">Afternoon Conference (Building 25)</td></tr>
<tr><td>Session 2: 13:20-15:50
Venue: Room 104 (1F)
Topic: “Medical Image Processing Technology and Method”
10 presentations</td><td>Session 3: 13:20-15:50
Venue: Room 105 (1F)
Topic: “Molecular Biology and Bioinformatics”
10 presentations</td><td>Session 4: 13:20-15:50
Venue: Room 109 (1F)
Topic: “Basic Medical Theory and Clinical Treatment”
10 presentations</td></tr>
</table>

<table>
<tr><td rowspan="3"></td><td colspan="2">Coffee Break: 15:50-16:10</td></tr>
<tr><td>Session 5: 16:10-18:25
Venue: Room 104 (1F)
Topic: “Image Processing and Application”
9 presentations</td><td>Session 6: 16:10-18:40
Venue: Room 105 (1F)
Topic: “Rehabilitation Medicine and Medical Information Management”
10 presentations</td></tr>
<tr><td colspan="2">18:40-20:00 Dinner (Restaurant)</td></tr>
<tr><td>Day 3</td><td colspan="2">9:00-18:00 Academic Visit & Tour</td></tr>
</table>

Tips: Please arrive at the Conference Room 10 minutes before the session begins to upload PPT into the laptop.

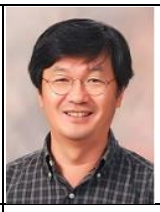
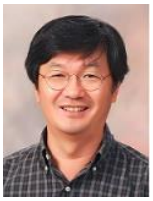
Detailed Schedule for Conference

August 22, 2018 (Wednesday)

Venue: Lobby of Building 25-1 (1F)

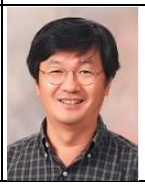
10:00-17:30	**Arrival and Registration**

Venue: International Conference Hall (국제회의실 1F)

13:30-13:35		**Opening Remarks** Prof. Taesung Park Seoul National University, South Korea
13:35-14:20		**Keynote Speech I** Prof. Kiyoshi Hoshino University of Tsukuba, Japan Topic: “Simultaneous Estimation of the Line-of-Sight and Rotational Eye Movement”
14:20-15:05		**Keynote Speech II** Prof. Taesung Park Seoul National University, South Korea Topic: “Hierarchical Structural Components Models for High Dimensional Omics Data”
15:05-15:30		**Coffee Break & Group Photo**
15:30-17:30		**Session 1, International Conference Hall (국제회의실 1F)** Topic: “Pharmacology and Medicinal Chemistry”

August 23, 2018 (Thursday)

Venue: International Conference Hall (국제회의실 1F)

		Morning Conference **Venue: (Building 25-1)**
09:00-09:05		**Opening Remarks** Prof. Taesung Park Seoul National University, South Korea

<table>
<tr><td>09:05-09:50</td><td colspan="3"> 
Keynote Speech III
Prof. Hiroshi Fujita
Gifu University, Japan
Topic: “Current Status and Future of Computer-Aided Diagnosis (CAD) in Clinical Imaging in the New Era of Artificial Intelligence (AI)”</td></tr>
<tr><td>09:50-10:15</td><td colspan="3">Coffee Break & Group Photo</td></tr>
<tr><td>10:15-11:00</td><td colspan="3"> 
Keynote Speech IV
Prof. Tae-Seong Kim
Kyung Hee University, Republic of Korea
Topic: “Deep Learning Methodologies in Smart Assistive Lifecare Technologies”</td></tr>
<tr><td>11:00-11:45</td><td colspan="3"> 
Keynote Speech V
Prof. Hyoungseop Kim
Kyushu Institute of Technology, Japan
Topic: “Computer Aided Diagnosis Based on Pattern Recognition Technique”</td></tr>
<tr><td>11:45-12:00</td><td colspan="3">Poster Session</td></tr>
<tr><td>12:00-13:20</td><td colspan="3">Lunch (Restaurant)</td></tr>
<tr><td></td><td colspan="3">Afternoon Conference
Venue: Building 25</td></tr>
<tr><td>13:20-15:50</td><td>Session 2
Venue: Room 104(1F)
Topic: “Medical Image Processing Technology and Method”</td><td>Session 3
Venue: Room 105(1F)
Topic: “Molecular Biology and Bioinformatics”</td><td>Session 4
Venue: Room 105(1F)
Topic: “Basic Medical Theory and Clinical Treatment”</td></tr>
<tr><td>15:50-16:10</td><td colspan="3">Coffee Break</td></tr>
<tr><td>16:10-18:40</td><td colspan="2">Session 5
Venue: Room 104(1F)
Topic: “Image Processing and Application”</td><td>Session 6
Venue: Room 105(1F)
Topic: “Rehabilitation Medicine and Medical Information Management”</td></tr>
<tr><td>18:40-20:00</td><td colspan="3">Dinner (Restaurant)</td></tr>
</table>

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 Presentation will be selected from each oral presentation session, and the Certificate for Presentation will be awarded at the end of each session on August 23, 2018.

Let's move to the session!

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, August 22, 2018 (Wednesday)

Time: 15:30-17:30

Venue: International Conference Hall (국제회의실 1F of Building 25-1)

Session 1: Topic: "Pharmacology and Medicinal Chemistry"

Session Chair: Prof. Keimei Oh

M0007 Session 1 Presentation 1 (15:30-15:45)	Inhibition Activity of Cleome Species Extract on Onion Guest Root **Sutthiduean Chunhakarn**, Prakaidao Yingsanga and Lada Mathurasa Phranakhon Rajabhat University, Thailand *Abstract*—Objective: The aim of this study was evaluated inhibitory activity of Cleome viscose and Cleome spinosa extracts on onion guest roots length. Methods: The whole plants of C. viscose and C. spinosa were extracted with dichloromethane, ethyl acetate, methanol and distilled water. Each group of onion guests was sprayed at various concentrations as 100, 200, 400, 800 and 1600 part per million for the treatment. The root growth was measured everyday for 1 month. Results: Methanol crude extract of C. spinosa, ethyl acetate and methanol crude extracts of C. viscose showed highest percent inhibitory activity values of 91.68, 90.17 and 90.90, respectively at concentration of 1600 ppm. Moveover, methanol extract of C. viscose and C. spinosa evaluated higher inhibitory activity than other solvent. Conclusions: In this study, inhibitory activity of C. viscose and C. spinosa extracts possessed allelochemicals for onion roots.
M0008 Session 1 Presentation 2 (15:45-16:00)	Local Vegetables Traditionally Used for Reducing Hyperglycemia in Suratthani Province, Thailand **Araya Pranprawit** Suratthani Rajabhat University, Thailand *Abstract*—Objective: High blood sugar can lead to diabetes, a chronic illness which is becoming a public health challenge in the 21th century in Thailand. The aim of this study was to survey the local vegetables traditionally used by traditional healers for reducing hyperglycemia and normally consumed in Suratthani province, and to analyze the total phenolic content (TPC) in these local vegetables. Methods: Data were

	collected using in-depth interview of traditional healers from nine districts of Suratthani province, and total phenolic content of the extracts of vegetables collected was determined by Folin-Ciocalteu Reagent method. Results: A total of 16 local vegetables have been found to be used by traditional healers for reducing blood sugar: Ocimun tenuiflorum Linn, Musa acuminata Colla, Cassia siamea (Lam.) Irwin & Barneby, Coccinia grandis (L.) Voigt, Pandanus amaryllifolius Roxb, Vigna unguiculata (L.) Walp. subsp. Unguiculata, Ipomoea aquatica Forssk., Phyllanthus emblica Linn., Solanum torvum Sw., Anacardium occidentale Linn., Momordica charantia Linn., Moringa oleifera Lamk., Archidendron jiringa Nielsen, Azadirachta indica A. Juss. var. indica, Parkia speciosa Hassk., and Micromelum minutum (G. Forst.) Wight & Arn. In addition, the TPC results showed that the extract of A.occidentale Linn. exhibited the highest total phenolic content (8.0 ± 0.11mg GAE/g fresh weight), followed by the extract of M.minutum (G. Forst.) Wight & Arn. (3.99 ± 0.10 mg GAE/g fresh weight). Conclusion: Local vegetables in Suratthani were shown to be a good source of TPC, and the data from this study can serve as fundamental information for promoting consumption of selected local vegetables for diabetes prevention in the future.
M1001 Session 1 Presentation 3 (16:00-16:15)	A Natural Product Decursin Enhances the Radiosensitization of Ionizing Radiation Against DMBA-Induced Tumor **Adeeb Shehzad**, Hira Zahid, Wazir Muhammad, Gauhar Rehman and Ebtesam A Al-Suhaimi National University of Sciences and Technology, Pakistan *Abstract*—Objective: Radiation therapy has gained significant attention for the treatment and prevention of solid and malignant human tumors. However, after periodical exposures, radiation therapy losses its efficacy against cancer cells displaying radio-resistant phenotypes. Therefore, Decursin might improve the efficiency of radiotherapy against a variety of human cancers. Methods: The chemopreventive efficacy of Decursin was evaluated against B16F10 cancer cell lines and DMBA/Croton oil-induced skin carcinogenesis in BALB/c mice. Decursin was administered intraperitoneal at the dose of 20mg/kg/day for 8 weeks following exposure to 5 Gy of ionizing radiation after 1 month of DMBA application. Western blot was performed for underlying mechanism of radioresistance. Results: Decursin suppressed the proliferation and viability of melanoma cancer cell lines in a concentration and time dependent manner. The in-vivo data collected from mice model revealed that Decursin reduced the precancerous skin lesions and the incidence of tumor bearing in a radiation exposed mice. Decursin also enhanced the effect of ionizing radiation by downregulation of Akt/NFκB pathway via activation of IκBα. Conclusion: Our results suggest that activation of Akt/NFκB establishes a pro-survival response to radiation that may

	account for development of radioresistance. Decursin blocks the abnormal expression of these proteins and potentiates the radiotherapeutic effect.
M0030 Session 1 Presentation 4 (16:15-16:30)	Screening of Mycosporine-Like Amino Acid Analogs in Neuroreceptors – $GABA_A$, $GABA_B$, DRD1, 5-HT3, and nAChR by Molecular Docking as Potential Drug Candidate for Neuropharmacology **Keene Louise D. L. Topacio**, Lemmuel L. Tayo, Alvin Edwin A. Magpantay, and Adonis P. Adornado Mapúa University, Philippines *Abstract*—The objective of this study is to identify and assess the Mycosporine-like Amino Acid (MAA) analogs binding properties with GABA Type A Receptor-Associated Protein (GABARAP), Dopamine Receptor D1 (DRD1), GABAB, 5-Hydroxytryptamine Type 3 (5-HT3) and Nicotinic Acetylcholine Receptor (nAChR) through molecular docking using Accelrys® Discovery Studio 2.5 as potential drug candidate for neuropharmacology. The microwave promoted synthesized MAA-analogs adapted from the work of Andreguetti et al. and the protein receptors gathered through RCSB Protein Data Bank were prepared, defined, and simulated using a molecular docking software implemented with docking algorithms and receptor-ligand interactions protocols to calculate the binding and entropic energies of the docked ligand unto protein receptors. The MAA-cyst and other MAA-analogs were found to be compatible, favorable, thermodynamically spontaneous, and novel ligand as candidate drugs for the receptor, GABARAP based on the calculated binding and entropic energy values. Competitions and specificity have been observed when same analogs were docked unto a receptor having a specific ligand based on the magnitudes of the negative binding energy values. With the use of molecular docking software, the screening and discovery of potential drug candidate for various neuropharmacological disorders have become faster, easier, and relatively low-cost since not everything can be proved experimentally as traditional experimental methods for drug discovery takes a long time.
M0010 Session 1 Presentation 5 (16:30-16:45)	Antibacterial Activity of Bawang Dayak (Eleutherine Sp) and Tawas UT (Ampelocissus Sp) from Central Kalimantan Against **Syahrida Dian Ardhany** Muhammadiyah University of Palangkaraya, Indonesia *Abstract*—Objective: The aim of the present study was to investigate phytochemical screenings and the in vitro effect antibacterial of BD (Eleutherine Sp) and TU (Ampelocissus Sp) against Propionibacterium acnes. Methods: The antibacterial activity was investigated against Propionibacterium acnes by well diffusion method. Results: Preliminary phytochemical screenings of BD ethanolic extract were found positive

