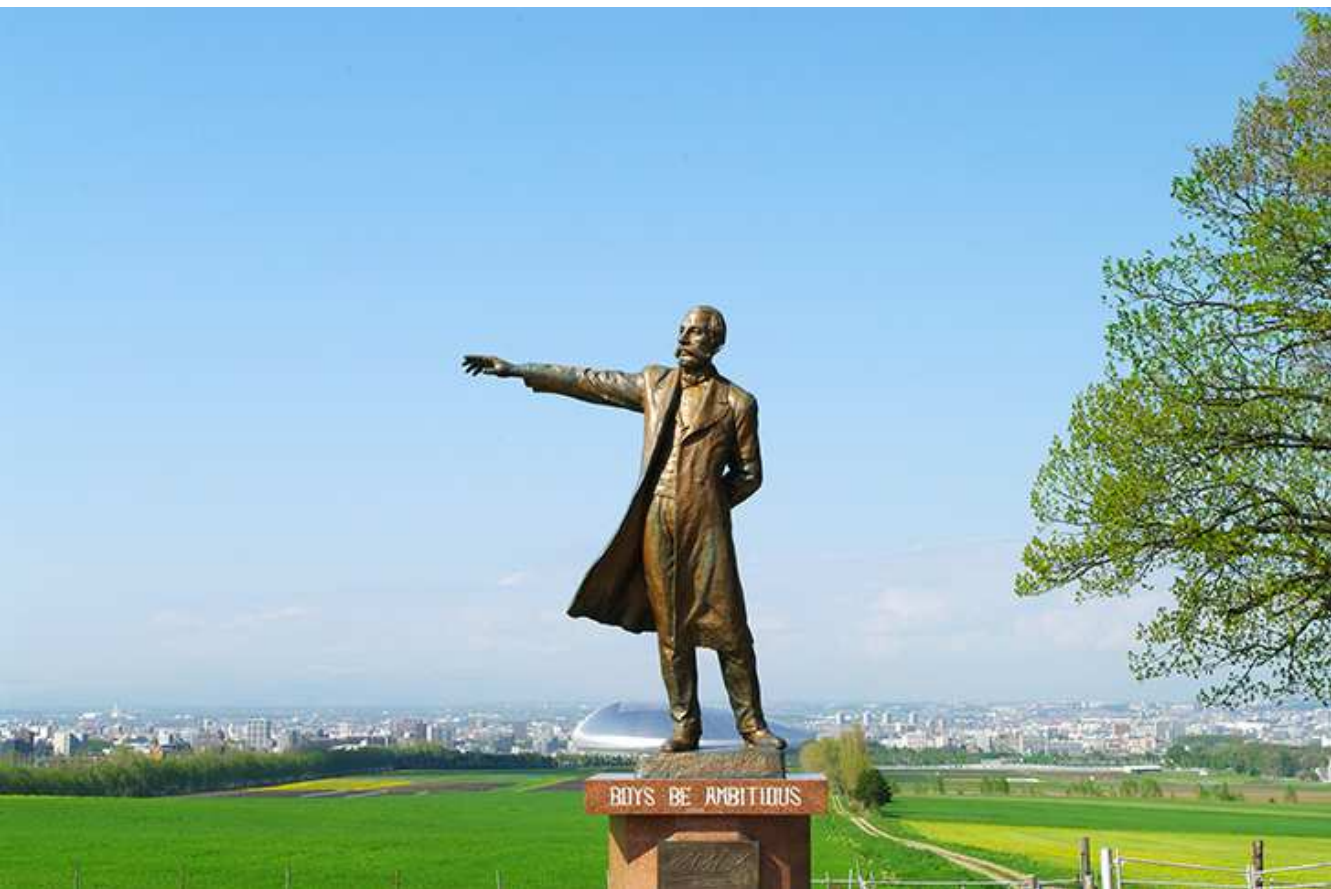


SPAWC 2017

The 18th IEEE International Workshop on Signal Processing
Advances in Wireless Communications

July 3rd to 6th 2017, Sapporo, Japan

Workshop Program



Memo

A series of 22 horizontal dashed lines spanning the width of the page, providing a guide for writing the memo.



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Program Overview

Monday, July 3

18:00-20:00 [Welcome Reception \(Sapporo TV Tower\)](#)

Tuesday, July 4

08:45-09:00 Welcome

09:00-10:00 P01: *Plenary 1: New Mobile Communications "5G" Actualized by Evolution on Wireless Signal Processing*

10:00-11:20 R01: *Sensing and Localization*

R02: *System and Hardware*

S01: *Special Session on Small Data Networking*

S02: *Special Session on Signal Processing for Large-Scale Belief Propagation*

11:20-11:40 [Coffee break](#)

11:40-13:00 R03: *mmWave 1: Beamforming*

R04: *NOMA, Multipoint Transmission, Interference Channels*

S03: *Special Session on Role of Sparsity in Communications*

S04: *Special Session on Caching and Content-Centric Networking*

Best Student Paper Award Contest

13:00-14:30 [Lunch](#)

14:30-15:30 P02: *Plenary 2: Is Interference and Collision Really Harmful in M2M Communications? A Contention-Free M2M System for Mission-Critical Applications*

15:30-15:50 [Coffee break](#)

15:50-17:10 R05: *mmWave 2 and Full Duplex*

R06: *Caching*

S05: *Special Session on Full-Duplex Communications*

S06: *Special Session on Security and Trust*

17:15-18:30 [Sundowner Reception](#)

Wednesday, July 5

09:00-10:00 P03: *Plenary 3: LiFi: Moving on to Nano-Meter-Wave Wireless Networking*

10:00-11:20 R07: *Resource Allocation, Access, Scheduling,*

S07: *Special Session on Signal Processing for Wireless Powered Communications,*

S08: *Special Session on Massive MIMO*

11:20-11:40 **Coffee break**

11:40-13:00 R08: *Massive MIMO 1: Modulation, Capacity, Detection*

R09: *Security*

S09: *Special Session on Localization/Tracking and Location-aware Communication*

S10: *Special Session on Signal Processing for Millimeter Wave Communication Systems*

13:00-14:30 **Lunch**

14:30-15:30 P04: *Plenary 4: Wireless Bioelectronics*

15:30-15:50 **Coffee break**

15:50-17:10 R10: *Cognitive*

R11: *Massive MIMO 2: Modulation, Codebook and Precoding*

S11: *Special Session on Molecular, Biological, and Multi-scale Communications*

S12: *Special Session on Machine Learning for Signal Processing and Networking*

18:30-21:00 **Banquet (Sapporo Park Hotel)**

Thursday, July 6

09:00-10:00 P05: *Plenary 5: Just Relax: Parallel Distributed Nonconvex Optimization via Successive Convex Approximation*

10:00-11:20 R12: *Space-Time Coding, MIMO Detection*

R13: *Communication and Coding Theory*

S13: *Special Session on Reliable Communication and Control*

S14: *Special Session on Heterogeneous and Cloud Access Networking*

11:20-11:40 **Coffee break**

11:40-13:00 R14: *Beamforming, MIMO precoding*

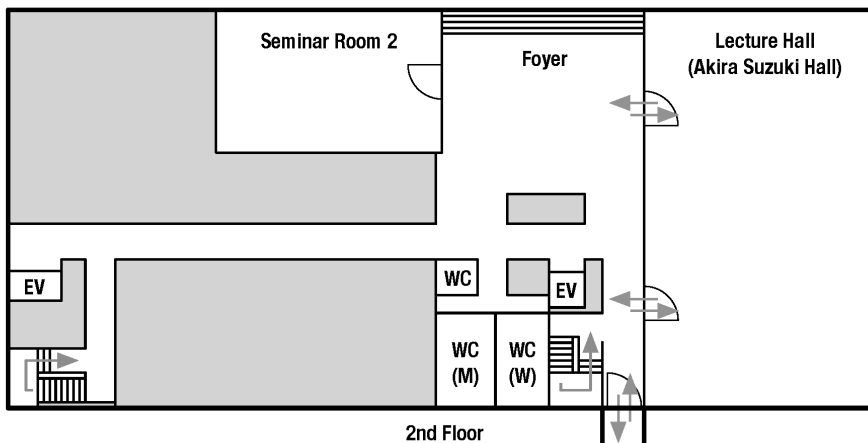
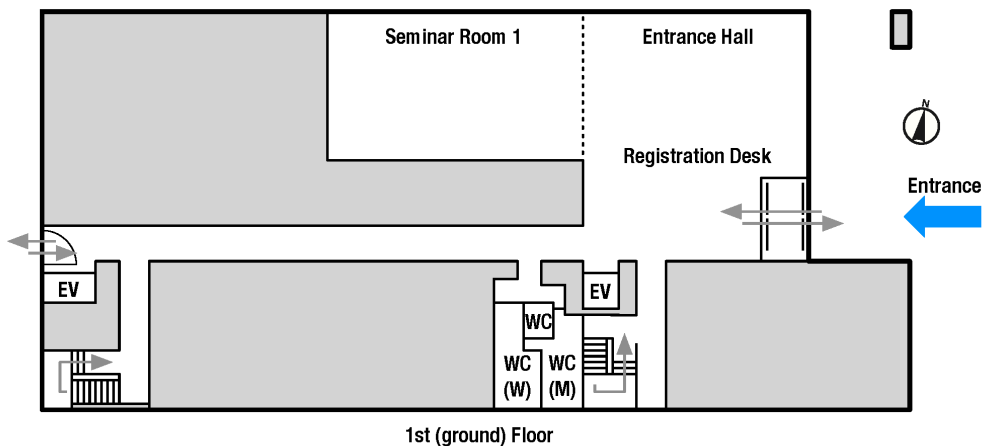
R15: *OFDM, Filter Bank Multicarrier, Waveform Design*

S15: *Special Session on Signal Processing and Networking for the Internet-of-Things*

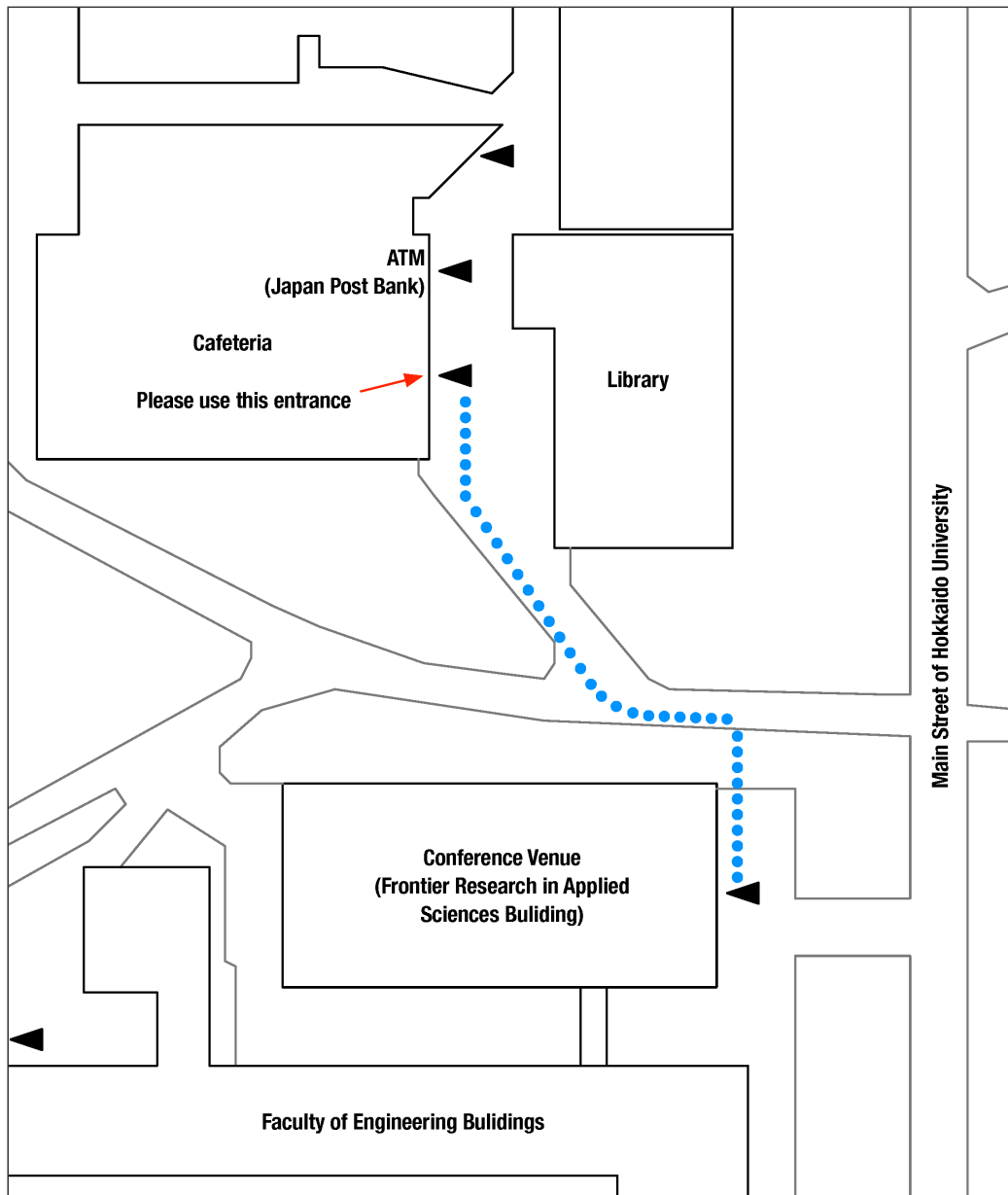
13:00-14:30 **Lunch**

Maps

Plenary talks take place in the Lecture Hall, and all poster sessions are held at Seminar Room 1.



