

# The 30<sup>th</sup> International Conference on Information Networking **ICOIN 2016**



**CONFERENCE  
PROGRAM**

**January 13-15, 2016**  
**Kota Kinabalu, Malaysia**

**Sponsored by KIISE Information Networking Society**

**Technically Co-sponsored by IEEE Computer Society**



KOREAN INSTITUTE OF  
INFORMATION SCIENTISTS AND ENGINEERS



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## Message from the ICOIN 2016 General Co-chairs

On behalf of the whole organizing committee, we welcome you to Kota Kinabalu, Malaysia for the 30th International Conference on International conference on Information Networking (ICOIN 2016). We are very grateful to have many talented and very well responsible people involved in the process of submitting papers, chairing sessions, reviewing papers, and organizing the conference.

This event is a product of the hardship of many committee members who have worked beyond deadlines for the perfect conference and performed the tedious task of advertisement in the best of manner. The conference is an amalgam of high-quality submissions brought forward by thorough research to meet the high standard required, as of in today's world.

We are also pleased to let you know that, this year, ICOIN has reached its 30th event. It is a remarkable achievement by all the people who have sacrificed their valuable time and effort for the 30 memorable years. ICOIN 2016 is ready to serve you with ever heightened quality of technical and social programs. You will find the technical sessions organized in 3 days interesting, informative and inspiring.

Of course, Kota Kinabalu can also be a great source of recreation which is a paradise island of one of the world famous travel destinations with her sandy beaches providing a picturesque backdrop to her colorful, deeply spiritual and unique culture. Please, enjoy your stay by combining your conference activities with cultural, historical and archaeological attractions, visiting shopping centers, spas, cafés, parks, and many more. We believe you will make unforgettable memories here.

Again, we would like to express our sincere gratitude to the committee members and referees who made tremendous contributions to this event. Our special thanks are due to Profs. Hyungkeun Lee: the Program Committee Chair, Prof Sanghwan Lee: the finance chair, Profs. Jungryun Lee, Mohd Nazri Ismail, Ho Chin Kuan, Yasuo Okabe: Publicity Co-chairs, Prof. HyungJune Lee: Registration chair, Prof. Myungsik Yoo: Publication chair, and all other chairs.

We wish your participation in ICOIN 2016 being a memorable one with both valuable technical exchanges and wonderful cultural and outdoor experiences.

Ki-Joon Chae, Keecheon Kim and Katsuyuki Yamazaki

General Co-chairs, ICOIN 2016



**Ki-Joon Chae**  
Ewha Womans University, Korea



**Keecheon Kim**  
Konkuk University, Korea



**Katsuyuki Yamazaki**  
Nagaoka University of Technology, Japan

## Message from the Technical Program Committee Chair

It is our great pleasure to welcome all of you to Kota Kinabalu from January 13 through 15, 2016 for the 30th International Conference on Information Networking (ICOIN). Thanks to its 30 years' tradition, ICOIN 2016 will be an exciting conference covering broad topics on computer communications and network technologies in the theoretical and practical aspects.

This year we have received 237 paper submissions electronically from 22 countries. A rigorous review process has followed, in which all papers have been reviewed by at least three independent reviewers. After the reviews and discussions, 57 papers have been accepted for oral presentations and 44 papers for poster ones, which results in 43% acceptance rate, and outstanding papers have been selected for the Best Paper Award. The 58 oral papers are organized into 12 technical sessions, which will be held in 2 parallel tracks. The program covers a variety of topics on both of wireless and wired communication networking technologies. It reflects the growing need to develop cross-layer or converging approaches to address the future challenges in this area. In addition to the contribution of prominent authors from all over the world, we believe this year's precious and interesting program is possible only by the commitment of technical program committee members.

We are indebted to all of the 133 TPC members from 21 countries for their active participation and volunteering their precious time. Also we would like to thank our sponsors, KIISE and IEEE Computer Society, for their support of this successful event. We extend our sincere thanks to the general co-chairs, Prof. Ki-Joon Chae, Prof. Keecheon Kim and Prof. Katsuyuki Yamazaki, for their support and guidance. We hope all of you enjoy the interesting program of ICOIN 2016 as well as the beautiful scenery and attractions of Kota Kinabalu.

Hyungkeun Lee

Technical Program Committee Chair, ICOIN 2016



**Hyungkeun Lee**  
Kwangwoon University, Korea

## ICOIN 2016 Program at a Glance

TIME	Track 1	Track2
Jan. 12, 2016 (Tuesday)		
16:00-18:00	Organizing Committee meeting / Technical Program Committee meeting	
Jan. 13, 2016 (Wednesday)		
08:30-09:00	Registration Open	
09:00-10:00	Tutorial 1 (Buntunggan)	
10:00-10:15	Coffee Break	
10:15-11:15	Tutorial 2 (Buntunggan)	
11:15-11:30	Coffee Break	
11:30-12:30	Opening Ceremony/Keynote Speech (Buntunggan)	
12:30-13:30	Lunch Break (Buntunggan)	
13:30-15:30	Oral 1 : Security and Privacy I (Masokoh) Chair: Sungrae Cho (Chung-Ang Univ.)	Oral 2 : Ad hoc and Sensor networks I (Magibah) Chair: Sanghwan Lee (Kookmin Univ.)
15:30-16:00	Coffee Break	Coffee Break
16:00-18:00	Oral 3 : Security and Privacy II (Masokoh) Chair: Kenichi Yoshida (Univ. of Tsukuba)	Oral 4 : Ad hoc and Sensor networks II (Magibah) Chair: Hyunseung Choo (Sungkyunkwan Univ.)
Jan. 14, 2016 (Thursday)		
08:30-09:00	Registration Open	
09:00-10:00	Poster 1 : Cloud and Mobile communication Chair: Young-June Choi (Ajou Univ.)	Poster 2 : IoT and Middleware Chair: TBA
10:00-12:00	Oral 5 : Routing techniques (Masokoh) Chair: Jani Väre (Teleste)	Oral 6 : CCN and PHY (Magibah) Chair: Tae-Kon Kim (Korea Univ.)
12:00-13:00	Lunch Break (Buntunggan)	
13:00-15:00	Oral 7 : Network design and implementations (Masokoh) Chair: Jessie Hui Wang (Tsinghua Univ.)	Oral 8 : Streaming service and traffic (Magibah) Chair: Charles H.-P. Wen (N. Chiao Tung Univ.)
15:00-16:00	Poster 3 : Wireless networks Chair: TBA	Poster 4 : SDN and PHY Chair: TBA
16:00-18:00	Oral 9 : SDN and Network architecture (Masokoh) Chair: Kazuaki Oya (Univ. of Electro-Comm.)	Oral 10 : Cloud and Mobile communication (Magibah) Chair: JongWon Kim (GIST)
18:30~21:30	Banquet (Buntunggan)	
Jan. 15, 2016 (Friday)		
08:30-09:00	Registration Open	
09:00-10:00	Poster 5 : Security, Service and Streaming Chair : TBA	
10:00-12:00	Oral 11 : Load balancing and Offloading (Masokoh) Chair: Gaik-Yee Chan (Multimedia Univ.)	Oral 12 : Location-based services (Magibah) Chair: HyungJune Lee (Ewha Womans Univ.)

