THE FLAGSHIP CONFERENCE OF IEEE VEHICULAR TECHNOLOGY SOCIETY

2023 IEEE 97th Vehicular Technology Conference

VTC2023-Spring
FLORENCE
Connecting the Mobile World

20 – 23 June 2023 • Florence, Italy

IEEE   IEEE VTS

FINAL PROGRAM

Conference Program

Time	Industry Track Auditorium (A)	Affari 2.1 (B)	Affari 2.2 (C)	Affari Adua Hall 2 (D)	Congressi - Room 4 (E)	Congressi - Room 5 (F)	Congressi - Room 101 (G)	Oince (H)	Auditorium Foyer - 2nd Floor (P)	Virtual (V)
TUESDAY 20 June										
7:00–17:30	Registration (Palazzo Degli Affari Entrance)									
9:00–17:30	TUTORIALS and WORKSHOPS (see separate program)									
18:00–20:00	Welcome Reception (Firenze Fiera Garden Area)									
WEDNESDAY 21 June										
7:00–17:30	Registration (Palazzo Degli Affari Entrance)									
8:30–9:00	Welcome and opening (Auditorium)									
9:30–9:45	Keynote: **Why Optical Wireless Communication is Ready for 6G!** (Harald Haas, Founder and Chief Scientific Officer, pureLiFi)									
9:45–10:30	Keynote: **Integrated Sensing and Communications: It was Meant to Be!** (Christos Masouros, University College, London)									
10:30–11:00	Refreshments (Passi Perduti - 1st floor of Auditorium)									
11:00–12:30 (1)	Workshop on Diversity and Inclusion	5G and Beyond I	IoV Networking I	Channel Modeling	Recent Results in Physical Layer I	Recent Results in Machine Learning for Communications	Batteries, Fuel Cells, and Charging	Deep Learning Applications	Emerging Technologies and Machine Learning	Antennas, Propagation, and RF | UAVs, Vehicular Networks, and Telematics
12:30–14:00	Lunch (Passi Perduti - 1st floor of Auditorium)									
14:00–15:30 (2)	Workshop on Diversity and Inclusion	5G and Beyond II	IoV Networking II	Channel Modeling and Measurements I	Recent Results in Physical Layer II	Radio Access Technology, Services and Security	Non Terrestrial Platforms	Machine Learning for Sensing	RF, E-Mobility, Radio Access, and Spectrum Management	E-Mobility and E-Vehicles | Wireless Networks
15:30–16:00	Refreshments (Passi Perduti - 1st floor of Auditorium)									
16:00–17:30 (3)		Emerging Technologies	Estimation & Detection	Channel Modeling and Measurements II	Recent Results in RIS I	Recent Results in Resource Management I	Performance Analysis and Evaluation	Large Intelligent Surfaces	Transmission & Reception and Vehicle Communications	Emerging Technologies in Communiations
THURSDAY 22 June										
8:00–17:30	Registration (Palazzo Degli Affari Entrance)									
9:00–9:45	Keynote: **Autonomous Driving Technology: The Booster of the Revolution of the Personal Mobility Model** (Sergio M. Savaresi, Politecnico di Milano)									
9:45–10:30	Keynote: **Toward Industry 5.0: Enabling Technologies and Research in 6G** (Sumei Sun, Institute for Infocomm Research (I2R))									
10:30–11:00	Refreshments (Passi Perduti - 1st floor of Auditorium)									
11:00–12:30 (4)	Panel: Wireless Futures	UAV Communications I	IoT Networks I	RIS-assisted Communications	Recent Results in Radio Access	Recent Results in Resource Management II	Autonomous Vehicle Security	DL for Communications		IoV, IoT, M2M and Sensor Networks | Recent Results Virtual I
12:30–14:00	Lunch (Passi Perduti - 1st floor of Auditorium)									
14:00–15:30 (5)		UAV Communications II	IoT Networks II	Satellite Comunications	Recent Results in Vehicular Communications	Radio Access for Cellular Networks	Green Tech and Energy Management	Assisted Mobility		Machine Learning and AI | Recent Results Virtual II
15:30–16:00	Refreshments (Passi Perduti - 1st floor of Auditorium)									
16:00–17:30 (6)		Vehicular Applications	Energy Efficiency	Space-Aerial	Recent Results in RIS II	Security		Cooperation and Coexistence		Positioning, Navigation, and Sensing
18:30–20:30	Banquet (La Loggia - busses leave from 18:00)									
FRIDAY 23 June										
8:00–17:30	Registration (Palazzo Degli Affari Entrance)									
9:00–9:45	Keynote: **Towards Extreme Band Communications** (Mohamed-Slim Alouini, King Abdullah University of Science and Technology)									
9:45–10:30	Keynote: **The 6G RAN to Support the Generative Pre-trained Transformer (GPT) Based Applications** (Wen Tong, CTO, Huawei Wireless)									
10:30–11:00	Refreshments (Passi Perduti - 1st floor of Auditorium)									
11:00–12:30 (7)	Panel: What is 6G?	Vehicular Networks I	Localization and Direction Finding	MIMO	Recent Results in Security I	Recent Results in Aerial and Satellite	Spectrum Management and Sensing	DL for Networks		Radio Access and Heterogeneous Networks
12:30–14:00	Lunch (Passi Perduti - 1st floor of Auditorium)									
14:00–15:30 (8)		Vehicular Networks II	Sensing in Cellular Systems	mmWave	Recent Results in Security II	Resource Allocation for Wireless Networks	System Security	Multihop/D2D Networking		Spectrum Management, Access, Services and Security
15:30–16:00	Refreshments (Passi Perduti - 1st floor of Auditorium)									
16:00–17:30 (9)		Vehicular Communications	User and Transmission Scheduling	Modulation & Coding	Recent Results in MIMO	Wireless and Security		Radar/LiDAR		Transmission and Reception

Final Program

VTC2023-Spring
FLORENCE
Connecting the Mobile World

2023 IEEE 97th Vehicular Technology Conference

20 – 23 June 2023

Florence, Italy

Welcome from the General Co-chair

On behalf of the organizing committee, it is my honor to welcome you to VTC2023-Spring, the Vehicular Technology Society flagship conference. The VTC has sustained its standing as an attractive publication venue, and we have received a notable amount of high-quality submissions providing a basis for an excellent technical program.

As is known, the Vehicular Technology Conference follows closely the recent progress in both academic and industry research domains, the most visible topics in this spring being 6G and related key technologies.

We are confident that VTC2023-Spring provides the research community a stimulating opportunity for gaining understanding on the recent progress in the field.

It will be surely inspiring to meet many of you in Florence, "the birthplace of the Renaissance".

I feel the need to thank the valuable team who allowed this edition to be organized: the General Co-Chair Lorenzo Ciani, the Technical Program Co-Chairs: Gabriele Maria Lozito, Fabio Corti, Rui Dinis, Alicia Trivino, Luca Pugi, and Salvatore Musumeci.

I also give my appreciation to the large number of TPC members and reviewers who dedicate their time to ensure a high-quality review process and to other members of the organizing committee.

Finally, none of what we could do would have been possible without the professional support from Vehicular Technology Society and I really feel the need to thank the conference administrators Rodney C. Keele and Cerry Leffler, Publication Chair James Irvine, and Financial Chair J. R. Cruz.

Welcome to Florence and VTC, the flagship conference of the Vehicular Technology Society.

Alberto Reatti
General Co-chair, IEEE VTC2023-Spring

Welcome from the TPC Co-chairs

On behalf of the Technical Program Committee, we would like to welcome you to the 97th IEEE Vehicular Technology Conference (VTC2023-Spring) that will be hosted in Florence, Italy, 20-23 June 2023. This edition of VTC has been able to attract an exciting technical program ranging across the latest areas of research in wireless systems and networks, connected and autonomous vehicles, both manned and unmanned, emerging trends in applications of machine learning and artificial intelligence in wireless communications, as well as many other emerging topics. We received over 850 paper submissions, out of which 540 outstanding papers will be presented in 12 technical tracks and the recent results track that comprise the IEEE VTC2023-Spring technical program. In addition to the regular and recent results sessions, the conference will feature 12 topical workshops, 8 tutorials delivered by the leading experts in the field, a balanced mix from industry and academia of 6 extraordinary keynote speakers discussing 6G, autonomous driving, wireless sensing, and spectrum scarcity, and 2 exceptional industry panels delving into wireless futures and also 6G.

We would like to use this opportunity to thank all co-chairs of the 12 technical tracks for their excellent work. They all managed to obtain at least 3 reviews for each paper within a short time frame, and the decision process was completed smoothly. We also sincerely thank the workshop organizers for putting together the set of very timely workshops and organizing the review process in a professional manner. We would like to thank the members of the IEEE VTC2023-Spring organizing committee for their great responsiveness and support during the entire period of technical program preparation and development. We would also like to thank the technical program committee (TPC) members for their diligent work. We also sincerely thank the keynote speakers and panelists for contributing to the VTC2023-Spring program.

Finally, we would like to thank the authors, constituting the scientific backbone of this forum, for all the precious knowledge they will share with their peers. We hope to see you all in Florence.

Gabriele Maria Lozito, Rui Dinis, Fabio Corti, Alicia Trivino Cabrera, Luca Pugi and Salvatore Musumeci, *TPC Co-chairs*, IEEE VTC2023-Spring

Welcome from the VTS President

On behalf of the IEEE Vehicular Technology Society (VTS), it is my great honor and pleasure to welcome you to the 97th IEEE Vehicular Technology Conference, VTC 2023-Spring, in Florence, Italy!

This semi-annual IEEE VTS flagship conference brings together individuals from academia, industry, and government agencies to discuss and exchange ideas in the fields of wireless, mobile, and vehicular technology. It provides you a unique platform to network with leading researchers and colleagues in the global technical community, to share your innovative ideas and thoughts for wireless communications and vehicular technology, and to benefit from the conference premier technical program that features cutting-edge R&D achievements of the international technical community. Your active participation in this conference will help to define and shape the future of wireless communication, connected vehicles, and autonomous driving technology in beyond 5G era and in 6G era!

Organizing this world-class conference requires a strong team of volunteers who have devoted both their time and their technical expertise. I want to take this opportunity to thank and congratulate the whole conference organization committee led by the VTS Vice President for Conferences, J.R. Cruz, the Conference General Co-Chairs Alberto Reatti and Lorenzo Ciani, and the Technical Program Committee Co-Chairs Gabriele Maria Lozito, Fabio Corti, Rui Dinis, Alicia Trivino, Luca Pugi, and Salvatore Musumeci. The conference organization committee has been working diligently in planning and running this conference with the excellent technical program, tutorials, and workshops. We highly appreciate their great efforts. The success of this conference is also due to the generous support of all the sponsors.

IEEE VTS has been successful in engaging the global technical community and in contributing to advances in vehicular technology in the areas of mobile radio, motor vehicles, and land transportation. In recent years, it has been promoting R&D activities in the 5G and beyond communication systems, in autonomous, connected, and electric vehicles, and in intelligent ground transport infrastructures. Building on the momentum, the VTS strives to listen to our members for their needs, be creative and work hard on various existing programs and new initiatives towards a stronger Society. If you are not a VTS member or student member yet, it is a good idea to consider joining VTS today to benefit from all the services and resources that VTS provides and to contribute to the community!

Finally, I would like to extend my sincere thanks to everyone for attending this conference and I wish all of you a great time at this VTC.

Weihua Zhuang, *President*
IEEE Vehicular Technology Society

Organizing Committee

General Co-chairs	*Alberto Reatti*	University of Florence, Italy
	Lorenzo Ciani	University of Florence, Italy
Technical Program Co-chairs	*Gabriele Maria Lozito*	University of Florence, Italy
	Fabio Corti	University of Perugia, Italy
	Rui Dinis	Universidade Nova of Lisbon, Portugal
	Alicia Trivino	University of Malaga, Spain
	Luca Pugi	University of Florence, Italy
	Salvatore Musumeci	Politecnico di Torino, Italy
Industry Session Chair	*Alvin Chin*	BMW, USA
Publications Co-chairs	*James Irvine*	University of Strathclyde, UK
	Niccolò Baldanzini	University of Florence, Italy
Keynotes and Panels Chair	*Gabriele Grandi*	University of Bologna, Italy
	Lajos Hanzo	University of Southampton, UK
	Periklis Chatzimisios	International Hellenic University, Greece
Tutorials Chair	*Vincenzo Cirimele*	University of Bologna, Italy
Workshops Chair	*Marco Pierini*	University of Florence, Italy
Patronage Co-chairs	*Luca Pugi*	University of Florence, Italy
	Francesco Grasso	University of Florence, Italy
Publicity Chair	*Antonio Luchetta*	University of Florence, Italy
Finance Chair	*J. R. Cruz*	The University of Oklahoma, USA
Conference Administrators	*Rodney C. Keele*	The University of Oklahoma, USA
	Cerry Leffler	IEEE VTS, USA

Logistics

IEEE eXpress Conference Publishing	*Christina Zarrello*	IEEE, USA
IEEE Conference Services	*Sophia Martin*	IEEE, USA

Technical Program Committee

Co-chairs	*Gabriele Maria Lozito*	University of Florence, Italy
	Fabio Corti	University of Perugia, Italy
	Rui Dinis	Universidade Nova of Lisbon, Portugal
	Alicia Trivino	University of Malaga, Spain
	Luca Pugi	University of Florence, Italy
	Salvatore Musumeci	Politecnico di Torino, Italy
Vice-Chairs, Antenna Systems, Propagation and RF Design	*Kentaro Saito*	Tokyo Institute of Technology, Japan
	Walaa Hamouda	Concordia University, Canada
	F. Javier Lopez-Martinez	University of Granada, Spain
Vice-Chairs, E-Mobility and E-Vehicles, Power Technologies and Integration in Smart Grids	*Dush Nalin Jayakody*	Lusófona University, Portugal
	Tharindu Ponnimbaduge Perera	Sri Lanka Technological Campus, Sri Lanka
	Surendar M	National Institute of Technology Poducherry, India
Vice-Chairs, Emerging Technologies, 6G and Beyond	*Mari Carmen Aguayo Torres*	University of Malaga, Spain
	João Guerreiro	Nova University of Lisbon, Portugal
	Siyu Lin	Beijing Jiaotong University, China
Vice-Chairs, IoV, IoT, M2M, Sensor Networks and Ad-Hoc Networking	*Cedomir Stefanovic*	Aalborg University, Denmark
	Hiroyuki Yomo	Kansai University, Japan
	Seyyedali Hosseinalipour (Ali Alipour)	University at Buffalo, USA
Vice-Chairs, Machine Learning and AI for Communications	*Megumi Kaneko*	The National Institute of Informatics, Japan
	Arumugam Nallanathan	Queen Mary University of London, UK
	Yansha Deng	King's College London, UK
	Anna Maria Vegni	Rome Tre University, Italy
Vice-Chairs, Positioning, Navigation and Mobile Satellite Systems	*Shahrokh Valaee*	University of Toronto, Canada
	Huang, Weimin	Memorial University, Canada
	Chai-Ho Ou	National Pingtung University, Taiwan
Vice-Chairs, Radio Access Technology and Heterogeneous Networks	*Koichi Adachi*	The University of Electro-Communications, Japan
	Peter Han Joo Chong	Auckland University of Technology, New Zealand
Vice-Chairs, Spectrum Sharing, Spectrum Management, Cognitive Radio, and Green Radio	*Daniel Benevides da Costa*	Technology Innovation Institute, UAE
	Jun Wu	Waseda University, Japan
	Miguel López-Benítez	University of Liverpool, UK
Vice-Chairs, Transmission and Reception Techniques	*Masoud Ardakani*	University of Alberta, Canada
	Yong Zhou	ShanghaiTech University, China
	Marco Gomes	Universidade de Coimbra, Portugal
	Hadi Sarieddeen	American University of Beirut, Lebanon
Vice-Chairs, Unmanned Aerial Vehicle Communications, Vehicular Networks and Telematics	*Juana Baños Polglase*	DEKRA Testing and Certification, Spain
	Amr El-Wakeel	West Virginia University, USA
Vice-Chairs, Wireless Networks: Protocols, Security and Services	*Willie Harrison*	Brigham Young University, USA
	Dinh Thai Hoang	University of Technology Sydney, Australia
	João Vilela	University of Porto, Portugal
Vice-Chairs, Recent Results	*Khaled Rabie*	Manchester Met University, UK
	Miaowen Wen	South China University of Technology, China
	Xingwang Li	Henan Polytechnic University, China
	Galymzhan Nauryzbayev	Nazarbayev Univeristy, Kazakhstan

Members

Syed Mohsin Abbas, Hong Kong University of Science and Technology (HKUST)

Asmaa Abdallah, King Abdullah University of Science and Technology (KAUST)

Eslam AbdAllah, Concordia University of Edmonton

Amr M. Abdelhady, King Abdullah University of Science and Technology

Fatma Abdelkefi, Sup'Com

Khelil Abdellatif, El-Oued University

Mouhamed Abdulla, Sheridan Institute of Technology

Abbas Abolfathimomtaz, University of Alberta

Taufik Abrão, State University of Londrina

Sundar Aditya, Imperial College London

Ramón Agüero, University of Cantabria

Ana Aguiar, School of Engineering University of Porto
Iftekhar Ahmad, ECU
Hamed Ahmadi, University of York
Ozgur Akan, University of Cambridge
Saqer Alja'afreh, Mutah University
Osama Alluhaibi, University of Warwick
Mohammed Alsharif, Aramco
Ziad Qais Al Abbasi, The Middle Technical University
Ibrahim Al-Nahhal, Memorial University
Hanan Al-Tous, Aalto University
Hirley Alves, University of Oulu
Marica Amadeo, University Mediterranea of Reggio Calabria
Anandpushparaj. J, SRM Institute of Science and Technology
Alan Anderson, Keysight
Pablo Angueira, University of the Basque Country (UPV/EHU)
Imran Shafique Ansari, University of Glasgow
Antti Anttonen, VTT Technical Research Centre of Finland
Khoirul Anwar, Telkom University
Daisuke Anzai, Nagoya Institute of Technology
Giuseppe Araniti, University Mediterranea of Reggio Calabria
Adriana Artega, Inria
Kazi Ashrafuzzaman, University of Chittagong
Edward Au, Huawei Technologies Co.
Andrew Austin, EPFL
Nurilla Avazov, Inland Norway University of Applied Sciences
Manlio Bacco, ISTI-CNR
Marco Baldi, Università Politecnica delle Marche
Masaki Bandai, Sophia University
Adrish Banerjee, Indian Institute of Technology Kanpur
Inkyu Bang, Hanbat National University
Vishaka Basnayake, Sri Lanka Technological Campus
Marko Beko, Universidade de Lisboa/COPELABS
Paolo Bellavista, University of Bologna
Baha Eddine Youcef Belmekki, KAUST
Mustapha Benjillali, INPT
Rafael Berkvens, University of Antwerp - imec
Manav R Bhatnagar, IIT Delhi
Yuanguo Bi, Northeastern University
Kaigui Bian, Peking University
Marcos Bina, Instituto Federal Catarinense (IFC)
Sanjay Kumar Biswash, National Research Tomsk Polytechnic University
Petros Bithas, National and Kapodistrian University of Athens
Bastian Bloessl, TU Darmstadt
Carsten Bockelmann, University of Bremen
Stefan Boecker, TU Dortmund University
Ruben Boluda-Ruiz, University of Málaga
Amnart Boonkajay, Institute for Infocomm Research
Abdelwahab Boualouache, University of Luxembourg
Saadi Boudjit, University Sorbonne Paris Nord
Alexandros-Apostolos A. Boulogeorgos, University of Western Macedonia
Alessandro Brighente, Università degli studi di Padova
Cesar Briso, Universidad Politecnica de Madrid
Eyuphan Bulut, Virginia Commonwealth University
Jun Cai, Concordia University
Lin Cai, Illinois Institute of Technology
Christelle Caillouet, Inria
Claudia Campolo, Università Mediterranea di Reggio Calabria

Bin Cao, Hebei Provincial Key Laboratory of Big Data Calculation
Charles Casimiro Cavalcante, Universidade Federal do Ceará
Daniel Castanheira, University of Aveiro
Luca Caviglione, National Research Council of Italy (CNR)
Abdulkadir Çelik, King Abdullah University of Science and Technology (KAUST)
Chabalala Chabalala, University of the Witwatersrand
Benoit Champagne, McGill University
Nestor Chatzidiamantis, Aristotle University of Thessaloniki
Cheng Chen, Intel
Di Chen, University of Michigan
Gaojie Chen, University of Surrey
Hui Chen, Chalmers University of Technology
Rong Rong Chen, University of Utah
Xinwei Chen, Memorial University
Zhengchuan Chen, Chongqing University
Julian Cheng, University of British Columbia
Eddy Chiu, ASTRI
Sooyong Choi, Yonsei University
Wan Choi, Seoul National University
Remi Chou, Wichita State University
Nam Hoai Chu, University of Technology Sydney
Pau Closas, Northeastern University
Ricardo Coelho, University of Campinas
Filipe Conceição, Instituto de Telecomunicações
Mustafa Cemil Coşkun, Nokia Bell Labs
Chan Thai Truyen Dai, Vietnamese-German University
Shuping Dang, University of Bristol
Dan Deng, Guangzhou Panyu Polytechnic
Floriano De Rango, University of Calabria
Arthur S. de Sena, Technology Innovation Institute
Dimitrios Dechouniotis, National Technical University of Athens (NTUA)
Benoît Denis, CEA-Leti Minatec
Harpreet S. Dhillon, Virginia Tech
Boya Di, Peking University
Almudena Díaz Zayas, Universidad de Málaga
Haiyang Ding, Xidian University
Meng Ding, Nanjing University of Aeronautics and Astronautics
Thi Ha Ly Dinh, Hanoi University of Science and Technology
Zheng Dong, Shandong University
Rahman Doost-Mohammady, Rice University
Pedro M. d'Orey, University of Porto
Qinghe Du, Xi'an Jiaotong University
Trung Q. Duong, Queen's University Belfast
Saravanan Duraiarasan, Southwest Research Institute
Mevan Ekanayake, Monash University
Taissir Elganimi, University of Tripoli
Nancy El Rachkidy, University Clermont-Auvergne
Mahmoud Wafik Eltokhey, KAUST
Furkan Ercan, Intel Corporation
Tugba Erpek, Virginia Tech
Aymen Fakhreddine, TII
Bo Fan, Beijing University of Technology
Wei Fan, Aalborg University
Borui Fang, University of Science and Technology of China
Yong Fang, Northwest A&F University
Hossam Farag, Aalborg University

Junaid Farooq, University of Michigan-Dearborn
Kai-Ten Feng, National Yang Ming Chiao Tung University
Weiyang Feng, Beijing Jiaotong University
Stefano Ferretti, University of Urbino Carlo Bo
Stefano Ferretti, University of Bologna
Andreas Festag, Technische Hochschule Ingolstadt (THI)
Stephan Frei, TU Dortmund University
Min Fu, National University of Singapore
Yaru Fu, The Open University of Hong Kong
Takuya Fujihashi, Osaka University
Manato Fujimoto, Osaka Metropolitan University
Xuesong Gao, Henan Polytechnic University
Francisco Garcia, Keysight
Ana García-Armada, Universidad Carlos III de Madrid
Rung-Hung Gau, National Yang Ming Chiao Tung University
Yacine Ghamri-Doudane, University of La Rochelle
Alireza Ghasempour, University of Applied Science and Technology
Hakim Ghazzai, King Abdullah University of Science and Technology
Khanh Tran Gia, Tokyo Institute of Technology
Giorgio Giacinto, University of Calgary
Giovanni Giambene, University of Siena
Romeo Giuliano, Guglielmo Marconi University
Ali Gorcin, Yildiz Technical University
Javier Gozálvez, Universidad Miguel Hernandez de Elche (UMH)
David Grace, University of York
Fabrizio Granelli, University of Trento
Jorge Granjal, University of Coimbra
Guan Gui, Nanjing University of Posts and Telecommunications
Alexandre Guitton, Université Clermont Auvergne
Aaron Gulliver, University of Victoria
Carlos A. Gutierrez, Universidad Autonoma de San Luis Potosi
Walaa Hamouda, Concordia University
Katsuyuki Haneda, Aalto University
Muhammad Hanif, Thompson Rivers University
Panawit Hanpinitsak, Khon Kaen University
Hadi Hashemi, University of Malaga
Danping He, Beijing Jiaotong University
Jiguang He, TII
Ruisi He, Beijing Jiaotong University
Xiaofan He, Wuhan University
Mohamed S. Hefeida, West Virginia University
Ali Reza Heidarpour, University of Alberta
Geert Heijenk, University of Twente
Francisco Helder, Federal University of Ceará
Thorsten Herfet, Saarland Informatics Campus
Rym Hicheri, University of Agder
Li-Ta Hsu, Hong Kong Polytechnic University
Xintao Huan, Beijing Institute of Technology
Mario Huemer, Johannes Kepler University Linz
Hassaan Hydher, Graz University of Technology
Giovanni Interdonato, University of Cassino and Southern Latium
Koji Ishibashi, The University of Electro-Communications
Susumu Ishihara, Shizuoka University
Sridhar Iyer, KLE Technological University Dr MSSCET
Wael Jaafar, École de Technologie Supérieure
Sudharman K. Jayaweera, University of New Mexico
Anand Jee, Indian Institute of Technology Delhi
Samir Jemeï, University of Franche Comte

Han-You Jeong, Pusan National University
Chao Jia, University of Nebraska-Lincoln
Junjie Jiang, Henan Polytechnic University
Zhang Jianhua, Beijing University of Posts and Telecommunications
Jingon Joung, Chung-Ang University
Antonio Jurado-Navas, Universidad de Málaga
Ahan Kak, Nokia Bell Labs
Anders E. Kalør, The University of Hong Kong
Nivetha Kanthasamy, Worcester Polytechnic Institute
George Karakostas, McMaster University
Frank Kargl, Ulm University
Zak (Zaher) Kassas, The Ohio State University
Minseok Kim, Niigata University
Tomotaka Kimura, Doshisha University
Adrian Kliks, Poznan University of Technology
Asil Koc, McGill University
Yoshihisa Kondo, ATR
Kali Krishna Kota, International Institute of Information Technology Hyderabad
Nour Kouzayha, KAUST
Meng-Lin Ku, National Central University
Chinmoy Kundu, University College Dublin
Van An Le, National Institute of Informatics
Ngoc-Phuc Le, KAUST
Nguyen Phi Le, Hanoi university of science and technology
Gilsoo Lee, Nokia Bell Labs
Haeyoung Lee, University of Hertfordshire
Jang-Won Lee, Yonsei University
Juyul Lee, ETRI
Sangwoo Lee, Korea Aerospace Research Institute
Woongsup Lee, Gyeongsang National University
Janne Lehtomäki, University of Oulu
Leonardo Leyva Lamas, University of Aveiro and Intituto de Telecomunicações
Israel Leyva-Mayorga, Aalborg University
Aohan Li, The University of Electro-Communciations
Cheng Li, MUN
Gaolei Li, Shanghai Jiao Tong University
Guangyu Li, Nanjing University of Science and Technology
Meiling Li, Taiyuan University of Science and Technology
Rongpeng Li, Zhejiang University
Shichao Li, Guilin University of Electronic Technology
Xiaoyang Li, Shenzhen Research Institute of Big Data
Xingwang Li, Henan Polytechnic University
Yang Li, University of Macau
Christos Liaskos, Foundation of Research and Technology
Francisco Rafael Marques Lima, UFC - Universidade Federal do Ceara
Xi Lin, Shanghai Jiao Tong University
Yun-Wei Lin, National Yang Ming Chiao Tung University
Agostinho Linhares, Anatel
Chang Liu, UNSW
Chen-Feng Liu, Technology Innovation Institute
Huiling Liu, Henan Polytechnic University
Miao Liu, Nanjing University of Posts and Telecommunications
Pei Liu, Wuhan University of Technology
Xiaolan Liu, Loughborough University
Yuchen Liu, North Carolina State University
Zhi Liu, The University of Electro-Communications
Waslon Terllizzie A. Lopes, Federal University of Paraíba
F. Javier Lopez-Martinez, Universidad de Granada
Valeria Loscri, Inria Lille - Nord Europe
Philip Lundrigan, Brigham Young University