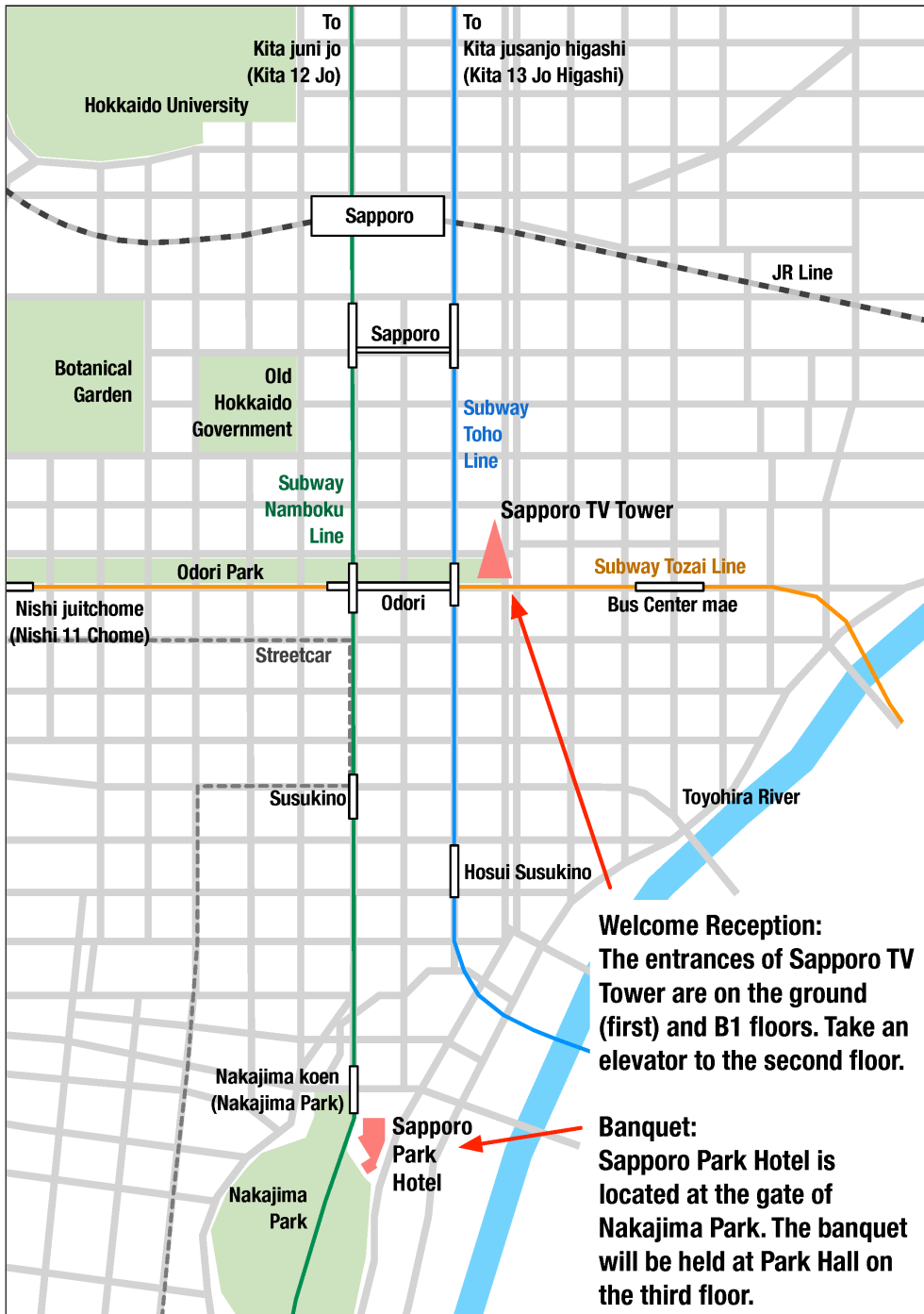
Frontier Research in Applied Sciences Building



Venue's Surrounding Area



Hokkaido University



Downtown Sapporo

Please take the subway to attend Welcome Reception and Banquet.

Welcome from the Chairs

Dear SPAWC 2017 Participants:

On behalf of the organizing committee, it is our pleasure to extend our warmest welcome to all of you to the 18th IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC) at Hokkaido University in Sapporo, Japan, July 3-6, 2017.

As the flagship workshop of the Signal Processing for Wireless Communications and Networking Technical Committee (SPCOM-TC) of the IEEE Signal Processing Society, SPAWC has a long tradition of bringing leading experts in signal processing, wireless communication, information theory, optimization and networking from both academia and industry to an intimate setting where the latest research findings are shared, lively discussions of new ideas take place, and where old friendships are renewed, and new friendships made.

We are happy to report that SPAWC this year has attracted 256 paper submissions and a record of more than 250 registered attendees. We sincerely thank all the authors for their enthusiastic contributions to the workshop, the technical programme committee members for careful review of all the papers, and all of you for making the event a success.

We especially thank our plenary speakers Yukihiko Okumura, Vincent Lau, Harald Haas, Ada Poon and Gesualdo Scutari, who took time out of their busy schedule to join SPAWC. They will present recent cutting-edge developments in new or emerging areas - namely, 5G wireless cellular system design, machine-to-machine (M2M) communications, visible light communications, wireless bioelectronics, and optimization theory. We greatly appreciate their support.

We would also like to thank all the special session organizers for putting together many high quality and timely invited sessions that explore the multitude of frontiers in signal processing for communications and networking. We look forward to the many stimulating interactions around both the invited and the contributed posters.

An event of this magnitude would not have been possible without the tireless volunteering efforts of our local organization team. We are especially grateful to Yasushi Yamao and Hai Lin for handling finance, Julian Webber and Koichi Adachi for publicity, Kazunori Hayashi and Kenichi Higuchi for publication, Takeo Ohgane and Toshihiko Nishimura for local arrangement, Joakim Jalden and Mathini Sellathurai as international advisors, and the numerous local student volunteers.

We express our gratitude to the Telecommunications Advancement Foundation, the KDDI Foundation, and the Support Center for Advanced Telecommunications Technology Research (SCAT) for their generous financial support.

This year marked only the second occasion that the workshop has ever taken place in East Asia, following the 3rd SPAWC in Taoyuan, Taiwan in 2001. We sincerely hope that the workshop will serve to stimulate research collaborations and help forge technical connections between Asia, Europe, North America, and beyond.

We hope that you will enjoy the campus of Hokkaido University and also have an opportunity to explore the beautiful nature around Sapporo. Hokkaido University is the oldest university in Japan, formerly known as Sapporo Agricultural College founded in 1876. Today, Hokkaido University is an advanced research institution, with strong links to industry, community and government. The campus is located in downtown Sapporo, within walking distance to almost everything the beautiful city has to offer. Often regarded as the most beautiful university campus in all of Japan, the stunningly beautiful campus has everything from old-growth forested areas to picturesque rivulets as well as immaculately preserved buildings dating back to the era of its establishment. Frontier Research in Applied Sciences Building, the workshop venue, was built in 2014 in honor of Prof. Emeritus Akira Suzuki of Hokkaido University, Nobel Prize winner in Chemistry 2010, and is used to train the successors of his achievement. The building is ideal not only for technical activities but also for exchanging ideas in an informal atmosphere.

We truly wish you a most memorable workshop experience!

Yasutaka Ogawa, Wei Yu, Fumiyuki Adachi, General Co-Chairs

Lutz Lampe, Wing-Kin (Ken) Ma, Tomoaki Ohtsuki, TPC Co-Chairs

Tony Q. S. Quek, Special Session Chair



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KTH Royal Institute of Technology
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United Kingdom

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Mugen Peng (Beijing University of Posts and Telecommunications, China)

Molecular, Biological, and Multi-scale Communications

Robert Schober (Friedrich-Alexander Universität of Erlangen-Nürnberg, Germany)
Tadashi Nakano (Osaka University, Japan)

Localization/Tracking and Location-aware Communication

Henk Wymeersch (Chalmers University of Technology, Sweden)
Sunwoo Kim (Hanyang University, South Korea)

Signal Processing and Networking for Internet-of-Things

Kwang-Cheng Chen (University of South Florida, USA)
Li Wang (Beijing University of Posts and Telecommunications, China)

Massive MIMO

Shi Jin (Southeast University, China)

Security and Trust

Jemin Lee (Daegu Gyeongbuk Institute of Science and Technology (DGIST), South Korea)
Parthajit Mohapatra (Indian Institute of Technology (IIT) Khgaragpur, India)

Full-Duplex Communications

Tsung-Hui Chang (The Chinese University of Hong Kong, Shenzhen, China)
Chuan Huang (University of Electronic Science and Technology of China, China)

Signal Processing for Wireless Powered Communications

Rui Zhang (National University of Singapore, Singapore)
Jie Xu (Guangdong University of Technology, China)

Caching and Content-Centric Networking

Meixia Tao (Shanghai Jiaotong University, China)
Giuseppe Caire (TU Berlin, Germany)

Signal Processing for Millimeter Wave Communication Systems

Robert Heath (The University of Texas at Austin, USA)

Machine Learning for Signal Processing and Networking

Anthony So (Chinese University of Hong Kong, Hong Kong)

Role of Sparsity in Communications

Chandra Murthy (Indian Institute of Science, India)

Small Data Networking

Petar Popovski (Aalborg University, Denmark)
Enrico Paolini (University of Bologna, Italy)

Signal Processing for Large-Scale Belief Propagation

Shinsuke Ibi (Osaka University, Japan)
Koji Ishibashi (The University of Electro-Communications, Japan)

Reliable Communication and Control

Kazunori Hayashi (Osaka City University, Japan)
Koji Ishii (Kagawa University, Japan)

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Oswaldo Simeone	New Jersey Institute of Technology	USA
Milica Stojanovic	Northeastern University	USA
Christoph Studer	Cornell University	USA
Satoshi Suyama	NTT DOCOMO, INC.	Japan
Cihan Tepedelenlioglu	Arizona State University	USA
Antti Tölli	University of Oulu	Finland
Stefano Tomasin	University of Padova	Italy
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Yik-Chung Wu	The University of Hong Kong	Hong Kong
Wei Zhang	The University of New South Wales	Australia
Yimin Zhang	Temple University	USA
Shengli Zhou	University of Connecticut	USA



Plenary Talks



Plenary 1: Tuesday, July 4, 09:00 - 10:00**New Mobile Communications "5G" Actualized by Evolution on Wireless Signal Processing**

Speaker: Yukihiro Okumura (NTT DOCOMO, INC., Japan)

Summary: In this talk, I first introduce our recent research results related with wireless signal processing in two Japanese fifth-generation mobile communications (5G) projects "High Capacity Technologies with Ultra High-Density Multi-Band and Multi-Access Layered Cells", and "High Data Rate and Low-Power-Consumption Radio Access Technologies with Ultra Higher-Frequency-Band and Wider-Bandwidth Massive MIMO" funded by the Ministry of Internal Affairs and Communications (MIC) in Japan. In addition, some updates on DOCOMO's activities of 5G field experiments and system

trials to verify the potential of advanced wireless signal processing and DOCOMO's views on wireless signal processing for beyond 5G will be presented.

Biography: Yukihiro Okumura received his M.S. degrees in electrical engineering from the Tokyo University of Science, Tokyo, Japan, in 1991, and his Ph.D. degree in engineering from the Tohoku University, Miyagi, Japan, in 2006. In 1991, he joined the Radio Communication Systems Laboratories of Nippon Telegraph and Telephone Corporation (NTT), Kanagawa, Japan, and since 1992, he has been engaged in the research, standardization and development of wideband/broadband mobile radio communication technologies, terminals and systems, at the NTT Mobile Communications Network, Inc. (now NTT DOCOMO, INC.), Kanagawa, Japan. He is currently engaged in the research of 5G radio access technologies, and he is promoting those verification experiments and system trials at the Research Laboratories, NTT DOCOMO, INC.