	alkaloid, saponin, tannins and steroid while TU positive flavonoid, saponin, tannins, steroid and triterpenoid. Antibacterial activity against P.acnes of ethanolic extract BD with concentration 25 mg/ml and 50 mg/ml showed the zone of inhibition 3.23 mm and 7.8 mm with category weak activity while ethanolic extract TU with same concentration showed zone of inhibition 10 mm (weak activity) and 16.3 mm (moderate activity) which mean ethanolic extract TU have better antibacterial activity. A combination ethanolic extract of both with variant ratio showed zone of inhibition 6.7 mm (1:1), 3.9 mm (1:2) and 3.63 mm (2:1). Conclusion: in this present study showed the highest potential antibacterial activity against P.acnes is an ethanolic extract of TU and The best ratio combination is 1:1. Furthermore this study needs more research with variant concentration so that may be possible to be used as natural anti acne formulations.
M0014 Session 1 Presentation 6 (16:45-17:00)	Antifungal Activity of Essential Oil Extract of Lemon Cui (*Citrus Microcarpa*) Skin Against *Trichophyton Rubrum* Growth **Sabrina P. M. Pinontoan**, Nurmila Sunati, Befani Aditya Febriana and Elne Vieke Rambi Manado Health Polytechnic, Indonesia *Abstract*—Objective: The aim of this study was to test the antifungal activity of essential oil extract of lemon cui skin on Trichophyton rubrum growth. Method: This research is true experimental laboratory to see the existence of clear zone on SDA test media after giving the extract. The research was held 9 weeks in the laboratory of Health Analyst of Poltekkes Kemenkes Manado. Essential oil extract of Lemon Cui (Citrus microcarpa) Skin was taken using Steam Distillation method. Antifungal activity test do by inserting 1 ml of Trichophyton rubrum suspension into sterile petri dish then poured ± 20 ml SDA medium and made homogeneous. The diameter of well is about 6 mm Then into different wells put 20 µl extract and 20 µl positive control (ketoconazole 2%). After the whole process has been completed, the petri dishes are put into an incubator at 37℃. The clear zones were observed after 48 hours. Result: Extraction with steam destilation method resulted a yellow gold oil with weighing 1.8 g and the rendement is 0.75%. Antifungal activity test showed that essential oil extract of Lemon Cui skin had inhibitory effect on Trichophyton rubrum growth. The diameter average of clear zone around the well is 8.6 mm. Conclusion: Essential oil extract of Lemon Cui Skin has inhibitory power to inhibit Trichophyton rubrum growth, marked by the clear zone around the well.
	Phytochemical Screening and Antibacterial Activity of Bawang Dayak (Eleutherine Sp.) and Hati Tanah (Angiopteris Sp.) and Their Combination Against Propionibacterium Acnes **Susi Novaryatiin**

M0011 Session 1 Presentation 7 (17:00-17:15)	Muhammadiyah University of Palangkaraya, Indonesia *Abstract*—Objective: The objective of this research was to investigate the preliminary phytochemical screening and antibacterial activity of Bawang Dayak (Eleutherine sp.) and Hati Tanah (Angiopteris sp.), and their combination against Propionibacterium acnes. Methods: The extracts were used for phytochemical screening. Antibacterial activity was performed using disc diffusion technique, with two variations of concentration of 5% and 10% for each extracts, and combination of both extract with three combination: (1) 5% : 5%, (2) 5% : 10%, and (3) 10% : 5%. Results: Both extracts contained tannins, saponins, and steroids. The antibacterial activity against Propionibacterium acnes, showed the inhibition zones of Bawang Dayak ethanol extract were 6.1±1.5 mm (5%) and 8.7±1.3 mm (10%). On the other hand, the inhibition zones of Hati Tanah ethanol extract were 4.0±1.6 mm (5%) and 9.2±2.5 mm (10%). The inhibition zones produced in combinations 1, 2, and 3 were 5.8±0.3 mm, 10.8±2.0 mm, and 15.5±2.8 mm, respectively. Conclusion: In this present study showed the presence of tannins, saponins and steroids in both extracts can be responsible for the antimicrobial properties observed. The best antibacterial activity was produced by combining the two extracts (combination 3).
M1009 Session 1 Presentation 8 (17:15-17:30)	Antioxidant and Hepatoprotective Activity of Abelmoschus Manihot L. Medik Leaves Fraction Against CCl4-Induced Liver Damage in Rats **Yos Banne**, Taty Setyawati Ponidjan and Jovie Mien Dumanauw Manado Health Polytechnic, Indonesia *Abstract*—Objective: The objective of this research was to determine the antioxidant and hepatoprotective activity of Abelmoschus manihot L. Medik leaves in carbon tetrachloride-induced liver damage in rats (Rattus norvegicus). Methods: Samples of dried leaf were macerated using 96% ethanol solvent to obtain a viscous extract. Fractionation was then performed using ethyl acetate and n-butanol solvent. The antioxidant activity test of each fraction was done by DPPH assay. Testing of hepatoprotective activity, the fractions were suspended in Tween 20 0.4% solution with concentrations of 10 mg/mL and 20 mg/mL. Rats were divided into 6 treatment groups consisting of 5 rats/group. Group I (positive control) was given an oral suspension of Curcuma® tablet, group II (negative control) was given Tween 20 0,4% solution, group III and IV (ethyl acetate fraction), V and VI (n-butanol fraction) were given fraction suspension. On the 1st to 7th days all groups were given the solution treatment, and the 8th day all groups were injected with CCl4 intraperitoneally and the treatment was continued until the 11th day. On the 12th day, the blood of rats was taken and then measured the SGOT and SGPT. Results: The results of the antioxidant test showed that ethyl acetate and n-butanol fraction respectively had

	IC50 of 89.99 and 114.56 ppm. Measurement of SGOT showed the result for group I-VI respectively of 160±63.62, 260.53±18.98, 154.16±52.78, 177.43±13.70, 120.07±34.80 and 105.23±40.49 IU/L. Measurement of SGPT showed the result for group I-VI respectively of 101.87±29.24, 108.1±9.04, 57.73±49.05, 106.07±26.45, 66.9±20.05 and 146.63±84.89 UI/L. Conclusion: The results of this research indicated that the ethyl acetate and n-butanol fraction of Abelmoschus manihot L. Medik leaves have the antioxidant and hepatoprotective activity.

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, August 23, 2018(Thursday)

Time: 13:20-15:50

Venue: Room 104(1F), Building 25

Session 2: Topic: "Medical Image Processing Technology and Method"

Session Chair: Prof. Chao-Lieh Chen

M2014 Session 2 Presentation 1 (13:20-13:35)	Palm-Vein Recognition Using RGB Images **Sungchul Cho** and Kar-Ann Toh Yonsei University, South Korea *Abstract*—This paper addresses the problem of palm-vein recognition based on the RGB color images. Comparing with existing palm-vein methods based on the infrared (IR) or near-infrared (NIR) images, this is the first study of palm-vein recognition utilizing the RGB images. The proposed system consists of three processing steps namely, image enhancement, vein region detection, and feature matching. Essentially, the image enhancement step emphasizes the contrast of the palm-veins for visibility. The lines of the palm-veins are subsequently detected using a simplified Gabor filter which is followed by a binarization for noise removal. Finally, the extracted binary templates are matched using the hamming distance. The system shows an equal error rate of 0.87% on the publicly available PolyU database which consists of four channels: Red, Green, Blue and NIR. This result establishes the feasibility of using the RGB images for palm-vein recognition.
M2020 Session 2 Presentation 2 (13:35-13:50)	The Segmentation of 3D MRI Brain Images with Digital Phantom **Ti-Hung Lee**, Tai-Been Chen, Wei-Chang Du, Nan-Han Lu, Ko-Ing Liu, Hueisch-Jy Ding, Jia-Huei Jhou and Yung-Hui Huang I-Shou University, Taiwan *Abstract*—The segmentation of medical images was very crucial and important for diagnostic and artificial intelligence applications. The main aim of this study was to improve the accuracy of segmentation of MRI images. The K-means, fuzzy C-means, and mixture Gaussian kernel function approaches were utilized to segment 3D MRI brain images with digital phantom including white and gray matters. The best overlapping rates generated by these methods were from 0.95 to 0.99. The results demonstrated the presented methods, which were good to segment 3D

	MRI brain image. The presented methods will be considered to apply real medical images in the future works.
M2008 Session 2 Presentation 3 (13:50-14:05)	An Algorithm for Extracting Centerline of the Aorta from CT/MR 3D Images **Sami Ur Rahman**, Amin Ur Rahman and Fakhre Alam University of Malakand, Pakistan *Abstract*—Aorta is the main artery in the human body, originating from the left ventricle of the heart and extending down to the abdomen. The aorta distributes oxygenated blood to all parts of the body. The aorta branches off into two main arteries called coronary arteries. For investigating the heart related diseases, it is very important to know the exact geometry of the aorta and coronary arteries. One of the important parameters is to compute the centerline or skeleton of the aorta. Skeletonization is a process in which foreground image data is reduced to a single line that preserves the extent and connectivity of the original object region. From the skeleton, then different geometric parameters like the diameter of the aorta, branching angles and branching locations of the coronary arteries can be computed. The challenge in geometry computation is faced when the input image data is noisy. In this paper, we propose a new method for computing the centerline of the aorta using 3D Computed Tomography or Magnetic Resonance images. The experimental results show that the suggested algorithm performs well on image data even if the data is noisy.
M3003 Session 2 Presentation 4 (14:05-14:20)	An Early Decision Algorithm for High-Profile H.264 Intra Prediction **Shih-Chang Hsia**, Chao- Lieh Chen and Yen-Hung Shih Yunlin University of Science and Technology, Taiwan *Abstract*—This paper presents a fast-efficient intra-prediction algorithm for high-profile H.264 encoder. The pre-decision algorithm is proposed to reject the impossible block size based on image variance before enter to the coding kernel. The decision rule can be classified to five cases, which can quickly classify the coding region to select the possible block size for coding modes. The threshold is adaptive computation for various image features. Results show that the proposed algorithm can reduce about 40% computational time on average when the coding bit increases only 0.56% and PSNR drops only -0.02dB.
M2027 Session 2 Presentation 5	Microscopy Cell Counting and Annotation Using a Max-Tree Representation of the Blood Cell Images **Bilkis Jamal Ferdosi** University of Asia Pacific, Bangladesh *Abstract*—Cell counting is one of the important tasks in cell analysis which is required for different application areas such as medical diagnosis. The method proposed in this paper tries to solve the problem