Nguyen Cong Luong, Phenikaa University
Surendar M, National Institute of Technology Puducherry
Maurizio Magarini, Politecnico di Milano
Juan Manuel Romero, University of Malaga
Pietro Manzoni, Polytechnic University of Valencia
Yijie Mao, ShanghaiTech University
Juliette Marais, Université Gustave Eiffel
Mirco Marchetti, Università di Modena e Reggio Emilia
Jose María Garrido, Universidad de Malaga
Mario Marques da Silva, Institute for Telecommunications
Daniel Massicotte, UQTR - Universite du Quebec a Trois-Rivieres
Michalis Matthaiou, Queen's University Belfast
Bho Matthiesen, University of Bremen
Daniel Medina, DLR
Mehrtash Mehrabi, University of Alberta
Neelesh Mehta, Indian Institute of Science
Konstantin Mikhaylov, University of Oulu
Nobuhiko Miki, Kagawa University
Amit Kumar Mishra, DIT University
Deepak Mishra, University of New South Wales
David Mitchell, New Mexico State University
Keiichi Mizutani, Kyoto University
Mohammadali Mohammadi, Queen's University Belfast
Carlos Molero, Universidad de Granada
Maximo Morales Cespedes, Universidad Carlos III de Madrid
Mohamed M. A. Moustafa, Egyptian Russian University
Shahid Mumtaz, Institute of Telecommunication Aveiro
Tomoki Murakami, NTT Corporation
Osamu Muta, Kyushu University
Akinori Nakajima, Mitsubishi Electric Corporation
Jin Nakazato, The University of Tokyo
Galymzhan Nauryzbayev, Nazarbayev University
Keivan Navaie, Lancaster University
Derrick Wing Kwan Ng, University of New South Wales
Telex M. N. Ngatched, McMaster University
Hien Quoc Ngo, Queen's University Belfast
Cong Nguyen, University of Technology Sydney
Diep Nguyen, University of Technology Sydney
Hieu Nguyen, University of Technology Sydney
Huynh Nguyen, Imperial College London
Kien Nguyen, Chiba University
Chuyen T. Nguyen, Hanoi University of Science and Technology
Huy T. Nguyen, Nanyang Technological University
Jianbing Ni, Queen's University
Dragoș Niculescu, Universitatea Politehnica din București
Jimmy Jessen Nielsen, Aalborg University
Ethiopia Nigussie, University of Turku
Takayuki Nishio, Tokyo Institute of Technology
Daiki Nobayashi, Kyushu Institute of Technology
Hideki Ochiai, Yokohama National University
Eiji Okamoto, Nagoya Institute of Technology
Samuel Okegbile, Concordia University
Rodolfo Oliveira, Universidade Nova de Lisboa/Instituto de Telecomunicações
Hideki Omote, Softbank corp.
Jörg Ott, TU München
Chia-Ho Ou, National Pingtung University
Mustafa Ozger, KTH Royal Institute of Technology
Kapila W. S. Palitharathna, Centre for Telecommunications Research
Luca Pallotta, University of Basilicata
Qianqian Pan, Shanghai Jiao Tong University
Anshul Pandey, SSRC Technology Innovation Institute

Ai-Chun Pang, National Taiwan University
Panagiotis Papadimitratos, KTH
Rohit Parasnis, Purdue University
João Pedro Pavia, Universidade Lusófona/COPELABS
Felipe Augusto Pereira de Figueiredo, National Institute of Telecommunications (INATEL)
Milica Petkovic, University of Novi Sad
Daniele Pinchera, University of Cassino
António Pinto, IPP
Francisco Rodrigo Porto Cavalcanti, Federal University of Ceara
Constantinos Psomas, University of Cyprus
Chenhao Qi, Southeast University
Liping Qian, Zhejiang University of Technology
Saulo Queiroz, Federal University of Technology (UTFPR) - Ponta Grossa, PR
Akashkumar Rajaram, Universidade Nova de Lisboa
Pablo Ramírez Espinosa, Universidad de Granada
Danda B Rawat, Howard University
Olivier Renaudin, Fraunhofer IIS
Daniela Renga, Politecnico di Torino
Francesco Restuccia, Northeastern University
Ignacio Rodriguez, University of Oviedo
Thomas Rosenstatter, RISE Research Institutes of Sweden
Koosha Pourtahmasi Roshandeh, University of Alberta
Giuseppe Ruggeri, UNI RC
Luca Rugini, University of Perugia
Harri Saarnisaari, University of Oulu
Nasir Saeed, United Arab Emirates University (UAEU)
Yalin Sagduyu, Intelligent Automation Inc./University of Maryland
Kentaro Saito, Tokyo Institute of Technology
Ahmed Hamdi Sakr, University of Windsor
Ola Salman, American University of Beirut
Sana Salous, Durham University
Malcolm Sande, University of Pretoria
Victor D. N. Santos, Polytechnic Institute of Coimbra
Yuris Mulya Saputra, Universitas Gadjah Mada
Koya Sato, The University of Electro-Communications
Anke Schmeink, RWTH Aachen University
Christian Schneider, Technische Universität Ilmenau
Karim Seddik, American University in Cairo
Vasilii Semkin, VTT Technical Research Centre of Finland
Miguel Sepulcre, Universidad Miguel Hernandez de Elche (UMH)
Dimitrios Serpanos, University of Patras
Shahriar Shahabuddin, Nokia Mobile Networks
Reza Shahidi, Memorial University
Zhambyl Shaikhanov, Rice University
Hazim Shakhatreh, Yarmouk University
Mohit Sharma, TII
Cong Shen, University of Virginia
Yuan Shen, Tsinghua University
Ray E. Sheriff, Edge Hill University
Takayuki Shimizu, Toyota Motor North America
Yoan Shin, Soongsil University
Junya Shiraishi, Kansai University
Yousef Shnaiwer, National Institute of Informatics
Adão Silva, DETI / Instituto de Telecomunicações / University of Aveiro
Yuri Silva, Federal University of Ceará
Ajay Singh, Assistant professor
Chetna Singhal, IIT Kharagpur
Besma Smida, University of Illinois at Chicago

Paschalis Sofotasios, Khalifa University and Tampere University
Foad Sohrabi, Nokia Bell Labs
Gerd Sommerkorn, TU Ilmenau
Richard Demo Souza, UFSC - Florianopolis
Bo Sun, The Chinese University of Hong Kong
Chen Sun, Sony R&D Center China
Hongbo Sun, A*STAR
Qian Sun, Chinese Academy of Sciences
Songlin Sun, Beijing University of Posts and Telecommunications
Weifeng Sun, China University of Petroleum
Himal A. Suraweera, University of Peradeniya
Katsuya Suto, The University of Electro-Communications
Dario Tagliaferri, Politecnico di Milano
Takumi Takahashi, Osaka University
Keigo Takeuchi, Toyohashi University of Technology
Osamu Takyu, Shinshu University
Fangqing Tan, Guilin University of Electronic Technology
Peng Hui Tan, Institute for Infocomm Research
Fengxiao Tang, Tohoku University
Suhua Tang, The University of Electro-Communications
Yosuke Tanigawa, Osaka Metropolitan University
Chen-Khong Tham, National University of Singapore
Yingwei Tian, Wuhan University
Joaquin Torres Sospedra, Universidade do Minho
Jorge Torres, University of Carlos III of Madrid
Trung Duy Tran, Post and Telecommunications Institue of Technology
Abderrahmen Trichili, King Abdullah University of Science and Technology (KAUST)
Ming-Fong Tsai, National United University
Eirini-Eleni Tsiropoulou, University of New Mexico
Seyhan Ucar, Toyota Motor North America R&D
Masahiro Umehira, Ibaraki University
Prabhat Kumar Upadhyay, Indian Institute of Technology Indore
Vipindev Adat Vasudevan, Massachusetts Institute of Technology
Jose Vega, Escuela Politécnica Nacional
Carlos Alberto Vieira Campos, Federal University of the State of Rio de Janeiro
Alejandro Villena, Universidad de Malaga
Alexey Vinel, Halmstad University
Dejan Vukobratovic, University of Novi Sad
Michael Walter, German Aerospace Center (DLR)
Chao Wang, National Taiwan Normal University
Chen Wang, Huazhong University of Science and Technology
Chih-Yu Wang, Academia Sinica
Chu-Fu Wang, National Pingtung University
Guanghui Wang, Henan University
Lifeng Wang, Fudan University
Qianqian Wang, Northwest Normal University
Wei Wang, Chang'an University
Xiaoyan Wang, Ibaraki University
Xinhua Wang, Qingdao University
Zhaorui Wang, The Chinese University of Hong Kong

Zhe Wang, Nanjing University of Technology and Design
Chao-Kai Wen, National Sun Yat-Sen University
Miaowen Wen, South China University of Technology
Jian-Jia Weng, National Taiwan Ocean University
Risto Wichman, Aalto University
Celimuge Wu, The University of Electro-Communications
Chengyu Wu, Zhejiang Sci-Tech University
Qingqing Wu, Shanghai Jiao Tong University
Shaohua Wu, Harbin Institute of Technology
Wen Wu, Peng Cheng Laboratory
Youlong Wu, ShanghaiTech University
Yuan Wu, University of Macau
Minghua Xia, Sun Yat-sen University
Liang Xiao, Xiamen University
Zhen Xie, Henan Polytechnic University
Yunchou Xing, New York University
Wenchao Xu, PolyU
Tetsuya Yamamoto, Panasonic Holdings Corporation
Qingyun Yan, Memorial University
De-Nian Yang, Academia Sinica
Lie-Liang Yang, University of Southampton
Nan Yang, Australian National University
Zhiding Yang, Memorial University
Qiang Ye, Memorial University of Newfoundland
Chia-Yi Yeh, MIT
Phee Lep Yeoh, University of Sydney
Kai Ying, Sharp Laboratories of America
Seong Ki Yoo, Coventry University
Yuki Yoshida, NICT
Jiadong Yu, Hong Kong University of Science and Technology
Peihong Yuan, Massachusetts Institute of Technology
Xinwei Yue, Beijing Information Science and Technology University
Chau Yuen, Nanyang Technological University
Alessio Zappone, University of Cassino and Southern Lazio
Sherali Zeadally, University of Kentucky
Thomas Zemen, AIT Austrian Institute of Technology
Hans-Jürgen Zepernick, Blekinge Institute of Technology
Chao Zhai, Shandong University
Jiayi Zhang, Beijing Jiaotong University
Junqing Zhang, University of Liverpool
Qi Zhang, Nanjing University of Posts and Telecommunications
Shuai Zhang, Aalborg University
Xiaoqing Zhang, Ocean University of China
Chen Zhao, Wuhan University
Kun Zhao, Sony Europe
Zhongyuan Zhao, Beijing University of Posts and Telecommunications
Fu-Chun Zheng, Harbin Institute of Technology (Shengzhen) & The University of York
Yike Zheng, Henan Polytechnic University
Weifeng Zhong, Guangdong University of Technology
Jiafeng Zhou, University of Liverpool
Fenghua Zhu, Chinese Academy of Sciences
Hongbin Zhu, Fudan University
Zhengyu Zhu, Zhengzhou University

Reviewers

Alberto
Hasan Aldiabat
Luciano C. Alexandre
Safwan Alfattani
Yousef Al-Gumaei
Duaa Zuhair Abduljabbar Al-Hamid
Syed Danial Ali Shah
Mohammad Furqan Ali
Syed Muhammad Ali
Mustafa Aljumaily
Hisham M. Almasaeid
Adel Alqahtani
Mahmood A. Al-Shareeda
Mohammed Alsharif
Amani Al-Shawabka
Hanan Al-Tous
Marica Amadeo
Ambrish
El Mehdi Amhoud
Insha Amin
Jie An
Bhaskar Anand
Anandpushparaj J
Alan Anderson
Pablo Angueira
Sai Anirudh
Angelos Antonopoulos
Antti Anttonen
Azhar Anwar
Khoirul Anwar
Daisuke Anzai
Kabuto Arai
Giuseppe Araniti
Masoud Ardakani
Christian Arendt
Adriana Artega
Sultangali Arzykulov
Aqsa Aslam
Aswini K
Edward Au
Andrew Austin
Nurilla Avazov
Zeina Awada
Muhammad Awais
Dimitrios I. Axiotis
Ferheen Ayaz
Reza Aghazadeh Ayoubi
Nithin Babu
Manlio Bacco
Mahmoud Badi
Miloud Bagaa
Mohammad Bahari
Zhengwei Bai
Rochak Bajpai
Ashutosh Balakrishnan
Marco Baldi
Masaki Bandai
Inkyu Bang
Juana Baños-Polglase
Luca Barbieri
Mahdi Barhoush
Agrim Bari
Luca Barletta
Manijeh Bashar
Chathuranga Basnayaka
Vishaka Basnayake
Alessandro Bazzi
Ana Belen Martinez
Paolo Bellavista
Alexis Benaitier
Mustapha Benjillali
Marion Berbineau
Rafael Berkvens
Pranay Bhardwaj
Jagadeesha Bhat
Sagnik Bhattacharyya
Dadi Bi
Ting Bi
Kaigui Bian
Qingyu Bie

Muhammad Bilal
Marcos Bina
Sanjay Kumar Biswash
Petros Bithas
Bastian Bloessl
Ruben Boluda-Ruiz
Amnart Boonkajay
Arindam Bose
Abdelwahab Boualouache
Saadi Boudjit
Glauber Brante
Alessandro Brighente
António Brito
Oday Bshara
Niklas Bulk
Eyuphan Bulut
Fabio Busacca
Muhammad Saleh Bute
Lin Cai
Yuanxin Cai
Christelle Caillouet
Claudia Campolo
Jéferson Campos Nobre
Zheng Cao
Alexander Carballo
Jorge Cardenas-Amaya
Leandro Carísio Fernandes
Enrico Casella
Charles Casimiro Cavalcante
Mario H. Castañeda Garcia
Daniel Castanheira
Luca Caviglione
Abdulkadir Çelik
Furong Chai
Benoit Champagne
Wei-Chieh Chang
Ioannis Chatzigeorgiou
Vivek Chaudhary
Vivek Chaudhary
Abdellah Chehri
Changwei Chen
Chen Chen
Cheng Chen
Dawei Chen
Hongzhi Chen
Hui Chen
Jie Chen
JinSong Chen
Junshi Chen
Luan Chen
Nanxi Chen
Shuaifei Chen
Xinwei Chen
Zhengchuan Chen
Zhixiong Chen
Chen Cheng
Qiao Cheng
Pradeep Chennakesavula
Federico Chiariotti
Alvin Chin
Masoto Chiputa
Eddy Chiu
Te-Chuan Chiu
Joohyun Peter Cho
Sunghyun Cho
Sooyong Choi
Wan Choi
Remi Chou
Mainak Chowdhury
Athanasios Chrysologou
Nam Hoai Chu
Zheng Chu
Zhixian Chu
Omer Chughtai
Carlos Coelho
Ricardo Coelho
Alejandro Cohen
Baldomero Coll-Perales
Filipe Conceição
Daniel Corujo
Roberto Corvaja
Victor Croisfelt

Junwei Cui
Mingyao Cui
Mariana Cunha
Daniel Czaniera
Asaad. S. Daghal
Jisheng Dai
Chan Thai Truyen Dai
Fabio D'Andreagiovanni
Shuping Dang
Hanh Dang-Ngoc
Anweshan Das
Sree Krishna Das
Songita Das
Soumya Prakash Dash
Arthur S. de Sena
Karel Toledo de la Garza
Maarten Uijt de Haag
Wilson de Souza Junior
Philipp del Hougne
Mamady Delamou
Quentin Delooz
Johannes Demel
Özlem Tugfe Demir
Dan Deng
Dapeng Deng
Yansha Deng
Yirui Deng
Abhinaba Dey
Debakshi Dey
Antonio Di Maio
Boya Di
Rouaa Diab
Almudena Díaz Zayas
Miguel Diaz-Ibarra
Li Ding
Thi Ha Ly Dinh
Rui Dinis
Goran Djordjevic
Kshitija Dolas
Igor Donevski
Yiwei Dong
İlknur Dönmez
Rahman Doost-Mohammady
Pedro M. d'Orey
Qinghe Du
Chao Duan
Jingpu Duan
Trung Q. Duong
Sampath Edirisinghe
Mevan Ekanayake
Ammar El Falou
Nancy El Rachkidy
Mohammed Elamassie
Jefferson Elbert Simões
Hossien B. Eldeeb
Taissir Elganimi
Ahmed El-Mowafy
Mahmoud Wafik Eltokhey
Amr El-Wakeel
Furkan Ercan
Ubeydullah Erdemir
Zahra Esmaeilbeig
Yaya Etiabi
Alice Faisal
Bo Fan
Jiaxin Fan
Wei Fan
Xin Fan
Yixin Fan
Fu Fang
Zhengru Fang
Hossam Farag
Mohammad Fardad
Nuno Faria
Adil Farooq
Muhammad Umar Bin Farooq
Junaid Farooq
Abdallah Farraj
Muhammad Fayaz
Zesong Fei
Mauro Femminella
Jie Feng
Weiyang Feng

Xinzheng Feng
Daniel Fernandes
Alexander James Fernandes
Adeel Feroz Mirza
Stefano Ferretti
Mark Flanagan
Chuan Heng Foh
Sergio Fortes
Stephan Frei
Emmanuel Obeng Frimpong
Min Fu
Xiaoyu Fu
Yaru Fu
Takuya Fujihashi
Manato Fujimoto
Slawomir Gajewski
Jian Gao
Xiangyu Gao
Xuesong Gao
Ying Gao
Zhenzhen Gao
Francisco Garcia
Omar Garcia Crespillo
Ana García-Armada
Juan Moreno García-Loygorri
Rung-Hung Gau
Abhilash Gaur
Alireza Ghasempour
Hakim Ghazzai
Sarbani Ghose
Khanh Tran Gia
Giorgio Giacinto
Giovanni Giambene
Victor Gil-Jimenez
Marco Gomes
Mengfei Gong
Yuanzhe Gong
Angela Gonzalez
Ganesh Gopal
Gopal
Ali Gorcin
Alberto Gotta
Fabrizio Granelli
Jorge Granjal
Mohamed Grissa
Bowen Gu
Xin Gu
Da Guan
Anna Guerra
David W. Guerra
João Guerreiro
Francesco Guidi
Alexandre Guitton
Jia Guo
Kaixuan Guo
Kefeng Guo
Yichen Guo
Zhihui Guo
Abhishek Gupta
Somak Datta Gupta
Mustafa Can Gursoy
Carlos A. Gutierrez
Aleksey Gvozdarev
Imed Hadj-Kacem
Simon Haeger
Marcus Haferkamp
Afshin Haghighat
Syed Kamran Haider Hakimi
Rreze Halali
Rami Halloush
Yuto Hama
Mutasem Hamdan
Kyusuk Han
Weijia Han
Yi Han
Katsuyuki Haneda
Thomas Hänel
Panawit Hanpinitsak
Chongzheng Hao
Guozhi Hao
Wanming Hao
Takanori Hara
Muhammad Haseeb
Hadi Hashemi
Saber Hassouna
Khaled Hayajneh
Kazunori Hayashi
Bishmita Hazarika
Danping He
ling He

Ruisi He
Xiaofan He
Zhizhou He
Mohamed S. Hefeida
Ali Reza Heidarpour
Geert Heijenk
Francisco Helder
Thorsten Herfet
Rodrigo Hernangómez
Omar Hiari
Hong-Nhat Hoang
Bernd Holfeld
Jun-Pyo Hong
Yang Hong
Yuta Hori
Yuta Hori
Seyyedali Hosseinalipour
Ricky Hou
Li-Ta Hsu
Limei Hu
Shicheng Hu
Yunbo Hu
Zhengdong Hu
shuaiheng huai
Xintao Huan
chen huang
Chong Huang
Mengyan Huang
Nan Huang
Weimin Huang
Wenjun Huang
Xiang Huang
Xin Huang
Xumin Huang
Zhicheng Huang
Mario Huemer
Yasir Ahmed Idris Humad
Mythri Hunukumbure
Mythri Hunukumbure
Junbeom Hur
Aamer Mohamed Huroon
Hassaan Hydher
Shinsuke Ibi
Amani Ibraheem
Abdulgani Ibrahim
Carlos Igor
Hiroki Iimori
Hafiz Hasnain Imtiaz
João Henrique Inacio de Souza
Giovanni Interdonato
Adeel Iqbal
James Irvine
Koji Ishibashi
Shun Ishihara
Susumu Ishihara
Naoto Ishii
Amirul Islam
Sailesh Iyer
Sridhar Iyer
Neha Jaiswal
Akshay Jajoo
Muhammad Ali Jamshed
Han Seung Jang
Salim Janji
Chi-Shih Jao
Dushantha Nalin K. Jayakody
Anand Jee
Anand Jee
Samir Jemeï
Gwanggil Jeon
Han-You Jeong
Sumin Jeong
Juan Jesús Hernandez
Jinhua Ji
Chao Jia
Junjie Jiang
Shuaifeng Jiang
Tao Jiang
Wangjun Jiang
Xuefeng Jiang
Yuxuan Jiang
Jianhe

Jose Jimmy
Wenxin Jin
Xibin Jin
Yifei Jin
Debora Helena Job
Sandeep Joshi
Jingon Joung
Wang Jue
Iran Junior
Antonio Jurado-Navas
Ahan Kak
Zeeshan Kaleem
Rafael Kaliski
Anders E. Kalør
Megumi Kaneko
Megumi Kaneko
Nivetha Kanthasamy
Vivek Kanwar
Batuhan Kaplan
Erhan Karakoca
George Karakostas
Pejman Karegar
Frank Kargl
Junichi Kawasaki
Sefa Kayraklık
Rodney Clint Keele
Chaker Abdelaziz Kerrache
Samed Keşir
Furkan Keskin
Israa Khaled
Ahsan Khan
Muhammad Farhan Khan
Noman Mujeeb Khan
Nasir Khan
Muhammad Toaha Raza Khan
Wali Ullah Khan
Yasin Khan
Ilyas Khattak
Farnaz Khodakhah
Faranak Khosravi
Mirza Golam Kibria
Jorma Kilpi
Donghyeon Kim
Hyunsoo Kim
Hong Ki Kim
Minseok Kim
Sanghyun Kim
Seungmo Kim
Taehoon Kim
Yong-hwan Kim
Tomotaka Kimura
H. Kiwan
Aldebaro Klautau
Adrian Kliks
Asil Koc
Kody
Shun Kojima
Oluwatayo Kolawole
Yoshihisa Kondo
Kali Krishna Kota
Jevgenij Krivochiza
Pawel Kryszkiewicz
Margreta Kuijper
K Praveen Kumar
Randhir Kumar
Shivam Kumar
Jian-Jhih Kuo
Ernest Kurniawan
Edward Kwao
Emmanouil Lakiotakis
Nikhil Lamba
Xiupu Lang
Charlotte Langlais
Dominic Laniewski
Hoceine Laouedj
Francisco Lazaro
Van An Le
Nguyen Phi Le
Thanh Le
Gilsoo Lee
Haeyoung Lee
Halim Lee
Jihoon Lee
Jinkyu Lee
Ju-Hyung Lee
Juyul Lee
Ki-Hun Lee
Jung Nam Lee

Woongsup Lee
Janne Lehtomäki
Chenjia Lei
Shao Lei
German Leon
Mehdi Letafati
Leonardo Leyva Lamas
Israel Leyva-Mayorga
Aimin Li
Anna Li
Dongqing Li
Fang Li
Gaolei Li
Guangyu Li
Guo Li
Husheng Li
Jiaxue Li
Jie Li
Jingxin Li
Jun Li
Junling Li
Kecheng Li
Longguang Li
Meiling Li
Nan Li
Paul Li
Peichun Li
Qiang Li
Qianrui Li
Shichao Li
Song Li
Xiaoyang Li
Xin Li
Xingwang Li
Yajie Li
Yang Li
Yi Li
Yuanbo Li
Zheng Li
Feng Liang
Wei Liang
Yiyang Liang
Ruizhi Liao
Wei Shun Liao
Yangzhe Liao
Christos Liaskos
Seung-Chan Lim
Francisco Rafael Marques Lima
Siyu Lin
Xi Lin
Yun Lin
Yun-Wei Lin
Agostinho Linhares
Francesco Linsalata
Boyang Liu
Danpu Liu
Huiling Liu
Jiasong Liu
Lin Liu
Miao Liu
Pei Liu
Rang Liu
Runnan Liu
Tianle Liu
Wenjing Liu
Xiaolan Liu
Ximan Liu
Yanjia Liu
Yongxi Liu
Yuchen Liu
Yunhe Liu
Zhecun Liu
Zhi Liu
Ziqi Liu
Ziwei Liu
Alvaro Llaria
Silas Lobo
Mir Lodro
Miguel López-Benítez
F. Javier Lopez-Martinez
David Lopez-Perez
Mario Lorenz
Valeria Loscri
Zhengying Lou
Huabing Lu
Juanwu Lu
Maximilian Lübke
Mª Carmen Lucas Estañ
Philip Lundrigan

Wei Luo
Marquez Luz E.
Jianhui Lv
Lu Lv
Douaidi Lydia
Surendar M
Huan Ma
Jianjun Ma
Wenyan Ma
Xujun Ma
Asma Maalaoui
Samuel Baraldi
Mafra
Maurizio Magarini
Asad Mahmood
Mobeen Mahmood
Friederike Maier
Madi Makin
Mickael Maman
Marvin Manalastas
Valérian Manoni
Venissa Adzo
Sedem Manya
Pietro Manzoni
Irvine Mapfumo
Dania Marabissi
Juliette Marais
Anna Maria Vegni
Jose María Garrido
Vuk Marojevic
Luis Marques
Mario Marques da
Silva
João Martins
Ala'eddin Masadeh
Antonino
Masaracchia
Daniel Massicotte
Federica Massimi
Luis C. Mathias
Michalis Matthaiou
Bho Matthiesen
Sylvie Mayrargue
Andrew McGordon
Mehrtash Mehrabi
Neelesh Mehta
Sergiy Melnyk
Agon Memedi
Léo Mendiboure
Jason M. Merlo
Konstantin
Mikhaylov
Nobuhiko Miki
Nenad Milosevic
Sunsik Min
Minh-Thuyen
Lorenzo Miretti
Amar Kumar Mishra
Kumar Vijay Mishra
David Mitchell
Purbesh Mitra
Yuichi Miyaji
Keiichi Mizutani
Zahra Mobini
Umair Mohammad
Mohammadali
Mohammadi
Deepika Mohan
Amidzade Mohsen
Fernando Moita
Carlos Molero
Alejandro Molina-
Galan
Antonella Molinaro
Soumen Mondal
Francisco Monteiro
Hichan Moon
Maximo Morales
Cespedes
Sumali Morapitiya
Masafumi Moriyama
Stefano Moro
Abderrahmen
Mtibaa
Amrita Mukherjee
Alistair Munro
Tomoki Murakami
Osamu Muta
Si Ahmed Naas
Muhammad Nafees
Bahareh Najafi
Jin Nakazato
Milan Narandzic
Adam Narbudowicz
Yalagala Naresh

Sharan Naribole
Leila Nasraoui
Ali Nauman
Galymzhan
Nauryzbayev
Keivan Navaie
Andrei Stefan
Nedelcu
Edoardo Negri
Ye Neng
Michael Neri
Cong Nguyen
Minh Dat Nguyen
Hieu Nguyen
Khoa Nguyen
Kien Nguyen
Huy T. Nguyen
Minh-Hien T.
Nguyen
Wanli Ni
Dawei Nie
Jimmy Jessen
Nielsen
Mengke Ning
Takayuki Nishio
Wafa Njima
Daiki Nobayashi
Nicola Novello
Mostafa Nozari
Pedro Nuno de
Souza Moura
Yusra M Obeidat
Hideki Ochiai
Masakatsu Ogawa
Behnam Ojaghi
Hiraku Okada
Eiji Okamoto
Rodolfo Oliveira
Antonio Oliveira-Jr
Hideki Omote
Jörg Ott
Chia-Ho Ou
El Mehdi Ouafiq
Messaoud Ahmed
Ouameur
Pratham Oza
Mustafa Ozger
Jesy Pachat
Kapila W. S.
Palitharathna
Luca Pallotta
Ángel Palomares
Caballero
Qianqian Pan
Kirtan Gopal Panda
Anshul Pandey
Ai-Chun Pang
Haoran Pang
Rohit Parasnis
Young Deok Park
Hyunhee Park
Seok-Hwan Park
Seunghyeon Park
Sunhoo Park
Amit Patel
Aditya Raosaheb
Pawar
João Pedro Pavia
Xinyue Pei
Yingjie Pei
Haoran Peng
Paulo G. Pereirinha
Javier Pérez
Santacruz
Jordi Pérez-Romero
Nemanja Perovic
Haris Pervaiz
Milica Petkovic
Daniele Pinchera
António Pinto
Pedro Pinto
Daniel Plabst
David Plets
Proyash Podder
Remon Polus
Tharindu D.
Ponnimbaduge
Perera
Monika Prakash
Ganesh Prasad
Johann P.
Prenninger
Constantinos
Psomas
Joel Puga