## Wed. January 13. 2016 (Buntunggan)

09:00 - 10:00

### Tutorial 1

#### Distributed Algorithms for Communication Networks

*Presenter: Prof. Song Chong (KAIST, Korea)*

##### Abstract:

In this tutorial talk, we will review mathematical foundations of distributed algorithms for a broad class of network protocols such as power control, flow/congestion control, routing, medium access control etc. In particular, we view network protocols in action as a distributed optimization process where geographically distributed participants (end hosts, routers, and links) either optimize a common objective (resource efficiency, fairness, QoE etc.) in a cooperative manner or maximize individually their own payoffs while competing for resources in a non.cooperative manner. Distributed network algorithms are iterative and message passing algorithms so that the convergence of the algorithms in a distributed and asynchronous environment is an essential property to be verified. By invoking variational inequality problems and fixed point theory, we provide a unified mathematical view on these issues.

##### Short Biography



Dr. Song Chong is a Professor in the School of Electrical Engineering at Korea Advanced Institute of Science and Technology (KAIST) and is the Head of Computing, Networking and Security Group of the school. He is the Founding Director of KAIST.LGE 5G Mobile Communications & Networking Research Center funded by LG Electronics. Prior to joining KAIST, he was with the Performance Analysis Department, AT&T Bell Laboratories, Holmdel, New Jersey, as a Member of Technical Staff. His current research interests include wireless networks, mobile systems, network data analytics and distributed algorithms. He is an Editor of IEEE/ACM Transactions on Networking, IEEE Transactions on Mobile Computing and IEEE Transactions on Wireless Communications.

He was the Program Committee Co.Chair of IEEE SECON 2015 and has served on the Program Committee of a number of leading international conferences including IEEE INFOCOM, ACM MobiCom, ACM CoNEXT, ACM MobiHoc and IEEE ICNP. He serves on the Steering Committee of IEEE WiOpt and was the General Chair of IEEE WiOpt 2009. He received the IEEE William R. Bennett Prize in 2013, given to the best original paper published in IEEE/ACM Transactions on Networking during the period of 2011.2013, and the IEEE SECON Best Paper Award in 2013. He received the B.S. and M.S. degrees from Seoul National University and the Ph.D. degree from the University of Texas at Austin, all in electrical engineering.

## Wed. January 13. 2016 (Buntunggan)

10:15 - 11:15

### Tutorial 2

#### On Performance of Green Wireless Communications: an Application in 5G Networks

*Presenter: Prof. Dinh-Thuan Do (Eastern International University, Vietnam)*

##### Abstract:

Radio frequency (RF) energy transfer and harvesting techniques have recently become effective methods to power the 5G next generation wireless networks. As this emerging technology enables energy replenishment of wireless devices in cellular networks, it is advantageous in supporting applications with longer operation requirements. In this tutorial, we present a comprehensive literature review on the research progresses and develop new system model in wireless networks with RF energy harvesting (EH) capability, referred to as RF energy harvesting networks.



### Short Biography



Dr. Dinh-Thuan Do was born in Tuy Hoa City, Vietnam, on July 5th, 1980. He received B.Sc. degree in Electronics and Communications Engineering, M.Sc. and Ph.D. degrees in Electrical Engineering from the Vietnam National University (HCMC.VNU) in 2003, 2007, and 2012 respectively. From September 2009 to September 2010, he was a visiting Ph.D. student at the Wireless Communications Lab (National Tsing Hua University.NTHU), Hsinchu City, Taiwan. Prior to joining academia, he worked as senior engineer at VinaPhone Mobile Network Company (VNPT Group) since 2003 until 2009. He was a vice chair of Communications Engineering Department, Ho Chi Minh City University of Technology and Education since 2011. He has been awarded as excellent young researcher with Golden Global Prize 2015 by Ministry of Science and Technology in Vietnam. He is currently Assistant Professor and Head of Wireless Communications Lab (WICOM LAB), Eastern International University, Vietnam. Dr. Thuan is a member of The Institute of Electronics, Information and Communication Engineers (IEICE). He also serves as Guest Editor, TPC Member and Active Reviewer for several journals/international conferences.

### Wed. January 13. 2016 (Buntungan)

11:30 - 12:30

### Keynote Speech

#### The ICT Paradigm Shift along with the Rise & Fall of Global ICT Companies

*Presenter: President. SangHong Lee (Institute for Information & communications Technology Promotion, Korea)*

#### Abstract:

The global ICT industry has been and continues to keep the world economy moving and alive. As we look back at its history and progress, I would like to speak of the type of companies that will rise and survive. During the last 35 years, do you know how many companies have fallen and how many survived through the ICT paradigm shift? What do those companies have in common? In an age of super.connected society, ICBM, and sharing economy, let us look at what small and medium sized companies need to do in order to lead the competition paradigm by 2020.