Plenary 2:

Tuesday, July 4, 14:30 - 15:30

Is Interference and Collision Really Harmful in M2M Communications? A Contention-Free M2M System for Mission-Critical Applications



Speaker: Vincent Lau (Hong Kong University of Science and Technology, Hong Kong)

Summary: Interference and collisions are notoriously known as the key performance bottleneck in wireless communication networks. As a result, the MAC protocol plays a critical role in a lot of wireless networks by controlling or mitigating the interference using (a) interference avoidance (e.g. scheduling-based) and/or (b) interference randomization (e.g. ALOHA/CSMA-based random access). For example, fast UL-scheduling protocols are proposed in LTE-M to enable low latency M2M communications. There are also

lot of recent works exploiting the underlying sparsity in the M2M nodes to recover the collided measurements using sparse recovery methods. In this talk, we take a closer look on whether interference or collision is really harmful in M2M systems supporting mission-critical control-type applications. In such a scenario, sensors or machine nodes are deployed to monitor the internal states of a potentially unstable dynamic plant. The sensors report the measurements to a remote controller over a wireless system, forming a closed loop feedback system. Unlike designing a generic communication system for content / data delivery, the goal of the M2M network in the mission-critical control-type application is to stabilize the unstable dynamic plant via the stabilizing feedback control loop. We show that in such case, we can exploit specific structure of the dynamic plant as well as the additive properties of the interference in wireless channels and transform the harmful interference into useful measurements at the controller. Based on this insight, we propose a low complexity contention-free M2M protocol and derive closed-form sufficient condition on the "communication resource" needed to stabilize the dynamic plant. Based on that, we discuss various design insights and show that the proposed scheme has order-wise performance advantages over the existing M2M baseline solutions.

Biography: Vincent Lau obtained B.Eng (Distinction 1st Hons) from the University of Hong Kong (1989-1992) and Ph.D. from the Cambridge University (1995-1997). He joined Bell Labs from 1997-2004 and the Department of ECE, Hong Kong University of Science and Technology (HKUST) in 2004. He is currently a Chair Professor and the Founding Director of Huawei-HKUST Joint Innovation Lab at HKUST. He is also elected as IEEE Fellow, HKIE Fellow, Croucher Senior Research Fellow and Changjiang Chair Professor. Vincent has published more than 300 IEEE journal and conference papers and has contributed to 50 US patents on various wireless systems. His current research focus includes stochastic optimization and analysis for wireless systems, Massive MIMO, Compressed Sensing, Networked Control Systems as well as PHY Caching for Wireless Networks.

Plenary 3: Wednesday, July 5, 09:00 - 10:00

LiFi: Moving on to Nano-Meter-Wave Wireless Networking



Speaker: Harald Haas (University of Edinburgh, United Kingdom)

Summary: We will start by clarifying the differences between visible light communications (VLC) and LiFi. This is followed by the introduction of the key building blocks required to create full LiFi networks. Next we report recent key achievements of the UP-VLC project with respect to component and demonstrator developments underpinning LiFi attocellular networks. We provide modelling results of such networks and address numerous misconceptions such as "LiFi is a line-of-sight technology". The talk also addresses the issue of energy efficiency of optical attocell networks and showcases how off-the-shelf solar panels can fulfill two functions at the same time, i) energy harvesting and ii) LiFi data detection. The talk closes by summarizing commercialization challenges.

Biography: Harald Haas holds the Chair of Mobile Communications at the University of Edinburgh, and is the Director of the Li-Fi R&D Centre. He is founder of pureLiFi Ltd. He first coined Li-Fi and was an invited speaker at TED Global 2011 and 2015. His talks have been watched online more than 4 million times. In 2014, he was selected by EPSRC as one of ten RISE (Recognising Inspirational Scientists and Engineers) Leaders in the UK. He was elected Fellow of the Royal Society of Edinburgh in 2017.

Plenary 4: Wednesday, July 5, 14:30 - 15:30

Wireless Bioelectronics



Speaker: Ada Poon (Stanford University, USA)

Summary: Bioelectronic modulation of neural activity has the potential to provide therapeutic control over diverse organ functions addressing unmet clinical needs. Towards this goal, significant progress has been made in the development of miniaturized electronics, and high resolution and mechanically flexible neural interfaces for both research and clinical systems. Their long-term access to neural structures, however, remains constrained by technological challenges in powering the device. In this talk, I will describe two new methods for electromagnetic energy transfer that exploit near-field interactions with biological tissue to wirelessly power tiny devices anywhere in the body. I will discuss engineering and experimental challenges to realizing such interfaces, including a pacemaker that is smaller than a grain of rice, a conformal vagus nerve stimulator, and a fully internalized neuromodulation platform. These devices can act as bioelectronic medicines, capable of precisely modulating local activity, that may be more effective treatments than drugs which act globally throughout the body.

Biography: Ada Poon was born and raised in Hong Kong. She received her B.Eng degree from the EEE department at the University of Hong Kong and her Ph.D. degree from the EECS department at the University of California at Berkeley in 2004. Upon graduation, she spent one year at Intel as a senior research scientist. Then, she joined her advisor's startup company, SiBeam Inc., architecting Gigabit wireless transceivers leveraging millimeter-wave and MIMO technologies. After two years in industries, she returned to academic and joined the faculty of the ECE department at the University of Illinois, Urbana-Champaign. Since then, she has changed her research direction from wireless communications to integrated biomedical systems. In 2008, she moved back to California and joined the faculty of the Department of Electrical Engineering at Stanford University. She is a Terman Fellow at Stanford University. She received the Okawa Foundation Research Grant in 2010 and NSF CAREER Award in 2013. She is a Chan Zuckerberg Biohub investigator.

Plenary 5: Thursday, July 6, 09:00 - 10:00

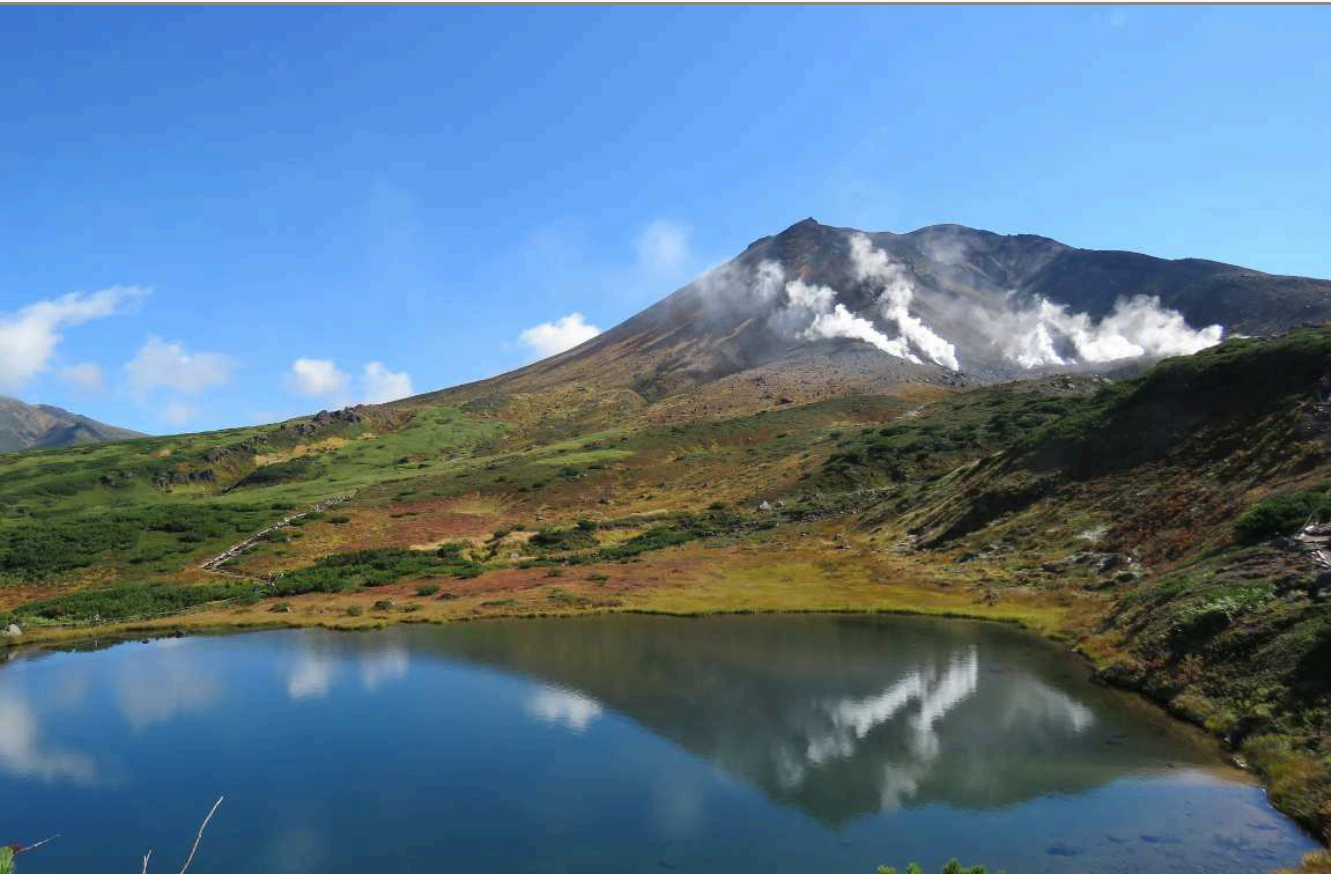
Just Relax: Parallel Distributed Nonconvex Optimization via Successive Convex Approximation



Speaker: Gesualdo Scutari (Purdue University, USA)

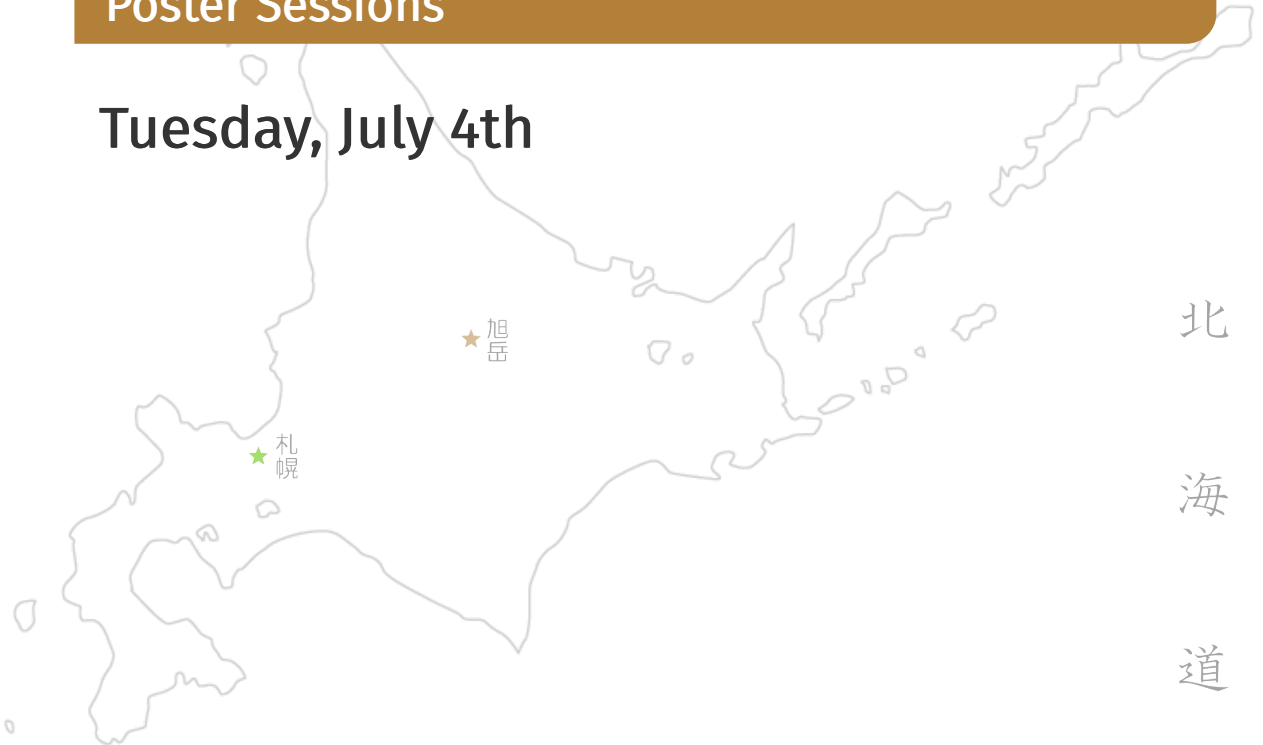
Summary: Distributed and large-scale optimization problems have gained a significant attention in several engineering areas, including network information processing, communication networks, cyber-physical systems, multi-agent control, and machine learning, just to name a few. The large-scale property is reflected in the number of decision variables, the number of constraints, or both, while the distributed nature of the problems is inherent due to partial (local) knowledge of the problem data (e.g., a portion of the cost function or a subset of the constraints is known to different entities in the system). Moreover, many applications of interest lead to optimization problems with nonconvex objective and constraints. All this makes the analysis and design of parallel and distributed algorithms a challenging task. In this talk we survey various recent parallel, distributed, asynchronous algorithms for the aforementioned classes of nonconvex problems. We show that several existing schemes can be unified under the elegant umbrella of successive convex approximation methods. The proposed unified algorithmic framework is then tested on a variety of applications in signal processing, communications, and machine learning. Finally, we address the question on what rigorous guarantees these methods provide for various classes of nonconvex functions, thus shifting the barrier between tractable and intractable problems.