Chenhao Qi
Yuxin Qi
Liping Qian
Liang Qiao
Zhao Qichao
Xintong Qin
Yifei Qiu
Kaige Qu
Saulo Queiroz
José Quevedo
Ahmed Raafat
Khaled Rabie
Saadane Rachid
Mahmoud Raeisi
Ammar Rafique
Muhammed Tahsin
Rahman
Chandrashekhar Rai
Akashkumar
Rajaram
Samikkannu
Rajkumar
Parisa Ramezani
Pablo Ramírez
Espinosa
Carlos Ravelo
Francesco
Raviglione
Allu Raviteja
Abdul Rehman
Qiao Ren
Shuhui Ren
Olivier Renaudin
Daniela Renga
Fatemeh Rezaei
Ignacio Rodriguez
Guillermo
Rodriguez-Navas
José Rodríguez-
Piñeiro
Juan M. Romero
Jerez
Maik Röper
José Rosado
Mohammad
Rowshan
Luca Rugini
Revathi S
Malik Saad
Malik Muhammad
Saad
Intisar Mohsin
Saadoon
Harri Saarnisaari
Yalin Sagduyu
Hemant Saggar
Alphan Sahin
Alphan Sahin
Prajwalita Saikia
Alia Salah
Komal Saleem
Anas Salhab
Sana Salous
Mohamed Sana
Juan Sanchez
Malcolm Sande
Wiroonsak
Santipach
Frederico Santos
Herman dos Santos
Victor D. N. Santos
Wilton Pereira
Santos Santana
Yuris Mulya Saputra
Hadi Sarieddeen
Manobendu Sarker
Goshi Sato
Koya Sato
Kumar Saurav
Ahmed H.
Sawalmeh
Florian Alexander
Schiegg
Robbert Schulpen
Adrian Schumacher
Karim Seddik
Cleofás Segura
Gómez
Vasilii Semkin
Sebastian Semper
Jiwon Seo
Jun-Bae Seo
Miguel Sepulcre
Dimitrios Serpanos
Ricardo Severino

Takashi Seyama
Awais Aziz Shah
Syed Tariq Shah
Shahriar
Shahabuddin
Mohd Hamza Naim
Shaikh
Zhambyl
Shaikhanov
Chunlin Shang
Mingjie Shao
Sihua Shao
Sujie Shao
Alexey Shapin
Pranav Sharda
Mohit Sharma
Sanjeev Sharma
Srishti Sharma
Mahmoud Shawky
Chandan Kumar
Sheemar
Tasher Ali Sheikh
Cong Shen
Zhichao Sheng
Ray E. Sheriff
Wan-Ting Shih
Takayuki Shimizu
Yoan Shin
Junya Shiraishi
Zhang Shizhe
Yousef Shnaiwer
Ashish Kant Shukla
Fahad Siddiqui
Adão Silva
Murilo Teixeira
Silva
Keshav Singh
Sandeep Kumar
SIngh
Pranav Singh
Chetna Singhal
Md Sadman Siraj
Thushan Sivalingam
Josiah Smith
Srdjan Sobot
Paschalis Sofotasios
Foad Sohrabi
Junggab Son
Huajun Song
Vishalya
Sooriarachchi
Richard Demo
Souza
Ashutosh Srivastava
Dario Stabili
Elvis Stancanelli
Emanuel Staudinger
Cedomir Stefanovic
Andreas Straßhofer
Yang Su
Zixun Su
K.E.D. Sumanasiri
Gizem Sümen
Chen Sun
Hongbo Sun
Shiyuan Sun
Songlin Sun
Weifeng Sun
Yanzan Sun
Sundaresan S
Himal A. Suraweera
Praneeth Susarla
Katsuya Suto
Tidiane Sylla
Vidya T
Hien Ta
Dario Tagliaferri
Ching-Lun Tai
Takumi Takahashi
Keigo Takeuchi
Osamu Takyu
Bo Tan
Peng Hui Tan
Jiajie Tan
Jingjing Tan
Fengxiao Tang
Suhua Tang
Xiaowei Tang
Yuankun Tang
Zhenzhou Tang
Zhiqing Tang
Yosuke Tanigawa
Feng Tao
Yiwei Tao

Muhammad Ashar
Tariq
Usman Tariq
Sotiris A. Tegos
Priyashantha
Tennakon
Gokulnath
Thandavarayan
Sapna Thapar
Yingwei Tian
Yuqing Tian
Zhifa Tian
Zheng Tianyu
Preetish Tilak
Sun Tingkai
Krishan Kumar
Tiwari
Leila Tlebaldiyeva
Adeena Toaha
Mesut Toka
Hiromichi Tomeba
Joaquin Torres
Sospedra
Jorge Torres
Luis Torres Figueroa
Reza Tourani
Trung Duy Tran
Viet Khoa Tran
Angelo Trotta
Ming-Fong Tsai
Christos Tsinos
Eirini-Eleni
Tsiropoulou
Manabu Tsukada
Kazuya Tsukamoto
Caglar Tunc
Gabriel Avanzi
Ubiali
Seyhan Ucar
Bernard Uguen
Inam Ullah
Waheed Ullah
Prabhat Kumar
Upadhyay
Melika Vahdat
MohammadAmin
Vakilifard
Mathy Vanhoef
Guilherme
Vettorazzi Vargas
Nancy Varshney
Vipindev Adat
Vasudevan
Jose Vega
Vasco Velez
Vipin Venugopal
Francesco Verde
Carlos Alberto
Vieira Campos
Flavio Vieira
Vikash
João Vilela
Thierry Villemur
Alejandro Villena
Alexey Vinel
Weskley Vinicius
Anna Vizziello
Thai-Hoc Vu
Thanh Tung Vu
Dejan Vukobratovic
Abdul Wakeel
Michael Walter
Ming Wan
Shaojun Wan
Xiangpeng Wan
Zhongzhichao Wan
Chao Wang
Chen Wang
Chen Wang
Chih-Yu Wang
Chu-Fu Wang
Dawei Wang
Fubin Wang
Guanghui Wang
Hailun Wang
Heng Wang
Hongxu Wang
Jie Wang
Jing Wang
Jingzhe Wang
Ke Wang
Liang Wang
Lifeng Wang
Qian Wang
Qianqian Wang

Qiu Wang
Rui Wang
Tengjiao Wang
Wei Wang
Xiaoxuan Wang
Xiaoyan Wang
Xinhua Wang
Xu Wang
Yanru Wang
Yi Wang
Ying Wang
You-Chiun Wang
Yuhong Wang
yujie wang
Zhaolin Wang
Zhe Wang
Zhengqiang Wang
Zhibin Wang
Zhuwei Wang
Sahil Waqar
Kasun Weerakoon
Wenqi Wei
Yuxuan Wei
Chao-Kai Wen
Miaowen Wen
Jian-Jia Weng
Risto Wichman
P.A.D. Shehan
Nilmantha
Wijesekara
SeungHwan Won
Celimuge Wu
Chengyu Wu
Maoqiang Wu
Qiuli Wu
Youlong Wu
Zeke Wu
Henk Wymeersch
Shuang Xia
Shuhao Xia
Zhichang Xia
Cai Xiangming
Liang Xiao
Lixia Xiao
Yue Xiao
Yue Xiao
Jin Xie
Mangang Xie
Yihang Xie
Yunchou Xing
Zhe Xing
Bo Xu
Chao Xu
Diyuan Xu
Hongjing Xu
Huixing Xu
Jinlei Xu
Rui Xu
Shiyuan Xu
Tianheng Xu
Wenchao Xu
Yamei Xu
Yao Xu
Yaodan Xu
Yike Xu
Hansong Xue
Peng Xue
Yilei Xue
Suneel Yadav
Yasunori Yagi
Hamad Yahya
Kanako Yamaguchi
Koji Yamamoto
Tetsuya Yamamoto
Kosuke Yamazaki
Mengchun Yan
Qingyun Yan
Yicheng Yan
Chenyi Yang
De-Nian Yang
Fajin Yang
Hao Yang
Nan Yang
Tinghan Yang
Xiao Yang
Yadong Yang
Zhaohui Yang
Zhiding Yang
Ziyi Yang
Kazuto Yano
Junliang Yao
Baolin Ye
Dongdong Ye
Chia-Yi Yeh
Halil Yetgin

Wenqiang Yi
Xiaoyu Yi
Cheng Yin
Hiroyuki Yomo
Seong Ki Yoo
Yuki Yoshida
Jiadong Yu
Wenhan Yu
Wenjuan Yu
Xiangbin Yu
Zhongyang Yu
Jing Yuan
Peihong Yuan
Zhenhui Yuan
Zhiqiang Yuan
Xinwei Yue
Chau Yuen
Burak Yuksek
Mahdi Zaman
Lorenzo Zaniboni
Shayan Zargari
Wang Zefan
Thomas Zemen
Yaoping Zeng
Hans-Jürgen
Zepernick
Chao Zhai
Zhandos Zhakipov
Chao Zhang
Chenhao Zhang
Di Zhang
Hui Zhang
Jiayi Zhang
Ling Zhang
Milin Zhang
Qi Zhang
Qianqian Zhang
Qiaolun Zhang
Ran Zhang
Shiyu Zhang
Tingping Zhang
Tingting Zhang
Tong Zhang
Xiaokang Zhang
Xiaoqi Zhang
Xiaoqing Zhang
Xiye Zhang
Xuefei Zhang
xuyang zhang
Yijia Zhang
Yujie Zhang
Zhengquan Zhang
Zhicai Zhang
Zijian Zhang
Bobai Zhao
Chen Zhao
Donglai Zhao
Hangran Zhao
Hongzhi Zhao
Le Zhao
Linlin Zhao
Liqiang Zhao
Ming Zhao
Ruiqin Zhao
Yanhua Zhao
Yifei Zhao
Zhongyuan Zhao
Li Zhen
Fu-Chun Zheng
Guangyuan Zheng
Hang Zheng
Paul Zheng
Yike Zheng
Kangda Zhi
Qu Zhijie
Ruikang Zhong
Weifeng Zhong
Yi Zhong
Guangxia Zhou
Jiafeng Zhou
Ning Zhou
Yong Zhou
Chaoyi Zhu
Fenghua Zhu
Jieao Zhu
Lidong Zhu
Yishuang Zhu
Zhengyu Zhu
Weihua Zhuang
Tong Ziheng
Guilherme
Martignago Zilli

Tutorials

A range of tutorials will be held on Tuesday 20 June 2023 given by experts from industry and academia.

T1: Multi-Antenna and In-Band Full Duplex Radio Techniques for Spectrum Sharing Vehicle-to-Everything (V2X) Communications
Dirk Slock, EURECOM, France; Tharmalingam Ratnarajah, University of Edinburgh, UK

This tutorial will provide an overview of the following ingredients: 1) Key SS approaches (from cognitive radio to eLSA, CBRS, unlicensed access in 3GPP, WiFi-5G coexistence etc.); 2) to provide a recent advance on IBFD radio design in the frequency range 2 (FR2) band ($\geq$25.250GHz); specifically, we review the antenna domain cancellation, wideband optical domain analog cancellation and digital domain cancellations. We will provide wideband hardware impairment models and hardware nonlinear effect models; 3) state-of-the-art Multi-user-MIMO transmitter/receiver designs for various utility optimization problems, including distributed techniques, and imperfect CSIT accounting, up to non-coherent designs; 4) to lay out the basics concepts of IBFD integrated sensing and communication and summarize the key advantages V2X scenarios. This tutorial is partially based on (but goes much beyond) our recent edited book: Spectrum Sharing: The Next Frontier in Wireless Networks, Wiley, 2020.

Prof. Dirk T.M. Slock is a Professor in the Communication Systems Dept. of Eurecom. He received two MSc and the PhD degree from Stanford University with a Fulbright grant. He has supervised over 40 PhD students in 30 years: 9 of them are in academia (6 professors, of which one IEEE Fellow), and about 10 of them are researchers in industry. His research led to about 10,000 total citations (h-index: 44), 1 edited book, 10 book chapters, 50 journal papers and 500 conference papers.

Tharmalingam Ratnarajah is currently working as a Digital Communications and Signal Processing Professor with the Institute for Digital Communications, University of Edinburgh, Edinburgh, UK. He was the Head of the Institute for Digital Communications during 2016-2018. His research interests include signal processing and information-theoretic aspects of beyond 5G cellular networks, full-duplex radio, mmWave communications, random matrix theory, big data analytics and machine learning for wireless networks, statistical and array signal processing, physical-layer secrecy and interference alignment. He has published over 400 Peer-reviewed papers in these areas and holds four US patents. He was the coordinator of the European Union (EU) projects HARP (4.6M€) in the area of highly distributed MIMO and ADEL (3.7M€) in the area of licensed shared access. He was also the coordinator of the European Union Future and Emerging Technologies project CROWN (3.4M€) in the area of cognitive radio networks and HIATUS (3.6M€) in the area of interference alignment. Prof Ratnarajah was an associate editor of IEEE Transactions on Signal Processing, 2015-2017, and Technical co-chair, The 17th IEEE International Workshop on Signal Processing advances in Wireless Communications, Edinburgh, UK.

T2: Road Communication Using Visible Light…Road Ahead
Anand Srivastava, IIIT Delhi, India

In the context of an increasing interest in reducing the number of traffic accidents and associated victims, communication-based vehicle safety applications have emerged as one of the best solutions to enhance road safety. In this area, visible light communications (VLC) have a great potential for applications due to their relatively simple design for basic functioning, efficiency, and large geographical distribution. This tutorial addresses the issues related to VLC usage in vehicular communication applications. Although VLC has been the focus of intensive research during the last few years, the technology is still in its infancy and requires continuous efforts to overcome the current challenges, especially in outdoor applications, such as automotive communications. This tutorial is aimed at providing an overview of several research directions that could transform VLC into a reliable component of the transportation infrastructure. The main challenges are identified, and the status of the accomplishments in each direction are presented, helping the audience to understand what has been done, where the technology stands and what is still missing.

Anand Srivastava did his M.Tech. and Ph.D. from IIT Delhi and is currently working at IIIT Delhi as Professor in ECE department since Nov. 2014 and also Director at IIIT Delhi Incubation Center (a Section 8 company). He is also Adjunct faculty in Bharti School of Telecom Technology at IIT Delhi. Before joining IIIT Delhi, he was Dean & Professor in the School of Computing and Electrical Engineering at Indian Institute of Technology Mandi, HP, India from Jan. 2012 to Nov. 2014. Prior to this, he was with Alcatel-Lucent-Bell Labs, India as a solution architect for access and core networks for 2.5 years. His initial stint (~ 20 years) was with the Center for Development of Telematics (CDOT), a telecom research center of Govt. of India where he was Director and member of the CDOT Board. During his stay in CDOT, he provided technical leadership and motivation to a team of engineers engaged in the development of national-level projects in the areas of Telecom Security Systems, Network Management Systems, Intelligent Networks, Operations Support Systems, Access Networks (GPON) and Optical Technology based products. The majority of these projects were completed successfully and commercially deployed in the public telecom network. He also carried out significant research work in the Photonics Research Lab, Nice, France, under the Indo-French Science & Technology Cooperation Program on "Special optical fibers and fiber-based components for optical communications" during 2007-2010 in different phases. He was also closely involved with ITU-T, Geneva in Study Group 15 and represented India for various optical networking standards meetings. Currently, he is driving VLC/LiFi standardization activities under the aegis of TSDSI. His research work is in the area of optical core & access networks, Vehicle-to-vehicle communications, Fiber-Wireless (FiWi) architectures, and Visible light communications.

T3: Reconfigurable Intelligent Surfaces for 6G: From Academic Research to Industry Development
Linglong Dai, Tsinghua University, China; Yifei Yuan, China Mobile Research Institute, China

Reconfigurable intelligent surface (RIS) has become a promising technology for future 6G wireless communications. Due to its high array gain, low cost, and low power consumption, RIS can improve spectrum efficiency, extend coverage, and reduce power consumption. However, the practical applications of RIS still face many challenges. This tutorial will introduce the latest progress of RIS from perspectives of both academic research and industry development. First, this tutorial will introduce the advanced algorithms for RIS. By considering the physical characteristics of RIS channels including near-field propagation, spatial non-stationarity, ultra-wide broadband effect, etc., we will present the corresponding advanced algorithm designs for RIS channel estimation, beamforming, and beam training. Then, this tutorial will discuss the architecture designs for RIS. Facing the challenges including the multiplicative fading effect and excessive pilot overhead for channel state information acquisition, some new architecture designs of RIS, such as active RIS, sensing RIS, and time-phase adjustable RIS, will be discussed from the viewpoint of joint hardware and software optimization. Subsequently, this tutorial will present the recent system-level simulations of RIS, and the trial test results of RIS in commercial 5G networks. The multi-stage standardization of RIS will also be discussed. Finally, we will review the predecessor technologies of RIS in 4G and 5G (relay and full dimensional MIMO) to predict the development trends of RIS in the future.

Linglong Dai (Fellow, IEEE) received the B.S. degree from Zhejiang University, Hangzhou, China, in 2003, the M.S. degree from the China Academy of Telecommunications Technology, Beijing, China, in 2006, and the Ph.D. degree from Tsinghua University, Beijing, in 2011. From 2011 to 2013, he was a Post-Doctoral Researcher with the Department of Electronic Engineering, Tsinghua University, where he was an Assistant Professor from 2013 to 2016, an Associate Professor from 2016 to 2022, and has been a Professor since 2022. His current research interests include massive MIMO, reconfigurable intelligent surface (RIS), millimeter-wave and Teraherz communications, wireless AI, and electromagnetic information theory. He has received the National Natural Science Foundation of China for Outstanding Young Scholars in 2017, the IEEE ComSoc Leonard G. Abraham Prize in 2020, the IEEE ComSoc Stephen O. Rice Prize in 2022, and the IEEE ICC Outstanding Demo Award in 2022. He was listed as a Highly Cited Researcher by Clarivate from 2020 to 2022. He was elevated as an IEEE Fellow in 2021.

Yifei Yuan (Senior Member, IEEE) received his Bachelor & Master degrees from Tsinghua University of China, and a Ph.D. from Carnegie Mellon University, USA. He was with Alcatel-Lucent from 2000 to 2008, working on 3G/4G key technologies. From 2008 to 2020, he was with ZTE as technical director and chief engineer responsible for standards research on LTEAdvanced and 5G. Since 2020, he has been with China Mobile Research Institute, responsible for advanced technologies of 6G. His research interests include MIMO, channel coding, non-orthogonal multiple access (NOMA), internet-of-things (IoT), resource scheduling. He has extensive publications, including 6 books on LTE-Advanced and 5G. He is the rapporteur of NOMA study item in 3GPP. He is the recipient of Best Paper Award by IEEE Communications Society Asia-Pacific Board for co-authoring a paper on NOMA in IEEE Communications Magazine.

Tuesday, 20 June 2022 14:00-17:30   Congressi - Room 6

T4: Cooperative connected and automated mobility: status and perspectives for Day-2-and-beyond services

Claudio Ettore Casetti, Politecnico di Torino, Italy; Alessandro Bazzi, Università di Bologna, Italy

The transportation system is entering a revolutionary phase where vehicles will coordinate their actions towards an unconceivable more efficient, safe, and comfortable way. A key role will be played by vehicle-to-everything (V2X) communications, without which cars and trucks cannot see behind the obstacles or far away and cannot collaborate with each other.

The first vehicles equipped with direct V2X are reaching the consumer market in Europe from early 2021 to allow for the so-called Day-1 applications, where each vehicle communicates its status and movements and based on this the others in the surrounding can take the necessary actions. In Day-2, which is now the main target of the stakeholders working in this field and of the standardisation bodies, also the perception of the surrounding is shared. Beyond this, early work is being conducted also towards the Day-3, where vehicles not only inform those in the neighbourhood, but they coordinate their manoeuvres. Along this paths, V2X access technologies are being studied and improved to fulfil increasingly challenging requirements.

In this tutorial, the speakers will go through the state of the art and research trends regarding V2X, looking both at the evolution of the access technologies and the standardization activities at higher layers. Regarding the access technologies, attention will be posed to the latest advancements of both the WiFi and cellular-related families. At the higher layers, the focus will be on the ETSI stack, with the recently added multi-channel operation and aspects like collective perception, vulnerable road user safety, and manoeuvre coordination.

Claudio Ettore Casetti (SMIEEE) is a Full Professor at the Department of Control and Computer Engineering, Politecnico di Torino, Italy. He has published over 250 papers in peer-refereed international journals and conferences on the following topics: vehicular networks, Intelligent Transportation Systems, 5G/6G networks. According to Google Scholar, his H-index is 42. He was the Scientific Coordinator of the Master in "Electrified and Connected Vehicle" at Politecnico di Torino between 2018 and 2021. He chaired the Turin Urban Digital Mobility working group within the Smart Roads project fostered by the City of Turin between 2018 and 2022, and is Senior Editor for Mobile Radio of IEEE Vehicular Technology Magazine.

Alessandro Bazzi (SMIEEE) is an Associate Professor at the University of Bologna, Italy, and an associated member of WiLab in the Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT). He received a Laurea degree (2002) and a PhD degree (2006) in Telecommunications from the University of Bologna. From 2002 to 2019 he was a researcher of the National Research Council of Italy (CNR) and since the academic year 2006/2007 he holds courses at the University of Bologna on wireless systems and networks. He is currently in the Editorial board of Hindawi Wireless Communications and Mobile Computing and MDPI Vehicles, and Chief Editor of Hindawi Mobile Information Systems. His research interests include wireless systems and networks, with focus on the wireless communications technologies for autonomous and connected vehicles. On these topics, he coordinated and coordinates various activities within national and international projects, and published more than 100 papers in conferences and journals, with an H-index equal to 29 according to Google Scholar.

Tuesday, 20 June 2022 14:00-17:30   Virtual

T6: Open AI Cellular (OAIC): An Open-Source Platform for Prototyping and Testing AI-Enhanced O-RAN Enabling 6G Wireless Research

Vuk Marojevic, Minglong Zhang, Mississippi State University, USA; Bo Tang, Worcester Polytechnic Institute, USA; Vijay K. Shah, George Mason University, USA

Since first conceptualized and proposed, the Open Radio Access Network (O-RAN) has aimed for openness, intelligence and flexibility. To fulfill the objectives, various network components and interfaces will have been virtualized and disaggregated. Meanwhile, O-RAN based 6G networks will incorporate artificial intelligence (AI) into the deployment, operation, and maintenance of the network. AI can optimize parameters in a large search space, figure out corresponding solutions for new situations, as well as interpolate while facing insufficient information. This tutorial will introduce the open-source software platform Open AI Cellular (OAIC), a community research infrastructure project enabling 6G wireless research and experiments. OAIC enables prototyping and testing of next generation AI-based cellular radio access networks (RANs). We will introduce how to design and integrate AI-based RAN controllers, such as user/resource scheduling and network slicing.

The tutorial will also highlight methodologies for developing open-source tools and services for AI-enabled O-RAN management and experimentation with software-defined radios (SDRs) along with an AI-enhanced RAN testing framework for 6G research. Attendees will obtain substantial knowledge and experience with O-RAN fundamentals and the emerging OAIC research platform and how to use it for wireless research and development.

Vuk Marojevic received the M.S. degree in electrical engineering from the University of Hannover, Germany, and the Ph.D. degree in electrical engineering from UPC-Barcelona Tech. He was assistant professor at UPC, research faculty at Wireless @ Virginia Tech and is currently an Associate Professor with the Department of Electrical and Computer Engineering at Mississippi State University. His research interests are in software-defined radio, spectrum sharing, vehicular communications, resource management with application to commercial and mission-critical cellular networks and unmanned aircraft systems. He is a PI of the NSF-sponsored AERPAW and Open AI Cellular (OAIC) projects. He serves as an Associate Editor of the IEEE Trans. on Vehicular Technology and the IEEE Vehicular Technology Magazine. He has given tutorials about software radio frameworks, open-source LTE and cellular communications security at major conferences and workshops, such as IEEE MILCOM (2018), NEWSDR (2019) and SDR-WInnComm (2013). He has presented a tutorial about OAIC at IEEE CCNC 2023.

Minglong Zhang received his M.S degree in electronic engineering from the Peking University, P.R. China and PhD degree in electrical and electronic engineering from Auckland University of Technology, New Zealand. He was a lecturer and research associate at Auckland

University of Technology. He is a postdoctoral research associate at Mississippi State University. His research interests include 5G/6G V2X communications, software-defined radios, AI-enabled ORAN. Dr. Zhang has attended and organized multiple relevant conferences, such as IEEE ICC, 2020 WCNC, 2018 EIA SARTGIFT and 2017 PIMRC. He made presentations in the conferences and the topics were wireless networks, V2X communications and networking. He has been a tutorial presenter at IEEE CCNC 2023 and present OAIC.

Bo Tang received the M.S. degree in information processing from Chinese Academy of Sciences and Ph.D. degree in electrical engineering from University of Rhode Island. He is currently an Assistant Professor in the Department of Electrical and Computer Engineering at Mississippi State University. His research interests are machine learning, edge AI, and AI security, as well as their applications in wireless networks. He is the recipient of NSF CAREER Award (2021) and NIJ New Investigator/Early Career Award (2019). He is a Senior Member of IEEE and servers as an Associate Editor of the IEEE Trans. on Neural Networks and Learning Systems. He has given a tutorial about OAIC at IEEE CCNC 2023.

Vijay K. Shah is an Assistant Professor in the Cybersecurity Engineering (CYSE) Department at George Mason University (GMU). He is also a faculty member of Commonwealth Cyber Initiative (CCI), a Virginia state-wide initiative to foster 5G wireless, autonomous systems, data and cybersecurity research. His research interests include 5G/Next-G wireless, O-RAN architecture, AI/ML for communications and wireless testbed development and prototyping. He serves as a co-chair for IEEE workshop on next-generation radio access networks (co-located with IEEE GLOBECOM 2022). He has organized many IEEE and ACM workshops collocated with leading wireless communication and networking conferences, such as, IEEE GLOBECOM, ACM MobiCom, and ACM ICDCN.

Tuesday, 20 June 2022 14:00-17:30 Congressi - Room 9
T8: Signals and Waveforms for Sustainable Multifunctional 6G Networks and Beyond
Christos Masouros, University College London, UK

The future Global cellular infrastructure will underpin smart city applications, urban security, infrastructure monitoring, smart mobility, among an array of emerging applications that require new network functionalities beyond communications. Key network KPIs for 6G involve Gb/s data rates; cm-level localization; μs-level latency; Tb/Joule energy efficiency. Future networks will also need to support the UN's Sustainable Development Goals to ensure sustainability, net-zero emissions, resilience and inclusivity. The multifunctionality and the net-zero emissions agenda necessitate a redesign of the signals and waveforms for 6G and beyond. In this tutorial, we will first explore a recent research direction involving symbol-level precoding (SLP) approaches that treat interference as a useful resource in multi-antenna communication systems. These have been shown to offer orders of magnitude savings in power consumption, over a range of communication scenarios. The second part of the tutorial will focus on enabling the multi-functionality of signals and wireless transmissions, as a means of hardware reuse and carbon footprint reduction. We will overview the emerging area of integrated sensing and communications (ISAC), that is a paradigm shift that enables a both sensing and communication functionalities from a single transmission, a single spectrum use and ultimately a common infrastructure. With the rising demand for sustainability and resilience from the network infrastructure, the above technologies are becoming essential building blocks of the wireless network.