### Short Biography



President SangHong Lee began as a researcher in Korea's Electronics and Telecommunications Research Institute (ETRI) with a doctorate in Information Engineering at Sungkyunkwan University. From there, he moved up to becoming KT Research Development Institute's Director of Research Planning and Management Department, Chief of KT Central Research Institute, Vice-President of KT Advanced Institute of Technology, and President of KT Powertel. He is a deeply experienced specialist in the field of research planning, management, and development. On June 2014, Dr. Lee took office as the first president of the Institute for Information & Communications Technology Promotion, a public organization mainly responsible for the ICT R&D of the Republic of Korea. As the president of IITP, he plans the ICT related policies, projects & progress management, and technology commercialization of ICT R&D. As the leader of such important role in the ICT R&D, he puts all his efforts into developing the technical commercialization and competency of human resources. Dr. Lee is also a prolific essayist of "The Scent of a Flower, the Scent of Communication," which is about his managerial experience in KT expressed in the form of a flower and "The Lives of the People in Umyeon.dong." The latter is a story told through a collection of letters that he and his employees sent back and forth. Along with important agency announcements, Dr. Lee still continues to communicate with his employees through words of encouragement and compliments with moving stories.

## January 13, 2016 (Wednesday)

13:30-15:30

### ORAL SESSION 1

#### Security and Privacy 1

Chair: Sungrae Cho (Chung-Ang Univ.)

##### [O1-1] Papering Over the Cracks: An Investigation Into the Effects of Introducing Best Practices on the Web Security Ecosystem

Emil Larsson (Schibsted Media Group, Sweden); Johan Sigholm (Swedish Defence University, Sweden)

##### [O1-2] On the Use of Proxy Re-Encryption to Control Access to Sensitive Data on Information Centric Networking

Roan Simões da Silva and Sergio Donizetti Zorzo (Federal University of Sao Carlos, Brazil)

##### [O1-3] Signing Key Leak Detection in Google Play Store

Long Nguyen-Vu, Jungsoo Park, Ngoc-Tu Chau and Souhwan Jung (Soongsil University, Korea)

##### [O1-4] Android Component Vulnerabilities: Proof of Concepts and Mitigation

Bharat Buddhdev, Parvez Faruki, Manoj Gaur, Vijay Laxmi (Malaviya National Institute of Technology, India)

##### [O1-5] Enhancing Performance of Cardinality Analysis by Packet Filtering

Shinichi MORI, Akira SATO and Kenichi YOSHIDA (University of Tsukuba, Japan)

### ORAL SESSION 2

#### Ad hoc and Sensor networks 1

Chair: Sanghwan Lee (Kookmin Univ.)

##### [O2-1] Spatially Dependent Loss Tomography for Multihop Wireless Networks

Tatsuya Morita, Takahiro Matsuda and Tetsuya Takine (Osaka University, Japan)

##### [O2-2] A Study on Penetration Strategy of On-board Unit Taking Account of the Type of Vehicles in V2V Communications

Hiroaki Minami, Yumi Takaki, Chikara Ohta and Hisashi Tamaki (Kobe University, Japan)

##### [O2-3] Selection of Relay UE with Energy Harvesting Capabilities in Public Safety Environment

Daniyal Munir, Syed Tariq Shah and Won Jin Lee (Sungkyunkwan University, Korea); Syed Faraz Hasan (Massey University, New Zealand); Min Young Chung (Sungkyunkwan University, Korea)

##### [O2-4] Collision Avoidance Scheme for Micro UAVs Delivering Information

Hyo Hyun Choi (Inha Technical College, Korea); Areeya Rubenecia, Paul Vincent Contreras and Myungwhan Choi (Sogang University, Korea)

##### [O2-5] Control of Transmission Power and Carrier Sense Threshold to Enhance Throughput and Fairness for Dense WLANs

Irda Roslan (Universiti Teknikal Malaysia Melaka, Malaysia); Takahiro Kawasaki, Toshiki Nishiue and Yumi Takaki, Chikara Ohta and Hisashi Tamaki (Kobe University, Japan)

16:00-18:00

### ORAL SESSION 3

#### Security and Privacy 2

Chair: Kenichi Yoshida (Univ. of Tsukuba)

##### [O3-1] An Implementation of Privacy Preserving Stream Integration System

Junpei Kawamoto (Kyushu University, Japan)

##### [O3-2] Intrusion Detection System Based on the Analysis of Time Intervals of CAN Messages for In-Vehicle Network

Hyun Min Song, Ha Rang Kim and Huy Kang Kim (Korea University, Korea)

##### [O3-3] An Incident Response Support System Based on Seriousness of Infection

Hirokazu Hasegawa, Yukiko Yamaguchi and Hajime Shimada (Nagoya University, Japan); Hiroki Takakura (National Institute of Informatics, Japan)

##### [O3-4] An Anonymous IP-based Privacy Protection Routing Mechanism for CDNI

Shi Li, Inshil Doh and Kijoon Chae (Ewha Womans University, Korea)

### ORAL SESSION 4

#### Ad hoc and Sensor networks 2

Chair: Hyunseung Choo (Sungkyunkwan Univ.)