(14:20-14:35)	using an image processing-based approach. Max-Tree is a data structure that is widely used in connected morphological operator-based image filtering. Max-Tree provides a hierarchical representation of the image where the root node contains a connected component with the lowest intensity and the leaf nodes hold the connected component with the highest intensity. Cells in an image can be realized as extremal intensity regions where intensity value inside the region is higher than its surroundings, thus can be found in the leaves of the Max-Tree. Counting the number of leaves in the Max-Tree would approximate the number of cells in the image. The Max-Tree also process the pixels of each connected component that can provide us with the annotation of the cells. The proposed method does not require any training or prior annotation by the user. It is conceptually easy and computationally efficient. Performance comparison with the state-of-the-art method ensured its strength.
M2003 Session 2 Presentation 6 (14:35-14:50)	Environment Recognition for Electric Wheelchair Based on YOLOv2 Yuki Sakai, **Huimin Lu**, Joo Kooi Tan and Hyoungseop Kim Kyushu Institute of Technology, Japan *Abstract*—At present, the aging population is growing in Japan. Along with that, the needs for the utilization of welfare equipment is increasing. Electric wheelchair, a convenient transportation tool, is popularized rapidly. However, many accidents have occurred by using electric wheelchair, and the dangers for driving are pointed out. Therefore, it needs to improve accident factors, reduce accidents and improve the convenience of electric wheelchair by automation. Environmental recognition is the key technology for developing autonomous electric wheelchair. Environmental recognition includes self-position estimation, recognition of sidewalks, crosswalks, traffic lights, and moving object prediction, etc. In order to solve these problems, this paper describes a system for the detection of sidewalks, crosswalks and traffic lights. We develop the object recognition methods using a modified YOLOv2 that is one of object detection algorithms applying convolutional neural networks (CNN). We detect the object through YOLOv2 and perform processing such as unnecessary bounding box deletion and interpolation. The experimental results demonstrate that the area under the curve (AUC) of the detection rate is 0.620.
M1021 Session 2 Presentation 7 (14:50-15:05)	Topological Data Analysis can Extract Subgroups with High Incidence Rate of Diabetes Mellitus **Hyung Sun Kim** and Taesung Park Seoul National University, South Korea *Abstract*— It is widely accepted that diabetes mellitus (DM) is affected by genetic factors. Topological data analysis (TDA) shows what shape a

	set of data can have. The shaping of data can contribute to clustering analysis by determining which component is close to another. TDA can generate a network using the single nucleotide polymorphism (SNP) data, which tells us how genetically close together the individuals are. The network can derive multiple ordered subgroups from the one that has low diabetes patient concentration to the others that have high diabetes patient concentration. We performed TDA of Korea association resource (KARE) project which is a population based genome-wide association study of Korean population. Since Korea association resource (KARE) data contains follow-up information about the incident of diabetes mellitus (DM), we compared the DM status of each individual at the baseline with that of 10 years later. For the TDA-network driven subgroups, we compared the incidence rate of DM after 10 years for the individuals without DM at the baseline. As a result, we found that the TDA-network driven ordered subgroups had the significant increasing tendency of incidence rates (p-value = 0.001591). Our results demonstrate the usefulness of TDA in genetic association studies.
M2026 Session 2 Presentation 8 (15:05-15:20)	Noise and Resolution Performance Evaluation for Statistical and Non-Statistical Iterative CBCT Reconstruction Methods **Zhongxing Zhou**, Lingxiao Wang and Lin Zhang Tianjin University, Tianjin, China *Abstract*—Non-statistical iterative and statistical iterative reconstruction (SIR) methods establish different models for Cone-beam computed tomography (CBCT) image reconstruction, which possibly produce different performance outcomes in reconstructed images. This paper presents a method to evaluate the noise and resolution properties of statistical and non-statistical iterative algorithms under low-dose relevant conditions. An EGSnrc/BEAMnrc Monte Carlo (MC) system was built for generating CBCT projections of a digital water phantom. SIR based OSC-TV (ordered subsets convex via total variation minimization) algorithm was selected to compare with non-statistical ASD-POCS (adaptive steepest descent-projection onto convex sets) algorithm and conventional FDK algorithm. The results demonstrate that ASD-POCS algorithm achieved a higher modulation transfer function than SIR based OSC-TV algorithm at the price of a higher image noise, while OSC-TV algorithm yielded best noise equivalent quanta performance among the three algorithms. The results of our study could guide a better evaluation and optimization of reconstruction algorithms for CBCT imaging.
M2015 Session 2 Presentation 9	A Prototype Design for the Machine Used for Measuring of Wound Volume Using a 3D Scanner **Kriangkrai Tassanavipas** and Suriya Natsupakpong King Mongkut's University of Technology Thonburi, Thailand

(15:20-15:35)	*Abstract*—Traditional methods for measuring wound volume require manual work or the integration of an expensive 3D-scanner to accurately indicate the wound depth. In this work, we propose a novel affordable machine to facilitate the process of the wound measurement. We explained in detail the process of designing our prototype machine, which effectively remove general limitations of a 3D-scanner caused by unstable movement. The prototype is capable of measuring wound volume for wounds located on most parts of the body. Its accuracy might be varied by the wound shape; however, it is of satisfactory.
M2004 Session 2 Presentation 10 (15:35-15:50)	Automatic Detection of Cell Regions in Microscope Images Based on BFED Algorithm Kazuki Nakamichi, **Huimin Lu**, Hyoungseop Kim, Kazue Yoneda and Fumihiro Tanaka Kyushu Institute of Technology, Japan *Abstract*—Circulating tumor cells (CTC) attract attention as a biomarker that can evaluate cancer metastasis and therapeutic effects. The CTC exists in the blood of cancer patients, so pathologists analyze blood by using a fluorescence microscope. However, manual analysis by pathologists is hard-work since the number of CTC to substances contained in the blood is very few and the cell regions are often unclear depending on shooting environments. In addition, there are few studies on automatic identification of CTC. In this paper, we develop an automatic detection method of cell regions in microscope images based on bacterial foraging-based edge detection (BFED) algorithm to analyze CTC. In the first step, we detect the initial cell regions by BFED algorithm. Second, we identify whether the region is a single cell or multiple cells come in connect with other cell(s) by SVM. Third, when a cell is connected with other one, we separate the connecting cells by branch and bound algorithm and obtain the final cell regions. We applied our proposed method to 1680 microscopy images (6 cases). The experimental results demonstrate that the proposed method has a true positive rate of 93.9% and a false positive 1.29 /case.

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.

Afternoon, August 23, 2018 (Thursday)

Time: 13:20-15:50

Venue: Room 105(1F), Building 25

Session 3: Topic: "Molecular Biology and Bioinformatics"

Session Chair: Assoc. Prof. Sugiono Sugiono

M1024 Session 3 Presentation 1 (13:20-13:35)	Mechanism of Solanum Betaceum to Prevent Memory Impairment in Cigarette Smoke Exposed Rat **Siti Khaerunnisa**, Kurnia Kusumastuti, Arifa Mustika, Nanik Siti Aminah and Suhartati Universitas Airlangga, Indonesia *Abstract*—Objective: The aim of this study was conducted to evaluate the neuroprotective role of Solanum betaceum against memory impairment due to chronic cigarette smoke exposured in rat brain. Methods: Adult male albino rats were exposed to cigarette smoke for a period of 28 days, 3 pc cigarette/day and simultaneously administered with Solanum betaceum in group K2,K3,K4 (100 mg/kg b.w/day; 200 mg/kg b.w/day ; 400 mg/kg b.w/day) respectively. The level of N-Methyl-D-Aspartate (NMDA), c-AMP Response Element Binding Protein (CREB), Brain Derived Neurothropic Factor (BDNF), number of neuron and glia cells, and memory were also measured. Results: Solanum betaceum administration could prevent from memory impairment significantly ($p<0,05$) by decreased time to reach the target at Y-Maze and maintained the levels of CREB, BDNF, neuron and glia cells (microglia, astrocytes, oligodendrocytes) significantly ($p<0,05$), but did not significantly decreased NMDA levels ($p>0.05$). Conclusion: Exposure to cigarette smoke compromised the memory function. The mechanism of Solanum betaceum to prevent memory impairment through activation of CREB a transcription factor which further enhances the formation of BDNF; neurotrophic factors. A positive correlated BDNF increase triggers the activation of the glia to protect brain cell damage, thus preventing memory impairment due to cigarette smoke exposure.

M0021 Session 3 Presentation 2 (15:35-15:50)	Eating Behavior and Protein Intake in Adolescent Girls with Anemia in Junior High School Krispa Silian the Regency of Southeast Minahasa North Sulawesi Indonesia **Rudolf Boyke Purba**, I Made Djendra, Reza Z. Kindangen, Irza N. Ranti, Olga Paruntu, Grace K. Langi and Joice M. Laoh Health Polytechnic Ministry of Health, Indonesia *Abstract*—Adolescents girls are at risk of anemia because at this time there is rapid growth and development so the needs of macro and micronutrients are higher especially during menstruation. Young women, in general, have characteristics of unhealthy eating habits. Among other habits do not take breakfast is usual, because they want to loose weight (ignore the source of protein). The purpose of this study was to determine the relationship between eating behavior and protein intake in adolescent girls with anemia. A cross sectional study was applied at Junior High School Krispa Silian of Southeast Minahasa Regency Indonesia. A total of 55 subjects participated in this study people (stratified random sampling) eating behavior, protein intake and anemia were variables collected. Using interview for eating behavior, protein intake using 24 hours food recall and hemoglobin using Autocheck. Chi-Square test analyses was employed. The results showed that, adolescents girls suffering from anemia were 52.7%, with eating behavior is dominantly not good (61.8%), and with less than 60% protein intake. Conclusion, there is a significant relationship between eating behavior with the incidence of anemia and protein intake with the incidence of anemia in adolescents girls at Junior High School Krispa Silian Southeast Minahasa North Sulawesi.
M1025 Session 3 Presentation 3 (13:50-14:05)	Association Test for Rare Variants Using the Hamming Distance **Suhyun Hwangbo**, Jin-Young Jang, Atsuko Imai-Okazaki, Jurg Ott and Taesung Park Seoul National University, South Korea *Abstract*—The recent development of DNA sequencing technology has given rise to many statistical methods for rare-variant association studies (RVASs), such as burden and sequence kernel association tests. However, these methods, which usually require large samples, can lose power in association studies with small samples. In this study, we propose two statistical approaches applicable for RVASs when the sample size is not large. Our approaches are based on the Hamming distance, which compares the dissimilarity of single nucleotide polymorphisms (SNPs) components between cases and controls. Existing Hamming distance-based methods mainly analyze common variants. For rare variant data with a small sample size, we extended two existing methods by using the weight based on minor allele frequency. Through simulation