Christos Masouros (SMIEEE, MIET) received the Diploma degree in Electrical and Computer Engineering from the University of Patras, Greece, in 2004, and MSc by research and PhD in Electrical and Electronic Engineering from the University of Manchester, UK in 2006 and 2009 respectively. In 2012 he joined University College London as a Lecturer. Since 2019 he is a Full Professor of Signal Processing and Wireless Communications in the Information and Communications Engineering research group, Dept. Electrical and Electronic Engineering, University College London. His research interests lie in the field of wireless communications and signal processing with particular focus on Green Communications, Large Scale Antenna Systems, Integrated Sensing and Communications, interference

mitigation techniques for MIMO and multicarrier communications. He was the co-recipient of the 2021 IEEE SPS Young Author Best Paper Award. He was the recipient of the Best Paper Awards in the IEEE GlobeCom 2015 and IEEE WCNC 2019 conferences, and has been recognized as an Exemplary Editor for the IEEE Communications Letters, and as an Exemplary Reviewer for the IEEE Transactions on Communications. He is an Editor for IEEE Transactions on Communications, IEEE Transactions on Wireless Communications, the IEEE Open Journal of Signal Processing, and Editor-at-Large for IEEE Open Journal of the Communications Society. He has been an Associate Editor for IEEE Communications Letters, and a Guest Editor for a number of IEEE Journal on Selected Topics in Signal Processing issues. He is a founding member and Vice-Chair of the IEEE Emerging Technology Initiative on Integrated Sensing and Communications (ISAC), Vice Chair of the IEEE Wireless Communications Technical Committee Special Interest Group on ISAC, and Chair of the IEEE Green Communications & Computing Technical Committee, Special Interest Group on Green ISAC. He is the TPC chair for the IEEE ICC 2024 Selected Areas in Communications (SAC) Track on ISAC.

Tuesday, 20 June 2022 9:00-12:30 Congressi - Room 9
T9: Integrating Terrestrial and Non-terrestrial Networks: 3D Opportunities and Challenges
Giovanni Geraci, Pompeu Fabra University, Spain

Integrating terrestrial and non-terrestrial networks has the potential of connecting the unconnected and enabling disruptive new services for the already-connected, with technological and societal implications of the greatest long-term significance. A convergence of ground, air, and space wireless communications also represents a formidable endeavor for the mobile and satellite communications industries alike, as it entails defining and intelligently orchestrating a new 3D wireless network architecture. In this tutorial, we present the key opportunities and challenges arising from this (r)evolution by illustrating its disruptive use-cases, introducing its key building blocks, and reviewing the relevant standardization activities. Through original results, we showcase how terrestrial networks could be re-designed to cater for non-terrestrial terminals, and opportunistically complemented by non-terrestrial infrastructure to augment their current capabilities. We further discuss the main hurdles that stand in the way to an integrated 3D wireless network and point out key open problems worthy of further research.

Giovanni Geraci is an Assistant Professor and the Head of Telecommunications Engineering at Univ. Pompeu Fabra in Barcelona. He was previously with Nokia Bell Labs, holds a dozen patents on wireless technologies, and is a co-Editor of the book "UAV Communications for 5G and Beyond" by Wiley–IEEE. Giovanni has been serving as Distinguished Lecturer for the IEEE Communications Society and the IEEE Vehicular Technology Society and he received the 2018 IEEE ComSoc EMEA Outstanding Young Researcher Award as well as Best Paper Awards at IEEE PIMRC'19 and IEEE Globecom'22.

Tuesday, 20 June 2022 9:00-12:30 Congressi - Room 6
T10: Introduction to Quantum Communications
Lajos Hanzo, University of Southampton, UK

Moore's laws has indeed prevailed since he outlined his empirical rule-of-thumb in 1965, but based on this trend the scale of integration is set to depart from classical physics, entering nano-scale integration, where the postulates of quantum physics have to be obeyed. The quest for quantum-domain communication solutions was inspired by Feynman's revolutionary idea in 1985: particles such as photons or electrons might be relied upon for encoding, processing and delivering information. Hence in the light of these trends it is extremely timely to build an interdisciplinary momentum in the area of quantum communications, where there is an abundance of open problems for a broad community to solve collaboratively. In this workshop-style interactive presentation we will address the following issues:

We commence by highlighting the nature of the quantum channel, followed by techniques of mitigating the effects of quantum decoherence using quantum codes.

Then we bridge the subject areas of large-scale search problems in wireless communications and exploit the benefits of quantum search algorithms in multi-user detection, in joint-channel estimation and data detection, localization and in routing problems of networking, for example.

We survey advance in quantum key distribution networks.

Lajos Hanzo (http://www-mobile.ecs.soton.ac.uk, https://en.wikipedia.org/wiki/Lajos_Hanzo) (FIEEE'04) received his Master degree and Doctorate in 1976 and 1983, respectively from the Technical University (TU) of Budapest. He was also awarded the Doctor of Sciences (DSc) degree by the University of Southampton (2004) and Honorary Doctorates by the TU of Budapest (2009) and by the University of Edinburgh (2015). He is a Foreign Member of the Hungarian Academy of Sciences and a former Editor-in-Chief of the IEEE Press. He has served several terms as Governor of both IEEE ComSoc and of VTS. He has published 2000+ contributions at IEEE Xplore, 19 Wiley-IEEE Press books and has helped the fast-track career of 123 PhD students. Over 40 of them are Professors at various stages of their careers in academia and many of them are leading scientists in the wireless industry. He is also a Fellow of the Royal Academy of Engineering (FREng), of the IET and of EURASIP. He holds the Eric Sumner Field Award.

The following tutorials have been cancelled.

T5: The Role of Data Engineering in the Realization of Network Automation
Engin Zeydan, Josep Mangues, CTTC, Spain
T7: Ambient IoT – Zero Energy Massive Machine Type Communications for 6G
Riku Jäntti, Aalto University, Finland

Patrons and Exhibitors

IEEE VTS would like to thank Huawei for their contributions to the success of the conference.

Registration

Registration will take place in the Palazzo Degli Affari Entrance. Hours are:

• Tuesday 20 June	0700 – 1730	• Thursday 22 June	0800 – 1730
• Wednesday 21 June	0700 – 1730	• Friday 23 June	0800 – 1730

Social Events

Coffee breaks and lunches will take place in the Passi Perduti building on the 1st floor of the Auditorium. Lunches and the banquet are included in the full registration. The banquet will be at La Loggia in its outside garden, which offers a stunning view of much of Florence especially at dusk. While one can walk to the banquet facility, it is not an easy walk, so buses will pick up at 1800 at the conference center and return there by 2100. The reception on Tuesday evening is open to all attendees, including student and life registrations.

Keynotes

Wednesday, 21 June 2023, 9:00–9:45 Auditorium

Why Optical Wireless Communication is Ready for 6G!

Harald Haas, *Founder and Chief Scientific Officer, pureLiFi*

We expect 6G to deliver step-change improvements in energy efficiency, data density, security, aggregate data rates in the region of Tbps and sensing information integration in order to unlock radically new applications in the metaverse. Naturally, this raises the question about 'spectrum'. Decades of research in optical wireless communications alongside new optical devices such as single photon avalanche diodes (SPADs) and high-bandwidth solar cells have paved the way for the readiness of this technology for 6G to build more powerful, secure and energy-efficient mobile networks. The optical spectrum already powers our long-haul optical fibre networks. All this has led to a rich set of highly optimised photonic devices that form the basis for new OWC technologies that allow mobile, multiuser Tbps optical wireless networks with data densities in the region of Gbps/m^2. Moreover, we show examples of how the specific physical layer security properties of this technology has already led to the commercial adoption of OWC access networks supported by a new IEEE standard, 801.11 bb. Finally, we will discuss existing challenges and the road ahead.

Professor Harald Haas received his PhD degree from The University of Edinburgh in 2001. He is a Distinguished Professor of Mobile Communications at the University of Strathclyde/Glasgow, Visiting Professor at the University of Edinburgh and the Director of the LiFi Research and Development Centre (LRDC). Prof Haas founded pureLiFi Ltd., where holds the position of Chief Scientific Officer (CSO). His most recent research interests are in combining physics and communication theory towards designing secure, high-speed and net-zero wireless multi-user access networks including distributed x-haul networks using the optical. He has co-authored more than 650 conference and journal papers and holds more than 45 patents. He has been listed as highly cited researcher by Clarivate/Web of Science since 2017. Prof. Haas has delivered two TED talks which have been watched online more than 5.5 million times. In 2016, he was the recipient of the Outstanding Achievement Award from the International Solid State Lighting Alliance. In 2017 he was awarded a Royal Society Wolfson Research Merit Award. In 2019 he received the IEEE Vehicular Society James Evans Avant Garde Award. In 2021, he received the Enginuity The Connect Places Innovation Award. In 2022 he was the recipient of a Humboldt Research Award for his research achievements to date. He is a Fellow of the IEEE, a Fellow of the Royal Academy of Engineering (RAEng), a Fellow of the Royal Society of Edinburgh (RSE) and a Fellow of the Institution of Engineering and Technology (IET).

Wednesday, 21 June 2023, 9:45–10:30 Auditorium

Integrated Sensing and Communications: It was Meant to Be!

Christos Masouros, *Professor of Signal Processing & Wireless Communications, University College London*

The integration of sensing and communication functionalities is seen as a key enabling technology for 6G networks to provide services beyond communications. In this talk I argue that it is a natural evolution of the two technologies, as it has obvious gains in energy, hardware and cost efficiency through the use of dual-functional hardware. I further explain that their co-design also offers opportunities in flexible trade-offs and new synergies between sensing and communication. I discuss signalling strategies that enable information exchange together with target detection from a single transmission. These range from radar-centric and communication-centric, to joint signalling. I present some results from my team's work in the area, that underline the benefits of the co-design in offering a graceful trade-off between the two functionalities. I then discuss use cases that highlight potential synergies between sensing and communications. I conclude with some thoughts on research opportunities and the road ahead.

Christos Masouros (SMIEEE, MIET) received the Diploma degree in Electrical and Computer Engineering from the University of Patras, Greece, in 2004, and MSc by research and PhD in Electrical and Electronic Engineering from the University of Manchester, UK in 2006 and 2009 respectively. In 2008 he was a research intern at Philips Research Labs, UK, working on the LTE standards. Between 2009-2010 he was a Research Associate in the University of Manchester and between 2010-2012 a Research Fellow in Queen's University Belfast. In 2012 he joined University College London as a Lecturer. He has held a Royal Academy of Engineering Research Fellowship between 2011-2016.

Since 2019 he is a Full Professor of Signal Processing and Wireless Communications in the Information and Communication Engineering research group, Dept. Electrical and Electronic Engineering, and affiliated with the Institute for Communications and Connected Systems, University College London. His research interests lie in the field of wireless communications and signal processing with particular focus on Green Communications, Large Scale Antenna Systems, Integrated Sensing and Communications, interference mitigation techniques for MIMO and multicarrier communications. He was the co-recipient of the 2021 IEEE SPS Young Author Best Paper Award. He was the recipient of the Best Paper Awards in the IEEE GlobeCom 2015 and IEEE WCNC 2019 conferences, and has been recognised as an Exemplary Editor for the IEEE Communications Letters, and as an Exemplary Reviewer for the IEEE Transactions on Communications. He is an Editor for IEEE Transactions on Wireless Communications, the IEEE Open Journal of Signal Processing, and Editor-at-Large for IEEE Open Journal of the Communications Society. He has been an Editor for IEEE Transactions on Communications, IEEE Communications Letters, and a Guest Editor for a number of IEEE Journal on Selected Topics in Signal Processing and IEEE Journal on Selected Areas in Communications issues. He is a founding member and Vice-Chair of the IEEE Emerging Technology Initiative on Integrated Sensing and Communications (SAC), Vice Chair of the IEEE Wireless Communications Technical Committee Special Interest Group on ISAC, and Chair of the IEEE Green Communications & Computing Technical Committee, Special Interest Group on Green ISAC. He is the TPC chair for the IEEE ICC 2024 Selected Areas in Communications (SAC) Track on ISAC.

Autonomous Driving Technology: The Booster of the Revolution of the Personal Mobility Model

Sergio M. Savaresi, *Professor of Automatic Control, Politecnico di Milano*

In the next 30 years a revolution is expected in the mobility model: the traditional personal mobility model (based on big, fossil-fuel-powered, personal-ownership cars) will be almost entirely replaced by Mobility-As-A-Service, autonomous, electric/H2 cars. This "revolution" aims to make a quantum leap in the overall efficiency of the mobility system, and to contribute to the improvement of the safety and sustainability of vehicles. This revolution will also deeply affect the structure of the entire automotive industry (layers, players, etc.). Among the main technology megatrends, the autonomous-driving technology has a special/key role: not only is (by far) the most challenging from a technical point of view, but it will play the role of booster/catalyzer of all the other megatrends. The talk will provide a high-level (strategic-like) view of this technology revolution, highlighting the role and the impact of the autonomous-driving technology.

Sergio M. Savaresi received the M.Sc. in Electrical Engineering (Politecnico di Milano, 1992), the Ph.D. in Systems and Control Engineering (Politecnico di Milano, 1996), and the M.Sc. in Applied Mathematics (Catholic University, Brescia, 2000). After the Ph.D. he worked as management consultant at McKinsey&Co, Milan Office. He is Full Professor in Automatic Control at Politecnico di Milano since 2006 . He is Deputy Director and Chair of the Systems & Control Section of Department of Electronics, Computer Sciences and Bioengineering (DEIB), Politecnico di Milano. He is author of more than 500 scientific publications. His main interests are in the areas of vehicles control, machine learning, and control applications, with special focus on smart mobility. He has been manager and technical leader of more than 400 research projects in cooperation with leading companies in the automotive industry. He is co-founder of 10 high-tech startup companies. He is the team leader of PoliMOVE, the winner of the the the Autonomous Challenge @ CES 2022 (first ever high-speed fully-autonomous head-to-head multi-agent race.

Toward Industry 5.0: Enabling Technologies and Research in 6G

Sumei Sun, *Deputy Executive Director (Research), Institute for Infocomm Research (I2R)*

Moving to 2030, the physical world, digital world, and human world will be even more seamlessly connected and interacted, creating brand new experiences in work, leisure, learning, study, and social activities, accelerating the digital transformation in processes and practices in all industry sectors and public services. These will form the core driver for 6G innovation. Drive for sustainability, represented by the Sustainable Development Goals (SDGs) in the United Nations (UN) Agenda 2030 also calls for 6G's contribution.

In this talk, we will start with a brief review on the megatrend 2030. We then look at the transformation from Industry 4.0 to Industry 5.0, and motivate the driving needs for enabling technologies in 6G research. As examples, we share a few use cases in Singapore's vertical sectors, such as advanced manufacturing, smart urban solutions, connectivity and transportation, renewable energy management, and present some selected research in wireless time sensitive networking (wTSN), software-defined agile spectrum management, and artificial intelligence-enhanced joint sensing, communications and control (JSC^2).

Sumei Sun is a Principal Scientist, Deputy Executive Director (Research), and Head of the Communications and Networks Dept at the Institute for Infocomm Research (I2R), Singapore. She is also holding a joint appointment with the Singapore Institute of Technology, and an adjunct appointment with the National University of Singapore, both as a full professor. Her current research interests are in next-generation wireless communications, joint sensing-communication-computing-control design, and industrial internet of things. She is a member of the IEEE Vehicular Technology Society Board of Governors (2022-2024), a member-at-large (MAL) with the IEEE Communications Society (2021-2023), and Editor-in-Chief of IEEE Open Journal of Vehicular Technology.

Towards Extreme Band Communications

Mohamed-Slim Alouini, *Professor of Electrical and Computer Engineering, King Abdullah University of Science and Technology*

A rapid increase in the use of wireless services over the last few decades has led to the problem of radio-frequency (RF) spectrum exhaustion. More specifically, due to this RF spectrum scarcity, additional RF bandwidth allocation, as utilized in the recent past over "traditional bands", is not anymore enough to fulfill the demand for more wireless applications and higher data rates. The talk goes first over the potential offered by extreme band communication (XB-Com) systems to relieve spectrum scarcity. Indeed, mm-wave, THz, and free space optics broadband wireless systems recently attracted several research interests worldwide due to the progress in electronics and photonics technologies. By utilizing these extreme frequency bands and employing extreme large bandwidths, the 6G target data rates over 100 Gbps could be achieved. The talk then summarizes some of the challenges that need to be surpassed before such kinds of systems can be deployed. For instance, it explains how the THz transmission band has immunity against the fog compared with the optical one, while being affected by the rain as it is the case for the mm-wave band. In addition, the role of ultra-massive multiple-input multiple-output (UM-MIMO) systems and reconfigurable intelligent surfaces in overcoming the distance problem at very high frequencies will be discussed. Finally, the talk offers an overview of some recent studies illustrating how these different XB-Com technologies can collaborate to increase emerging and future networks' reliability and coverage while maintaining their high capacity.

Mohamed-Slim Alouini was born in Tunis, Tunisia. He received the Ph.D. degree in Electrical Engineering from the California Institute of Technology (Caltech) in 1998. He served as a faculty member at the University of Minnesota then in the Texas A&M University at Qatar before joining in 2009 the King Abdullah University of Science and Technology (KAUST) where he is now a Distinguished Professor of Electrical and Computer Engineering. Prof. Alouini is a Fellow of the IEEE and OPTICA (Formerly the Optical Society of America (OSA)). He is currently particularly interested in addressing the technical challenges associated with the uneven distribution, access to, and use of information and communication technologies in rural, low-income, disaster, and/or hard-to-reach areas.

Friday, 23 June 2023, 9:45–10:30 Auditorium
6G RAN to Support the Generative Pre-trained Transformer (GPT) Based Applications
Wen Tong, *Chief Technology Officer, Huawei Wireless*

With the rise of ChatGPT as a machine learning technology, the radio access networks (RAN) may be redesigned for the emerging 6G systems. Hence in this talk, we present the principles of partitioning the ultra-large Generative Pre-trained Transformer based computing into a distributed computing and distributed networking architecture. The goal is to optimize the computing resources and connectivity resources to increase the capacity, when delivering ChatGPT-type services.

In this talk, we also discuss the Generative Pre-trained Transformer created from the 6G radio in the context of joint sensing and communications (JSAC), of the multi-user human-in-the-loop joint reward model and of the network based on sophisticated joint Proximal Policy Optimization (PPO). Our new distributed RAN architecture can ensure the alignment of the ChatGPT services to comply with human values and ethical norms.

Dr. Wen Tong is the CTO, Huawei Wireless. He is the head of Huawei wireless research. In 2011, Dr. Tong was appointed the Head of Communications Technologies Labs of Huawei, currently, he is the Huawei 5G chief scientist and led Huawei's 10-year-long 5G wireless technologies research and development. Prior to joining Huawei in 2009, Dr. Tong was the Nortel Fellow and head of the Network Technology Labs at Nortel. He joined the Wireless Technology Labs at Bell Northern Research in 1995 in Canada.

Dr. Tong is the industry recognized leader in invention of advanced wireless technologies, Dr. Tong was elected as a Huawei Fellow and an IEEE Fellow. He was the recipient of IEEE Communications Society Industry Innovation Award in 2014, and IEEE Communications Society Distinguished Industry Leader Award for "pioneering technical contributions and leadership in the mobile communications industry and innovation in 5G mobile communications technology" in 2018. He is also the recipient of R.A. Fessenden Medal. For the past three decades, he had pioneered fundamental technologies from 1G to 5G wireless with more than 530 awarded US patents.

Dr. Tong is a Fellow of Canadian Academy of Engineering, and he serves as Board of Director of Wi-Fi Alliance.

Wednesday, 21 June 2023, 14:00-15:30 Auditorium
Workshop on Diversity and Inclusion

Moderators:	**Carmela Cozzo**	*Samsung, USA*
	Sarah Kate Wilson	*Santa Clara University, USA*
Speakers:	**Ana Garcia Armada**	*Universidad Carlos III de Madrid (UC3M), Spain*
	Chris Lewis	*Lewis Insight, UK*
	Lian Zhao	*Toronto Metropolitan University, Canada*

This workshop features a range of speakers as well as a panel on "Designing for Diversity".

Waveforms and Diversity
Ana Garcia Armada is a Professor at Universidad Carlos III de Madrid (UC3M), Spain. She has been a visiting scholar at Stanford University, Bell Labs, and University of Southampton. She has published more than 250 papers in conferences and journals and she holds five patents. She serves on the editorial boards of IEEE Transactions on Communications, IEEE Open Journal of the Communications Society and ITU Journal on Future and Evolving Technologies. She has been a member of the organizing committee of several conferences, including IEEE Globecom 2021 as the General Chair. She has received several awards from UC3M, the third place Bell Labs Prize 2014, the outstanding service award from the IEEE ComSoc Signal Processing and Communications Electronics technical committee, the outstanding service award from the IEEE ComSoc Women in Communications Engineering standing committee and the IEEE ComSoc/KICS Exemplary Global Service Award. Her research mainly focuses on signal processing applied to wireless communications.

The telecoms inclusion opportunity: design for the edge and the centre comes for free
Chris Lewis has covered all aspects of the global telecoms and adjacent industry sectors over 30 years working as an industry analyst with Logica, Ovum, Yankee Group and IDC as well as independently under the Lewis Insight and Great Telco Debate banners for the last ten years. He offers a unique perspective on the emerging telecoms and networking markets and how they fit into the broader emerging digital landscape. He also works with the TM Forum, sits on the GSMA's Mobile World Congress Advisory Board and acts as a judge for many industry bodies. Registered blind throughout his career and a leading user of assistive technology, Chris has now expanded his coverage to look at the area of Equality Diversity & Inclusion (EDI) and Inclusive Design and its importance as part of sustainability for the telecoms industry.

Chris also founded the Great Telco Debate as a platform for more open and frank discussion on the future of the telecoms industry. The most recent debates topics include the Telcos progress towards being a digital service provider, Open RAN dividing loyalties, Cloudification and Softwarization of the Telco, Private Wireless Networks and 6G & the Metaverse.

Women in Engineering: to have a successful professional career
Lian Zhao received the Ph.D. degree from the Department of Electrical and Computer Engineering, University of Waterloo, Canada, in 2002. She joined Toronto Metropolitan University (formerly Ryerson University), Canada, in 2003. She has been an IEEE Communication Society and IEEE Vehicular Technology Distinguished Lecturer; received the Best Land Transportation Paper Award from IEEE Vehicular Technology Society in 2016, Top 15 Editor Award in 2016 for IEEE Transaction on Vehicular Technology, Best Paper Award from

the 2013 International Conference on Wireless Communications and Signal Processing (WCSP), Canada Foundation for Innovation (CFI) New Opportunity Research Award in 2005, and Outstanding New Leader Award from IEEE Toronto Section in 2021, IEEE Outstanding Leadership Award in 2018.

She has been serving as an Editor for IEEE Transactions on Wireless Communications, IEEE Internet of Things Journal, and IEEE Transactions on Vehicular Technology (2013-2021). She served as a co-Chair of Wireless Communication Symposium for Globecom 2020 and IEEE ICC 2018; Finance co-Chair for 2021 ICASSP; Local Arrangement co-Chair for IEEE VTC Fall 2017 and IEEE Infocom 2014; co-Chair of Communication Theory Symposium for IEEE Globecom 2013. She has been an elected Board of Governor (BoG) committee member since 2023. She has severed as a panel expert in various federal, provincial, and international evaluation committees.

Facts vs. myths for women in engineering

Sarah Kate Wilson earned her A.B. in Mathemathics from Bryn Mawr College and her Ph.D. in Electrical Engineering at Stanford University. She has worked in both industry and academia. She is a Professor of Electrical and Computer Engineering at Santa Clara University. She has served as an Editor for IEEE Transactions on Wireless Communications, IEEE Communications Letters and IEEE Transactions on

Communications and the Editor-in-Chief of IEEE Communications Letters. She served as the Director of Journals 2012-2013 and the Vice-President of Publications 2014-2015 for the IEEE Communications Society. She has served as the Chair of the IEEE Teaching Awards Committee and is currently serving on the IEEE Society and Council Review Committee. She was awarded the Joseph LoCicero Award for Exemplary Service to Publications from the IEEE Communications Society for "sustained and innovative contributions to publications" and won the 2018 IEEE Education Society Harriet Rigas Award "for excellence in communications engineering, education and promoting equity."

Carmela Cozzo is a Principal Engineer and Standards Expert at Samsung. She has over 20 years of experience in research and standardization of wireless communications systems in leading telecommunications companies. She has been actively contributing to the 3GPP standardization of 5G/4G/3G systems as RAN1 and RAN delegate and rapporteur representing Samsung, and earlier Huawei. She was with Ericsson Research where she focused on algorithm design of advanced receivers for HSPA systems. She holds a Ph.D. in EE from North Carolina State University, and a Laurea degree in EE from the University of Rome, La Sapienza, Italy.

Industry Panels

Thursday, 22 June 2023, 11:00-12:30 Auditorium
Wireless Futures

Moderator:	**Mohammad Reza Shikh-Bahaei**	*King's College London, UK*
Panelists:	**Wen Tong**	*Huawei, Canada*
	Sumei Sun	*Institute for Infocomm Research, Singapore*
	Harald Haas	*pureLiFi, UK*
	Christos Masouros	*University College London, UK*
	Rahim Tafazolli	*University of Surrey, UK*
	Lajos Hanzo	*University of Southampton, UK*

Mohammad Reza Shikh-Bahaei has been engaged in research in the area of wireless communications for 27 years both in academic and industrial organizations. He has worked for start-up companies on statistical signal processing for interference cancellation, network planning and optimisation of wireless networks. In 2000 he joined National Semiconductor Corp. (NSC), CA, USA, (now part of Texas Instruments) and worked within a team on the design of 3rd generation handsets based on UMTS standards, for which he has been awarded three US patents as inventor and co-inventor, respectively. He returned to the UK in March 2002 as a Lecturer at King's College London, and is now a full Professor of Telecommunications in the Department of Engineering, King's College London.

He is the chair of one6G Association's Working Group 1, has represented one6G in the International Telecommunications Union (ITU), and is a Fellow of IET, Senior Fellow of Higher Education Academy, and a Senior Member of IEEE.

Wen Tong's bio appears on Page 17.

Sumei Sun's bio appears on Page 16.

Harald Haas's bio appear on Page 15.

Christos Masouros's bio appear on Page 15.

Rahim Tafazolli is Regius Professor of Electronic Engineering, Professor of Mobile and Satellite Communications, Founder and Director of 5GIC, 6GIC and ICS (Institute for Communication System) at the University of Surrey. He has over 30 years of experience in digital communications research and teaching. He has authored and co-authored more than 1000 research publications and is regularly invited to deliver keynote talks and distinguished lectures to international conferences and workshops.

Lajos Hanzo (FIEEE'04) received Honorary Doctorates from the Technical University of Budapest and Edinburgh University. He is a Foreign Member of the Hungarian Science-Academy, Fellow of the Royal Academy of Engineering (FREng), of the IET, of EURASIP and holds the IEEE Eric Sumner Technical Field Award.

Friday, 23 June 2023, 11:00-12:30 Auditorium
What is 6G?

Moderator:	**Anthony C.K. Soong**	*Chief Scientist, Futurewei Technologies*
Panelists:	**Amitabha Ghosh**	*Nokia Fellow, Nokia*
	Aryan Kaushik	*Assistant Professor, University of Sussex*
	Chih-Lin I	*China Mobile Chief Scientist, China Mobile Research Institute*
	Enrico Buracchini	*Senior Project Manager, Telecom Italia*
	Takehiro Nakamura	*Chief Standardization Officer, NTT DoCoMo*

Buoyed by the commercial success of 5G, the wireless industry has initialized the development of 6G. Each region of the world has already organized groups, like B5GPC in Japan, NGA in North America, HEXA-X-II in the EU and FuTURE 5G/6G and IMT-2030 promotion group in China to work on 6G development. The ITU has initiated work on defining IMT-2030 and will finish the IMT Vision/Framework document, likely, by early next year. Just as 5G was a quantum leap in the capabilities of wireless communication for the user, 6G will undoubtedly be another quantum leap in cyber-physical interactions. With technologies like joint communication and sensing, as well as AI/ML capabilities, 6G will usher in the era of the metaverse. This panel, consisting of experts from companies that are part of 5 of the 7 Operational Partners of 3GPP and academic research labs that are defining 6G, will discuss the use cases, current technological development, research, and economics of 6G. The requirements and needs from each region of the world will be compared and contrasted to arrive at a unified framework and vision for 6G.