##### [O4-1] Reliable and Efficient Multi-rate Aware Reactive (REMAR) Routing for IEEE 802.11 Based MANET

Ahmed Khalid, Hyeon Tae Ahn and Chee-Ha Kim (Pohang University of Science and Technology, Korea)

##### [O4-2] A Security Testing Platform for Wireless Sensor Networks

Min Wei and Shuaidong Zhang (Chongqing University of Posts and Telecommunications, P.R. China); Keecheon Kim (Konkuk University)

##### [O4-3] An Iterative Method of Processing Node Flip Ambiguity in Wireless Sensor Networks Node Localization

Song Yang, Dong Enqing, Liu Wei and Peng Xue (Shandong University, P.R. China)

##### [O4-4] Exploring Energy-Latency Trade-off for Broadcast in Duty-cycled Wireless Sensor Networks

Duc Tai Le and Thang Le Duc (Sungkyunkwan University, Korea); Vyacheslav V. Zalyubovskiy (Sobolev Institute of Mathematics, SB RAS, Russia); Hyunseung Choo (Sungkyunkwan University, Korea)

### January 14, 2016 (Thursday)

10:00 - 12:00

#### ORAL SESSION 5

##### Routing techniques

Chair: Jani Väre (Teleste)

##### [O5-1] A Routing Based on OLSR with Traffic Load Balancing and QoS for Wi-Fi Mesh Network

Kazuhiro Yamaguchi, Takaharu Nagahashi, Takuya Akiyama, Takahiro Yamaguchi and Hideaki Matsue (Tokyo University of Science, Japan)

##### [O5-2] A Robust Node Localization Method to Address Flip Ambiguity in Wireless Networks

Wei Liu, Enqing Dong, Yang Song (Shandong University, P.R. China)

##### [O5-3] Performance Analysis of Routing Methods Based on OLSR and AODV with Traffic Load Balancing and QoS for Wi-Fi Mesh Network

Kazuhiro Yamaguchi, Kazunari Mukaiyama, Takuya Akiyama, Tomohiro Kobayashi and Hideaki Matsue (Tokyo University of Science, Japan)

##### [O5-4] Performance Analysis of Two High Rate Routing Protocols for Wireless Sensor Networks Based on the Linux Platform

Juan Xu, Enqing Dong, Dejing Zhang, Wei Liu and Weichong Zhong (Shandong University, P.R. China)

##### [O5-5] Congestion Prevention Mechanism Based on Q-learning for Efficient Routing in SDN

Seonhyeok Kim, Jaehyeok Son, Ashis Talukder and Choong Seon Hong (Kyung Hee University, Korea)

#### ORAL SESSION 6

##### Content-centric networks and Physical layer

Chair: Tae-Kon Kim (Korea Univ.)

##### [O6-1] A MultiCriteria Caching Decision for Information Centric Networks

Igor Carvalh, Airtton Ishimori and Antonio Abelem (UFPA - Federal University of Pará, Brazil)

##### [O6-2] Content Allocation in Information-Centric Networks

Sung-Yeon Kim and Jang-Won Lee (Yonsei University, Korea)

##### [O6-3] On Adaptive Pre-fetching and Caching the Contents in Content Centric Networking

Kyi Thar, Saeed Ullah, Doo Ho Lee and Choong Seon Hong (Kyung Hee University, Korea)

##### [O6-4] Energy Savings in Processor Based on Prediction Technique

Dinh-Mao Bui, Thien Huynh-The, Sungyoung Lee (Kyung Hee University, Korea); YongIk Yoon (SookMyung Women's University, Korea); SungIk Jun (Electronics and Telecommunications Research Institute Korea)

##### [O6-5] Optimization of Receiver FIFO for IEEE 802.3ba 40GBASE PCS Sub layer

Anuradha Nanayakkara and Subramaniam Thayaparan (University of Moratuwa, Sri Lanka)

13:00 - 15:00

#### ORAL SESSION 7

##### Network design and implementations

Chair: Jessie Hui Wang (Tsinghua Univ.)

##### [O7-1] Analyzing Intercontinental Circuitousness to Improve the Interconnection and Routing for ISPs

Pengcheng Du, Jessie Hui Wang, Jiahai Yang, J Wang and YJ Zhao (Tsinghua University, P.R. China)

##### [O7-2] Infrastructure-based Delay Tolerant Network Communication

Yasser Mawad and Stefan Fischer (University of Lübeck, Germany)

##### [O7-3] MLCS: A Multi-level Correlation Scheduling Algorithm for Multipath Transport

Bo Hu, Lin Xing, Zeng Wang and Na Liu (Beijing University of Posts and Telecommunications, P.R. China)

##### [O7-4] Deadline-Aware Packet Routing Based on Optimal Charging Schedule in Electric Vehicular Networks

Nusrat Sharmin and HyungJune Lee (Ewha Womans University, Korea)

##### [O7-5] Parametric Spanning Tree Generation Method for Network Topology Design

Kazuaki Oya, Toshinori Watanabe and Hisashi Koga (University of Electro-Communications, Japan)

#### ORAL SESSION 8

##### Streaming service and traffic

Chair: Charles H.-P. Wen (National Chiao Tung Univ.)

##### [O8-1] Equalizing Latency Peaks Using a Redundant Multipath-TCP Scheme

A. Hunger and P. A. Klein (University of Duisburg-Essen, Germany)

##### [O8-2] Client-side Rate Adaptation Scheme for HTTP Adaptive Streaming Based on Playout Buffer Model

Jiwoo Park and Kwangsue Chung (Kwangwoon University, Korea)

##### [O8-3] Traffic Engineering for IoT

Masafumi Katoh, Izuru Sato and Naotoshi Watanabe (Fujitsu Laboratories Ltd., Japan)

##### [O8-4] Video Quality Adaptation Scheme for Improving QoE in HTTP Adaptive Streaming

Sangwook Kim, Dooyeol Yun and Kwangsue Chung (Kwangwoon University, Korea)

##### [O8-5] Dynamic Segment Duration Control for Live Streaming Over HTTP

Dooyeol Yun and Kwangsue Chung (Kwangwoon University, Korea)



16:00-18:00

## ORAL SESSION 9

### SDN and Network architecture

Chair: Kazuaki Oya (Univ. of Electro-Comm.)