Biography: Gesualdo Scutari received the Electrical Engineering and Ph.D. degrees (both with honors) from the University of Rome "La Sapienza," Rome, Italy, in 2001 and 2005, respectively. He is an Associate Professor with the School of Industrial Engineering, Purdue University, West Lafayette, IN, USA; and he is the scientific director for the area of Big-Data Analytic at the Cyber Center (Discovery Park) at Purdue University. He had previously held several research appointments, namely, at the University of California at Berkeley, Berkeley, CA, USA; Hong Kong University of Science and Technology, Hong Kong; University of Rome, "La Sapienza," Rome, Italy; and University of Illinois at Urbana-Champaign, Urbana, IL, USA. His research interests include theoretical and algorithmic issues related to big data optimization, equilibrium programming, and their applications to signal processing, machine learning, and networking. Dr. Scutari is an Associate Editor of the IEEE Transactions on Signal Processing and he served as an Associate Editor of the IEEE Signal Processing Letters. He served on the IEEE Signal Processing Society Technical Committee on Signal Processing for Communications (SPCOM). He was the recipient of the 2006 Best Student Paper Award at the International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2006, the 2013 NSF Faculty Early Career Development (CAREER) Award, the 2013 UB Young Investigator Award, the 2015 AnnaMaria Molteni Award for Mathematics and Physics (from ISSNAF), and the 2015 IEEE Signal Processing Society Young Author Best Paper Award.



Poster Sessions

Tuesday, July 4th



Tuesday, July 4, 10:00 - 11:20

R01: Sensing and Localization

Chair: Feifei Gao (Tsinghua University, P.R. China)

R01.1 Automotive Doppler Sensing: The Doppler Profile with Machine Learning in Vehicle-to-Vehicle Networks for Road Safety

Billy Kihei and John A. Copeland (Georgia Institute of Technology, USA); Yusun Chang (Kennesaw State University & The Georgia Institute of Technology, USA)

R01.2 Outage Probability for Ambient Backscatter System with Real Source

Yu Zhang, Jing Qian and Feifei Gao (Tsinghua University, P.R. China); Gongpu Wang (Beijing Jiaotong University, P.R. China)

R01.3 Target Detection with Uniformly Distributed Subarrays in the Presence of Mainlobe Jamming

Qiliang Zhang and Feifei Gao (Tsinghua University, P.R. China); Qing Sun (AFEU, P.R. China); Xiaobo Wang (Tsinghua University, P.R. China)

R01.4 Joint Sensor Location/Power Rating Optimization for Temporally-Correlated Source Estimation

Osama Bushnaq (King Abdullah University of Science and Technology (KAUST), Saudi Arabia); Anas Chaaban (King Abdullah University of Science and Technology, Saudi Arabia); Tareq Y. Al-Naffouri (King Abdullah University of Science and Technology, USA)

R01.5 Indoor Positioning using Similarity-based Sequence and Dead Reckoning without Training

Ran Liu, Chau Yuen and Tri-Nhut Do (Singapore University of Technology and Design, Singapore); Ye Jiang and Xiang Liu (Peking University, P.R. China); U-Xuan Tan (Singapore University of Technology and Design, Singapore)

R01.6 OFDMA Communication System for Cooperative Localization of Underwater Vehicles

Joaquin Aparicio Sosa and Takuya Shimura (Japan Agency for Marine-Earth Science and Technology, Japan)

R01.7 Vandermonde Decomposition of Coprime Coarray Covariance Matrix for DOA Estimation

Yifan Shen and Chengwei Zhou (Zhejiang University, P.R. China); Yujie Gu (Temple University); Hai Lin (Osaka Prefecture University, Japan); Zhiguo Shi (Zhejiang University, P.R. China)

R02: System and Hardware

Chair: Byonghyo Shim (Seoul National University, Korea)

R02.1 Development of 5G CHAMPION Testbeds for 5G Services at the 2018 Winter Olympic Games

Seok Ho Won (ETRI, Korea); Markus Dominik Mueck (Intel Deutschland GmbH, Germany); Valerio Frascolla (Intel Deutschland GmbH, Germany); Junhyeong Kim (ETRI, Korea); Giuseppe Destino and Aarno Pärssinen (University of Oulu, Finland); Matti Latva-aho (UoOulu, Finland); Aki Korvala (Nokia, Finland); Antonio Clemente (CEA-LETI Minatoc, France); Tae-Yeon Kim (Principal Research Engineer, Korea); Ilgyu Kim (ETRI of KOREA, Korea); Hyun Kyu Chung (ETRI, Korea); Emilio Calvanese Strinati (CEA-LETI, France)

R02.2 Distributed Nonlinear Regression Using In-Network Processing With Multiple Gaussian Kernels

Ban-Sok Shin and Henning Paul (University of Bremen, Germany); Masahiro Yukawa (Keio University, Japan); Armin Dekorsy (University of Bremen, Germany)

R02.3 Real-Time Channel Emulation of a Geometry-Based Stochastic Channel Model on a SDR Platform

Markus Hofer (AIT Austrian Institute of Technology, Austria); Zhinan Xu and Thomas Zemen (AIT Austrian Institute of Technology GmbH, Austria)

R02.4 A new approach to exploit channel power imbalance in distributed antenna systems with fiber fronthaul

Alexis Alfredo Dowhuszko (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain); Ana Pérez-Neira (CTTC, Spain)

R02.5 Partial Relay Selection and Energy Detection for MCIM based Dual-Hop Multiple DF Relay Network

James Crawford (Queens University of Belfast, United Kingdom (Great Britain)); Youngwook Ko (Queen's University Belfast, United Kingdom (Great Britain))

S01: Special Session on Small Data Networking

Chairs: Enrico Paolini (University of Bologna, Italy), Petar Popovski (Aalborg University, Denmark)

S01.1 On the Performance of a Full-Duplex Receiver for Graph-Based Random Access Schemes

Andrea Munari (RWTH Aachen University, Germany); Federico Clazzer (German Aerospace Center (DLR), Germany); Petri Mähönen (RWTH Aachen University, Germany)

S01.2 Finite-Blocklength Bounds on the Maximum Coding Rate of Rician Fading Channels with Applications to Pilot-Assisted Transmission

Johan Östman, Giuseppe Durisi and Erik G Ström (Chalmers University of Technology, Sweden)

S01.3 Short Codes with Mismatched Channel State Information: A Case Study

Gianluigi Liva (DLR - German Aerospace Center, Germany); Giuseppe Durisi (Chalmers University of Technology, Sweden); Marco Chiani (University of Bologna, Italy); Shakeel Salamat Ullah and Soung Chang Liew (The Chinese University of Hong Kong, Hong Kong)

S01.4 User Activity Detection in Massive Random Access: Compressed Sensing vs. Coded Slotted ALOHA

Veljko Boljanović and Dejan Vukobratović (University of Novi Sad, Serbia); Petar Popovski (Aalborg University, Denmark); Čedomir Stefanović (Aalborg University & University of Novi Sad, Denmark)

S01.5 Polar Coded Probabilistic Amplitude Shaping for Short Packets

Tobias Prinz (Technische Universität München, Germany); Peihong Yuan (Technical University of Munich, Germany); Georg Böcherer and Fabian Steiner (Technische Universität München, Germany); Onurcan İşcan (Huawei European Research Center, Germany); Ronald Böhnke (Technische Universität München, Germany); Wen Xu (Huawei Technologies Duesseldorf GmbH & - European Research Center (ERC), Germany)

S02: Special Session on Signal Processing for Large-Scale Belief Propagation

Chairs: Shinsuke Ibi (Osaka University, Japan), Koji Ishibashi (The University of Electro-Communications, Japan)

S02.1 Rigorous Dynamics of Expectation-Propagation Signal Detection via the Conjugate Gradient Method

Keigo Takeuchi (Toyohashi University of Technology, Japan); Chao-Kai Wen (National Sun Yat-sen University, Taiwan)

S02.2 Discreteness-Aware AMP for Reconstruction of Symmetrically Distributed Discrete Variables

Ryo Hayakawa (Kyoto University, Japan); Kazunori Hayashi (Osaka City University, Japan)

S02.3 An Adaptive MIMO-BICM System with CRC-Assisted Two-Stage Interference Cancellation

Shinya Hagihara and Hideki Ochiai (Yokohama National University, Japan)

S02.4 Multi-Access Diversity Gain via Multiple Base Station Cooperation in Frameless ALOHA

Shun Ogata and Koji Ishibashi (The University of Electro-Communications, Japan); Giuseppe Abreu (Jacobs University Bremen, Germany)

S02.5 Data Associated Iterative Channel Estimations with Non-Orthogonal Pilot for Large MIMO Detections

Shinsuke Ibi and Seiichi Sampei (Osaka University, Japan)

Tuesday, July 4, 11:40 - 13:00

R03: mmWave 1: Beamforming

Chair: Shi Jin (Southeast University, P.R. China)

R03.1 Data Rate Bound for mmWave Hybrid Beamforming Systems with Subarrays

Marcin Iwanow and Nikola Vucic (Huawei Technologies Duesseldorf GmbH, Germany); Wolfgang Utschick (Technische Universität München, Germany); Mario H. Castañeda (Huawei Technologies Duesseldorf GmbH & European Research Center, Germany); Wen Xu (Huawei Technologies Duesseldorf GmbH & - European Research Center (ERC), Germany); Jian Luo (Huawei Technologies Duesseldorf GmbH, Germany)

R03.2 THIC structures for RF beamforming

Yuan-Pei Lin and Shang-Ho Tsai (National Chiao Tung University, Taiwan)

R03.3 Beamforming with no Instantaneous Feedback for mmWave Transmission

Yuan-Pei Lin and Shang-Ho Tsai (National Chiao Tung University, Taiwan)

R03.4 Partially-Connected Hybrid Precoding in mm-Wave Systems With Dynamic Phase Shifter Networks

Xianghao Yu, Jun Zhang and Khaled B. Letaief (The Hong Kong University of Science and Technology, Hong Kong)

R04: NOMA, Multipoint Transmission, Interference Channels

Chair: Yao-Win Peter Hong (National Tsing Hua University, Taiwan)

R04.1 Cooperation Resource Efficient User-Centric Clustering for QoS Provisioning in Uplink CoMP

Zhe Zhang (School of Information Engineering, Zhengzhou University, P.R. China); Ning Wang, Jiankang Zhang and Xiaomin Mu (Zhengzhou University, P.R. China); Kon Max Wong (McMaster University, Canada)

R04.2 Effects of Outdated CSI on the Coverage of CoMP-based Ultra-Dense Networks

Liu Mengting, Ying-lei Teng and Mei Song (Beijing University of Posts and Telecommunications, P.R. China)

R04.3 Energy Optimization for Full-Duplex Self-Backhauled HetNet with Non-Orthogonal Multiple Access

Lei Lei (University of Luxembourg, Luxembourg); Eva Lagunas (University of Luxembourg - SnT, Luxembourg); Sina Maleki (University of Luxembourg, Luxembourg); Qing He (Linköping University, Sweden); Symeon Chatzinotas (University of Luxembourg, Luxembourg); Björn Ottersten (University of Luxembourg, Luxembourg)

R04.4 Coordinated Beamforming and Power Allocation for Multicell NOMA Systems

Lanjie Shi (National Tsing Hua University, Taiwan); Yung-Shun Wang (National Tsing Hua University & Academia Sinica, Taiwan); Yao-Win Peter Hong and Wen-Tsuen Chen (National Tsing Hua University, Taiwan)