Anthony C. K. Soong ((S'88-M'91-SM'02-F'14) received the Ph.D. degree in electrical and computer engineering from the University of Alberta. He is currently the Chief Scientist for Wireless Research and Standards at Futurewei Technologies Co. Ltd (a Huawei company), in the US. He currently serves on the Engineering College Industrial Advisory Board of The University of North Texas. He served as Secretary and the founding board member of OPNFV (2014-2016), the chair for 3GPP2 TSG-C NTAH (the next generation radio access network technology development group) from 2007-2009 and vice chair for 3GPP2 TSG-C WG3 (the physical layer development group for CDMA 2000) from 2006-2011. Prior to joining Futurewei, he was with the systems group for Ericsson Inc and Qualcomm Inc. His research group is actively engaged in the research, development and standardization of the next generation cellular system. His research interests are in statistical signal processing, robust statistics, wireless communications, spread spectrum techniques, multicarrier signaling, multiple antenna techniques, quantum communications, network virtualization, SDN and physiological signal processing.

Dr. Soong is a Fellow of the IEEE. He has published more than 100 scientific papers and has more than 100 patents granted or pending. He received the 2017 IEEE Vehicular Technology Society James R. Evans Avant Garde Award, the 2013 IEEE Signal Processing Society Best Paper Award and the 2005 award of merit for his contribution to 3GPP2 and cdma2000 development.

Amitabha (Amitava) Ghosh (F'15) is a Nokia Fellow and works at Nokia Standards and Strategy. He joined Motorola in 1990 after receiving his Ph.D in Electrical Engineering from Southern Methodist University, Dallas. Since joining Motorola he worked on multiple wireless technologies starting from IS-95, cdma-2000, 1xEV-DV/1XTREME, 1xEV-DO, UMTS, HSPA, 802.16e/WiMAX and 3GPP LTE. He has 60 issued patents, has written multiple book chapters and has authored numerous external and internal technical papers. He is currently working on 5G Evolution and 6G technologies. He is also the chair of the NextGA (an US 6G initiative) National Roadmap Working Group. His research interests are in the area of digital communications, signal processing and wireless communications. He is the recipient of 2016 IEEE Stephen O. Rice and 2017 Neal Shephard prize, member of IEEE Access editorial board and co-author of the books titled "Essentials of LTE and LTE-A" and "5G Enabled Industrial IoT Network".

Aryan Kaushik is Assistant Professor at the University of Sussex, UK. He has been with University College London, UK, from 2020-21, University of Edinburgh, UK, from 2015-19, and Hong Kong University of Science and Technology, Hong Kong, from 2014-15. He has held visiting appointments at Imperial College London, UK, University of Luxembourg, Luxembourg, Beihang University, China, and Athena RC, Greece. He is the Editor of upcoming book on "Integrated Sensing and Communications for Future Wireless Networks: Principles, Advances and Key Enabling Technologies," Elsevier. He has been involved in several collaborative projects of international importance as PI/Co-I or research lead. Website: https://sites.google.com/view/aryankaushik/

Chih-Lin I is CMCC Chief Scientist of Wireless Technologies. She received Ph.D. EE from Stanford University. She has won 2005 IEEE ComSoc Stephen Rice Prize, 2018 IEEE ComSoc Fred W. Ellersick Prize, the 7th IEEE Asia-Pacific Outstanding Paper Award, and 2015 IEEE Industrial Innovation Award for Leadership and Innovation in Next-Generation Cellular Wireless Networks. She is the Chair of O-RAN Technical Steering Committee and an O-RAN Executive Committee Member, the Chair of FuTURE 5G/6G SIG, the Chair of WAIA (Wireless AI Alliance) Executive Committee, an Executive Board Member of GreenTouch, a Network Operator Council Founding Member of ETSI NFV, a Steering Board Member and Vice Chair of WWRF, a Steering Committee member and the Publication Chair of IEEE 5G and Future Networks Initiatives, the Founding Chair of IEEE WCNC Steering Committee, the Director of IEEE ComSoc Meetings and Conferences Board, a Senior Editor of IEEE Trans. Green Comm. & Networking, an Area Editor of ACM/IEEE Trans. Networking; Executive Co-chair of IEEE Globecom 2020 and a Scientific Advisory Board Member of Singapore NRF.

She has published over 200 papers in scientific journals, book chapters and conferences and holds over 100 patents. She is co-author of the book "Green and Software-defined Wireless Networks — From Theory to Practice" and has also Co-edited two books: "Ultra-dense Networks — Principles and Applications" and "5G Networks — Fundamental Requirements, Enabling Technologies, and Operations Management". She is a Fellow of IEEE and a Fellow of WWRF. Her current research interests center around ICDT Deep Convergence: "From Green & Soft to Open & Smart".

Enrico Buracchini is currently 5G senior project manager into Innovation Dept of TIM (former famous CSELT R&D labs). He has more than 26 years in wireless comms, managing several innovation projects on 3&4G and consultancy projects in former TIM foreign branches in Austrian A1 (lived in Wien 1 year), Spanish Amena and Greek TIM HELLAS. His Main activities concern 5G and its evolution (e.g. rel16, 17, 18, 19) & 6G, and he is involved in both Hexa X 1 &2 EU projects. A 3GPP RAN1& ITU R 5D delegate, he was E2E network manager of TIM 5G San Marino POC from March to November 2018, including mmW @26GHz. He was a lecturer from 2009 to 2014 of "Wireless Comms Course" into the Master for Foreign Students of Polytechnic of Turin, and in addition has delivered 5G courses & training to TIM personnel.

Takehiro Nakamura joined NTT Laboratories in 1990. He is now Chief Standardization Officer in NTT DOCOMO, Inc. Mr. Nakamura has been engaged in R&D and the standardization activities for advanced radio and network technologies of W-CDMA, HSPA, LTE/LTE-Advanced, 5G and 6G, and engaged in strengthening inter-industry collaboration. Mr. Nakamura has been contributing to standardization activities in 3GPP since 1999, including as vice chair and chair of 3GPP TSG-RAN from 2005 to 2013. He has also been the Acting Chairman of Strategy & Planning Committee and the leader of Millimeter wave Promotion Ad Hoc of 5G Mobile Communications Promotion Forum(5GMF), the leader of Cellular System Task Group of ITS Info-communications Forum, the leader of White Paper Subcommittee in Beyond 5G Promotion Consortium in Japan and the Board member of 5G-ACIA.

VTC2023-Spring Technical Program

Wednesday 21 June 2023

B1: 5G and Beyond I

1 Domain Knowledge-Based Neural Network Architecture for End-to-End Multiuser Precoding in Massive MIMO System
Minseok Jo, Sangrim Lee, Bonghoe Kim, Kyungho Lee, Ikjoo Jung, LG Electronics

2 Failure Prediction in Cloud Native 5G Core With eBPF-based Observability
Junichi Kawasaki, KDDI Corporation

3 Intelligent Subcarrier Allocation in Hybrid Beamforming Multi-User mMIMO-OFDM Systems
Farhan Bishe, Asil Koc, Tho Le-Ngoc, McGill University

4 Safe and Fast Reinforcement Learning for Network Slicing Resource Allocation
Antonio Massaro, Nokia Bell Labs France; Dan Wellington, Nokia Bell Labs, USA; Armen Aghasaryan, Nokia Bell Labs, Paris, France; Robert Seidl, Muhammad Naseer-Ul-Islam, Oemer Bulakci, Nokia Bell Labs, Munich, Germany

5 URLLC Physical Layer Authentication based on non-linear Supervised Learning
Andreas Weinand, RPTU Kaiserslautern Landau; Christoph Lipps, German Research Center for Artificial Intelligence; Michael Karrenbauer, Hans Schotten, University of Kaiserslautern

C1: IoV Networking I

1 Decentralized position detection for moving vehicles
Pedro Rosa, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa; Francesco Pollicino, Università di Modena e Reggio Emilia; Miguel L. Pardal, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa; Mirco Marchetti, Università di Modena e Reggio Emilia; Samih Eisa, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa

2 Environment-Dependent Throughput Distribution Estimation Based on Bayesian Approach for mmWave Vehicular Communications
Yuhi Kurebayashi, Aoyama Gakuin University; Akihito Taya, The University of Tokyo; Yoshito Tobe, Aoyama Gakuin University

3 Exploring Anomaly Detection Techniques for Enhancing VANET Availability
Julia Silva Weber, Tiago Ferreto, Pontifical Catholic University of Rio Grande do Sul; Nur Zincir-Heywood, Dalhousie University

4 On Batching Acknowledgements in C-V2X Services
Mahdi Zaman, Univ. of Central Florida; MD Saifuddin, Mahdi Razzaghpour, Yaser P. Fallah, University of Central Florida; Jayanthi Rao, Ford Motor Company

5 Optimized Strategies for Big Data Offloading in Vehicular Ad-Hoc Networks
Talha Akyildiz, University of Michigan; Tengchan Zeng, Yun Ho Lee, Basavaraj Tonshal, Ford Motor Company; Hessam, Mahdavifar

6 Spherical Codec for V2X Cooperative Awareness Trajectory Compression: A Preliminary Study
Thinh Hoang, University of Toulouse; Vincent Martinez, NXP, France; Daniel Delahaye, École Nationale de l'Aviation Civile (ENAC)

D1: Channel Modeling

1 Attention-based Learning for Sleep Apnea and Limb Movement Detection using WiFi CSI Signals
Chi-Che Chang, An-Hung Hsiao, National Yang Ming Chiao Tung University; Li-Hsiang Shen, University of California, Berkeley; Kai-Ten Feng, Chia-Yu Chen, National Yang Ming Chiao Tung University

2 Channel Capacity Prediction Using Point of Interest for Design and Operation Support of Network
Natsuki Morita, Fujitsu limited; Hayato Dan, Yoshihiro Okawa, Masatoshi Ogawa, Fujitsu Limited

3 Classification with Synthetic Radio Data for Real-life Environment Sensing
Soumeya Kaada, University of Rennes 1 and Nokia Paris Saclay; Sid Ali Hamideche, Chloe Daems, Marie Line Alberi Morel, Nokia Paris Saclay

4 Location-free Indoor Radio Map Estimation using Transfer learning
Rahul Jaiswal, Mohamed Elnourani, University of Agder; Siddharth Deshmukh, NIT Rourkela; Baltasar Beferull-Lozano, University of Agder

5 Mobile traffic classification through burst traffic statistical features
Cesar Vargas Anamuro, Xavier Lagrange, IMT Atlantique, IRISA

6 Robust Machine Learning for Channel Estimation with Varying Delay and Doppler Shift Conditions
Shuyan Ji, John Thompson, University of Edinburgh

E1: Recent Results in Physical Layer I

1 A CSI-Based Construction Scheme for GN-Coset Codes over Frequency Selective Fading Channels
Huiying Song, Yuyuan Chang, Kazuhiko Fukawa, Tokyo Institute of Technology

2 A Simple Algorithm for Jamming Detection in OFDM Systems
Krzysztof Weso?owski, Poznan University of Technology

3 A Time-alignment Algorithm of Multiple Power Delay Profiles Measured by Antenna Rotations Towards Flexible mmWave Channel Measurements
Hiroaki Endo, Yusuke Koda, Hiroshi Harada, Kyoto University

4 AoI-oriented status updating in Large-scale Heterogeneous Multi-Channel Systems
Huijia Chi, Fan Zhang, Chao Xu, Northwest A&F University; Xijun Wang, Sun Yat-sen University

5 Attribution Macro Cell Switching for CoMP in Distributed Antenna Transmission
Takahito Tsukamoto, Go Otsuru, Yukitoshi Sanada, Keio University

F1: Recent Results in Machine Learning for Communications

1 Deep Learning-based Estimation for Multitarget Radar Detection
Mamady Delamou, Mohammed VI Polytechnic University; Ahmad Bazzi, New York University; Marwa Chafii, NYU Abu Dhabi; El Mehdi Amhoud, Mohammed VI Polytechnic University

2 FedATM: Adaptive Trimmed Mean based Federated Learning against Model Poisoning Attacks
Kenji Nishimoto, Yi-Han Chiang, Hai Lin, Osaka Metropolitan University; Yusheng Ji, National Institute of Informatics

3 Machine Learning Based SINR Prediction in Private Campus Networks
Sachin Kumar, RPTU Kaiserslautern-Landau; Sai Charan Kusumapani, Nandish P. Kuruvatti, Bhalachandra G. Bhat, Hans Schotten, University of Kaiserslautern

4 Multichannel Relay assisted NOMA-ALOHA with Reinforcement Learning based Random Access
Haeyoung Lee, University of Hertfordshire; Sunyoung Lee, Entrust Microgrid Ltd.; Youngwook Ko, University of York

5 Spreading Factor assisted LoRa Localization with Deep Reinforcement Learning
Yaya Etiabi, Mohammed Jouhari, Mohammed VI Polytechnic University; Andreas Burg, EPFL; El Mehdi Amhoud, Mohammed VI Polytechnic University

Wednesday, 21 June 2023 11:00 - 12:30 Congressi - Room 101

G1: Batteries, Fuel Cells, and Charging

1 A detailed Electro-thermal model of an NMC lithium-ion prismatic battery cell
Said Madaoui, University of Bordeaux; Franck Guillemard, Stellantis; Jocelyn Sabatier, Jean-Michel Vinassa, University of Bordeaux

2 Collaborative Routing and Charging/Discharging Scheduling of Electric Autonomous Vehicles in Coupled Power-Traffic Networks
Kai-Fung Chu, The Hong Kong Polytechnic University; Tianlun Chen, Albert Y.S. Lam, Yue Song, The University of Hong Kong

3 Predicting Electric Vehicle Charging Stations Occupancy: A Federated Deep Learning Framework
Douaidi Lydia, University of Burgundy; Sidi-Mohammed Senouci, University of Bourgogne, ISAT Nevers; El Korbi Ines, University of burgundy; Harrou Fouzi, King Abdullah University of Science and Technology

4 QEVSEC: Quick Electric Vehicle SEcure Charging via Dynamic Wireless Power Transfer
Tommaso Bianchi, University of Padua; Surudhi Asokraj, University of Washington; Alessandro Brighente, Università degli studi di Padova; Mauro Conti, University of Padua; Radha Poovendran, University of Washington

Wednesday, 21 June 2023 11:00 - 12:30 Oince

H1: Deep Learning Applications

1 Meta-Critic Reinforcement Learning for IOS-Assisted Multi-User Communications in Dynamic Environments
Qinpei Luo, Boya Di, Peking University; Zhu Han, University of Houston

2 Parameter-less Asynchronous Federated Learning under Computation and Communication Constraints
Mengfan Wu, Mate Boban, Huawei Technologies Duesseldorf GmbH; Falko Dressler, TU Berlin

Wednesday, 21 June 2023 14:00 - 15:30 Affari 2.1

B2: 5G and Beyond II

1 Congestion Control by Mobile Core and RAN Coordination in 5G Mobile Network
Takuya Kato, KDDI Research, Inc.

2 Deep Q-Networks Assisted Pre-connect Handover Management for 5G Networks
Yao Wei, Chung-Horng Lung, Samuel Ajila, Carleton University; Ricardo Paredes Cabrera, Ericsson

3 Performance of Joint XR and Best Effort eMBB Traffic in 5G-Advanced Networks
Pouria Paymard, Aalborg University; Abolfazl Amiri, Nokia, Aalborg, Denmark; Troels E. Kolding, Nokia Bell Labs; Klaus Pedersen, Nokia

4 Optimal Antenna Selection and Time Sharing in RF-Powered Cognitive Networks With Ambient Backscatter Communication
Wenjing Liu, Shanpu Shen, Chi Zhang, Danny H.K. Tsang, Ross Murch, The Hong Kong University of Science and Technology

Wednesday, 21 June 2023 14:00 - 15:30 Affari 2.2

C2: IoV Networking II

1 Adverse Event Prevention on The Road System with Collaborative MEC
Ru Jun Wang, Han-Rong Lai, Shih-Jui Wang, Yu-Hsun Kuo, National Tsing Hua University; Chih-Hang Wang, Institute of Information Science, Academia Sinica; Wen-Tsuen Chen, National Tsing Hua University; De-Nian Yang, Academia Sinica

3 Resilient Sparse Array Radar with the Aid of Deep Learning
Aya Mostafa Ahmed, Ruhr University Bochum, Germany.; Udaya S.K.P. Miriya Thanthrige, University of Moratuwa; Aydin Sezgin, Ruhr-University Bochum; Fulvio Gini, University of Pisa, Pisa, Italy

Wednesday, 21 June 2023 11:00 - 12:30 Auditorium Foyer - 2nd Floor

P1: Emerging Technologies and Machine Learning

1 Advanced LiDAR Translation for Huge Domain Gap to Handle Adverse Weather Change
Jinho Lee, Geonkyu Bang, Tokyo University; Toshiaki Nishimori, Mitsubishi Heavy Industries Machinery Systems Ltd.; Kenta Nakao, Mitsubishi Heavy Industries Ltd.; Shunsuke Kamijo, University of Tokyo

2 Deep Unfolding for Fast Linear Massive MIMO Precoders under a PA Consumption Model
Thomas Feys, KU Leuven; Xavier Mestre, Telecommunications Technological Center of Catalonia; Emanuele Peschiera, François Rottenberg, KU Leuven

3 Design and Implementation of Holistic Service-Based End-to-end Network Slicing for 6G
Chang Qin, Xidian University; Tao Sun, China Mobile Research Institute; Mengtian Liu, Bingjie Zhu, Yunfeng Wang, Haiyan Tu, Manhua Zhu, Liqiang Zhao, Xidian University

4 Machine Learning-Aided Dual CSI Feedback in Next Generation WLANs
Eunsung Jeon, Wookbong Lee, Minki Ahn, Jung Woon Lee, Sungsoo Kim, Inhyoung Kim, Joonsuk Kim, Samsung Electronics

5 Propagation Measurements and Coverage Analysis for mmWave and Sub-THz Frequency Bands with Transparent Reflectors.
Ashwini Pondeycherry Ganesh, Wahab Khawaja, NC State University; Ozgur Ozdemir, Ismail Guvenc, North Carolina State University

6 Secrecy Energy Efficiency Maximization in Multi-RIS-Aided SWIPT Wireless Network
Chukwuemeka T. Nwufo, Yichuang Sun, Oluyomi Simpson, Pan Cao, University of Hertfordshire

2 An Energy Efficiency Analysis of Computation Offloading in MEC-Enabled IoV Networks
Ernest Tan, Agency for Science, Technology and Research; A.S. Madhukumar, Nanyang Technological University

3 Edge-V: Enabling Vehicular Edge Intelligence in Unlicensed Spectrum Bands
Francesco Raviglione, Claudio Casetti, Politecnico di Torino; Francesco Restuccia, Northeastern University

4 Federated Learning-based Architecture for Detecting Position Spoofing in Basic Safety Messages
Kenniston Arraes Bonfim, Fernando da Silva Dutra, Carlos Eduardo Travagini Siqueira, Aeronautics Institute of Technology; Rodolfo I. Meneguette, University of Sao Paulo; Aldri Luiz dos Santos, Federal University of Minas Gerais; Lourenço Alves Pereira Júnior, Aeronautics Institute of Technology

5 Refining Packet Collision Check in Resource Allocation for NR Sidelink Mode 2
Sumin Lee, Hyungjoon Shin, Hyogon Kim, Korea University

Wednesday, 21 June 2023 14:00 - 15:30 Affari Adua Hall 2

D2: Channel Modeling and Measurements I

1 Channel Measurement and Analysis for Human Exhalation and Inhalation in Living Room Scenario
Ran Pan, Danping He, Ke Guan, Beijing Jiaotong University; Xiaodong Sun, Dajie Jiang, Fei Qin, VIVO Mobile Communication Co.Ltd.

2 **Delay Spread by Antenna Beamwidth Effect for Mobile Kiosk Data Downloading Environment in the 285GHz bands**
Jinhyung Oh, Jong Ho Kim, Electronics and Telecommunications Research Institute

3 **Indoor Deterministic-Based Channel Modeling at D-Band for 6G Wireless Networks**
Nektarios Moraitis, National Technical University of Athens; Demosthenes Vouyioukas, University of the Aegean

4 **Outdoor Transmission Trials in the W-Band for 6G Mobile Access Scenarios**
Mehrnoosh Mazhar Sarmadi, Ramez Askar, Fraunhofer Institute for Telecommunications, Heinrich Hertz Institute; Mathis Schmieder, Fraunhofer HHI; Michael Peter, Heinrich-Hertz-Institut; Wilhelm Keusgen, Technische Universität Berlin; Dirk Schwantuschke, Fraunhofer IAF

5 **Statistical Evaluation of Delay and Doppler Spreads in sub-6 GHz and mmWave Vehicular Channels**
Faruk Pasic, TU Wien; Markus Hofer, AIT Austrian Institute of Technology; Mariam Mussbah, Herbert Groll, TU Wien; Thomas Zemen, AIT Austrian Institute of Technology; Stefan Schwarz, Christoph Mecklenbräuker, TU Wien

Wednesday, 21 June 2023 14:00 - 15:30 Congressi - Room 4
E2: Recent Results in Physical Layer II
1 **Covariance Difference of Arrival based Fingerprinting Localization**
Xinze Li, Hanan Al-Tous, Aalto University; Salah Eddine Hajri, Huawei Technologies CO. LTD.; Olav Tirkkonen, Aalto University

2 **First Demonstration of Predictive Equalization for UWOCC in Seawater**
Asako Shigenawa, Tokyo university of agriculture and technology; Yuika Yasui, Yu Nakayama, Tokyo University of Agriculture and Technology

3 **Hybrid Beamforming for Dual-Functional Radar-Communication Systems**
Wei-Chih Yang, Hsin-Yuan Chang, National Tsing Hua University; Ronald Y. Chang, Academia Sinica; Wei-Ho Chung, National Tsing Hua University

4 **Revisiting energy-efficient hybrid and digital beamforming architectures above 100 GHz**
Yigit Ertugrul, KU Leuven; Claude Desset, imec; Sofie Pollin, KU Leuven

5 **Wireless Multi-Target Vital Sign Detection Using SIMO-FMCW Radar in Multipath Propagation Environments**
Po-Yen Lin, Hsin-Yuan Chang, National Tsing Hua University; Ronald Y. Chang, Academia Sinica; Wei-Ho Chung, National Tsing Hua University

6 **Sparse Scatter/Target Detection with Spatial Wideband Uniform Linear Arrays**
Chandrashekhar Rai, Debarati Sen, Indian Institute of Technology Kharagpur

Wednesday, 21 June 2023 14:00 - 15:30 Congressi - Room 5
F2: Radio Access Technology, Services and Security
1 **Context-Aware Service Placement at the Edge in Vehicular Networks**
Wanlu Zhang, Chenhui Tao, Harbin Institute of Technology, Shenzhen; Jingjing Luo, Fu-Chun Zheng, Harbin Institute of Technology (Shenzhen); Lin Gao, Harbin Institute of Technology

2 **Physical Layer Authentication With Simultaneous Reflecting and Sensing RIS**
Mahmoud Selim, Stefano Tomasin, University of Padova

3 **Post-Quantum Impacts on V2X Certificates - Already at The End of The Road**
Takahito Yoshizawa, Bart Preneel, imec-COSIC KU Leuven

4 **Security and Reliability Performance of a Cooperative Network with Self-Sustaining Nodes**
Amit Patel, Shankar Prakriya, Indian Institute of Technology, Delhi

Wednesday, 21 June 2023 14:00 - 15:30 Congressi - Room 101
G2: Non Terrestrial Platforms
1 **Basic Experimental Evaluation of Feeder Link Transceiver in HAPS System**
Kazuki Matsuura, SoftBank Corp.; Yoshichika Ohta, Softbank Corp.

2 **HAPS Cell Design Method for Coexistence on Terrestrial Mobile Networks**
Yohei Shibata, Wataru Takabatake, Kenji Hoshino, Atsushi Nagate, SoftBank Corp.; Tomoaki Ohtsuki, Keio University

3 **Interference Reduction between HAPSs using Subarray Grouping and Nullforming Techniques for Cylindrical Massive MIMO Systems**
Koji Tashiro, SoftBank Corp.