**[O9-1] A Research on Regional Routing Scheme Based Mobile Agent for SDN**

MiYoung Jo and Keecheon Kim (Konkuk University, Korea)

**[O9-2] ERIC: Economical & Reconfigurable HybRI-d-band Control for Software-Defined Datacenter Network**

Cheng Suo, I-Chen Tsai and Charles H.-P. Wen (National Chiao Tung University, Taiwan)

**[O9-3] Forwarding Strategy on SDN-based Content Centric Network for Efficient Content Delivery**

Jaehyeok Son, DoHyeon Kim, Hyo Sung Kang and Choong Seon Hong (Kyung Hee University, Korea)

**[O9-4] ONU-based Decentralized Dynamic Bandwidth Allocation (OD-DBA) Scheme Over WDM Long-Reach EPONs**

Hui-Tang Lin, Chia-Lin Lai, Yu-Ying Kao and Tzy-Shiah Wang (National Cheng Kung University, Taiwan)

**[O9-5] TRINPON: A Novel Network Architecture for Supporting Private Networking Capability Over LR EPONs**

Hui-Tang Lin, Chia-Lin Lai, Wen-Yi Chen and Tzy-Shiah Wang (National Cheng Kung University, Taiwan)

## ORAL SESSION 10

### Cloud and Mobile communication

Chair: JongWon Kim (GIST)

**[O10-1] SaaS Virtualization Method and Its Application**

Heihachiro Yamaguchi and Masayuki Ida (Aoyama Gakuin University, Japan)

**[O10-2] Cloud-based Virtual Desktop Service Using Lightweight Network Display Protocol**

Sunwook Kim, Jihyeok Choi, Seongwoon Kim and Hagyoung Kim (Electronic Telecommunication Research Institute, Korea)

**[O10-3] An Adaptive Monitoring Framework for Ensuring Accountability and Quality of Services in Cloud Computing**

Hassan Mahmood Khan, Gaik-Yee Chan and Fang-Fang Chua (Multimedia University, Malaysia)

**[O10-4] Resource Allocation Optimization in LTE-A/5G Networks Using Big Data Analytics**

Kiran P., Jibukumar M. G. and Premkumar C. V. (Cochin university, India)

**[O10-5] A Multiple Beam Management Scheme on 5G Mobile Communication Systems for Supporting High Mobility**

Jun Suk Kim, Won Jin Lee and Min Young Chung (Sungkyunkwan University, Korea)

January 15, 2016 (Friday)

10:00-12:00

## ORAL SESSION 11

### Load balancing and Offloading

Chair: Gaik-Yee Chan (Multimedia Univ.)

**[O11-1] A Multihop Data-Gathering Scheme Using Multiple AUVs in Hierarchical Underwater Sensor Networks**

Jawaad Ullah Khan and Ho-Shin Cho (Kyungpook National University, Korea)

**[O11-2] The Dynamic Sub-Topology Load Balancing Algorithm for Data Center Networks**

Liming Wang and Gang Lu (East China Normal University, P.R. China)

**[O11-3] Multi-flow Rate Control in Delayed Wi-Fi Offloading Systems**

Yeongjin Kim (KAIST, Korea); Joohyun Lee (The Ohio State University, USA); Jaeseong Jeong (KTH Royal Institute of Technology, Sweden); Song Chong (KAIST, Korea)

**[O11-4] Wireless Offline Offload**

Jani Väre, Kimmo Ylände and Kari Virtanen (Teleste Corporation, Finland)

**[O11-5] Multi-agent and Reinforcement Learning Based Code Offloading in Mobile Fog**

Md Golam Rabiul Alam and Choong Seon Hong (Kyung Hee University, Korea)

## ORAL SESSION 12

### Location-based services

Chair: HyungJune Lee (Ewha Womans Univ.)

**[O12-1] An Optimized Fingerprint Positioning Algorithm for Underground Garage Environment**

Hailong Lin and Lei Chen (East China Normal University, P.R. China)

**[O12-2] A Feasibility Study of ARPS in UAT for Positioning**

Kyuman Lee, Jaesung Lim and Sunju Choi (Ajou University, Korea)

**[O12-3] A WLAN Planning Method for Indoor Positioning System**

Zhaoyu Zhang, Xin Di, Jun Tian and Pei Chen (Fujitsu R&D Center Co., Ltd., P.R. China)

**[O12-4] A Study on the Adaptation of the Firefly Algorithm for the Synchronization Between Multiple Controllers in SDN Environment**

Green Kim and Keecheon Kim (Konkuk University, Korea)



**January 14, 2016 (Thursday)**

**09:00-10:00**

### POSTER SESSION 1

#### Cloud and Mobile communication

Chair: Young-June Choi (Ajou Univ.)

##### [P1-1] A Distributed Mobile Cloud Computing Model for Secure Big Data

Soonhwa Sung, Cheong Youn, Eunbae Kong and Jaecheol Ryou (Chungnam National University, Korea)

##### [P1-2] Service Recommendation System for Big Data Analysis

Tai Yeon Ku and Hee-Sun Won (Electronics and Telecommunications Research Institute, Korea); Hoon Choi (Chungnam National University)

##### [P1-3] Analytics-leveraged Box Visibility for Resource-aware Orchestration of SmartX Multi-site Cloud

Jungsu Han and JongWon Kim (Gwangju Institute of Science & Technology, Korea)

##### [P1-4] An Overlapping Coalition Formation Approach to Maximize Payoffs in Cloud Computing Environment

Anupam Kumar Bairagi, Md. Golam Rabiul Alam, Ashis Talukder, Tran Hoang Nguyen, Da Eun Lee and Choong Seon Hong (Kyung Hee University, Korea)

##### [P1-5] P2P Network Organization Method for Low Signaling Overhead and Delay

Changkyu Lee, Wook Hyun, Shingak Kang and Juyoung Park (Electronics and Telecommunication Research Institute, Korea)

##### [P1-6] SIP Amplification Attack Analysis and Detection in VoLTE Service Network

Eunhye Ko, Seongmin Park, Sekwon Kim, Kyungho Son and Hwankuk Kim (Korea Internet & Security Agency, Korea)