	studies, we show that our proposed approaches control type 1 error rates and are powerful even when given very small sample sizes and small proportions of causal variants. They also work well regardless of the direction of causal SNP effects. Applying these methods to real data, we confirmed that they identified significant genes reported to be associated with pancreatic cancer pathway. Based on the results of this study, we firmly believe that our proposed methods are powerful for small sample data.
M0012 Session 3 Presentation 4 (14:05-14:20)	Screening and Identification of Indigenous Hemicellulolytic Bacteria from Indonesian Coffee Pulp Waste **Sattya Arimurti**, Yulia Nuraini, Tri Ardyati and Suharjono Suharjono University of Jember, Indonesia *Abstract*—The objective of the research was to get potential hemicellulolytic bacteria from Indonesian coffee pulp waste. Hemicellulolytic bacteria were isolated from coffee pulp waste of Coffea arabica and C. Canephora. These isolates were selected based on hydrolysis of xylan and xylanase activity. The isolates were then identified based on cell morphology, biochemical properties, and 16s rRNA sequences. It was reported that the density of hemicellulolytic bacteria isolated from C. arabica pulp waste (7.4 ± 5.3 ´106 CFU/g) was higher than that of C. canephora pulp waste (3.4 ± 2,1 ´105 CFU/g). In this study, 23 bacterial isolates were successfully isolated. An analysis on the isolates' ability to form clear zones on xylan medium with Gram iodine flooding resulted in the identification of five isolates (XRM21, XAJ25, XAJ30, XAJ31, and XAJ34) which had the highest level of hemicellulolytic activity. The results also indicated that XAJ34 isolate performed the highest xylanase activity (3.38 ± 0.65 U/mL). The 16S rDNA sequences analysis suggested that there was a close similarity between XAJ34 isolate and Bacillus aureus. This bacteria considered a potential isolate to degrade cellulose coffee pulp waste.
M3005 Session 3 Presentation 5 (14:20-14:35)	Synthesis and Biological Evaluation the Fluorescent Probe of EH-1, a Pyrazole Derivative Displays Ethylene Activity that Induces Triple Response in *Arabidopsis* Seedlings **Keimei Oh**, Hirodai Fujita and Sumiya Tomio Akita Prefectural University, Japan *Abstract*—Ethylene is a naturally occurring gaseous hormone that plays key roles in regulating broad aspects of physiological processes in plants. To explore new compounds that display ethylene activity, we conducted compound library screening using triple response assay method which sensitive to determine the ethylene activity. In the course of work, we discovered one compound (the IUPAC name is N-[(1,3,5-trimethyl-1H-pyrazol-4-yl)methyl]-N-methyl-2-naphthalene -

	sulfonamide) that display promising activity on inducing triple response morphological characteristics in Arabidopsis seedlings. We named this compound as EH-1(the chemical structure is shown in Figure 1). To improve our understanding of the mode of action of EH-1, we designed and synthesized the fluorescent probe of EH-1 which possess a dansyl moiety as a fluorescent chromophore. (we gave this compound a name of EH-DF, the structure is shown in figure 1). Synthesis of EH-DF is shown in Figure 2. The fluorescent spectra of EH-DF indicated that the Exmax=350 nm and Emmax =545 nm. The concentration of EH-DF on inducing triple response is approximately 30 M. Data obtained from fluorescence microscopy analysis indicated that the fluorescent signals of EH-DF were restrict in cell wall which is similar in location of auxin transports in plant tissues.
M0025 Session 3 Presentation 6 (14:35-14:50)	Pollen Morphology of Native Banana Cultivar (Musa acuminata Colla) in Surat Thani Province **Parinya Sukkaewmanee** Suratthani Rajabhat University, Thailand *Abstract*—A pollen morphological study of banana cultivar (Musa acuminata Colla) in Surat Thani Province conducted from March 2015 to February 2016. The pollen size and exine sculpturing of 8 cultivars of banana were studied by light and field emission scanning electron microscopy. The 8 pollen samples were acetolyzed following the technique of Erdtman (1969). The pollen is spheroidal. In addition, the aperture types are colporate. The numbers of aperture found were one aperture. The exine sculpturing is psilate. The length of pollen grains in average was 45-122 μm. Pollen size of banana cultivar genome B was larger than of genome A whereas triploid banana cultivar could be produced larger pollen size compared to diploid. The pollen size is differing among the banana cultivars. Therefore, the pollen morphology could be usefully identified banana cultivars.
M1028 Session 3 Presentation 7 (14:50-15:05)	Interactive Effect of pH and Temperature on Germination of Two Indian Wheat Species **Kratika Pathak** and Rekha Gadre Devi Ahilya Vishwa Vidhyalaya, India *Abstract*—Boost in industrialization close to the farm sites have seeded the acidity in the fertile soils. This has reduced pH of soil and increased surrounding temperature. These conditions reduce leaf photosynthetic rate, increases embryo abortion, grain number, grain filling duration and rates. High acidity mobilizes heavy metals and reduces the availability of essential metal-ions in the soil which are required for the proper growth and development of the plant. Wheat production is therefore adversely affected by temperature and pH resulting lower grain yield. Two, seven

	days old wheat genotypes (*T. astevium*; HI 1544 and *T. durum;* HI 8737) were evaluated for nine different combinations of three different pH (4, 5, 6) and temperature (10 º, 20 º, 30 ℃) supplemented with one-fourth strength hogland solution in static hydroponic system. Based on the statistical analysis for various parameters such as chlorophyll content, Nitrate Reductase (NR) and protein; pH6-Temp. 20 ℃ proved to be optimal condition for the growth of *T. durum*. Further, relatively low proline and high protein content was observed under pH5-Temp. 20 ℃ in *T. durum*. High protein and low proline content in *T. durum* as compared to *T. astevium* suggests well adaptability of *T. durum* under varying pH and temperature conditions. Thus, it has been suggested that *T. durum* is robust under acidic conditions.
M1016 Session 3 Presentation 8 (15:05-15:20)	Hierarchical Component Models for Pathway Analysis for Gene Expression Data **Lydia Mok** and Taesung Park Seoul National University, South Korea *Abstract*—There have been several pathway analyses for identifying cancer-associated pathways based on gene expression data. However, most of these methods are single pathway analyses and thus do not take into account the correlation among the pathways. Here, we propose hierarchical structured component model of pathway analysis of gene expression data (HisCoM-page) which accounts for the hierarchical structure of genes and pathways. Furthermore, HisCoM-page has the advantage of accounting for the correlations among the pathways. HisCoM-page focuses on the survival phenotype to find the relationship between pathways and cancer prognosis. Application of a real data analysis of pancreatic cancer data showed that HisCoM-page could successfully identify the significant pathways and genes associated with pancreatic adenocarcinoma prognosis. In addition, we compared the results of HiscoM–page with other gene-set methods such as Gene set Enrichment Analysis (GSEA), Global Test, and Wald-type Test (WT).
M1002 Session3 Presentation 9 (15:20-15:35)	Temperature Disturbance Stabilizes Microbial Community in Mesophilic Anaerobic Digestion of Swine Manure **Grace Tzun-Wen Shaw**, Chieh-Yin Weng, Cheng-Yu Chen, Francis Cheng-Hsuan Weng and Daryi Wang Academia Sinica, Taiwan *Abstract*—Microbial communities are key drivers of ecosystem processes but their behavior in disturbed environments is difficult to measure. How to predict microbial communities in response to disturbance compositionally or functionally is a common challenge in biomedical, environmental, agricultural, and bioenergy research. Describing microbial communities as networks is actually a novel

	manner to highlight insights of ecology that may emerge from a systems-level perspective. Based on a mesophilic anaerobic digestion system of swine manure as a tool, we propose a simple framework to investigate changes in microbial communities via composition, metabolic pathway, genomic properties or interspecies relationships due to a long-term temperature disturbance. After temperature disturbance, microbial communities have been compelled towards a competitive interaction network with higher GC content and larger genome size. Based on microbial interaction networks, the transition of acetotrophic (*Methanotrichaceae* and *Methanosarcinaceae*) to methylotrophic methanogens (*Methanomassiliicoccaceae* and *Methanobacteriaceae*) and the fluctuation of rare biosphere taxa against disturbance were observed. To conclude, this study may be of importance in exploring the dynamic relationships between disturbance and microbial communities as a whole, as well as in providing researchers with a better understanding of how the change of microbial communities relate to the ecological processes.
M1018 Session 3 Presentation 10 (15:35-15:50)	Hierarchical Component Models for the Analysis Microbiome Data **Nayeon Kang** and Taesung Park Seoul National University, South Korea *Abstract*—The successful application of the next generation sequencing technology to metagenome data has allowed several attempts to early detection of cancer by analyzing human microbiome composition or microbiome biomarkers. For early detection of cancer using human microbiome, some classical methods were used such as logistic regression, support vector machine, random forest and so on. These classical models select the best species as variables which provide the best prediction performance. However, these classical methods could not explain any biological or hierarchical relationship between microbiome levels into analysis. We proposed the hierarchical structural component models of microbiome (HisCoM-microb) that take hierarchical structures of microbiota into account by introducing latent variables, not observed variable but inferred from other observed variables. HisCoM-microb provides comprehensive analysis of low taxa level and high taxa level simultaneously. A real data application shows that HisCoM-microb improves the efficiency of analysis by reducing dimensions which collapses low taxa level data to high taxa level data.

Session 4

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, August 23, 2018 (Thursday)

Time: 13:20-15:50

Venue: Room 109(1F), Building 25

Session 4: Topic: "Basic Medical Theory and Clinical Treatment"

Session Chair: Assoc. Prof. Wei-Min Liu

M0019 Session 4 Presentation 1 (13:20-13:35)	Regulatory T Cells and Anti-Inflammatory Cytokines Profile in Mice Fed a High-Fat Diet After Single Garlic (A. *Sativum* L.) Oil Treatment **Sri Rahayu Lestari** and Muhaimin Rifa Universitas Negeri Malang (State University of Malang), Indonesia *Abstract*—This study aimed to analyze the effects of single garlic (A. sativum) oil (SGO) on the activation of regulatory T cells and anti-inflammatory cytokines IL-10 and TGF-β in mice fed a high-fat diet. Twenty four male mice divided into six groups consisting of four mice in each group: the control group (normal diet), the high-fat diet group (HFD) without treatment, HFD administrated simvastatin, and three high-fat diet groups administered SGO at dose 12.5 mg/kg BW; 25.0 mg/kg BW; 50.0 mg/kg BW. The mice were fed an HFD and continuously treated with SGO for 45 days. The relative number of regulatory T cells, IL-10 and TGF-β were measured using flow cytometry analysis. The results showed that an HFD decreased the expression of regulatory T cells, and the production of IL-10 and TGF-β compared to control group ($p < 0.05$). SGO at dose 50 mg/kg BW significantly enhanced the activation of regulatory T cells and the production of TGF-β in mice with an HFD compared to simvastatin group. The dose of 25 mg/kg BW SGO significantly increased the level of IL-10 in mice with a high-fat diet. These results suggest that SGO may inhibit the inflammatory processes in mice with a high-fat diet, by enhancing the regulatory T cells and the anti-inflammatory cytokine IL-10 and TGF-β.
M1005 Session 4	Effect of Red Bean (Vigna Angularis [Willd] Ohwi & Ohashi) Extract Administration on Lipid Profile, Uric Acid, and Blood Glucose Level in Male White Rat **Benedicta I. Rumagit**, Isworo and Donald E. Kalonio