R04.5 DoF Region of the MIMO Interference Channel with Partial CSIT

Bofeng Yuan and Arash Gholami Davoodi (University of California, Irvine, USA); Syed Ali Jafar (University of California Irvine, USA)

S03: Special Session on Role of Sparsity in Communications

Chair: Chandra R Murthy (Indian Institute of Science, India)

- S03.1 Joint Multicast and Unicast Beamforming for the MISO Downlink Interference Channel**
Ya-Feng Liu (Chinese Academy of Sciences, P.R. China); Cheng Lu (North China Electric Power University, P.R. China); Meixia Tao (Shanghai Jiao Tong University, P.R. China); Jiageng Wu (Beijing University of Posts and Telecommunications, P.R. China)
- S03.2 Lattice Parameter Estimation from Multivariate Sparse, Noisy Measurements**
Barry Quinn (Macquarie University, Australia); Vaughan Clarkson (The University of Queensland, Australia)
- S03.3 Multi-User Millimeter Wave Channel Estimation Using Generalized Block OMP Algorithm**
Manoj A (Indian Institute of Technology Madras, India); Arun Pachai Kannu (IIT Madras, India)
- S03.4 Rényi Divergence Based Covariance Matching Pursuit of Joint Sparse Support**
Saurabh Khanna and Chandra R Murthy (Indian Institute of Science, India)
- S03.5 Semi-tensor CS for Distributed Channel Estimation in WSNs**
Donghai Bao, Fang Yang, Yinping Wang, Qianru Jiang, Huang Bai and Sheng Li (Zhejiang University of Technology, P.R. China)
- S03.6 Joint Active User Detection and Channel Estimation for Massive Machine-Type Communications**
Sunho Park and Hee Jin Seo (Seoul National University, Korea); Hyoungju Ji (Seoul National University & Samsung Electronics. Co., Ltd, Korea); Byonghyo Shim (Seoul National University, Korea)
- S03.7 Multiple Hypothesis Testing for Dynamic Support Recovery**
Heng Qiao (University of California, San Diego, USA); Piya Pal (University of Maryland, College Park, USA)

S04: Special Session on Caching and Content-Centric Networking

Chairs: Giuseppe Caire (Technische Universität Berlin, Germany), Meixia Tao (Shanghai Jiao Tong University, P.R. China)

S04.1 Coded Multicast Fronthauling and Edge Caching for Multi-Connectivity Transmission in Fog Radio Access Networks

Seok-Hwan Park (Chonbuk National University, Korea); Osvaldo Simeone (King's College London, United Kingdom (Great Britain)); Wonju Lee (Samsung Advanced Institute of Technology, Korea); Shlomo (Shitz) Shamai (The Technion, Israel)

S04.2 Coded Prefetching and Efficient Delivery in Decentralized Caching Systems

Kai Zhang and Chao Tian (University of Tennessee Knoxville, USA); Husheng Li (University of Tennessee, USA)

S04.3 User Request Prediction Increases Energy Efficiency in AWGN Channels

Wei Huang and Wei Chen (Tsinghua University, P.R. China); H. Vincent Poor (Princeton University, USA)

S04.4 Incentive Mechanism Design for Cache-Assisted D2D Communications: A Mobility-Aware Approach

Rui Wang, Jun Zhang and Khaled B. Letaief (The Hong Kong University of Science and Technology, Hong Kong)

S04.5 Flexible Cache-Aided Networks with Backhauling

Italo Atzeni (Mathematical and Algorithmic Sciences Lab, France Research Center, Huawei Technologies Co. Ltd., France); Marco Maso (Mathematical and Algorithmic Sciences Lab, Huawei France Research Center, France); Imène Ghamnia (CentraleSupélec, France); Ejder Baştuğ (MIT & CentraleSupélec, USA); Mérouane Debbah (Huawei, France)

S04.6 Probabilistic Caching in Multi-tier Heterogeneous Networks: Optimization and Tradeoff

Kuikui Li, Zhiyong Chen and Meixia Tao (Shanghai Jiao Tong University, P.R. China)

Tuesday, July 4, 15:50 - 17:10

R05: mmWave 2 and Full Duplex

Chair: Seok-Hwan Park (Chonbuk National University, Korea)

R05.1 Two-Ray Models in mmWave Communications

Erich Zöchmann (TU Wien, Austria); Ke Guan (Beijing Jiaotong University, P.R. China); Markus Rupp (TU Wien, Austria)

R05.2 Sparse Bayesian Learning-based Channel Estimation in Millimeter Wave Hybrid MIMO Systems

Amrita Mishra (IIT Kanpur, India); Anupama Rajoriya (Indian Institute of Technology, Kanpur, India); Aditya K Jagannatham (Indian Institute of Technology Kanpur, India); Gerd H. Ascheid (RWTH Aachen University, Germany)

R05.3 Low Complexity Beamforming Training Method for mmWave Communications

Felix Fellhauer (University of Stuttgart & Sony, Germany); Nabil Loghin, Dana Ciochina and Thomas Handte (Sony, Germany); Stephan ten Brink (University of Stuttgart, Germany)

R05.4 Filter-and-Forward Based Full-Duplex Relay Networks with Cooperative Beamforming

Shogo Koyanagi and Teruyuki Miyajima (Ibaraki University, Japan)

R05.5 Estimation of the Self-Interference Channel with Received Signal in Full-duplex Radios

Arjun Nadh and Radha Krishna Ganti (Indian Institute of Technology Madras, India)

R06: Caching

Chair: Tony Q. S. Quek (Singapore University of Technology and Design, Singapore)

R06.1 Hybrid Wireless Edge Caching for Relaying with Spatial Randomness

Eleni Demarchou, Constantinos Psomas and Ioannis Krikidis (University of Cyprus, Cyprus)

R06.2 Optimal Caching Placement for Cache-enabled Mobile Social Networks

Mingyang Ding (Shanghai Jiao Tong University, P.R. China); Xiaoshi Song (Northeastern University, P.R. China); Zhiyong Chen and Bin Xia (Shanghai Jiao Tong University, P.R. China)

R06.3 Fractional Dynamic Caching: Minimizing the File Delivery Time under Limited Backhaul

Liumeng Wang and Sheng Zhou (Tsinghua University, P.R. China)

R06.4 Energy-efficient Design for Edge-Caching Wireless Networks: When is Coded-caching beneficial?

Thang Xuan Vu and Symeon Chatzinotas (University of Luxembourg, Luxembourg); Björn Ottersten (University of Luxembourg, Luxembourg)

R06.5 Explicit Data Caching at Mobile Edge Networks: A Cross-Layer Perspective

Albeladitalal Falah, Wenbin Luo, Jiping Jiao, Biyu Tang, Xuemin Hong and Jianghong Shi (Xiamen University, P.R. China)

R06.6 A Cooperative Video-Streaming Transmission Strategy in Information-Centric Networks

Xiaonan Liu (Dalian University of Technology, Canada); Nan Zhao (Dalian University of Technology, P.R. China); F. Richard Yu (Carleton University, Canada); Yunfei Chen (University of Warwick, United Kingdom (Great Britain)); Victor C.M. Leung (University of British Columbia, Canada)

S05: Special Session on Full-Duplex Communications

Chairs: Tsung-Hui Chang (The Chinese University of Hong Kong, Shenzhen, P.R. China), Chuan Huang (University of Electronic Science and Technology of China, P.R. China)

S05.1 Resource Allocation for Secure Full-Duplex OFDMA Radio Systems

Yan Sun (Friedrich-Alexander University of Erlangen-Nuremberg, Germany); Derrick Wing Kwan Ng (University of New South Wales, Australia); Robert Schober (University of British Columbia, Canada)

S05.2 Multiple Access Channel with Full-Duplex Amplify-and-Forward Transmitter Cooperations

Qingpeng Liang, Shengpei Jiang and Chuan Huang (University of Electronic Science and Technology of China, P.R. China)

S05.3 Max-Min-Fairness Linear Transceiver Design for Full-Duplex Multiuser Systems

Tsung-Hui Chang (The Chinese University of Hong Kong, Shenzhen, P.R. China); Ya-Feng Liu (Chinese Academy of Sciences, P.R. China); Shih-Chun Lin (National Taiwan University of Science and Technology, Taiwan)

S05.4 Robust Filter Design for Full-Duplex Relay Links under Limited Dynamic Range

Emilio Antonio-Rodríguez (Aalto University, Finland); Stefan Werner (NTNU, Norway); Taneli Riihonen and Risto Wichman (Aalto University School of Electrical Engineering, Finland)

S05.5 Resource Allocation for a Full-Duplex Base Station Aided OFDMA System

Yang You (KTH Royal Institute of Technology, Sweden); Chong Qin and Yi Gong (Southern University of Science and Technology, P.R. China)

S05.6 Multi-tap Digital Cancellor for Full-Duplex Applications

Paul Ferrand and Melissa Duarte (Huawei Technologies France, France)

S06: Special Session on Security and Trust

Chairs: Jemin Lee (Daegu Gyeongbuk Institute of Science and Technology (DGIST), Korea), Parthajit Mohapatra (Indian Institute of Technology Kharagpur, India)

S06.1 Improving Physical Layer Security for Wireless Ad Hoc Networks Via Full-Duplex Receiver Jamming

Tong-Xing Zheng (Xi'an Jiaotong University, P.R. China); Qian Yang and Hui-Ming Wang (Xi'an Jiaotong University, P.R. China); Hao Deng (Henan University, P.R. China); Pengcheng Mu and Weile Zhang (Xi'an Jiaotong University, P.R. China)

S06.2 Stabilizing the Secrecy Capacity of the Arbitrarily Varying Wiretap Channel and Transceiver Synchronization Using List Decoding

Ahmed Mansour (Technische Universität München, Germany); Holger Boche (Technical University Munich, Germany); Rafael F. Schaefer (Technische Universität Berlin, Germany)

S06.3 Wireless Surveillance of Two-Hop Communications

Ganggang Ma and Jie Xu (Guangdong University of Technology, P.R. China); Lingjie Duan (Singapore University of Technology and Design (SUTD), Singapore); Rui Zhang (National University of Singapore, Singapore)

S06.4 Inference and Data Privacy in IoT Networks

Meng Sun and Wee Peng Tay (Nanyang Technological University, Singapore)

S06.5 Robust Secure Goodput for Massive MIMO and Optical Fiber Wiretap Channels

Andrew Lonnstrom, Eduard Jorswieck, Daniel Haufe and Jürgen Czarske (TU Dresden, Germany)

S06.6 Trusted Content Delivery in Large-Scale SIC-Enabled Wireless Networks

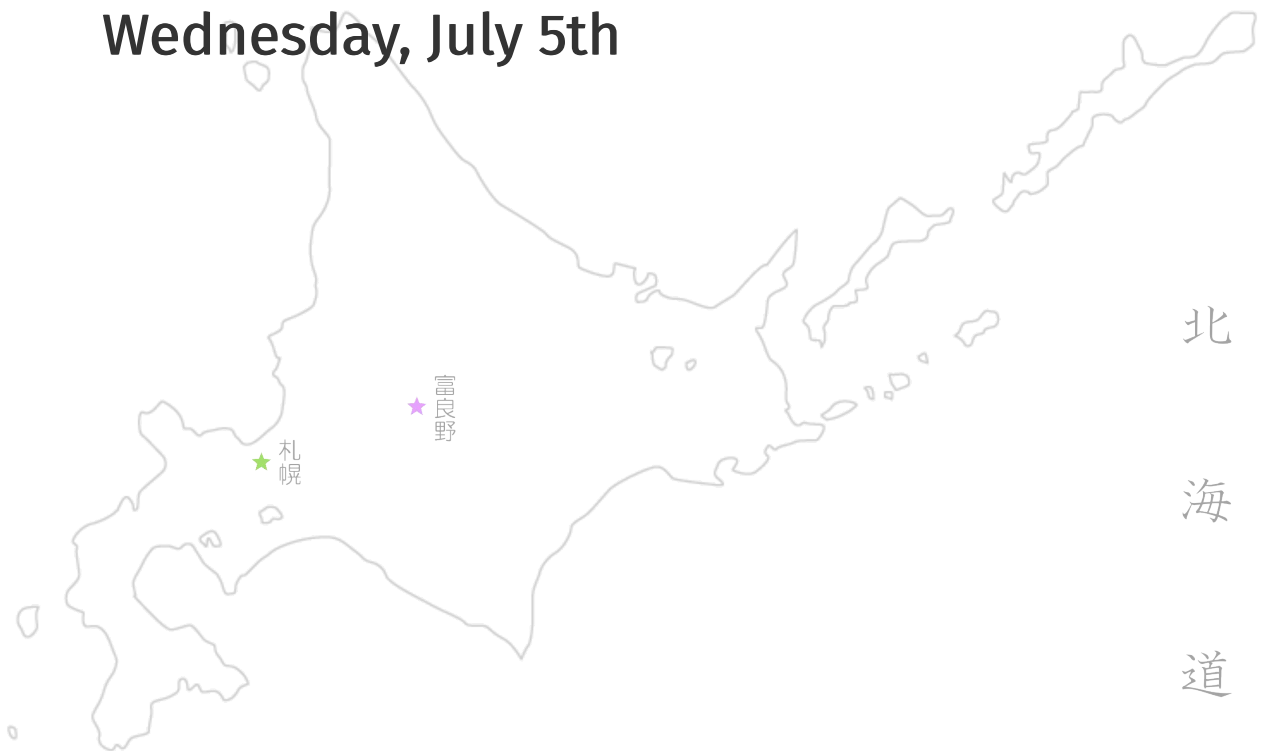
Ying Cui (Shanghai Jiaotong University, P.R. China); Dongdong Jiang and Jifang Xing (Shanghai Jiao Tong University, P.R. China); Jemin Lee (Daegu Gyeongbuk Institute of Science and Technology (DGIST), Korea)