##### [P1-7] SDN-based Distributed Mobility Management

Hyun Sik Yang and Younghan Kim (Soongsil University, Korea)

##### [P1-8] Design of Distributed Memory Integration framework (DMIF)

Shinyoung Ahn, Gyuil Cha, Youngho Kim, Eunji Lim, Seungjo Bae and Won-Young Kim (Electronics and Telecommunications Research Institute, Korea)

##### [P1-9] An Experimental Continuous Delivery Framework for SmartX-mini IoT-Cloud Playground

Jeongju Bae and JongWon Kim (Gwangju Institute of Science & Technology, Korea)

### POSTER SESSION 2

#### IoT and Middleware

Chair: Jiwoong Jang (Ulsan College)

##### [P2-1] Ontology-based Open API Composition Method for Automatic Mash-up Service Generation

Sang Il Kim and Hwa Sung Kim (Kwangwoon University, Korea)

##### [P2-2] Design of an Effective Framework for Mash-up Service

#### Development

Taeyoung Kim, Hyeonwoo Kim, Dongwoo Kwon, Kisu Ok, Isaac Im, Eunggi Lee, Huigwang Je, Nematullo Rakhmatov, Donghyeok An and Hongtaek Ju (Keimyung University, Korea)

##### [P2-3] A Study on Movable Thing Edge Service Platform

Eungha Kim and Changsup Keum (Electronics and Telecommunications Research Institute, Korea)

##### [P2-4] oneM2M \_Extension of Protocol Binding (Reuse of Binding Protocol's Legacy Services)

Jun Hwan Huh, Dong Hyun Kim and Jong Deok Kim (Pusan National University, Korea)

##### [P2-5] The Cluster Formation Strategies for Approximate Decoding in IoT Networks

Minhae Kwon and Hyunggon Park (Ewha Womans University, Korea)

##### [P2-6] IoT Learning Model Based on Virtual Object Cognition

Muhammad Golam Kibria, Hwa-Suk Kim and Ilyoung Chong (Hankuk University of Foreign Studies, Korea)

##### [P2-7] Design of Composite Virtual Objects for Service Entity Creation in WoO Based IoT Environment

Sheik Mohammad Mostakim Fattah, Hwa-Suk Kim and Ilyoung Chong (Hankuk University of Foreign Studies, Korea)

##### [P2-8] Programmable Multi-hop Wireless Networks Towards IoT Architecture and Key Techniques

Xin Di, Jun Tian, Jie Wu and Zhou Zhu (Fujitsu R&D Center, P.R. China)

##### [P2-9] Topic Naming Service for DDS

Gunjae Yoon, Jungwoo Choi, Huihwan Park and Hoon Choi (Chungnam National University, Korea)

**15:00-16:00**

### POSTER SESSION 3

#### Wireless networks

Chair: Hyungkeun Lee (Kwangwoon Univ.)

##### [P3-1] A Network Coding Aware Routing with Considering Traffic Load Balancing for the Multi-hop Wireless Networks

Minho Jeong and Sanghyun Ahn (University of Seoul, Korea); Hayoung Oh (Soongsil University, Korea)

##### [P3-2] Channel Modeling and System Analysis for Seaside Image Sensor Communications

Chang Hyun Hong, Trang Nguyen (Kookmin University, Korea), Se Bong Jang (Kimin Electronics, Korea), Seong-Ho Jeong (Hankuk University of Foreign Studies, Korea), Seung Hyong Rhee (Kwangwoon University, Korea) and Yeong Min Jang (Kookmin University, Korea)

##### [P3-3] Efficient Parallel Multi-path Interest Forwarding for Mobile User in CCN

Doo Ho Lee, Kyi Thar, DoHyeon Kim and Choong Seon Hong (Kyung Hee University, Korea)

##### [P3-4] Channel Bonding Algorithm for Densely Deployed Wireless LAN

Taewon Song, Tae-Yoon Kim, Wonjung Kim and Sangheon Pack (Korea

University, Korea)

### [P3-5] Design and Implementation of Access Point for the Wi-Fi Broadcasting System

Dong Hyun Kim, Sheng Hao Sun and Jong Deok Kim (Pusan National University, Korea)

### [P3-6] Modeling and Analysis of an Energy-efficient MAC Protocol for Wireless Sensor Networks

Hyungkeun Lee and Hyukjoon Lee (Kwangwoon University, Korea)

### [P3-7] Improving Time Slot Acquisition Through RSU's Coordination for TDMA-based MAC Protocol in VANETs

VanDung Nguyen, Oanh Tran Thi Kim, Tri Nguyen Dang and Choong Seon Hong (Kyung Hee University, Korea)

### [P3-8] An Energy Efficiency Evaluation Scheme for Manufacturing Facility

Sangjin Jeong and Yong-Woon Kim (Electronics and Telecommunications Research Institute, Korea)

### [P3-9] Android Application for WiFi Based Indoor Position: System Design and Performance Analysis

Nguyen Trong Thuong, Hoac Thieu Phong, Dinh-Thuan Do, Phan Van Hieu and Dao Tang Loc (Eastern International University, Vietnam)

## POSTER SESSION 4

### SDN and PHY

Chair: Hwa Sung Kim (Kwangwoon Univ.)