4 **Low Earth Orbit Satellite Supported Multi-Hop Dissemination of Messages in V2X Networks**
Mario Franke, TU Dresden; Roland Stroop, Paderborn University; Florian Klingler, TU Ilmenau; Christoph Sommer, TU Dresden

5 **Transmission experiments using delay generator actualizing fixed communication system for HAPS**
Yuki Hokazono, Hinata Kohara, Yuto Muroki, Kenji Fukasawa, NTT DOCOMO INC.; Yoshihisa Kishiyama, NTT DOCOMO, INC.; Jun Suzuki, Hiromu Kitanozono, SKY Perfect JSAT Corporation

Wednesday, 21 June 2023 14:00 - 15:30 Oince
H2: Machine Learning for Sensing
1 **Enhancing Image-based Positioning With a Novel Foot Position Extraction Algorithm and Machine Learning**
Han-Hsuan Cheng, Jin-Xian Liu, Jenq-Shiou Leu, National Taiwan University of Science and Technology

2 **Finding Needles in Haystack: Formal Generative Models for Efficient Massive Parallel Simulations**
Osama Maqbool, RWTH University Aachen

3 **Hybrid Cascaded and Feature-Level Fusion Scheme for Multi-Modal Indoor Localization**
Siyu Tang, Shanghai University; kaixuan huang, shanghai university; Shunqing Zhang, Shanghai University

4 **SwipeBot: DNN-based Autonomous Robot Navigation among Movable Obstacles in Cluttered Environments**
Dzmitry Tsetserukou, Skolkovo Institute of Science and Technology

5 **Training Data Generation Utilizing LOS Identification for Estimating Spatial Loss Fields**
Yoshiaki Nishikawa, NEC; Takahiro Matsuda, Tokyo Metropolitan University; Eiji Takahashi, Takeo Onishi, NEC; Toshiki Takeuchi, NEC Corporation

Wednesday, 21 June 2023 14:00 - 15:30 Auditorium Foyer - 2nd Floor
P2: RF, E-Mobility, Radio Access, and Spectrum Management
1 **6G Wireless Channel Scenario Extensions and Characteristics Analysis for Urban Environment**
Zhongyu Qian, Zheao Li, WenQi Zhou, Southeast University; Chen Huang, Purple Mountain Laboratory; Cheng-Xiang Wang, Southeast University

2 **Measuring the Impact of Intrain Repeater Deployments in Real-Time**
Martin Lerch, Philipp Svoboda, TU Wien; Josef Resch, OBB Technische Services GmbH; Markus Rupp, TU Wien

3 **Time Variant Directional Multi-Link Channel Sounding and Estimation for V2X**
Daniel Stanko, Michael Döbereiner, Fraunhofer Institute for Integrated Circuits IIS; Gerd Sommerkorn, Daniel Czaniera, Technische Universität Ilmenau; Carsten Andrich, Alexander Ihlow, Institute for Information Technology, Technische Universität Ilmenau; Markus Landmann, Fraunhofer Institute for Integrated Circuits IIS

4 **Decentralized Training of 3D Lane Detection with Automatic Labeling Using HD Maps**
Yadong Mao, Zhuqi Xiao, Zenseact AB; Che-Tsung Lin, Chalmers University of Technology; Pedro Porto Buarque de Gusmao, Nicholas Lane, University of Cambridge; Christopher Zach,

Chalmers University of Technology; Mina Alibeigi, Zenseact AB, University of Cambridge

5 Design and Implementation of a Service-based Radio Access Network
Haoyang Ding, Yunfeng Wang, Xingyun Zheng, Liqiang Zhao, Xidian University

6 Eco-driving over multi-signal road segments considering traffic flow constraints
Zhensen Yang, Chuang Wang, Huazhong University of Science and Technology; Yuling Fan, Huazhong Agricultural University; Lijun Zhang, Huazhong University of Science and Technology

7 MsSDEdit: Deep Learning Image Enhancement for Automated Bounding Box Annotations in Automotive Monocular Camera Applications
Nico Hessenthaler, Andreas F. Schneider, Nicolaj C. Stache, Heilbronn University of Applied Sciences

---

Wednesday, 21 June 2023 16:00 - 17:30 Affari 2.1
B3: Emerging Technologies

1 Light Source Tracking System for A-QL based Display-Camera Communication
Yuki Sasaki, Kazuki Maruta, Tokyo University of Science; Shun Kojima, The University of Tokyo; Daisuke Hisano, Osaka University; Yu Nakayama, Tokyo University of Agriculture and Technology

2 Minimizing Energy Consumption for Decentralized Federated Learning Using D2D Communications
Mohammed S. Al-Abiad, The University of Toronto; Md. Jahangir Hossain, University of British Columbia

3 MMSE Threshold-based Power Control for Wireless Federated Learning
Yeh-Shu Hsu, Rung-Hung Gau, National Yang Ming Chiao Tung University

4 Opportunistic Resilient Time Service from LEO Mega Constellations
Panos Fines, Ekaterini Christofylaki, Wireless Intellignet Systems Ltd; Paul Febvre, Satellite Applications Catapult

5 QRADCOM: Quantum Assisted Framework for Joint Detection and Estimation in Radar Communications
Mostafizur Rahaman Laskar, Soumita Naskar, Amit Kumar Dutta, Indian Institute of Technology Kharagpur

6 Towards Improving Realism of Perception in Artery
Alexander Willecke, Cengiz Yazici, Keno Garlichs, Lars Wolf, Technische Universität Braunschweig

Wednesday, 21 June 2023 16:00 - 17:30 Affari 2.2
C3: Estimation & Detection

1 A Least Squares Approach for Estimating Non-linearity Parameters for OFDM Signals with Bussgang Receivers
Zahra Mokhtari, Instituto de Telecomunicações (IT); Rui Dinis, Universidade Nova de Lisboa; João Madeira, Universidade Nova de Lisboa - Faculdade de Ciências e Tecnologias; João Guerreiro, FCT-Universidade Nova de Lisboa, Instituto de Telecomunicações

2 Active User Detection and Channel Estimation for Grant-Free Random Access with Gaussian Correlated Activity
Lelio Chetot, CITI - INSA Lyon, Maracas - INRIA Lyon; Malcolm Egan, CITI Lab, France; Jean-Marie Gorce, INSA Lyon

3 On the Feasibility of 5G Carrier Synchronization for Super-QAM Constellations
Zahra Mokhtari, Instituto de Telecomunicações (IT); Rui Dinis, Universidade Nova de Lisboa; Sha Hu, Huawei Lund Research Center; Hao Wang, Huawei Technologies

4 Wiener Interpolation Filter for Phase Noise Estimation in sub-THz Transmission
Yaya Bello, Jean-Baptiste Doré, David Demmer, CEA-Leti

Wednesday, 21 June 2023 16:00 - 17:30 Affari Adua Hall 2
D3: Channel Modeling and Measurements II

1 A Hybrid Antenna Switching Scheme for Dynamic Channel Sounding
Jaeyoung Park, Ali Al-Ameri, Juan Sanchez, Xuesong Cai, Fredrik Tufvesson, Lund University

2 A Novel Beam Domain Channel Model for Orbital Angular Momentum Communication Systems with Massive Uniform Circular Array
Wenxie Ji, Cheng-Xiang Wang, Jie Huang, Yue Yang, Southeast University

3 Evaluation of High-Performance Radio Propagation Simulation Method in Path Loss Estimation
Takahiro Tomie, Satoshi Suyama, Koshiro Kitao, Mitsuki Nakamura, NTT DOCOMO, Inc.

4 Reduction of Noise Power by Iterative Short-Time Power Delay Profile Estimation
Fumiya Ojika, Takaya Yamazato, Nagoya University; Masato Saito, University of the Ryukyus; Hideki Omote, Akihiro Sato, Sho Kimura, Shoma Tanaka, Ho-Yu Lin, SoftBank Corp.

5 RNN-Based Path Loss Modeling with Variable-Size Map Data in Urban Environments
Tatsuya Nagao, Takahiro Hayashi, KDDI Research, Inc.

Wednesday, 21 June 2023 16:00 - 17:30 Congressi - Room 4
E3: Recent Results in RIS I

1 A comprehensive dataset of RIS-based channel measurements in the 5GHz band
Simon Tewes, Ruhr-University Bochum; Markus Heinrichs, TH Cologne - University of Applied Sciences, Cologne, Germany; Kevin Weinberger, Ruhr-University Bochum; Rainer Kronberger, TH Cologne - University of Applied Sciences, Cologne, Germany; Aydin Sezgin, Ruhr-University Bochum

2 A Simulation Framework For RIS Communications
Jonathan W. Browning, Nidhi Simmons, Queen's University Belfast; Paschalis Sofotasios, Khalifa University; Simon L. Cotton, Queen's University Belfast; David Morales-Jimenez, University of Granada; Michalis Matthaiou, Muhammad Ali Babar Abbasi, Queen's University Belfast

3 A Low-Complexity Solution to Sum Rate Maximization for IRS-assisted SWIPT-MIMO Broadcasting
Vaibhav Kumar, University College Dublin; Anastasios Papazafeiropoulos, University of Hertfordshire; Muhammad Fainan Hanif, University of the Punjab, Lahore, Pakistan; Le-Nam Tran, Mark Flanagan, University College Dublin

4 CNN-enabled Joint Active and Passive Beamforming for RIS-assisted MU-MIMO Systems
Zhizhou He, Fabien Heliot, Yi Ma, University of Surrey

5 Firefly Algorithm for Beamforming Design in RIS-aided Communications Systems
Tuan Le, Middlesex University London; Xin-She Yang, Middlesex University

Wednesday, 21 June 2023 16:00 - 17:30 Congressi - Room 5
F3: Recent Results in Resource Management I

1 A New Time Series Forecasting Approach Using Classification: Application to Field of View Prediction in 360° videos
Ahmed Saadallah, El Korbi Ines, University of Burgundy; Sidi-Mohammed Senouci, University of Bourgogne, ISAT Nevers; Philippe Brunet, University of Burgundy

2 Communication and Control Interfacing for Co-design of Wireless Control Systems
Jianxiu Li, University of Southern California; Saeed R. Khosravirad, Jinfeng Du, Nokia Bell Labs; Wanchun Liu, University of Sydney; Urbashi Mitra, University of Southern California

3 Companding Transform Assisted Constant Envelope OFDM
Chongda Huang, Lilin Dan, Yue Xiao, University of Electronic Science and Technology of China

---

4 Coverage Hole Elimination System in Industrial Environment
Mervat Zarour, Shreya Tayade, Sergiy Melnyk, German Research Center for Artificial Intelligence; Hans D.Schotten, Technical University of Kaiserslautern; Hans Schotten, University of Kaiserslautern

5 Integrated Space Domain Awareness and Communication System
Selen Gecgel Cetin, Istanbul Technical University; Berna Ozbek, Izmir Institute of Technology; Gunes Karabulut Kurt, Polytechnique de Montreal, Canada

Wednesday, 21 June 2023 16:00 - 17:30 Congressi - Room 101
G3: Performance Analysis and Evaluation
1 Analysis of the outage probability of ground-based relaying for satellite systems
Hadi Hashemi, Beatriz Soret, University of Malaga; Mari Carmen Aguayo-Torres, Universidad de Malaga

2 Exploiting Reflection Direction Variation for Phase Control in Multiple Simultaneous IRS Links
Ei Tanaka, Yuichi Kawamoto, Nei Kato, Tohoku University; Masashi Iwabuchi, NTT; Riku Ohmiya, NTT Access Network Service Systems Laboratories; Tomoki Murakami, NTT Corporation

3 Implementation of Low-cost Multi-antenna AmBC Receivers
Xiyu Wang, Huseyin Yigitler, Aalto University; Bing-Qing Zhao, Xi'an Jiaotong University; Jingyi Liao, Norshahida Saba, Nicolas Malm, Aalto University; Riku Jäntti, Department of Communications and Networking, Aalto University

4 Performance Analysis of Intelligent Reflecting Surface Assisted-FSO System over Turbulent Channels with Pointing Errors
Takumi Ishida, Chedlia Ben Naila, Hiraku Okada, Masaaki Katayama, Nagoya University

5 Performance Analysis of QKD-based Terrestrial FSO System using QPSK under Atmospheric Turbulence
Ragini Verma, Anshul Jaiswal, IIT Roorkee

Wednesday, 21 June 2023 16:00 - 17:30 Oince
H3: Large Intelligent Surfaces
1 Capacity Analysis of RIS-Aided Backscatter Communication Systems
Yasin Khan, Aaqib Afzal, Ankit Dubey, Indian Institute of Technology Jammu

2 Efficient Power Allocation in Coded MIMO Systems
Haochen Wu, Ke Ma, Yang Ming, Tsinghua University; Ziyuan Sha, Zeku Technology Corp., Ltd.; Zhaocheng Wang, Tsinghua University

3 On the Jamming Rejection Features of Near-field Beamforming
João Ferreira, Universidade Nova de Lisboa; João Guerreiro, FCT-Universidade Nova de Lisboa, Instituto de Telecomunicações; Rui Dinis, Universidade Nova de Lisboa; Mario Marques da Silva, Institute for Telecommunications

4 RIS-aided Media Based Modulation
Shankul Saini, Vighnesh S Bhat, Indian Institute of Science, Bangalore; A Chockalingam, Indian Institute of Science

Wednesday, 21 June 2023 16:00 - 17:30 Auditorium Foyer - 2nd Floor
P3: Transmission & Reception and Vehicle Communications
1 Adaptive Time Synchronization between Transmitters in Digital Self-interference Cancellation Systems
Daeyoung Kim, Hyunseok Yu, Joohyun Do, Jungwon Lee, Samsung Electronics

2 Amplitude- and phase-modulated PSSS for wide bandwidth mixed analog-digital baseband processors in THz communication
Lukasz Lopacinski, IHP; Nebojsa Maletic, IHP - Leibniz-Institut für innovative Mikroelektronik; Rolf Kraemer, IHP; Alireza Hasani, IHP - Leibniz-Institut fur innovative Mikroelektronik; Jesus Gutiérrez, IHP; Milos Krstic, IHP - Leibniz-Institut für innovative Mikroelektronik; Eckhard Grass, IHP, Germany and HU, Berlin

3 Max-Min Fairness Precoder Design using A Generalized Power Iteration Approach in Rate-Splitting Multiple Access
Doseon Kim, Jeonghun Park, Yonsei University; Dongku Kim, Yonsei university

4 Deep Reinforcement Learning-Based Resource Allocation for Cellular V2X Communications
Yi-Ching Chung, Hsin-Yuan Chang, National Tsing Hua University; Ronald Y. Chang, Academia Sinica; Wei-Ho Chung, National Tsing Hua University

5 Flying Intelligent Surfaces: Joint adjustment of position and configuration for UAV-mounted RIS
Kevin Weinberger, Simon Tewes, Raphael Dyrska, Jens Müller, Martin Mönnigmann, Aydin Sezgin, Ruhr-University Bochum

6 Matrix Factorization and Deep Autoencoder based Clustering Scheme for Large-scale UAV Networks
Jiaolan Fang, Chan Wang, Rongpeng Li, Zhejiang University

Thursday 22 June 2023

Thursday, 22 June 2023 11:00 - 12:30 Affari 2.1
B4: UAV Communications I
1 Characterizing Interference in UAV-mounted Radar Networks with Guard Zones
Jaehyun Park, Pukyong National University; Ismail Guvenc, North Carolina State University

2 Collision Avoidance Strategies for Cooperative Unmanned Aircraft Systems using Vehicle-to-Vehicle Communications
Jaya Sravani Mandapaka, Batool Dalloul, Skyler Hawkins, Kamesh Namuduri, University of North Texas; Shane Nicole, Keven Gambold, Unmanned Experts

3 Measurement-based Channel Characterization for A2A and A2G Wireless Drone Communication System
Ubeydullah Erdemir, Batuhan Kaplan, Tübitak Bilgem; İbrahim Hökelek, Tübitak; Ali Gorcin, Yildiz Technical University; Hakan Ali Çırpan, İstanbul Technical University

4 MEC-assisted Low Latency Communication for Autonomous Flight Control of 5G-Connected UAV
Sourabh Solanki, Université du Luxembourg; Asad Mahmood, Vibhum Singh, SnT, University of Luxembourg; Sumit Gautam, Indian Institute of Technology - Indore; Jorge Querol, Symeon Chatzinotas, SnT, University of Luxembourg

5 Spherical-Array-Based Joint Beamforming and UAV Positioning in Massive MIMO Systems
Mobeen Mahmood, Asil Koc, Tho Le-Ngoc, McGill University

6 Trajectory Design for Sum-Rate Enhancement in UAV-SCMA System
Saumya Chaturvedi, Indraprastha Institute of Information Technology Delhi; Vivek Bohara, IIIT-Delhi; Zilong liu, University of Essex; Anand Srivastava, IIIT DELHI

C4: IoT Networks I

1 Aggregation of Contiguous Packets in an Actual LoRaWAN Passive Packet Sniffer
Ahmed Abdelghany, Bernard Uguen, Christophe Moy, Jérôme Le Masson, IETR / CNRS / Université Rennes-I

2 DoIP: A Parallel Protocol Conversion Gateway for DMR over Internet Protocol
Wenkai Wang, Xidian University, China; Lina Zhu, Tom H. Luan, Changle Li, Xidian University

3 FLCC: Efficient Distributed Federated Learning on IoMT over CSMA/CA
Abdelaziz Salama, University of Leeds

4 Measurement-Based Latency Evaluation and the Theoretical Analysis for Massive IoT Applications Using Bluetooth Low Energy
Daisuke Uchida, Toshiba Corporation; Yuki Yonezawa, Koji Akita, Toshiba Corp.

5 Periodic Data Scheduling Scheme for Power Internet of Things Based on Age of Information
Qianni Zhou, Chong Tan, Hui Li, Jichen Bian, Hong Liu, Min Zheng, Shanghai Institute of Microsystem and Information Technology CAS

D4: RIS-assisted Communications

1 Ergodic Capacity Analysis of Reconfigurable Intelligent Surface Assisted MIMO Systems with the source to destination link
Marjan Abbasi Mosleh, Fabien Heliot, Rahim Tafazolli, University of Surrey

2 Measurement-based Characterization of Physical Layer Security for RIS-assisted Wireless Systems
Samed Keşir, Sefa Kayraklık, Tübitak Bilgem; İbrahim Hökelek, Tübitak; Ali Emre Pusane, Bogazici University; Ertugrul Basar, Koc University; Ali Gorcin, Yildiz Technical University

3 On the Optimal Assignment of Mirror Element in UAV and OIRS-Assisted OWC based Architecture
Priyanka Singh, Vivek Bohara, Anand Srivastava, IIIT-Delhi

4 User Selection for Simple Passive Beamforming in Multi-RIS-Aided Multi-User Communications
Wei Jiang, German Research Center for Artificial Intelligence; Hans Schotten, University of Kaiserslautern

E4: Recent Results in Radio Access

1 EFD-M2MMAC: An Enhanced Full-Duplex Many-to-Many MAC Protocol for Single-Hop Wireless Ad Hoc Networks
Wilton Pereira Santos Santana, Renato Mariz de Moraes, Universidade Federal de Pernambuco (UFPE)

2 Evaluation of 5GNR-based Cooperative Collision Avoidance (CoCA)
Valérian Mannoni, CEA; Benoît Denis, CEA-Leti Minatec

3 Performance Evaluation of Random Access for Small Data Transmissions in Highly Dense Public and Private NB-IoT Networks
Pascal Jörke, David Ronschka, Technische Universität Dortmund; Christian Wietfeld, TU Dortmund University

4 Performance of a New Dynamic Time-Switching Protocol with a Battery-Assisted FD Relay
Kamal Agrawal, Shankar Prakriya, Indian Institute of Technology, Delhi; Keshav Singh, National Sun Yat-sen University

5 Time-Triggered Reservation for Cooperative Random Access in Wireless LANs
Yaodan Xu, Sheng Zhou, Tsinghua University; Qian Cao, Bowen Zheng, Zhangliang Xiong, Yuanqiang Ni, Huawei Device Co., Ltd

F4: Recent Results in Resource Management II

1 Network Economic Model for Resource Utilization in Fog-based RAN
Bharat Dwivedi, Sandip Chakraborty, Debarati Sen, Indian Institute of Technology Kharagpur

2 On the Detection and Solution of Coverage Holes in 5G Networks through Relay User Equipment: a combined DBSCAN and Deep:Q Network Approach
Juan Jesús Hernandez, Jordi Pérez-Romero, Irene Vilà Muñoz, Oriol Sallent, Universitat Politècnica de Catalunya

3 On the Feasibility of Position-Flooding in Urban UAV Networks
Konrad Fuger, Andreas Timm-Giel, Hamburg University of Technology

4 Revealing Spectrum Allocation Scheme and Temporal Transmission Behavior of IoT Devices using Passive Packet Sniffing
Ahmed Abdelghany, Bernard Uguen, Christophe Moy, Jérôme Le Masson, IETR / CNRS / Université Rennes-I

5 Path Planning for Unmanned Aerial Vehicles: Peak Power Minimization
Bahareh Jafari, University of Massachusetts Amherst; Hamid Saeedi, University of Doha for Sci. and Tech.; Saeede Enayati, Hossein Pishro-Nik, University of Massachusetts Amherst

G4: Autonomous Vehicle Security

1 A Machine Learning Approach for Detecting GPS Location Spoofing Attacks in Autonomous Vehicles
Stylianos Filippou, Andreas Achilleos, Syeda Zillay Nain Zukhraf, Christos Laoudias, Kleanthis Malialis, KIOS Center of Excellence, University of Cyprus; Maria K. Michael, George Ellinas, University of Cyprus

2 PREVENT: A Mechanism for Preventing Message Tampering Attacks in Electric Vehicle Networks
Rohini Poolat Parameswarath, National University of Singapore; Nalam Venkata Abhishek, Singapore Institute of Technology; Biplab Sikdar, National University of Singapore

3 MMFiducial: Millimeter Wave Fiducial Tags for Radar Sensing of Traffic Infrastructure
Manideep Dunna, Kshitiz Bansal, University of California San Diego; Sanjeev Anthia Ganesh, Eamon Patamasing, Dinesh Bharadia, University of California, San Diego

4 Rate Adaptation Algorithm With LSTM in IEEE 802.11ac
Jichen Bian, Chong Tan, Hong Liu, Hui Li, Min Zheng, Shanghai Institute of Microsystem and Information Technology CAS

5 Secure Vehicle Software Updates: Requirements for a Reference Architecture
Kim Strandberg, Ulf Arnljung, Volvo Cars; Tomas Olovsson, Chalmers University of Technology; Dennis Kengo Oka, Synopsys

6 Simutack - An Attack Simulation Framework for Connected and Autonomous Vehicles
Andreas Finkenzeller, Anshu Mathur, Jan Lauinger, Mohammad Hamad, Sebastian Steinhorst, Technical University of Munich

H4: DL for Communications

1 Deep Learning-based Demodulator for Magnitude Modulated Signals
Diogo Henriques, Marco Gomes, Instituto de Telecomunicações - University of Coimbra; Vitor Silva, University of Coimbra; Fernando Perdigão, Instituto de Telecomunicações - University of Coimbra

2 Pragmatic Distributed Algorithm for Multi-Carrier Cooperative NOMA
Harry Horler, Baharak Rastegari, Soon Xin Ng, University of Southampton

3 SplitAMC: Split Learning for Robust Automatic Modulation Classification
Jihoon Park, Seungeun Oh, Seong-Lyun Kim, Yonsei University

B5: UAV Communications II

1 **Graphic Neural Network based GPS Spoofing Detection for Cellular-Connected UAV swarm**
Yongchao Dang, Alp Karakoc, Riku Jäntti, Aalto University

2 **Using UAVs for the fast detection and characterization of polluted areas**
Javier Paul, Jamie Wubben, Universidad Politécnica de Valencia; Willian Zamora, Universidad Laica Eloy Alfaro de Manabí Manta; Enrique Hernández Orallo, Carlos T. Calafate, Polytechnic University of Valencia; Jorge L. Valenzuela, Kansas State University

C5: IoT Networks II

1 **Deduplication of Textual Data by NLP Approaches**
Kiana Ghassabi, Peyman Pahlevani, Institute for Advanced Studies in Basic Sciences (IASBS); Peyman Pahlevani, Aalborg University; Daniel Enrique Lucani Rotter, Aarhus University

2 **Fair Network Division of Nano-satellite Swarms**
Evelyne Akopyan, TéSA; Riadh Dhaou, Toulouse University; Emmanuel Lochin, ENAC; Bernard Pontet, CNES; Jacques Sombrin, TéSA

3 **Fast converging Federated Learning with Non-IID Data**
Si Ahmed Naas, Stephan Sigg, Aalto University

4 **Inter-Twin Connectivity for Digital Twin Networks in Secure Contactless Delivery Service Scenarios**
Woojin Park, Chungbuk National University; Daeun Lee, Ulsan National Institute of Science and Technology; Soochang Park, Chungbuk National University; Taehun Yang, Andong National University; Sang-Ha Kim, ChungNam National University

5 **Prospect-theoretic DRL Approach for Container Provisioning in Energy-constrained Edge Platforms**
Mduduzi Comfort Hlophe, Sunil Maharaj, University of Pretoria

D5: Satellite Comunications

1 **A New GNSS-based Channel Estimation Strategy for LEO Satellite Communication Systems**
Hyunwoo Lee, Jehyun Heo, Daesik Hong, Yonsei University

2 **Capacity of Satellite Communication Systems Under Different Adaptive Transmission Schemes**
Kshitija Dolas, Manav R Bhatnagar, IIT Delhi

3 **Energy Efficiency of Rate-Splitting Multiple Access for Multibeam Satellite Communications**
Jinyuan Liu, Guan Yong Liang, Yao Ge, Nanyang Technological University; Longfei Yin, Imperial College London; Bruno Clerckx, Imperial

E5: Recent Results in Vehicular Communications

1 **On the Feasibility of Using 5G Enabled Smartphones to Improve Safety of Vulnerable Road Users**
Joel Puga, CCG; Filipe Meneses, Adriano Moreira, University of Minho

2 **Predictive Network Configuration with Hierarchical Spectral Clustering for Software Defined Vehicles**
Pierre Laclau, Stellantis and Heudiasyc (CNRS, UTC), France; Stéphane Bonnet, Heudiasyc, UMR CNRS, Université de Technologie de Compiègne, France; Bertrand Ducourthial, Université de Technologie de Compiègne; Xiaoting Li, Trista Lin, Stellantis, Vélizy-Villacoublay, France

3 **Real-time route planning based on network coverage for connected vehicles**
Romain Stevens, University of Technology of Troyes; Mario Bou Abboud, Maroua Drissi, Sylvain Allio, Orange Labs

4 **Reinforcement Learning-Based Cognitive Radio Transmission Scheduling in Vehicular Systems**
Yun Li, Yuyuan Chang, Kazuhiko Fukawa, Tokyo Institute of Technology; Naoki Kodama, Meiji University

F5: Radio Access for Cellular Networks

1 **A QoS harmonization strategy for Wi-Fi and Cellular Networks Convergence**
Akshay Jain, Nokia Bell Labs; Daniel Garcia, Seyed Mahdi Darroudi, Neutroon Technologies SL; Elena Lopez-Aguilera, Universitat Politecnica de Catalunya

2 **DRL-based RAT Selection in a Hybrid Vehicular Communication Network**
Badreddine Yacine Yacheur, Toufik Ahmed, CNRS-LaBRI UMR 5800, University Bordeaux, Bordeaux-INP; Mohamed Mosbah, LaBRI, Bordeaux INP, Universiy of Bordeaux, CNRS, France

3 **Improving Delay Estimation in Underwater Acoustic Applications by the Additional Use of Cross-Cross-Correlation**
Gaetano Giunta, University of Roma Tre; Luca Pallotta, University of Basilicata

4 **Novel Out-of-Band mmWave Layer 2 Protocol for 5G Network-Based Downlink IAB SDR Platform**
Randy Verdecia, Universidad Politécnica de Madrid; Rodolfo Oliveira, Universidade Nova de Lisboa/Instituto de Telecomunicações; José I. Alonso, Universidad Politécnica de Madrid

5 **Optimal placement of virtualized DUs in O-RAN architecture**
Amath Ndao, Xavier Lagrange, Nicolas Huin, Geraldine Texier, Loutfi Nuaymi, IMT Atlantique

G5: Green Tech and Energy Management

1 **An Innovative Convoying and Power Management System for Public Transportation**
Adriano Alessandrini, University of Florence; Fernando Ortenzi, ENEA; Lorenzo Berzi, Michelangelo Santo Gulino, University of Florence; Fabio Cignini, ENEA; Luca Pugi, University of Florence

2 **Energy Consumption of Electric Vehicles: Effect of Lateral Dynamics**
Simran Kumari, Susenjit Ghosh, Ashish Hota, Siddhartha Mukhopadhyay, Indian Institute of Technology, Kharagpur

3 **Modeling and Controller Design for Real-time Energy Management in Battery/SC Electric Vehicles**
Morteza Rezaei Larijani, Shahin Hedayati Kia, University of Picardie Jules Verne; M. R. Zolghadri, Sharif University of Technology; Ahmed El Hajjaji, University of Picardie Jules Verne; Amir Taghavipour, K. N. Toosi University of Technology

4 **Multi-layer Approach for Energy Consumption Optimization in Electric Buses**
Tobias Rösch, Sunilkumar Raghuraman, EvoBus GmbH; Martin Sommer, Carolin Junk, Daniel Baumann, Eric Sax, Karlsruhe Institute of Technology

5 **Performance Evaluation of an Electromechanical Linear Actuator with Optimal Trajectories**
Mohammad Bahari, Alvaro Paz, Andrew Habib, Jouni Mattila, Tampere University

H5: Assisted Mobility

1 **Experimental Identification of the Lateral Dynamics of a Steering-assisted Two-wheeled Vehicle**
Stefano Lovato, Matteo Massaro, Basilio Lenzo, Mauro Andriollo, Roberto Lor, Matteo Bova, University of Padova

2 **Improving Emergency Vehicles Flow in Urban Environments Through SDN-based V2X Communications**
Mickaël Riviere, University of Reunion Island, France; José D. Padrón, Universitat Politècnica de València; Carlos T. Calafate, Juan-Carlos Cano, Polytechnic University of Valencia; Tahiry Razafindralambo, Univ. La Réunion

3 **Inferring Human Driver Intent in Partial Deployment of Connected Autonomous Vehicles: the Lane Change Case**
Jonghwan Na, Hojeong Lee, Hyogon Kim, Korea University

4 Optimized Intelligent Driver Model for a Fluid Traffic Flow and Accidents Avoidance
Mayssa Dardour, Mohamed Mosbah, Toufik Ahmed, University of Bordeaux

5 Stochastic Graph Neural Network-based Value Decomposition for Multi-Agent Reinforcement Learning in Urban Traffic Control
Xiao Baidi, Rongpeng Li, Zhejiang University; Fei Wang, Chenghui Peng, Jianjun Wu, Huawei Technologies; Zhifeng Zhao, Zhejiang Lab; Honggang Zhang, Zhejiang Lab and Zhejiang University

6 Design & Modelling of an All Wheel Drive System for an Heavy Quadricycle Truck (L7e category)
Luca Pugi, Lorenzo Berzi, Samule Sarti, University of Florence; Claudia Bonaccorso, Enrico Bianconi, Advanced Techno Solutions S.r.l.