Presentation 2 (15:35-15:50)	Manado Health Polytechnic, Indonesia *Abstract*—Red bean is source of fiber, both water-soluble or insoluble, possesses low glycemic index and beneficial for reducing cholesterol and blood glucose. It belongs to nut plants that contain about 50-150 mg of purine. This study aims to know the effect of the red bean (Vigna angularis [Willd] Ohwi & Ohashi) extract administration on lipid profile, such as on male white rat. The type of research used is laboratory experimental research using Postest With Control Group design. Red bean (V. angularis [Willd] Ohwi & Ohashi) was obtained in Manado, North Sulawesi. Parameters measured were total cholesterol, HDL, LDL, triglyceride, uric acid, and blood glucose level of male white rat's blood after administered red bean extract and high cholesterol-fed for 21 days. Statistical analysis used One Way ANOVA. Results showed that red bean extract administration influenced the lipid profile, could reduce LDL level, and did not increase the uric acid and glucose level. Nevertheless, further study is needed with higher dose variations of the extract and on the effect of high-cholesterol diet, based on its type and administration route.
M0015 Session 4 Presentation 3 (13:50-14:05)	Human Immun Response against 56 kDa Immunigenic Protein from Salivary Gland of *Aedes Aegypti* **Rike Oktarianti** and Kartika Senjarini The University of Jember, Indonesia *Abstract*—DENV is transmitted by several species of Aedes mosquitoes and Aedes aegypti is the main vector. Based on the previously study, we identified immunogenic proteins from salivary gland of Ae. aegypti with molecular weight of 56 kDa. These proteins may modify hemostatic responses and induce both cellular immunity and the production of specific antibodies. The objective of this study was to analyze human immune response against 56 kDa immunogenic protein from salivary gland of Aedes aegypti by ELISA (Enzyme Linked Immunosorbent Assay) analysis. We crossed react human sera from healthy people, DHF patient in endemic area (Jember) againts 56 kDa immunogenic protein from salivary gland of Ae. aegypti. The results showed that the highest IgG concentration was detected in sera from Dengue patients compared to healthy people living in endemic area and infant respectively. This might indicate the important functional properties of 56 kDa during Dengue transmission.
M1026 Session 4 Presentation 4	Antimicrobial Activity of Bacteria Symbionts of Tunicate Ascidia Ornata from Lemon Island Indonesia Against Clinical Pathogens **Rina A. Mogea**, Tresia S. Tururaja, Yenny Y. Salosa and Simon PO Leatemia Papua University, Indonesia

(14:05-14:20)	*Abstract*—Symbionts bacterial plays important rule for providing energy and nutrient, inhibiting pathogenic microorganism and producing metabolite compounds which has biology activities. This study purposed to screen bacterial symbionts of *Ascidia ornata* which produce potency of antimicrobial activities and also to identify bacteria base on 16S rDNA. The study was used *Ascidia ornata* sample and collected from hard coral at Lemon Island Doreri Bay Manokwari, sample was isolated and screened in order to get potential bacteria which can produce antimicrobe compound. Enteropathogenic *E. coli* (EPEC), *Staphylococus aureus*, methicillin-resisten *Staphyloccocus aureus* (MRSA) and *Candida albicans* was used as test bacterial, by using agar diffusion test. Datas was analysed qualitatively by looking at clear zone around those isolates and to identify bacteria using PCR amplification 16S rDNA gene sequence. The results showed that eight isolates which can have antimicrobe activity and as identification process result were strains *Bacillus*, *Enterobacter* and *Ochrobactrum* with 98-100 % sequence similarities. The conclusions from this research marine bacteria was collected has potential power to inhibit pathogenic microbe and could be used as raw material of medicine.
M2001 Session 4 Presentation 5 (14:20-14:35)	Association of Regional Differences in Senility Death Ratio and Fitness Level: ALLSTAR Big Data Analysis **Junichiro Hayano**, Yuto Masuda, Masaya Kisohara and Emi Yuda Nagoya City University, Japan *Abstract*—A recent survey in Japan reported that the municipality with a high senility death ratio has lower medical expenses per late elderly. Senility death is defined as natural death in elderly people who do not have the cause of death to be described otherwise, which may be one of the ultimate goals of medicine. However, the medical characteristics of individuals who are prone to senility death are unknown. We examined whether regional differences in senility death rate are associated with regional differences in fitness level, using heart rate variability (HRV) and actigraphic physical activity data of Allostatic State Mapping by Ambulatory ECG Repository (ALLSTAR) database. The age-adjusted senility death rate of 47 Japanese prefectures in 2015 distributed from 1.2 to 3.6% in men and from 3.5 to 7.8% for women. We compared these rates with the age-adjusted indices of HRV in 108,865 men and 136,536 women and physical activity in 16,661 men and 21,961 women. Both HRV indices known to associate with low mortality risk, and physical activity level were higher in prefectures with higher senility death ratio. These suggest positive association between the regional level of senility death ratio and regional fitness level in Japan.
M2012	A Better Online Method of Heart Diagnosis

Session 4 Presentation 6 (14:35-14:50)	**Yi Huang** and Insu Song James Cook University Singapore, Singapore *Abstract*—Heart related health conditions, such as heart attacks, are the primary reasons for millions of deaths worldwide. Most of the existing heart-disease diagnosis techniques are invasive and need trained medical professionals. The current paper reports the development of a rapid, non-invasive heart sound diagnosis method and describes its functionality in Health Social Networks (HSNs). HSNs are platforms for health professionals, organizations and patients to use IT applications to share information, including medical information, e.g., HSNs allow users to conveniently and inexpensively upload their heart sounds for professional analysis using mobile phones. This method offers great promise, as heart-related health conditions cause millions of deaths worldwide. This paper contributes to the development of a new feature extraction method based on Gaussian Hamming Distance (GHD). The approach that applying GHD to MFCC features (GMTS) is shown robust to noise and also solves the difficulties of recording heart sound activities. The proposed GMTS feature was tested with 0.05 seconds shifting stress and obtained accuracy, sensitivity and specificity of at least 84.2%, 77.8%, and 84.5%, respectively.
M1014 Session 4 Presentation 7 (14:50-15:05)	Pathological Evaluation of Murine Breast Tumor Following Local Hyperthermia Treatment by Near-Infrared Radiation **Wan Fatin Amira Wan Mohd Zawawi**, Merilyn Hibma and Khairunadwa Jemon Universiti Teknologi Malaysia, Malaysia *Abstract*—Objective: The objective of this research was to study the pathological effects of heating tumor at 43oC locally by infrared radiation. Methods: Mice were inoculated with 5 × 105 EMT6 cells subcutaneously once anaesthesized. On day 7 post-inoculation, tumor of about 30 mm2 in size were subjected to three times local hyperthermia treatment for 30 minutes. This treatment was repeated for the next two days. Tumor progression was monitored thereafter until tumor achieved maximum allowable size, 150 mm2. In another experiment, mice were sacrificed 24 hr after the third treatment, at which tumor were harvested for pathological examination by H&E staining and immunohistochemical analysis. Results: The present study demonstrated that local hyperthermia at 43oC for 3 consecutive days reduced tumor progression and prolong the survival ($P<0.05$) of tumor-bearing mice. H&E staining showed that tumor experienced necrosis following hyperthermia treatment. In addition, low PCNA-positive stained cells was observed in treated group indicated that heating tumor at 43oC reduced tumor cells proliferation. Conclusion: Hyperthermia could significantly inhibit tumor growth by promoting necrosis and reducing tumor cells proliferation.

M1015 Session 4 Presentation 8 (15:05-15:20)	Enhancement of Radiosensitization by Dual-Targeted Silver Nanoparticles in Glioma Radiation Therapy **Jing Zhao**, Huiquan Yang, Dongdong Li, Wenbin Chen and Peidang Liu Southeast University, China *Abstract*-The radiosensitizing effects of silver nanoparticles (AgNPs) on glioma were affirmed in the previous studies of our group. To effectively treat brain glioma and reduce the side effects, the targeting modification of radiosensitizers is urgently needed. Herein, we developed a dual-targeted AgNPs (AsNPs) functionalized with both polyethylene glycol (PEG) and aptamer As1411 that could effectively enhance radiosensitivity in glioma cells through passive and active targeting. TEM image showed that AsNPs were generally spherical with average diameter of 18 nm. UV–visible spectroscopy displayed the characteristic absorption of As1411, indicating the successful construction of AsNPs. The targeting of AsNPs to C6 glioma cells compared with normal human microvascular endothelial cells was confirmed by confocal microscopy. In vitro cell uptake and tumor spheroid penetration experiment demonstrated that AsNPs could not only internalize into tumor cells but also penetrate into the core of tumor spheroids. In vivo imaging further demonstrated that cy5-loaded AsNPs could accumulate at the tumor site and reach a peak level after 6 h intravenous administration. As a result, the combination of AsNPs with radiation could significantly induce apoptotic cell death and prolong median survival time of C6 glioma-bearing mice. Our results suggest the clinical potential of dual-targeted AgNPs as an effective nano-radiosensitizer for the treatment of glioma.
M2021 Session 4 Presentation 9 (15:20-15:35)	The Prediction of Children Hydrocephalus of MRI via Neural Network with Deep Learning Algorithm **Yi-Wen Yao**, Tai-Been Chen, Wei-Chang Du, Nan-Han Lu, Li-Sheng Chung, Ko-Ing Liu, Hueisch-Jy Ding, Jia-Huei Jhou and Yung-Hui Huang I-Shou University, Taiwan *Abstract*—The prediction of children hydrocephalus from MRI was very difficult by using statistical model base. The retrospective experiment was applied in this work. The training and testing set were collected 808 (Positive group: 157, Negative: 651) and 726 (Positive group: 246, Negative: 480) 2D slices. Then, the automatic features were extracted from slice including intensity, gray level co-occurrence matrix, and Laws texture energy measurement. In total 95 features were used to build neural network with deep learning algorithm. The accuracy, sensitivity, and specificity were over 0.85. The false positive rates and false negative rates were less than 0.15 respectively. The fine-tuning parameters of neural network algorithm should be searching via GPU or parallel

	computing in the future.
M2024 Session 4 Presentation 10 (15:35-15:50)	Estimating the Internal Tumor Position from Respiratory Motion Trace of Body Surface Fiducial Markers in Radiotherapy: a Feasibility Analysis **Wei-Min Liu**, Ke-Wei Chen and Wei-Ta Tsai National Chung Cheng University, Taiwan *Abstract*—How to more accurately locate tumors that are displaced by respiratory motion has always been an important issue in radiotherapy. A commonly used method in the clinic is to track the respiratory status using positioning markers placed on the body surface, and repeatedly irradiating the tumor with radiation in the same respiratory state to reduce the uncertainty caused by breathing. This paper experimentally examines whether the fiducial markers on the body surface (BSFM) can be used to estimate the trajectory of in vivo tumor with respiratory motion. We use two cameras to record the coordinates of the BSFM moving with the respiration in the image space, and locate both BSFM and tumor in 10 sets of 4D-CT images. The three kinds of coordinates were correlated by polynomial fitting such that eventually the coordinates of tumor in 4D-CT can be estimated from the coordinates of BSFM in the image space of cameras. When patients receive radiotherapy, such technique allows us to directly infer the position and motion of the in vivo tumor from the BSFM captured by video cameras.