### [P4-1] A Congestion Avoidance Algorithm in SDN Environment

Seungbeom Song, Jaiyong Lee, Kyuho Son, Hangyong Jung and Jihun Lee (Yonsei University, Korea)

### [P4-2] Evaluations of a Multiple Flow Tables Construction Scheme for Service Function Chaining

Eun-Do Kim (University of Science and Technology, Korea); Seungik Lee, YunChul Choi, Myung-Ki Shin and Hyoung-Jun Kim (Electronics and Telecommunications Research Institute, Korea)

### [P4-3] Resource Monitoring and Visualization for of@tein SDN-enabled Multi-site Cloud

Muhammad Usman, Aris Cahyadi Risdianto and JongWon Kim (Gwangju Institute of Science & Technology, Korea)

### [P4-4] A Frame Buffer Caching for Fast Launch of Browsers

Kyusik Kim and Taeseok Kim (Kwangwoon University, Korea)

### [P4-5] Multi-band OFDMA Based Passive Optical Network with Windowing Technique for Asynchronous Multiple Access

Chang-Hun Kim, Sang-Min Jung, Sun-Young Jung, Soo-Min Kang and Sang-Kook Han (Yonsei University, Korea)

### [P4-6] InGaAs-based Junctionless Transistor with Dual-spacer Dielectric for Low Power Loss and High Frequency Mobile Network System

Young Jun Yoon, Jae Hwa Seo, Ra Hee Kwon, Young In Jang and In Man Kang (Kyungpook National University, Korea)

### [P4-7] A Fast Convergence LLL Algorithm with Fixed-Complexity for SIC-based MIMO Detection

Hyukyeon Lee, Hyunsub Kim, Minjoon Kim and Jaeseok Kim (Yonsei University, Korea)

### [P4-8] Design Optimization of Si/Ge-based Heterojunction Arch-shaped Gate-All-Around (GAA) Tunneling Field-Effect Transistor (TFET) Which Applicable for Future Mobile Communication Systems

Jae Hwa Seo, Young Jun Yoon, Ra Hee Kwon, Young In Jang and In Man Kang (Kyungpook National University, Korea)

## January 15, 2016 (Friday)

09:00-10:00

## POSTER SESSION 5

### Security, Service and Streaming

Chair: Keechun Kim (Konkuk Univ.)

### [P5-1] Fast User Authentication Method Considering Mobility in Multi Clouds

Jinsook Bong, Yuhwa Suh and Yongtae Shin (Soongsil University, Korea)

### [P5-2] Network Defense System for Detecting and Preventing Potential Hacking Attempts

Saad Alsunbul (King Abdulaziz City for Science and Technology, Saudi Arabia); Phu Le (Monash University, Australia); Jefferson Tan (IBM Research Australia, Australia); Bala Srinivasan (Monash University, Australia)

### [P5-3] A Study on Behavior-Based Mobile Malware Analysis System Against Evasion Techniques

Mijoo Kim, Youngsang Shin, Tai Jin Lee (KISA, Korea); Heung Youl Youm (SoonChunHyang University, Korea)

### [P5-4] Vulnerability Detection Mechanism Based on Open API for Multi-User's Convenience

Sung Soo Kim, Da Eun Lee and Choong Seon Hong (Kyung Hee University, Korea)

### [P5-5] Securing Information Flow in Content Delivery Networks with Visual and Quantum Cryptography

Nishat I Mowla, Inshil Doh and Kijoon Chae (Ewha Womans University, Korea)

### [P5-6] Collaborative Local Triangles Counting in a Graph Stream by Using Node Resources

Kim Jiyong and Min Ok Gee (ETRI, Korea)

### [P5-7] Semantic Relationship of Contents Using Tensor Factorization for Self-Growth Social Broadcasting

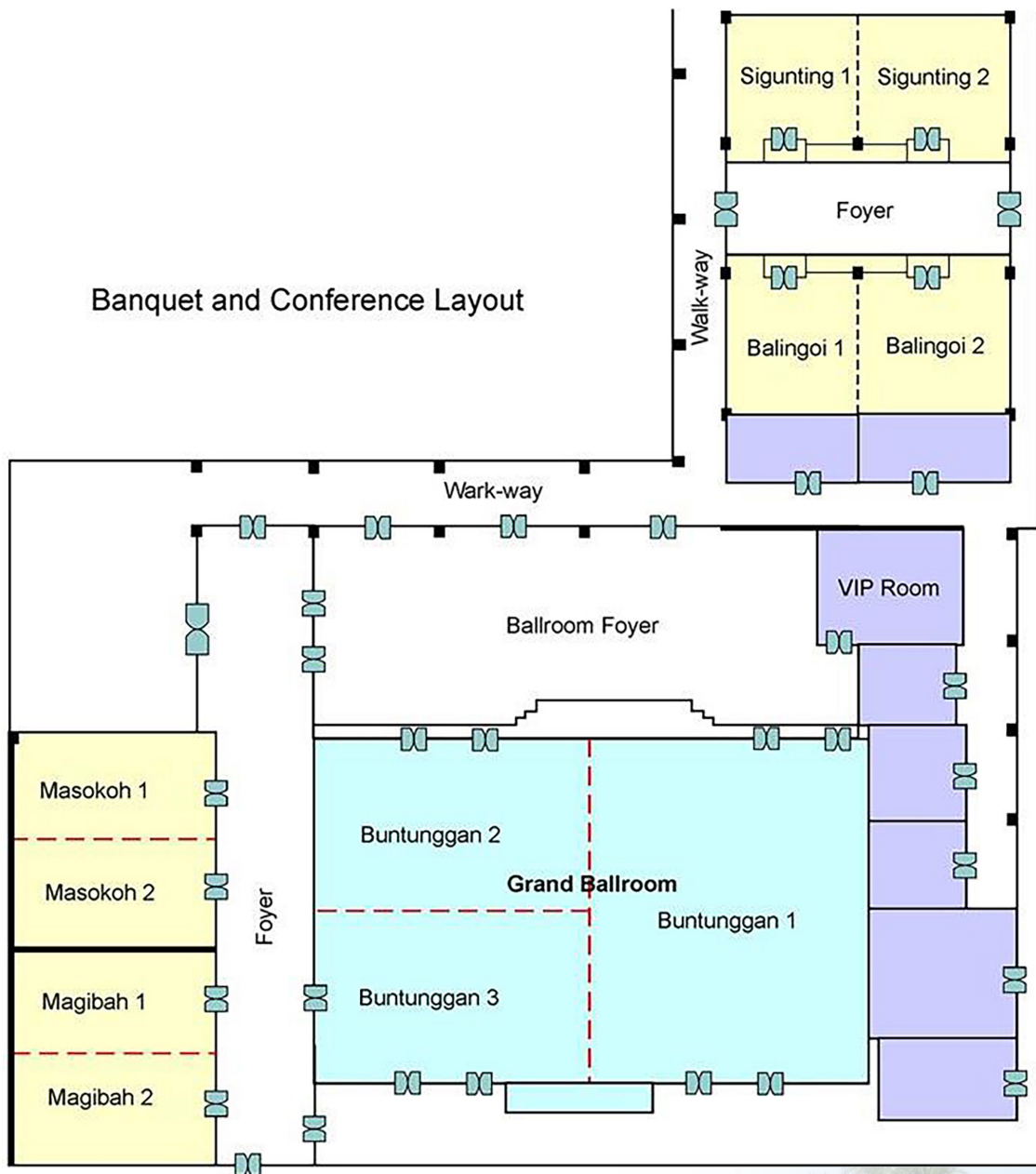
Svetlana Kim and Yong-Ik Yoon (Sookmyung Women University, Korea)