Thursday, 22 June 2023 16:00 - 17:30 Affari 2.1
B6: Vehicular Applications

1 Fine-grained Passenger-Vehicle Coupling Management for Secure Ride-Sharing Services
Daeun Lee, Ulsan National Institute of Science and Technology; Woojin Park, Soochang Park, Chungbuk National University; Taehun Yang, Andong National University; Sang-Ha Kim, ChungNam National University

2 On the Accuracy of Automotive Radar Tracking
Lennert Jacobs, Ghent University; Peter Veelaert, Ghent University - imec; Heidi Steendam, Ghent University; Wilfried Philips, Ghent University - imec

3 RF Signal Source Search and Localization Using an Autonomous UAV with Predefined Waypoints
Hyeokjun Kwon, Ismail Guvenc, North Carolina State University

4 Sensing Resources Reduction for Vehicle Detection with Integrated Sensing and Communications
Carlos Ravelo, 5G Communicatons for Future Industry Verticals; David Martin-Sacristan, 5G Communications for Future Industry Verticals; Syed Najaf Haider Shah, Technische Universität Ilmenau, Germany; Carsten Smeenk, Fraunhofer Institute for Integrated Circuits; Giovanni Del Galdo, TU Ilmenau; Jose F. Monserrat, Polytechnic University of Valencia

5 Vehicle Detection and Tracking using Radar for Lane Keep Assist Systems
Shantanu Yadav, Sanju Kumar NT, IIT Hyderabad; P. Rajalakshmi, NMICPS TiHAN, Indian Institute of Technology Hyderabad

6 Vehicle Positioning With Dynamic Recurrent Vehicular Pattern Learning
Alberto, Dario Tagliaferri, Umberto Spagnolini, Politecnico di Milano

Thursday, 22 June 2023 16:00 - 17:30 Affari 2.2
C6: Energy Efficiency

1 A New Information Harvesting Mechanism for Far-Field Wireless Power Transfer
Mehmet Ilter, Risto Wichman, Jyri Hamalainen, Aalto University; Salama Ikki, Lakehead University

2 Adaptive K-Repetition Transmission Employing Site Diversity Reception for 5G NR Uplink Grant-Free URLLC
Arif Dataesatu, Kosuke Sanada, Hiroyuki Hatano, Kazuo Mori, Mie University; Pisit Boonsrimuang, King Mongkut's Institute of Technology Ladkrabang

3 Energy and Bandwidth Efficiency of Event-Based Communication
Christopher Willuweit, Carsten Bockelmann, Armin Dekorsy, University of Bremen

4 Energy and SNR-Aware Robotic Swarm Coordination for Aquatic Cleaning Operations
Maria C. Mannone, Valeria Seidita, Antonio Chella, University of Palermo; Achille Giacometti, Peppino Fazio, Ca' Foscari University of Venice

5 Energy Consumption Minimized Task Allocation with Correlated Data for Symbiotic Robotic Swarm
Yuhao Zhang, Na Yi, Siqi Zhang, Yi Ma, University of Surrey

Thursday, 22 June 2023 16:00 - 17:30 Affari Adua Hall 2
D6: Space-Aerial

1 A Convex Optimization Assisted DDQL Algorithm for Computing Resource Allocation in Space-Aerial Integrated Network
Meng-Hsuan Lin, Yiwei Li, National Tsing Hua University; Shuai Wang, Singapore University of Technology and Design; Ruihong Jiang, Beijing University of Posts and Telecommunications; Chong-Yung Chi, National Tsing Hua University

2 Autoencoder based Physical Layer Authentication for UAV Communications
Linda Senigagliesi, Gianluca Ciattaglia, Ennio Gambi, Marche Polytechnic University

3 Prediction of YouTube QoE over SATCOM
Matthieu Petrou, ISAE-SUPAERO; David Pradas, Viveris Technologies; Mickael Royer, Ecole Nationale de l?Aviation Civile (France); Emmanuel Lochin, ENAC

4 Hierarchical Multi-Agent Multi-Armed Bandit for Resource Allocation in Multi-LEO Satellite Constellation Networks
Li-Hsiang Shen, University of California, Berkeley; Yun Ho, Kai-Ten Feng, National Yang Ming Chiao Tung University; Lie-Liang Yang, University of Southampton; Sau-Hsuan Wu, National Yang Ming Chiao Tung University; Jen-Ming Wu, Hon Hai Research Institute

5 Preprocessing via Deep Learning for Enhancing Real-Time Performance of Object Detection
Yu Liu, SUNY Binghamton; Kyoung-Don Kang, Binghamton University

6 Split Learning Assisted Multi-UAV System for Image Classification Task
Sun Tingkai, Xiaoyan Wang, Ibaraki University; Masahiro Umehira, Nanzan University; Yusheng Ji, National Institute of Informatics

Thursday, 22 June 2023 16:00 - 17:30 Congressi - Room 4
E6: Recent Results in RIS II

1 Intelligent Reflecting Surfaces Assisted Millimeter MIMO Full Duplex Systems
Chandan Kumar Sheemar, University of Luxembourg; Stefano Tomasin, University of Padova; Dirk T.M. Slock, EURECOM; Symeon Chatzinotas, SnT, University of Luxembourg

2 Outage Analysis of an IRS-Assisted 5G and Beyond Wireless Communications System
Neha Choudhary, Birla institute of technology and science, Pilani; Sandeep Joshi, Birla Institute of Technology and Science Pilani; V. K. Chaubey, BITS Pilani

3 Performance Analysis for IRS-Assisted SWIPT with Optimal Phase Shift under Spatially Correlated Fading Channels
Masaaki Miura, Katsuya Suto, Koya Sato, The University of Electro-Communications; Onel Luis Alcaraz López, University of Oulu

4 Performance of SSK-based Receive Diversity RIS-assisted System with Nakagami-m Fading Channels
Aritra Basu, Soumya Prakash Dash, Indian Institute of Technology Bhubaneswar; Sandeep Joshi, Birla Institute of Technology and Science Pilani; Debasish Ghose, Kristiania University College Norway

---

5 Security Aware Joint Optimization Over Aerial-IRS Assisted Wireless Communications
Ya Gao, Yang Zhang, He Geng, Luoyang Normal University; Xingwang Li, Henan Polytechnic University (HPU); Daniel Benevides da Costa, Technology Innovation Institute

Thursday, 22 June 2023 16:00 - 17:30 Congressi - Room 5
F6: Security

1 An Energy-constrained Cooperative Jamming Scheme for Wireless Security Communication in Power IoT
Jiabei Yan, Jiahui Mao, Chong Tan, Hong Liu, Hui Li, Min Zheng, Shanghai Institute of Microsystem and Information Technology CAS

2 An Intrusion Detection System Against Rogue Master Attacks on gPTP
Alessio Buscemi, Manasvi Ponaka, Mahdi Fotouhi, University of Luxembourg; Florian Jomrich, Christian Koebel, Honda R&D Europe (Germany) GmbH; Thomas Engel, University of Luxembourg

3 Electric Vehicle Security and Privacy: A Comparative Analysis of Charging Methods
Marco De Vincenzi, IIT CNR; Gianpiero Costantino, Ilaria Matteucci, Fabio Martinelli, IIT-CNR

4 Intrusion Resilience Systems for Modern Vehicles
Ali Shoker, RC3, KAUST; Vincent Rahli, University of Birmingham; Jérémie Decouchant, DELFT Univ.; Paulo Esteves-Verissimo, RC3, KAUST

5 Structured Specification Framework for the Attacks, Weaknesses, and Vulnerabilities of Vehicle E&E systems
Toru Sakon, Yukikazu Nakamoto, University of Hyogo

6 VECAEP: A Hands-on Exploration Platform for Vehicular Communication Attacks
Darshith Madvinkodi Prakash, Bhagawat Baanav Yedla Ravi, Srivalli Boddupalli, Sandip Ray, University of Florida

Thursday, 22 June 2023 16:00 - 17:30 Oince
H6: Cooperation and Coexistence

1 Full-duplex Cooperative Uplink Communication with Non-full-diversity Space-time Codes
Qing Qu, Bin Zhou, Shanghai Institute of Microsystem and Information Technology, CAS; Liu Guangyu, Shanghai Institute of Microsystem and Information Technology; Cheng Ju, Shanghai Institute of Microsystem and Information Technology, CAS

2 Latency Optimization for Heterogeneous Task Offloading in Cooperative MEC Network
Zhiwei Jiang, Yijin Pan, Chenhao Qi, Southeast University

3 Message Generation Algorithm for Maneuver Coordination Based on Value of Information
Edmir Xhoxhi, Shule Li, Leibniz University Hannover; Florian Alexander Schiegg, Robert Bosch GmbH

4 Multi-RAT IoT - What's to Gain? An Energy-Monitoring Platform
Guus Leenders, Gilles Callebaut, Liesbet Van der Perre, Lieven De Strycker, KU Leuven

5 On the Benefits of Opportunistic WiFi in Cooperative Downloading
Michael Niebisch, University of Erlangen-Nürnberg; Daniel Pfaller, AUDI AG; Reinhard German, Anatoli Djanatliev, University of Erlangen-Nürnberg

6 Performance Assessment of DECT-2020 NR and Classic DECT Coexistence Mechanisms
Andrey Samuylov, Dmitri Moltchanov, Tampere University; Juho Pirskanen, Jussi Numminen, Wirepas Oy; Yevgeni Koucheryavy, Mikko Valkama, Tampere University

Friday 23 June 2023

Friday, 23 June 2023 11:00 - 12:30 Affari 2.1
B7: Vehicular Networks I

1 AirComp-aided Safety-aware CAM Broadcast Rate Control in C-V2X Sidelink
Da-Yung Hsieh, National Tsing Hua University; Jian-Jhih Kuo, National Chung Cheng University; Wen-Tsuen Chen, Jang-Ping Sheu, National Tsing Hua University

2 AutowareV2X: Reliable V2X Communication and Collective Perception for Autonomous Driving
Yu Asabe, Ehsan Javanmardi, Jin Nakazato, The University of Tokyo; Manabu Tsukada, the University of Tokyo; Hiroshi Esaki, The University of Tokyo

3 Joint use of Self and Successive Interference Cancellation in V2X Sidelink with Autonomous Resource Allocation
Vittorio Todisco, University of Bologna; Claudia Campolo, Università Mediterranea di Reggio Calabria; Antonella Molinaro, University "Mediterranea" of Reggio Calabria; Antoine O Berthet, CentraleSupélec, Université Paris-Saclay; Richard A. Stirling-Gallacher, Huawei Technologies Duesseldorf GmbH; Alessandro Bazzi, University of Bologna

4 On the Application of Q-learning for Mobility Load Balancing in Realistic Vehicular Scenarios
Martin Trullenque, i2CAT Foundation; Oriol Sallent, Universitat Politecnica de Catalunya (UPC); Daniel Camps-Mur, Jad Nasreddine, Josep Escrig, i2CAT Foundation; Jordi Pérez-Romero, Universitat Politècnica de Catalunya

5 Packet Delivery Impact of Predictive Resource Allocation for Quasi-Periodic Cellular V2X Communication
Hyeonji Seon, Hojeong Lee, Hyogon Kim, Korea University

Friday, 23 June 2023 11:00 - 12:30 Affari 2.2
C7: Localization and Direction Finding

1 Bring Your Own Positioning System: An Infrastructure-free and Omnidirectional UWB-based Localization Approach
Florian Schmickmann, Marcus Haferkamp, Janis Tiemann, Christian Wietfeld, TU Dortmund University

2 Direction-of-arrival estimation using virtual dual-antenna receivers : algorithms and controlled experiments.
Youssef Agram, Université Libre de Bruxelles; Jianqiao Cheng, Free University of Brussels; François Quitin, Université Libre de Bruxelles

3 Hierarchical visual localization based on Sparse Feature Pyramid for adaptive reduction of keypoint map size
Andrei Potapov, Mikhail Kurenkov, Pavel Karpyshev, Evgeny Yudin, Alena Savinykh, Evgeny Kruzhkov, Dzmitry Tsetserukou, Skolkovo Institute of Science and Technology

4 Positioning with Starlink LEO Satellites: A Blind Doppler Spectral Approach
Zak (Zaher) Kassas, Sharbel Kozhaya, The Ohio State University

5 Uplink Sensing with Unknown Transmitter Position in Clutter Environment via Tensor Decomposition
Yirui Luo, Guan Yong Liang, Erry Gunawan, Nanyang Technological University

Friday, 23 June 2023 11:00 - 12:30 Affari Adua Hall 2
D7: MIMO

1 Decentralized Bidirectional-Chain Equalizer for Massive MIMO
Shuai Cui, Southeast University; Jianjun Zhang, Nanjing University of Aeronautics and Astronautics; Jiaheng Wang, Xiqi Gao, Southeast University

2 Energy Efficiency Comparison of Digital and Hybrid Precoding in 1-Bit mmWave Massive MIMO
Ferhad Askerbeyli, Huawei Munich Research Center / Technical University of Munich; Wen Xu, Huawei Technologies Duesseldorf GmbH; Josef A. Nossek, Technical University of Munich

3 Hybrid SOMP-MUSIC-Based Channel Estimation Scheme for Terahertz Massive MIMO-OFDM Systems
Olutayo O. Oyerinde, University of the Witwatersrand

4 Low Cost Dynamic Load Balancing for User-Centric Wireless Systems
Mirza Golam Kibria, Xiong Jie, Huawei Technologies Sweden AB

5 Optimization for Multiple Vertical-Beams Tilting in Full-Dimension MIMO System
Icheon Kim, Kwonyeol Park, Minwoo Park, Seongho Hur, Sanghyun Lee, Min-Ho Shin, Samsung Electronics

Friday, 23 June 2023 11:00 - 12:30 Congressi - Room 4
E7: Recent Results in Security I
1 Cybersecurity Engineering: Bridging the Security Gaps in Advanced Automotive Systems and ISO/SAE 21434
Sakir Sezer, Fahad Siddiqui, Queen's University Belfast

2 Open RAN for detection of a jamming attack in a 5G network
Pawel Kryszkiewicz, Marcin Hoffmann, Poznan University of Technology, Rimedo Labs

3 Physical Layer Authentication in Private Campus Networks based on Machine Learning
Nandish P. Kuruvatti, Univ of Kaiserslautern; sachinkumar, RPTU Kaiserslautern-Landau; Sai Charan Kusumapani, Hubert Djuitcheu, Hans Schotten, University of Kaiserslautern

Friday, 23 June 2023 11:00 - 12:30 Congressi - Room 5
F7: Recent Results in Aerial and Satellite
1 A Satellite Selection Method based on Multi-Constellation GNSS Geometry
Taek Geun Lee, Yu Dam Lee, Hyung Keun Lee, Korea Aerospace University

2 Connecting Rural Areas: an Empirical Assessment of 5G Terrestrial-LEO Satellite Multi-Connectivity
Melisa López Lechuga, Sebastian Bro Damsgaard, Aalborg University; Ignacio Rodriguez, University of Oviedo; Preben Mogensen, Aalborg University

3 Joint Trajectory Design and Sub-channel Allocation in the UAV Relaying OFDMA Network
Young Ik Park, Yonsei University; Do-Yup Kim, Kyungnam University; Jang-Won Lee, Yonsei University

4 Optimal Deployment of an Aerial Base Station in Heterogeneous Cellular Networks for Heterogeneous User Traffic Demands
Takeshi Hirai, Kouki Doi, Naoki Wakamiya, Osaka University

Friday, 23 June 2023 14:00 - 15:30 Affari 2.1
B8: Vehicular Networks II
1 Dynamic Service-Orientation for Software-Defined In-Vehicle Networks
Timo Häckel, Philipp Meyer, Mehmet Mueller, Jan Schmitt-Solbrig, Franz Korf, Thomas Schmidt, Hamburg University of Applied Sciences

2 Enhancing C-V2X Network Connectivity with Distributed Mobility Control
Jingxuan Men, University of Surrey; Yun Hou, Hang Seng University of Hong Kong; Zhengguo Sheng, University of Sussex; Tse-Tin Chan, The Education University of Hong Kong

3 Experimental Trials on Sidelink Multi-hop Communications
Manabu Sakai, Kazuma Obigane, Hiroshi Nishimoto, Akihiro Okazaki, Masaki Noda, Mitsubishi Electric Corporation

Friday, 23 June 2023 11:00 - 12:30 Congressi - Room 101
G7: Spectrum Management and Sensing
1 A Basic Study on Cancelling Same Frequency Interference from 5G Systems to Other Systems by a Cooperative Control Network
Takafumi Fujii, Teruya Fujii, Softbank Corp.

2 A New Resource Management Technique in 3D Wireless Networks
Jeeyeon Kim, Hakkeon Lee, Daesik Hong, Yonsei University

3 Adjacent Channel WiFi 5 Interference on DSRC Communication at 5.9GHz
Jacob Bills, University of Utah

4 On Spectrum Sensing for mmWave and THz Beam-based Communications
Junwei Zang, Qiao Liu, Jia He, Wang Guangjian, Huawei Technologies Co., Ltd

5 Orientation Based Band Sharing for Radar Interference Mitigation
Roudiere Sylvain, ANITI: University of Toulouse-Midi-Pyrénées; Vincent Martinez, NXP, France; Daniel Delahaye, ENAC - Ecole Nationale de l'Aviation Civile

6 Spectrum Monitoring and Analysis in Urban and Rural Environments at Different Altitudes
Amir Hossein Fahim Raouf, Sung Joon Maeng, Ismail Guvenc, Ozgur Ozdemir, Mihail L. Sichitiu, North Carolina State University

Friday, 23 June 2023 11:00 - 12:30 Oince
H7: DL for Networks
1 Deep Reinforcement Learning Based Subchannel Selection and Power Allocation in Wireless Networks with Imperfect CSI
Ningzhe Shi, University of Chinese Academy of Sciences; Yu Zhang, State Key Lab of Processors, Institute of Computing Technology, CAS; Yiqing Zhou, Institute of Computing Technology, Chinese Academy of Sciences

2 How to Improve Learning Efficiency of GNN for Precoding?
Jia Guo, Beihang University; Chenyang Yang, Beihang University, Beijing

3 Learning Cellular Coverage from Real Network Configurations using GNNs
Yifei Jin, KTH; Marios Daoutis, Ericsson Research; Sarunas Girdzijauskas, Aristides Gionis, KTH

4 Learning-Aided Demand-Driven Elastic Architecture for 6G & Beyond
Shahrukh Khan Kasi, University of Oklahoma; Umair Sajid Hashmi, National University of Sciences and Technology; Sabit Ekin, Texas A&M University; Ali Imran, The University of Oklahoma

4 Fake Beacon: A Pseudonym Changing Scheme for Low Vehicle Density in VANETs
Junchao Wang, Yan Sun, Chris Phillips, Queen Mary University of London

5 Multiple Cars Remote Monitoring System using AI-based Video Streaming and Alert
Koichi Nihei, Hayato Itsumi, Yusuke Shinohara, NEC Corporation; Tomonao Araki, University of Tokyo; Takanori Iwai, NEC Corporation

6 Quantitative Assessment of Penetration Rates of CCAM Applications on GHG Emissions in EU27
Anjie Qiu, RPTU Kaiserslautern-Landau; Donglin Wang, Technical University of Kaiserslautern; Sanket Partani, Hans Schotten, University of Kaiserslautern

C8: Sensing in Cellular Systems

1 Characterization of 5G mmWave High-Accuracy Positioning Services for Urban Road Traffic
Simon Haeger, Niklas Gratza, Christian Wietfeld, TU Dortmund University

2 Downlink Sensing in 5G-Advanced and 6G: SIB1-assisted SSB Approach
Moeinreza Golzadeh, Tampere University; Esa Tiirola, Nokia; Lauri Anttila, Jukka Talvitie, Tampere University; Kari Hooli, Oskari Tervo, Ismael Peruga, Sami Hakola, Nokia; Mikko Valkama, Tampere University

3 Extended FastSLAM Using Cellular Multipath Component Delays and Angular Information
Junshi Chen, Russ Whiton, Fredrik Tufvesson, Lund University

4 Position-Time Pattern Based Method for Analyzing Users' Mobility
Hayyan Ali, Czech Technical University; Robert Bestak, Czech Technical University in Prague

5 Preconfigured Assistance Data for Reduction in Latency and Power Consumption
Birendra Ghimire, Fraunhofer IIS, Fraunhofer Institute for Integrated Circuits; Ritesh Shreevastav, Ericsson Research, Stockholm, Sweden; Xiaolin Jiang, Ericsson Research

D8: mmWave

1 Block Sparse Channel Estimation based on Residual Difference and Deep Learning for Wideband MmWave Massive MIMO
Rongshun Tang, Chenhao Qi, Pengju Zhang, Southeast University

2 Machine Learning-based Millimeter Wave Beam Management for Dynamic Terminal Orientation
Filipa Fernandes, Aalborg University; Sajad Rezaie, Nokia; Christian, Rom; Johannes Harrebek, Nokia; Carles Navarro Manchon, Aalborg University

3 RIDNet Assisted cGAN Based Channel Estimation for One-Bit ADC mmWave MIMO Systems
Erhan Karakoca, Hasan Nayir, Istanbul Technical University; Ali Gorcin, Yildiz Technical University; Khalid Qaraqe, Texas A&M University at Qatar

4 SVDNet: Deep Power Control for Multiuser MIMO
Ritabrata Maiti, Nanyang Technological University (NTU); A.S. Madhukumar, Nanyang Technological University; Ernest Tan, Agency for Science, Technology and Research

E8: Recent Results in Security II

1 Practical In-Vehicle Security Architecture based on Trust Anchors
Jiyong Han, Hyundai Motor Company

2 Privacy-Preserving V2V Charge Sharing Coordination using the Hungarian Algorithm
Ahmed Bakr, Mahmoud Srewa, The University of Alabama; Eyuphan Bulut, Virginia Commonwealth University; Kemal Akkaya, Florida International University; Mizanur Rahman, Clemson University; Ahmad Alsharif, University of Alabama

3 Q-learning-based Joint Design of Adaptive Modulation and Precoding for Physical Layer Security in Visible Light Communications
Duc M. T. Hoang, Hanoi University of Science and Technology; Thanh V. Pham, Shizuoka Univeristy; Anh T. Pham, University of Aizu; Chuyen T. Nguyen, Hanoi University of Science and Technology

4 A Gradient Boosted ML Approach to Feature Selection for Wireless Intrusion Detection
Birupaxha Mondal, Fahim Faisal, Zeba Tusnia Towshi, Md Fahad Monir, Tarem Ahmed, Independent University, Bangladesh

5 Measurements Based Physical Layer Security in Device to Device mm-Wave Communications
Seong Ki Yoo, Coventry University; Paschalis Sofotasios, Khalifa University; Simon L. Cotton, Lei Zhang, Queen's University Belfast; JaeSeung Song, Sejong University, South Korea; Imran Shafique Ansari, University of Glasgow; Young Jin Chun, CityU - Hong Kong

F8: Resource Allocation for Wireless Networks

1 Adaptive Bit Allocation for SVD based Hybrid Processing of Uplink Cell-Free Massive MIMO under Limited Fronthaul Capacity
Issei Kanno, Masaaki Ito, Yoshiaki Amano, Yoji Kishi, KDDI Research, Inc.; Thomas Choi, Wei Yu Chen, Andreas F. Molisch, University of Southern California

2 Co-Phase Over-the-Air Aggregation for Multi-Server Federated Learning with Randomized Transmissions
Jinho Choi, Deakin University

3 Joint Channel and Power Allocation in WLAN based on Sequential Deep Reinforcement Learning
Jun Yong Eom, Wha Sook Jeon, Seoul National University

4 Multi-AP Coordinated Radio Resource Allocation using Requirements for Video Transmission in Wireless LAN system
Ryota Yamada, Hiromichi Tomeba, Osamu Nakamura, Takuhiro Sato, Yasuhiro Hamaguchi, Sharp Corporation

5 Uplink Interference Canceller and Processing Amount Reduction Method of Macrocell in Three-Dimensional Spatial HetNet Construction
Takuya Kaneda, Takafumi Fujii, Softbank Corp.; Teruya Fujii, Tokyo Institute of Technology

G8: System Security

1 Hash Function and Lightweight Encryption Aided Authentication Design for Radio Frequency Watermarking Systems
Lin Zhang, Ziyong Zhang, Chen Wu, Jieheng Zheng, Sun Yat-sen University; Zhiqiang Wu, Wright State University

2 Joint jammer selection and jamming power allocation scheme in covert communications assisted by multiple friendly jammers
Zhijun Han, University of Chinese Academy of Sciences; Yu Zhang, State Key Lab of Processors, Institute of Computing Technology, CAS; Yiqing Zhou, Yanli Qi, Institute of Computing Technology, Chinese Academy of Sciences

3 Location-based Physical Layer Authentication in Underwater Acoustic Communication Networks
Waqas Aman, Saif Al-Kuwari, Hamad Bin Khalifa University, Doha, Qatar; Marwa Qaraqe, Hamad Bin Khalifa University

H8: Multihop/D2D Networking

1 A Hybrid Relay Strategy for Low-latency Communication in Multi-Hop Wireless Networks
Qianqian Liu, Shanghai Institute of Microsystem and Information Technology; Bin Zhou, Shanghai Institute of Microsystem and Information Technology, CAS; Zhiyong Bu, Shanghai Institute of Microsystem and Information Technology CAS

2 Cluster-based Wake-up Control for Top-k Query in Wireless Sensor Networks
Takuya Murakami, Junya Shiraishi, Hiroyuki Yomo, Kansai University

3 Dynamic Route Control for Repeater-based Integrated Access Backhaul System
Takahiko Kato, KDDI Research, Inc.

4 LTE Sidelink Indoor-to-Outdoor Device-to-Device Channel Measurements and Simulations for Public Safety Applications
Hussein Hammoud, Pawan K. Venkatesh, Jorge Gomez, Seun Sangodoyin, University of Southern California; Jason Kahn, National

Institute of Standards and Technology; Andreas F. Molisch, University of Southern California

5 Multi-hop Computational Offloading with Reinforcement Learning for Industrial IoT Networks
Swagato Barman Roy, ARTC; Ernest Tan, Agency for Science, Technology and Research; A.S. Madhukumar, Nanyang Technological University

6 SDR-based Demonstration System and Applicability of SNR Aggregation for Multistage Distributed Cooperative Communication in MANETs
Mus'ab Yüksel, University of Applied Sciences Darmstadt; Raphael T. L. Rolny, Armasuisse Science and Technology; Marc Kuhn, ZHAW; Michael Kuhn, University of Applied Sciences Darmstadt

---

Friday, 23 June 2023 16:00 - 17:30 Affari 2.1
B9: Vehicular Communications

1 A Robust DCB Approach to IRS-Assisted Vehicular Communications with ICSI
Dariel Pereira-Ruisanchez, Óscar Fresnedo, Darian Pérez-Adán, Luis Castedo, University of A Coruña

2 Berlin V2X: A Machine Learning Dataset from Multiple Vehicles and Radio Access Technologies
Rodrigo Hernangómez, Fraunhofer Heinrich Hertz Institute; Philipp Geuer, Ericsson Research; Alexandros Palaios, Ericsson; Daniel Schäufele, Fraunhofer Heinrich Hertz Institute; Cara Watermann, Ericsson Research; Khawla Taleb-Bouhemadi, Fraunhofer Heinrich Hertz Institute; Mohammad Parvini, Anton Krause, Technische Universität Dresden; Sanket Partani, University of Kaiserslautern; Christian Vielhaus, Technische Universität Dresden; Martin Kasparick, Fraunhofer Heinrich Hertz Institute; Daniel Fabian Külzer, BMW Group; Friedrich Burmeister, Technische Universität Dresden; Slawomir Stanczak, Fraunhofer Heinrich Hertz Institute; Gerhard Fettweis, Technische Universität Dresden; Hans Schotten, University of Kaiserslautern; Frank H.P. Fitzek, Technische Universität Dresden

3 Data-Driven Digital Mobile Network Twin Enabling Mission-Critical Vehicular Applications
Hendrik Schippers, Stefan Boecker, Christian Wietfeld, TU Dortmund University

4 Predicut - A Machine Learning Model For Online Prediction of Cut-In Manoeuvre For Autonomous Vehicles
Pandeeswari Sankaranarayanan, Arvind Ramanujam, Sruthi Sathy, Rajesh Jayaprakash, Tata Consultancy Services