15:50-16:10	**Coffee Break**

Session 5

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, August 23, 2018 (Thursday)

Time: 16:10-18:25

Venue: Room 104(1F), Building 25

Session 5: Topic: "Image Processing and Application"

Session Chair: Assoc. Prof. Zhongxing Zhou

M2002 Session 5 Presentation 1 (16:10-16:25)	Photoacoustic Image Denoising Using Dictionary Learning **Syahril Siregar** and Yoshifumi Saijo Tohoku University, Japan *Abstract*—Photoacoustic (PA) imaging is the biomedical imaging modality to visualize the biological object with high contrast, high spatial and temporal resolutions. The PA image is degraded due to several parameters such as random noise, frequency, transducer, and laser components. A band-pass filter does not completely remove the noise since the noise is distributed in the bandwidth frequency. In this paper, we propose noise removal method for PA image by applying dictionary learning method. The algorithm is applied to PA images of micropipe filled carbon nanotube and *in vivo* mice ear. We estimated the optimum input parameters to implement dictionary learning denoising method on PA image. Our results declared that the proposed denoising method using dictionary learning enhances the quality of PA image.
M2017 Session 5 Presentation 2 (16:25-16:40)	Improved Material Recognition Using Neural Networks **Muhammad Umer Shahzad Awan**, Amir Shahzad and Dong-Ryeol Shin Sungkyunkwan University, South Korea *Abstract*—Material recognition is a significant subtask in computer vision that has many different applications like autonomous cars in transport engineering, auto-lifting in robotics and even for some sort of autonomous-surgeries in medical field. In this paper, we suggest an improved method to recognize the materials of different categories from one photo image that is captured in an unidentified illumination and view-angle. For that purpose, several different features that cover dynamic material appearance in detail and all gathered information will be used by neural network for recognition. Our proposed method

	significantly improved in contrast to several leading alternatives including SIFT, Color SIFT, LBP, k-mean, and others. Additionally, we use a material database of Flickr Material Database (FMD) to analyze our method for identifying materials of different categories including foliage, plastic, wood, glass, leather, metal, paper, fabric, water and stone.
M2018 Session 5 Presentation 3 (16:40-16:55)	A New Dataset Benchmark for Pedestrian Detection **May Thu**, Nikom Suvonvorn and Montri Karnjanadecha Prince of Songkla University, Thailand *Abstract*—Pedestrian detection is an increasingly interest research in computer vision with the challenging problem under complex background and occluded appearance in real world environment. The existing datasets have limitations for a large variation in human pose and clothing, variation of appearance, and cluttered backgrounds. In this paper, we considered the limitation of the existing dataset problem by providing with complex pose and occluded pedestrians from different views and complex backgrounds. Therefore, the main objective of this paper is to propose PSU Pedestrian Dataset for the Asian pedestrian environment which is different with the standard European datasets. For the performance comparison, PSU dataset and INRIA dataset are used to test with baseline Histogram of Oriented Gradient (HOG) and Support Vector Machine (SVM) learning model.
M3001 Session 5 Presentation 4 (16:55-17:10)	Application of Hyperspectral Imaging for Surface Defects Detection of Jujube Quoc Thien Pham and **Nai-Shang Liou** Southern Taiwan University of Science and Technology, Taiwan *Abstract*—Hyperspectral imaging system with the range of 450–990 nm was developed to obtain the reflection spectral of "Kaohsiung 11" jujube with surface defects. Principal component analysis (PCA) was used to reduce the spectral dimensionality of hyperspectral image data and determine the wavebands used by band ratio method for quick detection of jujube surface defects. Two-band ratio ($Q_{550/680}$) images were successfully used to differentiate surfaces with defects such as decay, rusty, fungus infection and insect bites from the sound surface. Due to the fact that rusty surface of "Kaohsiung 11" has no effect on the quality of flavor and texture, a threshold value for slope of reflectance spectra between 700 nm and 710 nm was used to differentiate the rusty region from other defect regions. The glare due to specular reflection from smooth and waxy surface of jujube may lead to error when the differentiation of surfaces with defects and sound surfaces was performed. The findings of this study can be used as a basis for developing effective algorithm to identify different types of defects on

	jujube surface.
M1017 Session 5 Presentation 5 (17:10-17:25)	Pathway-Based Approach Using Hierarchical Components for GWAS **Nan Jiang** and Taesung Park Seoul National University, South Korea *Abstract*— Genome-wide association studies(GWAS) have been widely used in identifying phenotype related common variants by many statistical methods, such as logistic regression and linear regression. However, the statistically significant SNPs may suffer from the lack a biological interpretation. We construct a single hierarchical component model which takes the biological pathway components of common variants into account for the analysis of GWAS data. The proposed pathway-based approach using GWAS data summaries the common variants in gene-level and then analyzes all pathways simultaneously by ridge-type penalization approach on the effects of both gene and pathway to the phenotype. For the given ridge estimates of parameters, our model can accomplish the statistical significance test of the gene and pathway coefficient estimates by permutation test to obtain p-value. Our approach can provide a more intuitive biological interpretation for the association between common variants and phenotypes.
M2028 Session 5 Presentation 6 (17:25-17:40)	Reliability Evaluation of Speaker Recognition **Evgeny Gershikov** and Samuel Trabelsi Braude Academic College, Israel *Abstract*—In this paper we propose reliability measures for algorithms that recognize a speaker within a database of speaker features using a short voice recording. We consider only text independent recognition. Using the proposed measures, we test the reliability of three algorithms, which are based on MFCC features. The first two methods use Gaussian Mixture Models (GMM), while the third method uses Vector Quantization (VQ). We compare the performance of the three methods and conclude about the usability and usefulness of our reliability evaluation of voice recognition.
M2011 Session 5 Presentation 7 (17:40-17:55)	Robust and Sparse Kernel PCA and Its Outlier Map Kunzhe Wang, **Huaitie Xiao**, Hongqi Fan, Yongfeng Zhu and Rang Liu National University of Defense Technology, China *Abstract*—Kernel principal component analysis (PCA) generalizes linear PCA to high-dimensional feature spaces, related to input space by some nonlinear map. One can efficiently compute principal components via an eigen-decomposition of the kernel matrix. Nevertheless, classical kernel PCA has two deficiencies: the lack of robustness and sparseness. It can be affected by outliers so strongly that the resulting eigenvectors will be tilted toward them. Moreover, the technique is not sparse, since each

	principal component in the Hilbert space is expressed in terms of kernels associated with every training pattern. To overcome these issues, we proposed a two-stage algorithm: a robust distance was computed to identify the uncontaminated data set, followed by estimating the best-fit ellipsoid to these data for an informative and concise representation. Finally, a kernel PCA outlier map was proposed to display and classify the outliers. Simulations with synthetic data show the effectiveness of our algorithm and its corresponding outlier map.
M2010 Session 5 Presentation 8 (17:55-18:10)	Deep Learning for Voice Activity Detection **Kun-Ching Wang** , Ying-Ru Yang and Yung-Ming Yang Shih Chien University, Taiwan *Abstract*—In this paper, a Voice Activity Detection (VAD) based on deep learning is proposed. First, the sound signal is visualized as a time-frequency characteristic of two dimensions. A linear-power spectral image, a log-power spectrogram and a cepstrum figure (Cepstrogram) are regarded as visualized features. Secondly, the convolutional neural network (CNN) is used as the depth learning model of speech feature. The input layer is composed of linear-power spectral image, log-power spectral image and Cepstrogram as three input feature maps. The CNN's hidden layer is localized and max-pooled along the frequency axis to handle the frequency structure of these regions. The CNN's hidden layer is transmitted over three frequency bands, Three-pair convolution operation and Pooling to obtain the best neuron parameter and weight. Finally, a fully connected MLP network is used in the output layer to identify the speech / non-speech output.
M3007 Session 5 Presentation 9 (18:10-18:25)	Image Retrieval with Degree-2 Iterative Linear Interpolation Polynomial Coefficients **Chao-Lieh Chen** and Chen-Wei Cheng Kaohsiung University of Science and Technology, Taiwan *Abstract*—Images are 2D surfaces. People usually scale images using interpolations, which produce 2D polynomial surfaces. Therefore, in this paper we propose an image retrieval scheme that uses the coefficients of the polynomials as local features. To obtain the coefficients, we apply the iterative linear interpolation (ILI) which produces degree-2 polynomial surfaces. The coefficients are normalized according to the center pixel of the 4x4 sliding window and histogram of the normalized coefficients become the image features for the image retrieval. Experimental results show that for some classes of images, the proposed retrieval outperforms the local binary pattern (LBP), the local ternary pattern (LTP) and the local tetra pattern (LTrP) schemes while it inherits ILI's low computational complexity nature.

Session 6

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, August 23, 2018 (Thursday)

Time: 16:10-18:40

Venue: Room 105(1F), Building 25

Session 6: Topic: "Rehabilitation Medicine and Medical Information Management"

Session Chair: Prof. Junichiro Hayano

M1004 Session 6 Presentation 1 (16:10-16:25)	Effect of Education on Improvement of Attitude to Generic Drugs, an Experimental Study to In-Patient at Aloei Saboe Hospital **Zulfiayu**, Nangsih Sulastri Slamet, Yos Banne and Fadli Husain Gorontalo Health Polytechnic, Indonesia *Abstract*—Objective: The objective of this research was to observe the effect of education and information on the alteration of in-patient's knowledge, perception, and attitude to the generic drug. Methods: An experimental study was conducted with a simple random sampling with a total sample of 45 people. They divided into three group, first group educated by the nurse, second group by the pharmacist, and third group by collaboration of nurse and pharmacist. The data were analyzed with Wilcoxon Sign Rank Test to verify the alteration. Results: The results of data analyze showed a significant alteration of knowledge, perception, and attitude before and after education by the nurse, by the pharmacist and by the collaboration of nurse and pharmacist (the value of $p \leq 0.05$). There was no significant difference level of perception and attitude on in-patient whom educated by pharmacist, nurse, and collaboration of nurse and pharmacist. The significant difference showed on in-patient's knowledge that educated by pharmacist and collaboration of them (p-value 0.025). Conclusion: The results indicated that there was a significantly increased level of knowledge, perception, and attitude on the in-patient that have been educated about the generic drug. Education by nurse, pharmacist, and collaboration of nurse and pharmacist had the same result to increase the level of perception and attitude of the generic drug, but the best method used to increased knowledge was done by the pharmacist.

M1008 Session 6 Presentation 2 (16:25-16:40)	Instructional Media Human Anatomy and Physiology Using Virtual Reality Janejira Euasukaree and **Sarinporn Visitsattapongse** King Mongkut's Institute of Technology Ladkrabang, Thailand *Abstract*—Objective: In present, Technology is more modern and diverse that has become a necessity of people in this very technologically advanced age. So, this is the age where technology advances play a bigger role that we chose to take technology to apply to human learning. Methods: Virtual Reality (VR) is simulates virtual environments technology through visual Perception, voice, or touch. This technology applies to the science of Anatomy and Physiology to provide new learning about cause of disease and user experience. User can study the human structure and performance of each system in the body when have disease. Results: It's help patients to understand the cause of disease and system of body function to enable patient to recognize diseased and takes care of themselves as prescribed by doctor for the most effective rehabilitation. Conclusion: The technology applied to the original content is more interesting and diverse. The program will reference content from text books, resources and expert. Even though it's new technology, it easy to be for all use.
M1019 Session 6 Presentation 3 (16:40-16:55)	The Combination of Exercise and Ascorbic Acid Influence Blood Glucose Level but not Islets Pancreatic Area on High Carbohydrate Diet Rats **Lilik Herawati**, Lina Lukitasari, Rimbun, Bambang Purwanto and Gadis Meinar Sari Universitas Airlangga, Indonesia *Abstract*—Objective: This study is conducted to determine the protective effects of physical exercise and ascorbic acid on increasing of blood glucose levels and islets pancreatic area in high-carbohydrate diet rats. Method: Twenty rats were divided into 4 groups: as control group was a high-carbohydrate diet (HC), as treatment groups were HC plus exercise (HCEx), HC plus ascorbic acid (HCAs), and HCExAs. The duration of treatment was 9 weeks. Swimming to exercise held 6 times a week and ascorbic acid dose was 9 mg. Result: It showed that the smallest body weight was HCEx group. Blood glucose difference (before and after treatment = BG diff) had a significant difference ($p = 0.021$) among groups and the lowest level of BG diff was HCEx group. HCAs had the biggest BG diff. However, there was no significantly difference among group on islets pancreatic area, but HC group had the largest area. Conclusion: This study suggests that combination of exercise and ascorbic acid on high carbohydrate diet subject may regulate blood glucose level compare to the exercise or ascorbic acid alone. However,