Memo

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Wednesday, July 5th



Wednesday, July 5, 10:00 - 11:20

R07: Resource Allocation, Access, Scheduling

Chair: Timothy N. Davidson (McMaster University, Canada)

R07.1 Access Point Assignment in Hybrid LiFi and WiFi Networks in Consideration of LiFi Channel Blockage

Xiping Wu and Harald Haas (The University of Edinburgh, United Kingdom (Great Britain))

R07.2 Compressive Random Access using Distance based Resource Block Selection Scheme for Machine Type Communications

Jin Young Lee (Gwangju Institute of Science and Technology, Korea); KyungJun Lee and Jinho Choi (Gwangju Institute of Science and Technology (GIST), Korea)

R07.3 Decentralized Coordinated Scheduling with Muting in LTE-Advanced Networks

Oscar Dario Ramos-Cantor (Technische Universität Darmstadt, Germany); Marius Pesavento (Technische Universität Darmstadt & Merckstr. 25, Germany)

R07.4 Learn-and-Adapt Network Resource Allocation

Tianyi Chen (University of Minnesota, USA); Qing Ling (University of Science and Technology of China, P.R. China); Georgios B. Giannakis (University of Minnesota, USA)

R07.5 Trigger-based Approach with Hidden Node Problem for Uplink Multi-User Transmission in 802.11ax

Sok-lan Sou (National Cheng Kung University, Taiwan); Yinman Lee (National Chi Nan University, Taiwan)

R07.6 Reassociation Method based on Top Trading Cycles for WLANs: Mechanism Design Approach

Shotaro Kamiya, Koji Yamamoto, Takayuki Nishio and Masahiro Morikura (Kyoto University, Japan)

R07.7 Performance Evaluation and Resource Allocation in HetNets Under Joint Offloading and Frequency Reuse

Mehdi Fereydooni (Vienna University of Technology, Austria); Gita Babazadeh Eslamlou (Vienna University of Technology, Austria); Markus Rupp (TU Wien, Austria)

R07.8 Fairness-Aware Energy-Efficient Power Control Scheme for D2D Communications Underlying Cellular Networks

Xiaozheng Gao (Beijing Institute of Technology, P.R. China); Hangcheng Han (Beijing Institution of Technology, P.R. China); Kai Yang, Jianping An and Xiangyuan Bu (Beijing Institute of Technology, P.R. China)

R07.9 Optimizing Age-of-Information and Energy Efficiency Tradeoff for Mobile Pushing Notifications

Samrat Nath and Jingxian Wu (University of Arkansas, USA); Jing Yang (The Pennsylvania State University, USA)

R07.10 Multiple Access Computational Offloading with Computation Constraints

Mahsa Salmani and Timothy N. Davidson (McMaster University, Canada)

S07: Special Session on Signal Processing for Wireless Powered Communications

Chairs: Jie Xu (Guangdong University of Technology, P.R. China), Rui Zhang (National University of Singapore, Singapore)

S07.1 On the Performance of Wireless Powered Communication With Non-linear Energy Harvesting

Rania Morsi (Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany); Elena Boshkovska (University of Erlangen-Nuremberg, Germany); Esmat Ramadan (Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany); Derrick Wing Kwan Ng (University of New South Wales, Australia); Robert Schober (University of British Columbia, Canada)

S07.2 Secrecy Outage Analysis of Hybrid VLC-RF Systems with Light Energy Harvesting

Gaofeng Pan (Southwest University, P.R. China & Lancaster University, United Kingdom (Great Britain)); Jia Ye (Southwest University, P.R. China); Zhiguo Ding (Lancaster University, United Kingdom (Great Britain))

S07.3 Optimum MCS for High-Throughput Long-Range Ambient Backscatter Communication Networks

Tae Yeong Kim and Dong In Kim (Sungkyunkwan University (SKKU), Korea)

S07.4 Collision Avoidance in Wireless Powered Sensor Networks with Backscatter Communications

Constantinos Psomas and Ioannis Krikidis (University of Cyprus, Cyprus)

S07.5 Multi-user Scheduling in Full-Duplex Wireless-Powered Communications with Energy Accumulation

Di Zhai, He Chen, Zihuai Lin, Yonghui Li and Branka Vucetic (University of Sydney, Australia)

S07.6 Waveform Optimization for Radio-Frequency Wireless Power Transfer

Mohammad Reza Veday Moghadam, Yong Zeng and Rui Zhang (National University of Singapore, Singapore)

S08: Special Session on Massive MIMO

Chair: Shi Jin (Southeast University, P.R. China)

S08.1 Interference Coordination for FD-MIMO HetNet Exploiting Statistical Channel State Information

Chaosong Li, Xiao Li, Wenjin Wang and Xiqi Gao (Southeast University, P.R. China)

S08.2 Frequency Synchronization for Uplink Massive MIMO with Partly Calibrated Subarrays

Yinghao Ge and Weile Zhang (Xi'an Jiaotong University, P.R. China); Feifei Gao (Tsinghua University, P.R. China); Ling Xing (Henan University Of Science And Technology, P.R. China)

S08.3 Energy Efficiency Optimization for Cell-Free Massive MIMO

Hien Ngo (Linköping University, Sweden); Le-Nam Tran (Maynooth University, Ireland); Trung Q. Duong and Michail Matthaiou (Queen's University Belfast, United Kingdom (Great Britain)); Erik G. Larsson (Linköping University, Sweden)

S08.4 Comprehensive Scaling Law for Single-cell Massive MIMO with MRT

Cheng Zhang (Southeast University, P.R. China); Yindi Jing (University of Alberta, Canada); Yongming Huang and Luxi Yang (Southeast University, P.R. China)

S08.5 Channel Estimation using Superimposed Pilots and Second-Order Statistics for Massive MIMO Networks

Fei Li, Haiquan Wang and Mengyun Ying (Hangzhou Dianzi University, P.R. China); Wei Zhang (The University of New South Wales, Australia)

Wednesday, July 5, 11:40 - 13:00

R08: Massive MIMO 1: Modulation, Capacity, Detection

Chair: Erik G. Larsson (Linköping University, Sweden)

R08.1 Mean Square Error (MSE) Based Hybrid Analog and Digital Combining for Systems with Large Receive Antenna Arrays

Ming-Chun Lee (University of Southern California, USA & Academia Sinica, Taiwan); Wei-Ho Chung (Academia Sinica, Taiwan)

R08.2 Impact of Residual Transceiver Impairments on MMSE Filtering Performance of Rayleigh-Product MIMO Channels

Shree Krishna Sharma (University of Western Ontario, Canada); Anastasios Papazafeiropoulos (University of Edinburgh, United Kingdom (Great Britain)); Symeon Chatzinotas (University of Luxembourg, Luxembourg); Xianbin Wang (University of Western Ontario, Canada); Tharmalingam Ratnarajah (The University of Edinburgh, United Kingdom (Great Britain))

R08.3 Pilot Contamination Mitigation with Reduced RF Chains

Shahar Stein Ioushua (Technion - Israel Institute of Technology, Israel); Yonina C. Eldar (Technion-Israel Institute of Technology, Israel)

R08.4 Channel Estimation in Full-dimensional Massive MIMO System Using One Training Symbol

Lei Cheng and Yik-Chung Wu (The University of Hong Kong, Hong Kong); Shaodan Ma (University of Macau, P.R. China); Jianzhong Zhang (Samsung, USA); Lingjia Liu (University of Kansas, USA)

R08.5 Channel Reciprocity and Capacity Analysis with Outdoor MIMO Measurements

Yi Wang and Zhenyu Shi (Huawei Technologies Co., Ltd, P.R. China)

R08.6 On the Outage Capacity in Massive MIMO with Line-of-Sight

Prabhu Chandhar (Linköping University, Sweden); Danyo Danev (Linköping University, Sweden); Erik G. Larsson (Linköping University, Sweden)

R08.7 Multiuser Media-based Modulation for Massive MIMO Systems

Bharath Shamasundar and A. Chockalingam (Indian Institute of Science, India)

R08.8 Uniquely Factorable Space-Time Modulation for Two-User Uplink Massive MIMO Systems

Gangtao Han (Zhengzhou University, P.R. China); Jian-Kang Zhang and Zheng Dong (McMaster University, Canada); Xiaomin Mu (Zhengzhou University, P.R. China)

R09: Security

Chair: Gesualdo Scutari (Purdue University, USA)

R09.1 Fronthaul Quantization as Artificial Noise for Enhanced Secret Communication in C-RAN

Seok-Hwan Park (Chonbuk National University, Korea); Osvaldo Simeone (King's College London, United Kingdom (Great Britain)); Shlomo (Shitz) Shamai (The Technion, Israel)

R09.2 Energy Efficiency Optimization for MISO Wiretap Channels With Statistical and Imperfect CSI

Weidong Mei, Zhi Chen, Jun Fang and Boyu Ning (University of Electronic Science and Technology of China, P.R. China)

R09.3 A Nonadaptive Transmission Scheme in Slow Fading Wiretap Channels with Adjustable Transmit Power under Secrecy Outage Constraint

Zongze Li, Pengcheng Mu, Bo Wang, Hui-Ming Wang and Weile Zhang (Xi'an Jiaotong University, P.R. China); Tong-Xing Zheng (Xi'an Jiaotong University, P.R. China)

R09.4 Uncoordinated Frequency Shifts based Pilot Contamination Attack Detection

Weile Zhang (Xi'an Jiaotong University, P.R. China); Hai Lin (Osaka Prefecture University, Japan)

R09.5 Secret Key Generation for Pairwise Independent Networks with Curious Helpers

Pin-Hsun Lin (TU Dresden, Germany); Carsten Janda (Technical University of Dresden, Germany); Eduard Jorswieck (TU Dresden, Germany); Yao-Win Peter Hong (National Tsing Hua University, Taiwan)

R09.6 Secrecy Rate Maximization in Full-Duplex Multi-Antenna Decode-and-Forward Relay Systems

Batu Chalise (Cleveland State University, USA); Wing-Kin Ma (The Chinese University of Hong Kong, Hong Kong); Himal A Suraweera (University of Peradeniya, Sri Lanka); Qiang Li (University of Electronic Science and Technology of China, P.R. China)

S09: Special Session on Localization/Tracking and Location-aware Communication

Chairs: Sunwoo Kim (Hanyang University, Korea), Henk Wymeersch (Chalmers University of Technology, Sweden)

S09.1 Multipath-assisted Indoor Positioning Enabled by Directional UWB Sector Antennas

Michael Rath and Josef Kulmer (Graz University of Technology, Austria); Mustafa Bakr and Bernhard Grosswindhager (Technical University Graz, Austria); Klaus Witrisal (Graz University of Technology, Austria)

S09.2 Pilot Placement for Power-Efficient Uplink Positioning in 5G Vehicular Networks

José A. del Peral-Rosado and M. Angélica Barreto-Arboleda (Universitat Autònoma de Barcelona, Spain); Francesca Zanier and Massimo Crisci (European Space Agency, The Netherlands); Gonzalo Seco-Granados (Universitat Autònoma de Barcelona, Spain); José A. López-Salcedo (Universitat Autònoma de Barcelona, Spain)

S09.3 Continuous Device Positioning and Synchronization in 5G Dense Networks with Skewed Clocks

Mike Koivisto and Aki Hakkarainen (Tampere University of Technology, Finland); Mario Costa (Huawei Technologies Oy (Finland) Co., Ltd., Finland); Kari Leppanen (Huawei Technologies, Finland); Mikko Valkama (Tampere University of Technology, Finland)