### [P5-8] Efficient Streaming Over CoAP

Gyuhong Choi, Dohyung Kim and Ikjun Yeom (Sungkyunkwan University, Korea)

### [P5-9] Optical Camera Communications Based Invisible Watermarking Technique

Nam-Tuan Le, Thithanhnhhan Le and Yeong Min Jang (Kookmin University, Korea)





### Hotel

Located just 28km from the city and 38km from Kota Kinabalu International Airport, Nexus Resort & Spa Karambunai is set amidst 3,335 acres of natural and landscaped surroundings creating the perfect background for all 485 well-appointed guestrooms, suites and luxury villas. The award-winning 18-hole championship golf course and exclusive Borneo Spa complement the superb facilities of this magnificent resort which boasts eight restaurants and bars and an almost endless array of leisure and recreational activities.

### Address

off Jalan Sepanggar Bay  
Locked Bag 100  
Sabah, 88993  
Kota Kinabalu, Malaysia  
Phone: +60 88-480 888

### Direction

Situated on the spectacular Karambunai Peninsula, upon 3,335 acres of natural and landscaped surrounds, the resort is just 30 minutes from Kota Kinabalu city, the capital and gateway to Sabah, and only 40 minutes from Kota Kinabalu International Airport and Terminal 2 Kota Kinabalu. Transfers to the resort can easily be arranged by coach, private limousine or taxi.

Nexus Resort & Spa Karambunai is accessible via direct or single-stop flights from the nation's capital Kuala Lumpur and several major Asian cities such as Singapore, Bangkok, Sydney, Melbourne, Manila, Taipei, Hong Kong, Seoul, Tokyo, Guangzhou and Xiamen.

### Ocean Panorama Deluxe

The 5-storey 243 rooms resort-themed building offers guests panoramic views of the ocean, the white sandy beach and the botanical gardens. Access to all guestrooms at every floor is through an open corridor. Meandering like a restful Rungus longhouse, the Ocean Panorama was built to complement the serene village charm of Borneo Villa. As with the Borneo Villa Deluxe rooms, each Ocean Panorama room features a private balcony or verandah.







### Services & Amenities

Eight different restaurants and bars whet the appetites of even the most selective gourmets. Savour delightful Malaysian cuisine in the traditional village-like setting of the Kingfisher Malaysian Restaurant with its tremendous local delicacies or bountiful ala-carte at the Penyu, All Day Dining. For the finer points on Mediterranean cuisine, dine at the exquisite, award-winning Olives Mediterranean Restaurant. The Noble House Chinese Restaurant showcases superb Szechuan cuisine and homemade dim sum whilst Seoul Fairway & Grill offers variety of Korean dishes with the background of the panoramic view of award winning Karambunai Golf course. The Muffins offers signature cakes, pastries and an extensive selection of coffee and tea. The Sunset Bar & Grill is the resort's casual hub of activity, with pizzas, char-grilled favorite's and more. Splashes Pool Bar provides a convenient watering hole for poolside drinks, snacks and cocktails with Darlin' Darlin' Fun Pub topping off each evening in paradise in party mood with fabulous entertainment by a powerhouse band.

### Weather

Kota Kinabalu is almost always warm and humid. Temperatures do not vary much from 74°F to 85°F or 23°C to 30°C.

### Nearby Attractions

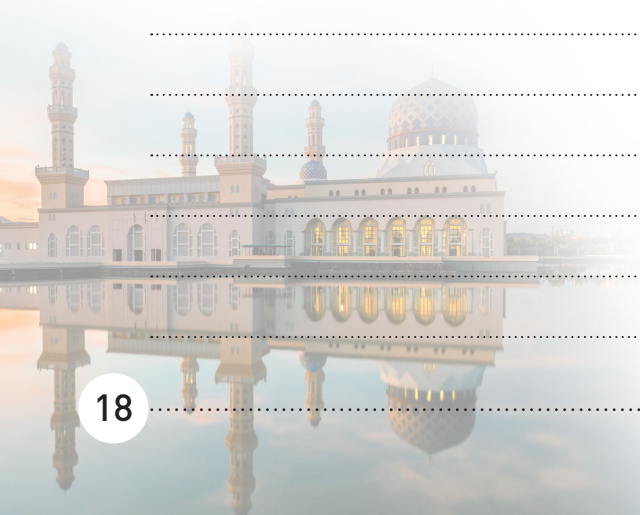
1Borneo Hypermall – 15km  
Crocodile Farm – 8km  
Sea Gypsy Mangrove Village – 5km

### Hotel Reservation

To make a room reservation at the conference rate, follow the steps:

1. Download the hotel reservation form from the ICOIN 2016 website.  
Booking Form: English, Korean
2. Fill out the reservation form.
3. FAX or email the form to  
FAX: +82-2-6944-8208  
PHONE: +82-2-745-8282  
Email: [icoin@clubbali.co.kr](mailto:icoin@clubbali.co.kr)

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