	they do not influence pancreatic islets area.
M1006 Session 6 Presentation 4 (16:55-17:10)	Relationship Between Age, Working Period and Work Duration with Fatigue on Pedycab Drivers in North Kotamobagu District **Bongakaraeng** and Maryam Danial Manado Health Polytechnic, Indonesia *Abstract*—Objective: The purpose of this study is to determine the relationship between age, working period and work duration with work fatigue on the driver of the pedycab in North Kotamobagu District North Sulawesi Indonesia. Method: This type of research is a survey research that is analytic observational with cross sectional approach applied in January - May 2016. Respondents in this research are the pedycab drivers in Bilalang I and Bilalang II villages with a total sample of 38. Instruments used are the Work Fatigue Measurement Questionnaire (KAUPK2). Data analysis was done by using Chi-Square statistical test. Independent variables studied were age, work period and duration of work. Result: Based on the results of the research that there are 18 driver who experienced fatigue category and there are 20 drivers in very tired category. There was a significant correlation between age with the work fatigue of driver (P = 0,000), there was a significant relationship between the working period with the working fatigue of driver (P = 0,000), and there was a significant relationship between work duration with the work fatigue of driver (P = 0.000). Suggestion: There is a need for different working time setting for the pedycab drivers. Because the pedycab design is performed by the workshop based only on experience, it is necessary to conduct research on the design of the pedycab according to the anthropometry of the driver.
M1020 Session 6 Presentation 5 (17:10-17:25)	Fundamental Movement Skill Approach to Combat Childhood Obesity in Surabaya, Indonesia: Potential Effects of Video Games Based Exercises (Exergaming) Raden Argarini, Lilik Herawati, Irfiansyah Irwadi, Eka Arum Cahyaning Putri and **Gadis Meinar Sari** Universitas Airlangga, Indonesia *Abstract*—Objective: The purpose of this study is to observe the effect of moderate intensity exergaming (video games based exercise) on mastering of fundamental movement skill (FMS) and reduction in body mass index (BMI) in overweight and obese children in Surabaya, Indonesia. Method: The participants were 17 primary school students, aged 6-12 years. All participants had a BMI above percentile 85 (classified as overweight and obese children) and performed 12 sets of moderate intensity exergaming for four weeks, three sessions per week, 30-40 minutes in each session. The variables studied were FMS, body weight, BMI, body fat percentage (%BF), and prediction energy

	expenditure (EE). Variables were taken 3 days prior first exercise (pre-test) and after last exercise (post-test) except for EE. Prediction of EE were taken in first and last of exergaming session. Data were analysed using SPSS 20.0. Result: There was improvement in component jumping of FMS, but not in others component of FMS. There were also significant decline on body weight, BMI ($p < 0,05$) and %BF, but not in energy expenditure. Conclusion: This research shows that regular physical exercise using moderate intensity exergaming for 4 weeks can help children to improve their FMS and reduce BMI.
M2013 Session 6 Presentation 6 (17:25-17:40)	Physiological and Psychological Burden of Workers by Satellite Navigation Labor Management **Emi Yuda**, Junichiro Hayano, Yutaka Yoshida and Kazuo Mizuno Nagoya City University, Japan *Abstract*—Labor management based on satellite navigation systems such as Global Positioning System (GPS) have become popular. To investigate the stress caused by GPS labor management system, we studied its physiological and psychological impacts of the use of management system in nursing home workers. In 10 healthy labors, ambulatory ECG with 3-axis accelerograms were recorded during working hours on 4 days with similar work schedules; GPS system was used on 2 days (GPS+) and not used on the other 2 days (GPS−). Anxiety was assessed by State-Trait Anxiety Inventory performed on the second days of GPS+ and GPS−. While the use of GPS labor management system caused no difference in physical activity or anxiety scores, it decreased heart rate and increased parasympathetic indices of heart rate variability during both acting and resting periods. While classical fight-or-flight type stress response is accompanied by sympathetic activation and parasympathetic withdrawal, inescapable stress situations cause a sustained alert response, which is accompanied by parasympathetic activation and bradycardia. The autonomic responses observed under GPS system may be consistent with those with the sustained alert response.
M0005 Session 6 Presentation 7 (17:40-17:55)	Mental Stress Evaluation of Car Driver in Different Road Complexity Using Heart Rate Variability (HRV) Analysis **Sugiono Sugiono**, Denny Widhayanuriyawan and Debrina P. Andriyani Universitas Brawijaya (UB), Indonesia *Abstract*—Objective: Controlling driver stress level is going popular research and put it very important factor to reduce risk of road accident. The aim of the paper is to analysis the impact of road complexity on driver stress level based on physiological factor of Heart Rate Variability (HRV). Methods: The first step of the research is literature study on human stress, Heart Rate Variability (HRV), Electrocardiograph (ECG), and NASA TLX mental work load. The driver will use ECG to monitor

	and then recorded at every heart rate change at any time from three different road conditions of city road, rural road, and motorways. The collected sampling data are 26 male drivers with the average age of 21 years old and average driving experience of 4.08 years. Mental stress evaluation of driver was assessed by frustration level (F) in NASA TLX questioner (subjective measurement) and HRV in time domain analysis mRR (objective measurement). Results: The statistic test demonstrated that there are not significant different mental stress level for driver between mRR and F-NASA TLX. The city road produced avarage F–NASA TLX=3.92 and mRR=612.40ms, rural road produced avarage F–NASA TLX=3.46 and mRR =621.26 ms, and motorway produced avarage F–NASA TLX=2.50 and mRR=820.20ms. Conclusion: In sort, the mRR of HRV data can be used to monitor the mental stress level of driver in real time as consequence it baneficely implemented in car alert safety system.
M1023 Session 6 Presentation 8 (17:55-18:10)	Swimming Exercise Improves Memory Function and Decrease Nmda on Eldery Rats **Hanik Badriyah Hidayati**, Hasan Machfoed, Purwo Sri Rejeki, Siti Khaerunnisa and Lilik Herawati Universitas Airlangga, Indonesia *Abstract*—Objective: Memory impairments may substantially influence the quality of life in elderly. It is associated with alteration of some neurotrophic (NTs) factor such as Brain Derived Neurotrophic Factor (BDNF) and glutamate receptor N-Methyl-D-Aspartate (NMDA). Exercise has been widely used to improve a cognitive impairment. Previous studies have shown the benefit of aerobic exercise in improving a cognitive impairment by increasing BDNF and prevent excessive of NMDA, but some results are still controversial. Therefore, we investigate the association between exercise and the memory function by looking at the increased of BDNF and the reduction of NMDA in elderly rats. Methods: The study design was randomized post test only controlled group with total of 30 male elderly Rattus norvegicus aged 1 years divided in three groups, K0 as control, K1 and K2 as treatments (aerobic swimming exercise) group in different frequency (3x/ and 5x/ week). Memory function was assessed using the Y Maze which the result had inversevely association. BDNF and NMDA were analysed using enzyme-linked immunosorbent assay (ELISA). Results: There were significant differences on the memory function improvement and NMDA decreased amongs the groups (p= 0.001; p= 0.041) but not in BDNF increment (p= 0.387). Conclusion: Swimming exercise may increase memory function via NMDA reduction, but there was no increased BDNF. We suggest swimming exercise as a promising method to prevent and delay degenerative brain diseases. However, further investigation is still needed to complete its mechanism.

M2006 Session 6 Presentation 9 (18:10-18:25)	Correction of Aliasing in Color Doppler Echocardiography to Improve Blood Velocity Estimation by Echodynamography **Sri Oktamuliani**, Kaoru Hasegawa and Yoshifumi Saijo Tohoku University, Japan *Abstract*—A study about the program of color Doppler to improve blood velocity estimation has been developed. Color Doppler echocardiographic images were acquired using Philips IE33 have a crucial issue the ambiguity of the offset beams when the correct velocity of the blood flow exceeds the velocity of Nyquist limit. Therefore, velocity dealiasing is needed in quality control of color Doppler echocardiographic data to correct velocities using EDG (echodynamography) based on observer and machine interaction. The program is applied to echocardiography images of aortic stenosis subject as a technique to assess cardiovascular function. One challenging with color Doppler is correcting velocity aliasing. The observer determines the ambiguity area based on his or her knowledge. These results confirm the dealiasing and noise removing are vital elements in improving blood velocity estimation in cardiovascular diagnostic. Therefore, this study could use in clinical tools based on color Doppler imaging.
M2016 Session 6 Presentation 10 (18:25-18:40)	A Literature Review on Carotenoids and Methods of Measuring Carotenoids **Yi Huang** James Cook University Singapore, Singapore *Abstract*—Recently, great interest has been generated in monitoring and increasing the level of antioxidants in the human body, as higher antioxidant levels are linked to better overall health and lower risk of various ailments. Not only have researchers gained a better understanding of the roles and development of antioxidants, they have also explored various methods of detecting antioxidant levels in humans. While research suggests that greater consumption of plant based food positively correlates with higher antioxidant levels, the general public, as well as health professionals lack a readily available, low cost, non-invasive, in vivo, and fast means of assessing antioxidant levels. In this study, previous research was reviewed in the areas of: relation between antioxidant level and cancer and other health problems, relation between antioxidant level and food consumption behavior, and detection of antioxidants by methods such as Raman spectroscopy and Reflectance spectroscopy. Previous studies suggest a strong connection between higher antioxidant level and lower cancer risk, while there also appears to be strong connection between antioxidant level and food consumption behavior. Based on their review of the research, this study's authors propose a non-invasive, inexpensive and fast method for detecting antioxidant level, so as to encourage consumption of healthier diets.

Poster Session

August 23, 2018 (Thursday)

Time: 11:45-12:00

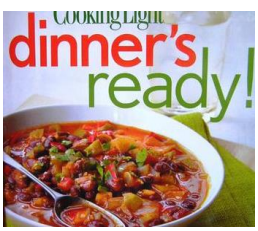
Venue: International Conference Hall (국제회의실 1F of Building 25-1)