S09.4 Cooperative Simultaneous Autonomous Orbit Determination and Time Synchronization: A Distributed Factor Graph Approach

Yongbin Zhou, Jun Lai, Yifan Zhou and Jinmao Lin (National University of Defense Technology, P.R. China); Ninghu Yang (China Satellite Navigation Office, P.R. China); Jun Yang (National University of Defense Technology, P.R. China)

S09.5 On the Opportunistic Location-Aware Transmission Power Adaptation in mm-Wave Communications

Suhanya Jayaprakasam, Kyusic Kang, Jun Won Choi and Sunwoo Kim (Hanyang University, Korea)

S10: Special Session on Signal Processing for Millimeter Wave Communication Systems

Chair: Robert Heath (The University of Texas at Austin, USA)

S10.1 Hybrid Beamformer Design for mmWave Wideband Multi-User MIMO-OFDM Systems

Yongjin Kwon (Agency for Defense Development, Korea); Jihoon Chung and Youngchul Sung (KAIST, Korea)

S10.2 mmWave meshed network with traffic and energy management mechanism

Kei Sakaguchi (Tokyo Institute of Technology & Fraunhofer HHI, Japan); Gia Khanh Tran and Hiroaki Ogawa (Tokyo Institute of Technology, Japan)

S10.3 TCP Dynamics over mmWave Links

Menglei Zhang (New York University, USA); Marco Mezzavilla (NYU Poly, USA); Jing Zhu (Intel, USA); Sundeep Rangan (New York University, USA); Shivendra Panwar (Polytechnic Institute of New York University, USA)

S10.4 A compressive channel estimation technique robust to synchronization impairments

Nitin Jonathan Myers and Robert Heath (The University of Texas at Austin, USA)

Wednesday, July 5, 15:50 - 17:10

R10: Cognitive

Chair: Ramy Gohary (Carleton University, Canada)

R10.1 OFDM-IM-aided Cooperative Relaying Protocol for Cognitive Radio Networks

Qianli Ma, Ping Yang and Lilin Dan (University of Electronic Science and Technology of China, P.R. China); Xu He (National Key Laboratory of Science and Technology on Communication, P.R. China); Yue Xiao and Shaoqian Li (University of Electronic Science and Technology of China, P.R. China)

R10.2 Sensing of OFDM Signals Based on Time-Domain Autocorrelation Induced by Guard Subcarriers

Yuh-Ren Tsai and Guo-Xin Yu (National Tsing Hua University, Taiwan)

R10.3 Regularized Secondary Beamforming in Cognitive Radio Networks with Limited Feedback

Abhishek Agrahari, Navneet Garg and Aditya K Jagannatham (Indian Institute of Technology Kanpur, India)

R10.4 Entropy-Based Covariance Determinant Estimation

Ferran de Cabrera Estanyol (Universitat Politècnica de Catalunya (UPC), Spain); Jaume Riba (UPC, Spain); Gregori Vazquez (Technical University of Catalonia, Spain)

R10.5 Spectrum Cartography using Adaptive Radial Basis Functions: Experimental Validation

Henning Idsøe (Norway & University of Agder, Norway); Mohammed Hamid (University of Agder, Norway); Thomas Jordbru (Norway & University of Agder, Norway); Linga Reddy Cenkeramaddi (University of Agder & University of Agder, Norway); Baltasar Beferull-Lozano (University of Agder, Norway)

R10.6 Distributed Scheduling in Multi-hop Multi-band Cognitive Radio Networks Utilizing Potential Fields

Henri Hentilä, Jan Oksanen and Visa Koivunen (Aalto University, Finland)

R10.7 Fast Initialization of Cognitive Radio Systems

Malcolm Egan (INRIA, France); Jean-Marie Gorce (INSA-Lyon & CITI, Inria, France); Leonardo S. Cardoso (Université de Lyon & INRIA, INSA-Lyon, CITI-INRIA, France)

R11: Massive MIMO 2: Modulation, Codebook and Precoding

Chair: Lutz Lampe (University of British Columbia, Canada)

R11.1 An Improved Matrix Inversion Approximation Method for Massive MIMO Systems with Transmit Antenna Correlation

Kelvin Kuang-Chi Lee (Tamkang University, Taiwan); Chiao-En Chen (National Chung Cheng University, Taiwan)

R11.2 Multi-Resolution Codebook Design for Two-Stage Precoding in FDD Massive MIMO Networks

Deli Qiao and Haifeng Qian (East China Normal University, P.R. China); Geoffrey Li (Georgia Tech, USA)

R11.3 Massive MIMO Downlink 1-Bit Precoding with Linear Programming for PSK Signaling

Hela Jedda (Technische Universität München, Germany); Amine Mezghani (University of California, Irvine, USA); Josef A. Nossek (TU Munich, Germany & Federal University of Ceara, Fortaleza, Brazil); Lee Swindlehurst (University of California at Irvine, USA)

R11.4 Beamforming Designs for Per-Antenna Power Constrained Downlink MISO Using Partial CSIT

Yu-Ren Jwo, Ming-Fu Tang and Borching Su (National Taiwan University, Taiwan)

R11.5 Wideband Hybrid Precoder Design in MU-MIMO based on Channel Angular Information

Rui Peng and Yafei Tian (Beihang University, P.R. China)

R11.6 NOMA in Multiuser MIMO Systems with Imperfect CSI

Hei Victor Cheng, Emil Björnson and Erik G. Larsson (Linköping University, Sweden)

S11: Special Session on Molecular, Biological, and Multi-scale Communications

Chairs: Tadashi Nakano (Osaka University, Japan), Robert Schober (Friedrich-Alexander University Erlangen-Nuremberg, Germany)

S11.1 Touchable Computation: Computing-inspired Bio-detection

Yifan Chen (The University of Waikato, New Zealand); Shaolong Shi and Xin Yao (Southern University of Science and Technology, P.R. China); Tadashi Nakano (Osaka University, Japan); Panagiotis Kosmas (King's College London, United Kingdom (Great Britain))

S11.2 Molecular Circuit-based Transmitters and Receivers for Molecular Communication Networks

Hamdan Awan and Chun Tung Chou (University of New South Wales, Australia)

S11.3 Modeling and Simulation Experiments of Trail Network Formation by Non-diffusion-based Mobile Molecular Communication Networks

Yutaka Okaie, Tadashi Nakano, Takuya Obuchi and Takahiro Hara (Osaka University, Japan)

S11.4 The Gaussian Approximation in Soft Detection for Molecular Communication Via Biological Circuits

Alessio Marcone (Politecnico di Milano, Italy); Massimiliano Pierobon (University of Nebraska-Lincoln, USA); Maurizio Magarini (Politecnico di Milano, Italy)

S11.5 Machine Learning based Channel Modeling for Molecular MIMO Communications

Changmin Lee (Yonsei University, Korea); Huseyin Birkan Yilmaz (Yonsei University, Yonsei Institute of Convergence Technology, Korea); Chan-Byoung Chae (Yonsei University, Korea); Nariman Farsad and Andrea Goldsmith (Stanford University, USA)

S12: Special Session on Machine Learning for Signal Processing and Networking

Chair: Anthony Man-Cho So (The Chinese University of Hong Kong, Hong Kong)

S12.1 Learning to Optimize: Training Deep Neural Networks for Wireless Resource Management

Haoran Sun and Xiangyi Chen (Iowa State University, USA); Qingjiang Shi (Zhejiang Sci-Tech University, P.R. China); Mingyi Hong (Iowa State University, USA); Xiao Fu and Nikolaos D Sidiropoulos (University of Minnesota, USA)

S12.2 Essentially Cyclic Asynchronous Nonconvex Large-Scale Optimization

Loris Cannelli (Purdue University, USA); Francisco Facchinei (University of Rome "La Sapienza", Italy); Vyacheslav Kungurtsev (Czech Technical University in Prague, Czech Republic); Gesualdo Scutari (Purdue University, USA)

S12.3 A Discrete First-Order Method for Large-Scale MIMO Detection with Provable Guarantees

Huikang Liu, Man-Chung Yue, Anthony Man-Cho So and Wing-Kin Ma (The Chinese University of Hong Kong, Hong Kong)

S12.4 Metric Learning on Biological Sequence Embeddings

Dhananjay Kimothi, Ankita Shukla and Pravesh Biyani (IIIT Delhi, India); Saket Anand (IIITD, India); Jim Hogan (QUT, Australia)



Thursday, July 6th



Thursday, July 6, 10:00 - 11:20

R12: Space-time Coding, MIMO Detection

Chair: Wing-Kin Ma (The Chinese University of Hong Kong, Hong Kong)

R12.1 A New Transceiver Architecture for Multi-User MIMO Communication Based on Mixture of Linear and Non-Linear Reception

Junyeong Seo and Youngchul Sung (KAIST, Korea)

R12.2 Sparsity-Aided Iterative Receiver for Large Scale Under-Determined MIMO Systems

Peiyao Zhao (Tsinghua University, P.R. China); Jingxian Wu (University of Arkansas, USA); Zhaocheng Wang (Tsinghua University, P.R. China); Yahong Rosa Zheng (Missouri University of Science and Technology, USA)

R12.3 Deep MIMO Detection

Neev Samuel (Hebrew University of Jerusalem, Israel); Tzvi Diskin and Ami Wiesel (The Hebrew University of Jerusalem, Israel)

R12.4 Orthogonal Approximate Message Passing for GFDM Detection

Suchun Zhang (Southeast University, P.R. China); Chao-Kai Wen (National Sun Yat-sen University, Taiwan); Keigo Takeuchi (Toyohashi University of Technology, Japan); Shi Jin (Southeast University, P.R. China)

R12.5 Minimum PER User-Energy Profile for Massive SIC Receivers under an Average Energy Constraint

Josep Sala-Alvarez and Francesc Rey (Universitat Politècnica de Catalunya, Spain); Javier Villares (Technical University of Catalonia, Spain); Francesc Molina (Universitat Politècnica de Catalunya, Spain)

R12.6 Self-interference cancellation for channel-unaware differential space-time two-way relay networks

Salime Bameri (Shahid Bahonar University of Kerman, Iran); Siamak Talebi (Bahonar University, Iran); Ramy Gohary and Halim Yanikomeroglu (Carleton University, Canada)

R13: Communication and Coding Theory

Chair: Tomoaki Ohtsuki (Keio University, Japan)

- R13.1 A Closed-Form Symbol Error Probability for MCIK-OFDM with Frequency Diversity**
Thien Van Luong and Youngwook Ko (Queen's University Belfast, United Kingdom (Great Britain))
- R13.2 On the Performance Analysis of Mixed Multi-aperture FSO/Multiuser RF Relay Systems with Interference**
Nesrine Cherif (INRS, Canada); Imene Trigui (University of Toronto, Canada); Sofiene Affes (INRS-EMT, Canada)
- R13.3 Multi-Leader Multi-Follower Game-Based ADMM for Big Data Processing**
Zijie Zheng and Lingyang Song (Peking University, P.R. China); Zhu Han (University of Houston, USA); Geoffrey Li (Georgia Tech, USA); H. Vincent Poor (Princeton University, USA)
- R13.4 A Theoretical Analysis of the Spatial Multi Channel Compressed Sensing Model**
Tobias Schnier, Carsten Bockelmann and Armin Dekorsy (University of Bremen, Germany)
- R13.5 On irregular LDPC codes with quantized message passing decoding**
Michael Meidlinger and Gerald Matz (Vienna University of Technology, Austria)
- R13.6 A Game Theoretical Model for Signature Selection in Non-Cooperative IrLDS-OFDMA System**
Lu Zhao, Neng Ye, Kai Yang and Xiangyuan Bu (Beijing Institute of Technology, P.R. China)
- R13.7 Perfect Gaussian integer sequences from monomial o -polynomials**
Jeng-Jung Wang, Chong-Dao Lee and Yaotsu Chang (I-Shou University, Taiwan)

S13: Special Session on Reliable Communication and Control

Chairs: Kazunori Hayashi (Osaka City University, Japan), Koji Ishii (Kagawa University, Japan)

S13.1 Optimal Formation of Unmanned Aerial Vehicles for Minimizing Localization Error -A Two-Dimensional Case-

Azusa Danjo (Daihen Corporation, Japan); Shinsuke Hara (Osaka City University, Japan)

S13.2 A Cross-layer Design of Optimized Receiver for Wireless State Feedback Control

Kentaro Kobayashi, Hiraku Okada and Masaaki Katayama (Nagoya University, Japan)

S13.3 Modified Slotted ALOHA Protocol for Average Consensus Problem

Koji Ishii (Kagawa University, Japan)