M0022 Poster 1	Swissknife-Inspired Fluorescence Probes for Cellular Organelle Targeting and Photodynamic Ablation Based on Simple ESIPT-Active AIEgens **Jen-Shyang Ni**, Michelle M. S. Lee and Ben Zhong Tang HKUST-Shenzhen Research Institute, China *Abstract*—Biological fluorometric detection has been paid attention in the field of bioimaging technology with the progress of human civilization. Due to the expensive purification and tedious transfected processes of fluorescent proteins, commercial organelle-targeting based on small organic molecules such as BODIPY and Nile red have been broadly used for co-localization assays. In this investigation, a facile, efficient and mass production of aggregation-induced emission (AIE) luminogens (AIEgens) with excited-state intramolecular proton transfer (ESIPT) characteristics was achieved by one-step condensation reaction of 2-(hydrazonomethyl)phenol with benzaldehydes. The function of the generated AIEgens could be tuned easily by varying the functional group carrying on the phenyl ring of benzaldehyde just like Swiss knife handle. The suitable distance and angle of intramolecular hydrogen bond in these AIEgens endowed them with ESIPT properties, intense solid-state luminescence and large Stokes shifts (155–169 nm). These AIEgens could serve as biological probes showing specific targeting to lipid droplets, endoplasmic reticulum and lysosomes. They could generate reactive oxygen species upon visible light irradiation to make them promise for photodynamic ablation of cancer cells.
M0003 Poster 2	Microrna-1/206 Target Both Monocarboxylate Transporter (MCT)-4 and Vascular Endothelial Growth Factor (VEGF) Genes Leading to Inhibition of Tumor Growth **Anas Khaleel** and Abdallah Ahmed Elbakkoush Al Isra University, Jordan *Abstract*—Objective: In this study, we aim to include microRNA role in regulating two (*MCT4*&*VEGF*) oncogenes, thereby reducing tumor growth and metastasis. We postulated that miR-1 and miR-206 might

	regulate cell proliferation, migration, and invasion by targeting the duo proto-oncogenes MCT4/VEGF. MiR-1/206 negatively regulates the proto-oncogenes MCT4/VEGF. Methods: This was confirmed by using publically available database (e.g. TargetScan 6.2, MicroCosm and PicTar). Besides, we used miRTarBase database for experimentally validated target used to further verify this miRNA gene relationship and literature for searching gene targets of microRNAs. Results: MiR-1 and miR-206 targeted *MCT4* coded by *SLC16A3* gene and VEGF, thus reduce growth and infiltration. In addition, MiR-1 and miR-206 reduced angiogenesis and vasculature of the tumor by targeting *VEGF* gene. Our results elucidated a novel regulation pathway in CRC cells and could suggest a potential therapeutic approach for CRC therapy. Conclusion: MiR-1/206 may inhibit the tumor growth and infiltration of colorectal cancer cells in by the down-regulation of *MCT4* and *VEGF* proteins in tumor tissues. The possibility of metabolic modification of the tumor microenvironment via regulation of *MCT4* and *VEGF* may prove to be a promising outcome for our proposition. Our data for miR-1/206 cluster is used to support to the main idea in this article that they both target the recently exposed oncogenes (*MCT4*&*VEGF*) in colorectal cancer.
M2022 Poster 3	The Opinion of Therapists and Specialized Doctors on the Provision of Medical Assistance of Patients with Type 2 Diabetes in Polyclinics in Almaty **Aygul Tazhiyeva**, Vitaly Reznik, Zhan Abylayuly and Gulzhanat Kuttykozhayeva Kazakhstan Medical University "KSPH", Kazakhstan *Abstract*—Objective: The objective of this research was to study the opinion of therapists and highly specialized doctors (cardiologist, neuropathologist, oculist) in Almaty polyclinics on the provision of endocrinological care for patients with type 2 diabetes. Methods: The sociological study was conducted on the basis of a specially developed questionnaire. The questionnaire consisted of 23 questions. The database was created in the Microsoft Access 2010 program. Statistical processing of data was carried out using the SPSS 22.0 software package. The average relative values have been calculated with the value of their standard error. Results: Most patients with type 2 diabetes mellitus are observed in primary health care by therapists and endocrinologists. According to 86.7% of therapists, the number of patients with diabetes exceeds the number of registered patients and the determination of blood glucose level in the daily practice of therapists will reveal a large part of them. Most of the interviewed doctors believe that they have difficulties in servicing patients due to the presence of concomitant disease in patients, low adherence of patients and a narrow choice of drugs for

	treatment. According to the opinion of doctors of different specialties (endocrinologists, cardiologists, neurologists, oculists), when examining patients with type 2 diabetes, complications from the cardiovascular system, the nervous system and the organ of vision are identified. Conclusion: The organization of out-patient care for patients with type 2 diabetes mellitus should be interrelated by therapists and cardiologists, neurologists and ophthalmologists. It should be based on continuity and interdisciplinary approach, and be aimed at ensuring patient satisfaction with quality of care, adherence to treatment and improving the quality of life.
M2019 Poster 4	A Portable 3×3 Mueller Matrix Polarimeter Prototype for Cancer Detection Ex Vivo Zhiwen Huang, Yifan Fu, Zhengyi Li and **Jian Wu** Graduate School at Shenzhen, Tsinghua University, China *Abstract*—In this paper, a new structure of polarimeter is designed to measure the 3×3 Mueller matrix of ex-vivo human tissues by integrating the polarization state generator (PSG) and the polarization state analyzer (PSA) together in a metal base. The rotation of linear polarizers was implemented precisely and rapidly by two DC servo motors, and controlled along with the snapshots of the polarimetric images by a software program running on a mobile work station. Hence, the whole system is portable and the total acquisition time for a Mueller matrix was controlled within 5 seconds. Furthermore, the Z pulse output of the encoder was utilized to search the horizontal axis of linear polarizers, which was taken as an automatic calibration tool after the system being moved out of the laboratory for measurement. Finally, a prototype was implemented and validated with a linear polarizer and chicken heart cross-section. This prototype was then moved to Shenzhen Second People's Hospital for the measurement of unstained human tissue samples that were treated only with fixatives. The comparison between the pathological results and the Mueller matrix parameters showed the potential application of our system in cancer detection.
M3004 Poster 5	Cardiovascular Perfprmance for Drug Addiction in Taiwan **Kang-Ming Chang**, Shan-Chuan Teng, Hsin-I Li and Hui-Jane Kang Asia University, Taiwan *Abstract*—Previous studies showed that drug addiction users are often accompanied by cardiovascular diseases. This study investigated the cardiovascular parameter distribution among addiction subjects deferred prosecution with condition to complete the addition treatment. Forty subjects, 33 males and 7 females, average age 34.7 (10.7) are involved. Cardiovascular parameter distributions are as following: systolic blood pressure is 118.3(18.2); diastolic blood pressure is 79.0 (9.8); heart rate is

	89.1 (16.4); Low frequency power of heart rate variability spectrum (LF) is 904.6 (2297.2); How frequency power of heart rate variability spectrum (HF)is 424.8 (533.0). Besides, there are 6 subjects with irregular heart beat numbers (over 20). LF power percentage (LF/LF+HF) is 57.4% (19.8%)。Furthermore, subject numbers with LF power percentage greater than 60%, 40% to 60 % and below 40% are 20, 11, and 9, respectively. That is, 50% subjects are with high percentage of sympathetic nervous activities.
M2009 Poster 6	Health Assessment System Based on Big Data Analysis of Meridian Electrical Potential Hui Li, **Yibo Cheng**, Yinghui Li, Xiaochang Ma and Delong Li, Peking University, Shenzhen, China *Abstract*—This paper develops a health management and assessment system named Jinluo Kangbao Health Management System, which is based on big data analysis of meridian potential value. The main purpose is to achieve fast and low-cost diagnosis of disease, and to alleviate problems like unequal distribution of medical resources. The system contains three major modules, the meridian detector, the client software and the central database. During test process, the electrode of meridian detector contacts 24 acupuncture points of the body in particular order, and collects potential value of each acupuncture point. By constructing a calculation matrix, the potential values are corresponded to certain regions of a 24-dimensional space. Within this space, the positions are used to judge the status of the client's health condition, including at low-risk, at medium-risk, at high risk, in subclinical state or in clinical state. The collected data are analyzed by the central database, which also provides reliable medical advice. In this paper, we use Jinluo Kangbao system to check a client. We list the detailed results concerning major aspects of his health condition, and give him relevant medical advice. The output of this system shows high accuracy compared to the results provided by hospital.



Dinner	
18:40-20:00	**Restaurant**

Conference Venue

Seoul National University, Seoul, South Korea

http://stat.snu.ac.kr/eng/
Addr.: Building. 25-1, College of Natural Sciences, Seoul National University

How to Get Here?

Way #1 From the Airport

1. Incheon International Airport

- Take the "#6003 Airport limousine bus" at Incheon International Airport
  → Get off the limousine at the main gate of Seoul National University
- Take the "#6017 Airport limousine bus" at Incheon International Airport
  → Get off the limousine at Hoam Faculty House.

2. Gimpo International Airport

- Take the "#6003 Airport limousine bus" or "#651 blue bus" at Gimpo International Airport
  → Get off the bus at the main gate of Seoul National University
- Take the subway from Gimpo International Airport. on the **No.5 line**
  → Transfer to the **No.2 line** at Yeongdeungpo-gu Office Station.
  → Get off at either Seoul National University Station or Nakseongdae Station

Way #2 From Seoul or Yeongdeungpo Station

1. Seoul Station

- (Take the Bus) Take the "#501, #750A, or #750B blue bus" at Seoul Station
  → Get off at the main gate of Seoul National University
- Take the **No.4 line** towards Sadang
  → Transfer to the **No.2 line** at Sadang Station.
  → Get off at the main gate of Seoul National University Station.

2. Yeongdeungpo Station

- Get on subway **Line No.1**
  → Transfer to the **No.2 line** at Sindorim Station
  → Get off at the Seoul National University Station.

Way #3 From Express Bus Terminal

1. Seoul Express Bus Terminal or Cental City Terminal

- Get on "#8541 green bus or #643 blue bus"
  → Transfer to the "#5528 green bus" at Sadang 1-dong Gwanak-market Station
  → Get off at the main gate of Seoul National University
- Get on the **No.3 subway line** at Express Bus Terminal Station
  → Transfer to the **No.2 line** at Seoul National University of Education Station.
  → Exit 3 at Seoul National University Station
  → Use shuttle bus, city bus, or taxi.

2. Dong-Seoul Bus Terminal

- Use the **No.2 subway line** at Gangbyeon Station
  → Get off at Seoul National University Station
  → Use shuttle bus, city bus, or taxi.

Map

Location

Enter Seoul National University Gate and go straight for 2km -> Brick-colored building on the left (G3 Gate 25-1)

Academic Visit & Tour

August 24, 2018 (Friday) 9:00-18:00

(Tips: 1.Please arrive at the Hoam Faculty House, Seoul National University before 8:50 a.m. 2. The following places are for references, and the final schedule should be adjusted to the actual notice. 3. The quotation includes lunch and Gyeongbokgung Palace Ticket. Other payment items are on own expense)

Time	Specific Arrangement
9:00-10:30	Bioinformatics Labs
10:30-17:30	Gyeongbokgung Palace; Cheong Wa Dae; Insadong; N Seoul Tower
17:30	Go back to Hoam Faculty House, Seoul National University

Gyeongbokgung Palace, built in 1394, has a history of six hundred years. It's one of the top five palaces in the Korea dynasty period. Gyeongbokgung palace is one of the biggest and oldest palaces and also the political heart of the later Korea feudal society. It has four doors in all.

Cheong Wa Dae is located in the northwest of Seoul. It's a presidential office and a political center of South Korea. The most notable characteristic of Cheong Wa Dae is the celadon. All the buildings are built in accordance with the traditional Korean architecture.

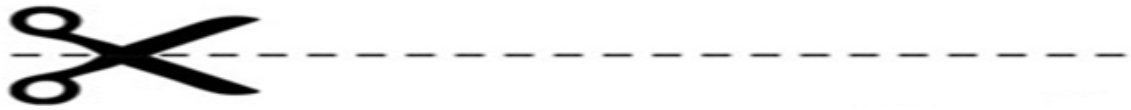
Insa-dong, the street of traditional culture and art, is located in the heart of the city, is an important place where old but precious and traditional goods are on display. There is one main road in Insa-dong with alleys on each side. Within these alleys are galleries and traditional restaurants, teahouses, and cafes.

N Seoul Tower is located in Namsan of Seoul. It was built in 1975 and is 236.7 meters high as Korea's first integrated transmission tower beaming television and radio broadcasts across the capital. Since opening to the publication in 1980, it has become a much-loved Seoul landmark. The tower's main attractions include a digital observatory, a roof terrace, the HanCook restaurant, the n.Grill restaurant, and the Haneul (Sky) Restroom.

Note

Note

Note



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Would you please list the top 3 to 5 universities in your city?	
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Any Other Suggestions/Comments	

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