S13.4 Adaptive Modulation and Coding Design for Communication-Based Train Control Systems Using IEEE 802.11 MAC with RTS/CTS

Dong Qisheng (Kyoto University, Japan); Kazunori Hayashi (Osaka City University, Japan); Megumi Kaneko (National Institute of Informatics, Japan)

S13.5 BMI Approach to Design of Networked Control Systems with Decentralized Event-Triggering

Kyohei Nakajima, Koichi Kobayashi and Yuh Yamashita (Hokkaido University, Japan)

S14: Special Session on Heterogeneous and Cloud Access Networking

Chairs: Mugen Peng (Beijing University of posts & Telecommunications, P.R. China), Tony Q. S. Quek (Singapore University of Technology and Design, Singapore)

S14.1 Mobile Cloud Computing with Voltage Scaling and Data Compression

Wei Zhang and Yonggang Wen (Nanyang Technological University, Singapore); Ying Jun (Angela) Zhang (The Chinese University of Hong Kong, Hong Kong); Fang Liu (Nanyang Technological University, Singapore); Rui Fan (ShanghaiTech University, P.R. China)

S14.2 Joint Design of Digital and Analog Processing for Downlink C-RAN with Large-Scale Antenna Arrays

Jaemin Kim (Korea University, Korea); Seok-Hwan Park (Chonbuk National University, Korea); Osvaldo Simeone (King's College London, United Kingdom (Great Britain)); Inkyu Lee (Korea University, Korea); Shlomo (Shitz) Shamai (The Technion, Israel)

S14.3 Exploring the Interactions of Communication, Computing and Caching in Cloud RAN under Two Timescale

Jianhua Tang (Seoul National University, Korea); Long Teng (Chongqing University of Posts and Telecommunications, P.R. China); Tony Q. S. Quek (Singapore University of Technology and Design, Singapore); Tsung-Hui Chang (The Chinese University of Hong Kong, Shenzhen, P.R. China); Byonghyo Shim (Seoul National University, Korea)

S14.4 Joint Resource Allocation and Caching Placement for Network Slicing in Fog Radio Access Networks

Liya Tang, Xian Zhang and Hongyu Xiang (Beijing University of Posts and Telecommunications, P.R. China); Yaohua Sun (Beijing University of posts and Telecommunications, P.R. China); Mugen Peng (Beijing University of posts & Telecommunications, P.R. China)

Thursday, July 6, 11:40 - 13:00

R14: Beamforming, MIMO precoding

Chair: Mojtaba Soltanalian (University of Illinois at Chicago, USA)

R14.1 Analog-Digital Beamforming for Tunable-Load MIMO by Mutual Coupling Exploitation
Ang Li and Christos Masouros (University College London, United Kingdom (Great Britain)); Mathini Sellathurai (Heriot-Watt University, United Kingdom (Great Britain))

R14.2 Energy Efficient MIMO SWIPT by Hybrid Analog-Digital Beamforming
Ang Li and Christos Masouros (University College London, United Kingdom (Great Britain))

R14.3 Energy Efficient Beamforming Design with SWIPT for Heterogeneous Cellular Networks
Li Yu Wang, Chao Lin Chen and Che Lin (National Tsing Hua University, Taiwan)

R14.4 Energy-Efficient Coordinated Beamforming for Multi-Cell Multicast Networks under Statistical CSI
Juwendo Denis (CNAM, France); Sinda Smirani (Orange, France); Bakarime Diomande (TSP RS2M, France); Takoua Ghariani (Institut Telecom / Telecom SudParis, France); Badii Jouaber (Institut TELECOM - Telecom SudParis & cnrs UMR-SAMOVAR, France)

R14.5 Direct Beamformer Estimation for Dynamic TDD Networks with Forward-Backward Training
Laddu Praneeth Roshan Jayasinghe, Antti Tölli and Jarkko Kaleva (University of Oulu, Finland); Matti Latva-aho (UoOulu, Finland)

R14.6 On the MMSE Precoder Design for Interference Alignment in MIMO Interfering Broadcast Channel
Navneet Garg, Abhishek Agrahari and Govind Sharma (Indian Institute of Technology Kanpur, India)

R14.7 A Computationally Efficient Algorithm for Downlink Multiuser MIMO Systems Maximizing a Sum-Rate
Shigenori Kinjo (Japan Coast Guard Academy, Japan); Shuichi Ohno (Hiroshima University, Japan)

R14.8 Energy-Efficient Joint Unicast and Multicast Beamforming with Multi-Antenna User Terminals
Oskari Tervo (University of Oulu, Finland); Le-Nam Tran (Maynooth University, Ireland); Symeon Chatzinotas (University of Luxembourg, Luxembourg); Markku Juntti (University of Oulu, Finland); Björn Ottersten (University of Luxembourg, Luxembourg)

R14.9 Spatial PAPR Reduction in Symbol-level Precoding for the Multi-beam Satellite Downlink
Danilo Spano (University of Luxembourg, Luxembourg); Maha Alodeh (SnT, Luxembourg); Symeon Chatzinotas (University of Luxembourg, Luxembourg); Jens Krause (SES, Luxembourg); Björn Ottersten (University of Luxembourg, Luxembourg)

R14.10 MIMO Directional Modulation M-QAM Precoding for Transceivers Performance Enhancement

Ashkan Kalantari (University of Luxembourg, The Interdisciplinary Centre for Security, Reliability and Trust (SnT), Luxembourg); Christos G. Tsinos (University of Luxembourg, Luxembourg); Mojtaba Soltanalian (University of Illinois at Chicago, USA); Symeon Chatzinotas (University of Luxembourg, Luxembourg); Wing-Kin Ma (The Chinese University of Hong Kong, Hong Kong); Björn Ottersten (University of Luxembourg, Luxembourg)

R14.11 Utility Maximization for MISO Bursty Interference Channel under Traffic Uncertainties
Chao Lin Chen, Li Yu Wang and Che Lin (National Tsing Hua University, Taiwan)**R14.12 Distance-aware Coordinated Multi-Point Transmission for Terahertz Band Communication**

Alexis Alfredo Dowhuszko (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain); Víctor P. Gil Jiménez (University Carlos III of Madrid, Spain); Borja Genovés Guzmán (Universidad Carlos III de Madrid, Spain); Ana Pérez-Neira (CTTC, Spain)

R15: OFDM, Filter Bank Multicarrier, Waveform Design

Chair: Koichi Adachi (The University of Electro-Communications, Japan)

R15.1 Filter Optimization of Out-of-Band Radiation with Performance Constraints for GFDM Systems

Po-Chih Chen and Borching Su (National Taiwan University, Taiwan)

R15.2 Waveform Design for QAM-FBMC Systems

Heesu Kim and Hyungsik Han (Korea Advanced Institute of Science and Technology, Korea); Hyuncheol Park (KAIST, Korea)

R15.3 FBMC-OQAM in Doubly-Selective Channels: A New Perspective on MMSE Equalization

Ronald Nissel and Markus Rupp (TU Wien, Austria); Roman Marsalek (Brno University of Technology, Czech Republic)

R15.4 A Fast Algorithm for Joint Design of Transmit Waveforms and Receive Filters

Linlong Wu (Hong Kong University of Science and Technology, Hong Kong); Prabhu Babu (CARE, Indian Institute of Technology, Delhi, India); Daniel P Palomar (Hong Kong University of Science and Technology, Hong Kong)

R15.5 Blind Estimation of Symbol Timing Offset in OFDM Systems

Yen-Chin Wang and See-May Phoong (National Taiwan University, Taiwan)

R15.6 A Low-Complexity Algorithm for OFDM Phase Noise Estimation

Zhongju Wang (Hong Kong University of Science and Technology (HKUST), Hong Kong); Prabhu Babu (CARE, Indian Institute of Technology, Delhi, India); Daniel P Palomar (Hong Kong University of Science and Technology, Hong Kong)

R15.7 On PAPR Characteristics of DFT-s-OFDM with Geometric and Probabilistic Constellation Shaping

Anastasios Kakkavas (Huawei Technologies Duesseldorf GmbH, German Research Center); Wen Xu (Huawei Technologies Duesseldorf GmbH & - European Research Center (ERC), Germany); Jian Luo (Huawei Technologies Duesseldorf GmbH, Germany); Mario H. Castañeda (Huawei Technologies Duesseldorf GmbH & European Research Center, Germany); Josef A. Nossek (TU Munich, Germany & Federal University of Ceara, Fortaleza, Brazil)

R15.8 FBMC-OQAM with Phase Noise: Achievable Performance and Compensation

Anastasios Kakkavas (Huawei Technologies Duesseldorf GmbH, German Research Center & Technische Universität München); Mario H. Castañeda (Huawei Technologies Duesseldorf GmbH & European Research Center, Germany); Jian Luo (Huawei Technologies Duesseldorf GmbH, Germany); Tobias Laas (Huawei European Research Center & Technische Universität München, Germany); Wen Xu (Huawei Technologies Duesseldorf GmbH & - European Research Center (ERC), Germany); Josef A. Nossek (TU Munich, Germany & Federal University of Ceara, Fortaleza, Brazil)

R15.9 Block Frequency Spreading: A Method for Low-Complexity MIMO in FBMC-OQAM

Ronald Nissel (TU Wien, Austria); Jiri Blumenstein (Brno University of Technology, Czech Republic); Markus Rupp (TU Wien, Austria)

S15: Special Session on Signal Processing and Networking for the Internet-of-Things

Chairs: Kwang-Cheng Chen (University of South Florida, USA), Li Wang (Beijing University of Posts and Telecommunications, P.R. China)

S15.1 Semi-coherent Detector of Ambient Backscatter Communication for the Internet of Things

Jing Qian and Feifei Gao (Tsinghua University, P.R. China); Gongpu Wang (Beijing Jiaotong University, P.R. China); Shi Jin (Southeast University, P.R. China); Hongbo Zhu (Nanjing University of Posts and Telecommunications, P.R. China)

S15.2 Graph-Based Time-Critical Cooperative Data Exchange in V2V via Network Coding Strategy

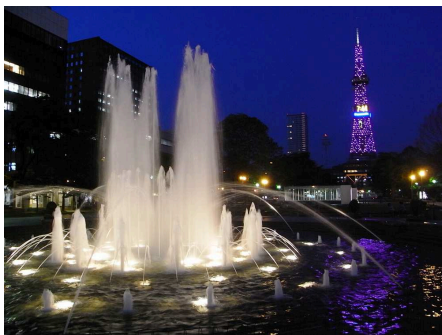
Yanyan Lu (Beijing University of Posts and Telecommunications, P.R. China); Qimei Cui and Yanzhao Hou (Beijing University of Posts and Telecommunications, P.R. China); Zhenguo Gao (Harbin Engineering University, P.R. China); Zhang Baofeng (China Information Technology Security Evaluation Center, P.R. China)



Social Program

Please make sure you wear your conference badge.

Welcome Reception -- Sapporo TV Tower (Monday July 3, 18:00 - 20:00)



A welcome reception with a stand-up buffet and free drinks will be held on the second floor (about 5th floor level of surrounding buildings) of the Sapporo TV Tower located on the east edge of Odori Park, downtown Sapporo. The Sapporo TV Tower, built in 1956, is only 147.2 meters high but brings you a nostalgic moment. We hope you enjoy seeing the beautiful landscape transition from sunset to night. A complementary single ticket to the higher observation deck will be provided to each person.

Sundowner Reception -- Cafeteria (Tuesday July 4, 17:15 - 18:30)

An additional reception with a limited number of selected wines and cheeses produced in Hokkaido will be held at the cafeteria (lunch venue). The Sundowner Reception will be closed when we run out of wine. Don't be late!



Workshop Banquet -- Sapporo Park Hotel (Wednesday July 5, 18:30 - 21:00)



A sit-down banquet with a buffet dinner and free drinks will be held at the Sapporo Park Hotel located at the gate of Nakajima Park, which is another beautiful park in downtown Sapporo. The attendees can walk around the park before the sundown. An entertainment program in addition to the speeches from committee members is planned. Don't miss it!

Lunches (Tuesday July 4 -- Thursday July 6, 13:00 - 14:30)

Lunches are served for three days in a buffet style (self-service) at the cafeteria just next to the workshop venue. The cafeteria provides a selection of meat and vegetarian options, including a salad bar, soft drinks, and hot beverages every day.

Coffee Breaks (Tuesday July 4 - Thursday July 6)

Coffee breaks are held at the foyer and entrance hall of the conference venue. Hot beverages and cold drinks are served with cookies. **Bringing drinks and foods into the conference rooms is strictly prohibited.** We are very sorry for any inconvenience and thank you very much in advance for your understanding.

Have time? Enjoy yourself in the beautiful campus of Hokkaido University!

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