5 Towards AI-Native Vehicular Communications
Gianluca Rizzo, HES SO / UNIFG; Eirini Liotou, Institute of Communication and Computer Systems, Athens; Yann Maret, University of Applied Sciences of Western Switzerland; jean-frederic wagen, HEFR; tommaso zugno, huawei; Mengfan Wu, Huawei Technologies Duesseldorf GmbH; Adrian Kliks, Poznan University of Technology

Friday, 23 June 2023 16:00 - 17:30 Affari 2.2
C9: User and Transmission Scheduling

1 Mitigating User Identification Errors in Resource Optimization for Grant-Free Random Access
Alix Jeannerot, Malcolm Egan, Lelio Chetot, Jean-Marie Gorce, Univ Lyon INSA Lyon

2 Multi-connectivity Enabled User-centric Association in Ultra-Dense mmWave Communication Networks
Qing Xue, Wei Renlong, Chongqing University of Posts and Telecommunications; Professor Shaodan Ma, University of Macau; Yongjun Xu, Chongqing University of Posts and Telecommunications; Li Yan, Xuming Fang, Southwest Jiaotong University

3 Overlapping Channel Bonding Allocation for Dense WLANs under Imbalanced Traffic Demands
Hong-Nhat Hoang, Pusan National University; Kien Nguyen, Hiroo Sekiya, Chiba University; Chang-Hong Lee, Dong-Hyun Kim, Jong-Deok Kim, Pusan National University

4 User Scheduling and Passive Beamforming for FDMA/OFDMA in Intelligent Reflection Surface
Wei Jiang, German Research Center for Artificial Intelligence; Hans Schotten, University of Kaiserslautern

---

Friday, 23 June 2023 16:00 - 17:30 Affari Adua Hall 2
D9: Modulation & Coding

1 A Proposed Quantum Classification Algorithm for Symbol Detection with Noisy Observation
Srinath Koya, Mostafizur Rahaman Laskar, Amit Kumar Dutta, Indian Institute of Technology Kharagpur

2 An Orthogonal Time Frequency Space Modulation based Different Chaos Shift Keying Transceiver for Reliable communications
Jieheng Zheng, Lin Zhang, Yan Li, Sun Yat-sen University; Yuehui Ouyang, Honor Device Com. Ltd.; Hongcheng Zhuang, Sun Yat-sen University

3 Expectation Propagation Detection for Polarization Modulation
Min Liu, Shuaixin Yang, Yue Xiao, Wenhui Xiong, University of Electronic Science and Technology of China

4 Grover Adaptive Search for Joint Maximum-Likelihood Detection of Power-Domain Non-Orthogonal Multiple Access
Masaya Norimoto, Naoki Ishikawa, Yokohama National University

5 Index Coded PSK Modulation for Prioritized Receivers over Rayleigh Fading Channels
Arindam Paul, IISC Bangalore; B. Sundar Rajan, Indian Institute of Science, Bangalore

6 Performance Analysis of Space-Time Line Code with Imperfect Channel Estimation
Yue Xiao, University of Electronic Science and Technology of China

Friday, 23 June 2023 16:00 - 17:30 Congressi - Room 4
E9: Recent Results in MIMO

1 Cell-Free Massive MIMO System With Dedicated Interference Cancellation Access Points
Sung-Min Park, Yonsei University; Do-Yup Kim, Kyungnam University; Kyeong-Won Kim, Jang-Won Lee, Yonsei University

2 Low Complexity Beam-Oriented Linearization Approaches for Massive MIMO Transmitters
Abdelwahab Fawzy Mohamed Soliman Afifi, National University of Singapore; Sumei Sun, Institute for Infocomm Research; Teng Joon Lim, University of Sydney; Yongxin Guo, National University of Singapore

3 Non-coherent detection with differential modulation for distributed massive MIMO Systems
Supuni Gunasekara, University of Melbourne; Peter Smith, Victoria University of Wellington; Margreta Kuijper, Rajitha Senanayake, University of Melbourne

4 On the Design of Superimposed Pilots in MIMO-OFDM with Index Modulation
Lijun Yang, Lilin Dan, Chu Zhao, University of Electronic Science and Technology of China

5 Precoding and Gain Adjustment Scheme for Block Low-Resolution DACs in Massive MIMO Downlink
Taichi Yamakado, Yukitoshi Sanada, Keio University

Friday, 23 June 2023 16:00 - 17:30 Congressi - Room 5
F9: Wireless and Security

1 Admission Control and Scheduling of Isochronous and Asynchronous Traffic in IEEE 802.11ad MAC
Anirudha Sahoo, Pu Tian, Tanguy Ropitault, NIST; Steve Blandino, NIST and Prometheus Computing LLC; Nada Golmie, NIST

2 In-Network Dynamic Compute Orchestration Over Mobile Edge Systems
Roman Kovalchukov, Roman Glazkov, Tampere University; Srikathyayani Srikanteswara, Yi Zhang, Intel Labs; Dmitri

---

Moltchanov, Tampere University; Gabriel E. Arrobo, University of South Florida; Hao Feng, Marcin Spoczynski, Nageen Himayat, Intel Labs

3 **Introducing benchmarks for evaluating user-privacy vulnerability in WiFi**
Abhishek Kumar Mishra, Nadjib Achir, Aline Carneiro Viana, Inria

4 **Wi-Sniffer: Wifi-based intruder detection system using deep learning and decision tree**
Jun Yong Eom, Seok Un Jang, Wha Sook Jeon, Seoul National University

Friday, 23 June 2023 16:00 - 17:30 Oince
H9: Radar/LiDAR
1 **BEV Approach Based Efficient Object Detection using YoloV4 for LiDAR Point Cloud**
Bhaskar Anand, Indian Institute of Technology,Hyderabad; P. Rajalakshmi, NMICPS TiHAN, Indian Institute of Technology Hyderabad

2 **Deep Learning Based Steering Angle Prediction with LiDAR for Autonomous Vehicle**
Parvez Alam, Indian Institute of Technology Hyderabad; P. Rajalakshmi, NMICPS TiHAN, Indian Institute of Technology Hyderabad

3 **Machine Learning based In-Cabin Radar System for Passenger Monitoring System**
Eugin Hyun, Jieun Bae, YoungSeok Jin, Park Chi-Ho, DGIST

4 **Signal Identification and Entrainment for Practical FMCW Radar Spoofing Attacks**
Andrew Graff, Todd E. Humphreys, The University of Texas at Austin

Virtual Sessions

Wednesday 21 June 2023

Wednesday, 21 June 2023 11:00 - 12:30 Virtual
V1a: Antennas, Propagation, and RF
1 **A Novel Geometry-Based Semi-Deterministic Wideband Channel Model for Hyperloop Communications**
Kai Wang, LiuLiu, Jiachi Zhang, Meilu Liu, Beijing Jiaotong University

2 **Energy-Efficient Beam Training For RIS Assisted UAV Communications in Emergency Rescue Scenarios**
Sihui Shang, Xi 'an Jiaotong University; Dongyang Xu, Pinyi Ren, Xi'an Jiaotong University; Keping Yu, Hosei University; Mohsen Guizani, Qatar University

3 **Extended frequency coverage of clutter loss model for high base station environments**
Hideki Omote, Softbank corp.; Akihiro Sato, Softbank.corp.; Sho Kimura, Shoma Tanaka, Hoyu Lin, Softbank corp.; Takaya Yamazato, Nagoya University

4 **Low-Cost Path Loss Estimation Using Correlation Graph CNN with Novel Feature Parameters**
Keita Imaizumi, Koichi Ichige, Yokohama National University; Tatsuya Nagao, KDDI Research, Inc.; Takahiro Hayashi, KDDI Research Inc.

5 **Performance Investigation of Streetlight-to-Vehicle Visible Light Communication**
Hossien B. Eldeeb, Mohammed Elamassie, Ozyegin University; Sami Muhaidat, University of Surrey; Murat Uysal, Ozyegin University; Tu Dac Ho, UiT-The Arctic University of Norway

6 **Probe Configuration in Dual Anechoic Chamber Multiprobe OTA Testing**
Nan Luo, Yong Li, Beijing University of Posts and Telecommunications

Wednesday, 21 June 2023 11:00 - 12:30 Virtual
V1b: UAVs, Vehicular Networks, and Telematics
1 **Context-Aware Timely Status Updates for Trajectory Control With Limited Communication Resources**
Haojie Bai, Huafu Li, Wenhao Dou, Harbin Institute of Technology; Yang Wang, Shenzhen Graduate School of Harbin Institute of Technology

2 **Exploring Graph Neural Networks for Joint Cruise Control and Task Offloading in UAV-enabled Mobile Edge Computing**
Kai Li, Real-Time and Embedded Computing Systems Research Centre; Wei Ni, Xin Yuan, CSIRO; Alam Noor, University of Porto; Abbas Jamalipour, The University of Sydney

3 **Verification of Standardized Rel-15 Requirements for Drone's Command-and-Control Link Reliability**
samira Homayouni, R&D-3; Taulant Berisha, Dimetor GmbH; Mario Paier, Hutchison Drei Austria.; Sebastian Woblistin, Dimetor GmbH; Johannes Rehak, Hutchison Drei Austria; Thomas Neubauer, Dimetor GmbH

4 **Impact of Channel Aging on User-Centric Cell-Free Vehicular Networks With Non-Isotropic Scattering**
Huafu Li, Harbin Institute of Technology; Yang Wang, Shenzhen Graduate School of Harbin Institute of Technology; Chenyang Sun, ZhenYong Wang, Harbin Institute of Technology

5 **Energy Consumption Optimization for UAV-Assisted Communication by Trajectory Design**
Huang Xiaoge, Yuyang Luo, Yang Xuan, Chongqing University of Posts and Telecommunications; Qianbin Chen, University of Posts and Telecommunications

6 **Energy Constrained Data Collection in Multi-UAV-Assisted IoT**
Yulei Wu, Simeng Feng, Chao Dong, Nanjing University of Aeronautics and Astronautics

7 **GAANet: Ghost Auto Anchor Network for Detecting Varying Size Drones in Dark**
Misha Urooj Khan, Maham Misbah, Zeeshan Kaleem, COMSATS University Islamabad, Wah Campus; Yansha Deng, King's College London; Abbas Jamalipour, The University of Sydney

Wednesday, 21 June 2023 14:00 - 15:30 Virtual
V2a: E-Mobility and E-Vehicles
1 **A multi-UAV fast search path planning algorithm research**
Xiang Yu, Binbin Wang, Ziyi Wang, Fugui Deng, Chongqing University of Posts and Telecommunications

2 **Model Based Integration and Performance Analysis of Direct Water Injection Humidification Method for Proton Exchange Membrane Fuel Cell**
Kemal Kaya, Oytun Karaduman, Burhan Özece, Onur Dömez, Sonat Arslan, Merve Tekin, Eren Özdemir, AVL Research & Engineering

3 On the Effects of PLMN Interconnection, Data Roaming Schemes and Cloud vs Edge Operation for 5G Enabled Cross-Border CAM Use Case
Konstantinos Trichias, National Technical University of Athens; Thodoris Soultanopoulos, WINGS ICT Solutions; Panagiotis Demestichas, University of Piraeus; Symeon Papavassiliou, Nikolaos Mitrou, National Technical University of Athens

4 Research on Electromagnetic Effect Generated by DC Converter on Human Body in Electric Vehicle
Jianjun Xiao, Beijing Jiaotong University; Changsheng Gao, China Faw Group CO., LTD; Zhichun Li, Beijing Jiaotong University; Kai Zhang, Jia Jia, China Faw Group Corporation; Dan Zhang, Beijing Jiaotong University

5 Securing Cooperative Intersection Management through Subjective Trust Networks
Frank Kargl, Ulm University; Nata?a Trkulja, Universität Ulm; Artur Hermann, Ulm University; Florian Sommer, Karlsruhe University of Applied Sciences; Anderson Ramon Ferraz de Lucena, Alexander Kiening, DENSO AUTOMOTIVE Deutschland GmbH; Sergej Japs, Fraunhofer IEM

6 Ubiquitous Transportation Mode Estimation using Limited Cell Tower Information
Sherif Mostafa, American University in Cairo; Khaled A. Harras, Carnegie Mellon University; Moustafa Youssef, American University in Cairo

7 Digital twin based simulation platform for heavy duty hybrid electric vehicles
Eneko Otaola, Tecnalia Research & Innovation

Wednesday, 21 June 2023 14:00 - 15:30 Virtual
V2b: Wireless Networks
1 Compromising Random Linear Network Coding as A Cipher
Sravya Bethu, Ye Zhu, Cleveland State University

2 Detection Performance of Malicious UAV using Massive IoT Networks
Suhail I. Al-Dharrab, King Fahd University of Petroleum and Minerals

3 Distributed Trust-Aware Virtual Network Embedding for Industrial IoT Systems
Parinaz Rezaeimoghaddam, Irfan Al-Anbagi, University of Regina

4 Extremely Low Latency Interactive Streaming over an 802.11 Wireless Link
Seohyang Kim, Junho Lee, Chi-Hyun Cho, Samsung Electronics

5 Physical Layer Security for THz Communication
Shubha Sharma, Nanyang Technological University, Singapore; A.S. Madhukumar, Nanyang Technological University

6 Privacy-Preserving Data Aggregation in IoTs: A Randomize-then-Shuffle Paradigm
Zuyan Wang, Jun Tao, Dika Zou, Southeast University

7 QoE-Analysis of 5G Network Resource Allocation Schemes for Competitive Multi-User Video Streaming Applications
Kristina Wheatman, The Pennsylvania State University; Fidan Mehmeti, Technical University of Munich; Mark Mahon, Thomas La Porta, The Pennsylvania State University

8 Using IRS to Improve the Secrecy Rate of Millimeter Wave Communication System
KunPeng Song, Fangshu Ma, Zexian Chen, Sen Liu, Yong Shang, Yuxin Cheng, Peking University

Wednesday, 21 June 2023 16:00 - 17:30 Virtual
V3: Emerging Technologies in Communiations
1 A Collision Probability Based Multi-User Grant-Free Scheduling Method for Ultra-Reliable and Low Latency Communications
Xi Song, Zhining Yin, Yan Li, Xiaoyu Li, Samsung Research China-Beijing(SRC-B), Beijing, China; Meifang Jing, Samsung Research China-Beijing; Jiajia Wang, Samsung Research China-Beijing(SRC-B)

2 Inter-Slice Traffic Steering Technologies for Beyond 5G Networks
Dongeun Suh, Naman Gupta, Ashok Kumar Nayak, Sangsoo Jeong, Samsung Electronics

3 Performance Analysis of E-band 12-Kilometer Long Transmission Links Based on Experimental Data
Bofan Wu, Haifeng Mou, Hang Yang, Zhenyang Guo, Xianbing Zou, Xiang Gao, University of Electronic Science and Technology of China

4 UE cooperative communications for future cellular networks
Aleksandar Damnjanovic, Xiaoxia Zhang, Tao Luo, Rajat Prakash, Mostafa Khoshnevisan, Arumugam Kannan, Qualcomm Technologies Inc; Fang Yuan, Shaozhen Guo, Luanxia Yang, Qualcomm Wireless

5 Cell-free Massive MIMO with Protective Partial Zero-Forcing and Active Eavesdropping
Yasseen Sadoon Atiya, Centre for Wireless Innovation (CWI), Queen's University Belfast; Zahra Mobini, Hien Quoc Ngo, Michalis Matthaiou, Queen's University Belfast

6 Joint Beamforming and Metasurface Reflection: A Lightweight Design for Energy Efficiency via Deep Reinforcement Learning
Mina Yonan, American Unviersity in Cairo; Mohammad Galal Khafagy, Vodafone Egypt; Karim Banawan, Faculty of Engineering, Alexandria University; Karim Seddik, American University in Cairo

Thursday 22 June 2023

Thursday, 22 June 2023 11:00 - 12:30 Virtual
V4a: IoV, IoT, M2M and Sensor Networks
1 Asynchronous Task Offloading in Mobile Edge Computing with Uncertain Computation Burden over Multiple Channels
Bizheng Liang, Rongfei Fan, Xiangyuan Bu, Beijing Institute of Technology

2 Data-Driven Sensor Selection using Gumbel-max Sampling for Large-Scale IoT
Yuxuan Chen, Yuan Chen, Guobing Li, Xi'an Jiaotong University

3 Don't Push But Pull: Improving Awareness and Channel Utilization by Demand-Driven V2X Communication
Soyeon Kim, Hyogon Kim, Korea University

4 Dynamic resources allocation in non-3GPP IoT networks involving UAVs
Rogério Sousa e Silva, UFG; William Pires Junior, Federal University of Goiás; Antonio Oliveira-Jr, Federal University of Goiás & Fraunhofer Portugal AICOS; Kleber Vieira Cardoso, Universidade Federal de Goiás; Sand Luz Correa, Federal University of Goiás

5 Graph-Based Distributed Control in Vehicular Communications Networks
Jikui Zhao, Oklohoma State University

6 Hierarchical Blockchain-enabled Federated Learning with Reputation Management for Mobile Internet of Vehicles
Lingling Zhou, Yuchuan Fu, Pincan Zhao, Sha Liu, TianyuChang, Changle Li, Xidian University

7 **Interactive and Intelligent Root Cause Analysis in Manufacturing with Causal Bayesian Networks and Knowledge Graphs**
Christoph Wehner, University of Bamberg; Maximilian Kertel, Judith Wewerka, BMW Group

8 **MAC-Based Stream-Aware Mechanism for IEEE 802.1Qbv Networks**
Ke Cui, Zhu Yuan, Binqi Li, Lu Ke, Qin Liu, Tongji University

9 **Optimization and Performance Evaluation of Hybrid Deep Learning Models for Traffic Flow Prediction**
Usha Goparaju, IIITH; Rahul Biju, Pravalika M, Bhavana MC, Deepak Gangadharan, International Institute of Information Technology, Hyderabad; Bappaditya Mandal, Keele University, United Kingdom; Pradeep C, Saintgits College of Engineering, Kerala, India

10 **Prescriptive Maintenance of Freight Vehicles using Deep Reinforcement Learning**
Chen-Khong Tham, Weihao Liu, Rajarshi Chattopadhyay, National University of Singapore

11 **Covariation and Constant Modulus Decomposition Based Interference Resistant Access System in Smart Grid**
Yuan Zhang, Dongyang Xu, Pinyi Ren, Xi'an Jiaotong University; James A. Ritcey, University of Washington; Keping Yu, Hosei University; Joel Rodrigues, National Institute of Telecommunications (Inatel)

12 **Estimation of PN Sequence for Spread Spectrum Pilot Signals in Grant-Free Access System**
Yuan Zhang, Dongyang Xu, Pinyi Ren, Xi'an Jiaotong University; James A. Ritcey, University of Washington; Keping Yu, Hosei University; Joel Rodrigues, National Institute of Telecommunications (Inatel)

13 **Federated Learning for Anomaly Detection in Vehicular Networks**
Chen-Khong Tham, National University of Singapore

Thursday, 22 June 2023 11:00 - 12:30 Virtual
V4b: Recent Results I
1 **A Channel Engineering Method for Future Wireless Communication**
Tianchen Sun, Jiabin Jia, University of Edinburgh; Dushyantha A. Basnayaka, Dublin City University

2 **A General Simulation Framework for Radiative Wireless Power Transfer Systems Based On Phased-Array Transmitters**
Andrey Kletsov, Samsung Research; Artem Vilenskiy, Chalmers University of Technology; Alexander Chernokalov, Chongmin Lee, Sungku Yeo, Samsung Research

3 **Adaptive Group Based Symbol Flipping Decoding Algorithm**
Waheed Ullah, University of the Witwatersrand; Dushantha Nalin K. Jayakody, Lusófona University; Fengfan yang, Nanjing University of

Aeronautics and Astronautics, Nanjing, China; Marko Beko, Lusófona University

4 **Adversarial Reprogramming as Natural Multitask and Compression Enabler**
Syahidah Izza Rufaida, Jenq-Shiou Leu, National Taiwan University of Science and Technology

5 **Channel Estimation for Non-Stationary Extremely Large-Scale MIMO**
Yuhao Chen, Zijian Zhang, Mingyao Cui, Linglong Dai, Tsinghua University

6 **Deep Reinforcement Learning Aided Online Trajectory Optimization of Cellular-Connected UAVs with Offline Map Reconstruction**
Qing Hao, Haitao Zhao, Hao Huang, Guan Gui, Nanjing University of Posts and Telecommunications; Tomoaki Ohtsuki, Keio University; Fumiyuki Adachi, Tohoku Univeristy

7 **Design of 3GPP-based Millimeter-Wave Band Wireless Virtual Community Network**
Hiroshi Harada, Shota Mori, Norichika Ohmi, Yusuke Koda, Keiichi Mizutani, Kyoto University

8 **Device-Edge Digital Semantic Communication with Trained Non-Linear Quantization**
Lei Guo, Beijing Jiaotong University,; Wei Chen, Beijing Jiaotong University; Yuxuan Sun, Beijing Jiaotong University,; Bo Ai, Beijing Jiaotong University

9 **DPC Inspired Beamformer Design Approach for Integrated Sensing and Communications**
Zhongmin Ma, Xi'an Jiaotong University, China; Qinghe Du, Xi'an Jiaotong University; Shijiao Zhang, Xi'an Jiaotong University, China

10 **Efficient Radar Detection for RIS-Aided Dual-Functional Radar-Communication System**
Xiao Jun, South China university of technology; Jianhua Tang, Jiao Chen, South China University of Technology

11 **Error Performance of RIS-Assisted NOMA Networks with Imperfect Channel State Information**
Guomei Cao, Meiling Li, Taiyuan University of Science and Technology; Hu Yuan, Kingston University; Wei Chen, Tsinghua University; Lijun Li, Taiyuan University of Science and Technology; Abdul Nasser Raouf, Dean of Faculty of Technology at UISTAM

12 **Incentive-Driven Fog-Edge Computation Offloading and Resource Allocation for 5G-NR V2X-Based Vehicular Networks**
Pradeep Chennakesavula, Jen-Ming Wu, Hon Hai Research Institute; ArulMurugan Ambikapathi, Lam Research

13 **Intelligent Recognition for Fast Access to Machine to Machine**
Yifan Zhang, Jie Zhang, YiMing Wang, Mian Wang, Jinlong Sun, Nanjing University of Posts and Telecommunications

Thursday, 22 June 2023 14:00 - 15:30 Virtual
V5a: Machine Learning and AI
1 **A Novel Scatterer Density-Based Predictive Channel Model for 6G Communications**
Zheao Li, Cheng-Xiang Wang, Southeast University; chen huang, purple mountain labrotary; Long Yu, Junling Li, Zhongyu Qian, Southeast University

2 **AFLChain: Blockchain-enabled Asynchronous Federated Learning in Edge Computing Network**
huangxiaoge, Deng Xuesong, Chongqing University of Posts and Telecommunications; Qianbin Chen, University of Posts and Telecommunications; Jie Zhang, University of Sheffield

3 **An online deep learning based channel estimation method for mmWave massive MIMO system**
XuDong Bai, Qi Peng, Xidian University

4 **Automatic modulation classification for multi-criteria generic channel equalization**
Chouaib Farhati, Souhaila Fki, Supcom; Abdeldjalil Aissa El Bey, IMT Atlantique; Fatma Abdelkefi, Sup'Com

5 **DRL based Beam Selection and Hybrid Beamforming for Intelligent Reflective Surface assisted Massive MIMO System**
Irfan Ahmed, Higher Colleges of Technology

6 **Dynamic threshold spectrum sensing method based on DQN combined with clustered cooperative sensing architecture**
Shen Tingting, Youyun Xu, Nanjing University of Posts and Telecommunications

7 **Joint Frequency Assignment and Power Allocation Based on Multi-Agent Deep Reinforcement Learning for Multi-Beam Satellite Systems**
Yuanjun Li, Dewei Yang, Haowen Yang, Jingming Kuang, Beijing Institute of Technology

8 Joint Optimization of Reconfigurable Intelligent Surfaces and Base Station Beamforming in MISO System Based on Deep Reinforcement Learning
LIQiang Ma, Shandong University

9 Learning Beamforming for RIS-aided Systems with Permutation Equivariant Graph Neural Networks
Baichuan Zhao, Beihang University; Chenyang Yang, Beihang University, Beijing

10 Modulation Recognition with Enhanced Constellation Based on Convolutional Neural Network
Shijie Song, Han Sun, Wenbo Xu, Beijing University of Posts and Telecommunications

11 NASEI: Neural Architecture Search-Based Specific Emitter Identification Method
Yuxuan Huang, Xixi Zhang, Yu Wang, Donglai Jiao, Guan Gui, Nanjing University of Posts and Telecommunications; Tomoaki Ohtsuki, Keio University

12 Number of FLOPs of Training DNNs for Learning Precoding
Pengyu Cong, Beihang University; Chenyang Yang, Beihang University, Beijing

13 Performance Evaluation of Turbo Autoencoder with Different Interleavers
Homayoon Hatami, Hamid Saber, Jung Hyun Bae, Samsung Semiconductors Inc.

14 Proactive Hybrid Precoding for Time-varying mmWave Channel with Deep Learning
Ruiming Wang, Jiajun Wu, Beihang University; Chenyang Yang, Beihang University, Beijing

15 Residual Channel Attention Network-Based Channel Interpolation Using Noise2Noise for Massive MIMO-OFDM Systems
Shuhui Ren, Zhenkun Qiu, Zhou Wuyang, University of Science and Technology of China

16 RL-based Freshness-aware Frame Mode Selection for Real-time Wireless Video Transmission
Jie Hou, Xiaohui Chen, Wenyi Zhang, University of Science and Technology of China

17 Tracking the Best Beam for a Mobile User via Bayesian Optimization
Lorenzo Maggi, Arndt Ryo Koblitz, Nokia Bell Labs; Qiping Zhu, intel; Matthew Andrews, Nokia Bell Labs

18 WiFi Based Multi-Task Sensing via Selective Sharing Module
Boyu Yang, Ting Jiang, Beijing University of Posts and Telecommunications

19 Wireless Channel Scenario Identification Using Convolutional Neural Networks
Govind Ravikumar Gopal, University of California San Diego; Jie Chen, William J. Hillery, Nokia of America; Jun Tan, Nokia Bell Labs; Serdar Ozen, Nokia; Qiping Zhu, intel

20 Deep learning based context classification for cognitive network management
Aymen Askri, Imed Hadj-Kacem, Sana Ben Jemaa, Kahina Mokrani, Orange Labs

21 Deep Automatic Modulation Classification Using Deformation-Insensitive Color Constellation
Chaoren Ding, Pinyi Ren, Dongyang Xu, Xi'an Jiaotong University

22 Deep Learning-Based Automatic Modulation Recognition in OTFS and OFDM systems
Jinggan Zhou, Xuewen Liao, Zhenzhen Gao, Xi'an Jiaotong University

23 One-shot Learning for Channel Estimation in Massive MIMO Systems
Kai Kang, Qiyu Hu, Yunlong Cai, Zhejiang University; Yonina Eldar, Weizmann Institute of Science

Thursday, 22 June 2023 14:00 - 15:30 Virtual

V5b: Recent Results II

1 MmWave Vehicular Beam Alignment Leveraging Online Learning
Qingyang Xian, Angela Doufexi, Simon Armour, University of Bristol

2 Mobile Edge Computing and AI Enabled Web3 Metaverse over 6G Wireless Communications: A Deep Reinforcement Learning Approach
Wenhan Yu, Terence Jie Chua, Jun Zhao, Nanyang Technological University

3 Path Planning for Unmanned Aerial Vehicles: Peak Power Minimization
Bahareh Jafari, University of Massachusetts Amherst; Hamid Saeedi, UDST and Tarbiat Modares University; Saeede Enayati, University of Massachusetts; Hossein Pishro-Nik, University of Massachusetts, Amherst

4 Performance Analysis of Selection Combining over UAV-to-Ground Channels with Shadowing
Remon Polus, Claude D'Amours, University of Ottawa

5 Predictive Repacketization of Periodic Messages for Bandwidth Efficiency in Cellular V2X Environment
Songmu Heo, Hyogon Kim, Korea University

6 Semantics-Aware Multi-UAV Cooperation for Age-Optimal Data Collection : An Adaptive Communication based MARL Approach
Yabin Wu, Fan Zhang, Chao Xu, Northwest A&F University; Xijun Wang, Sun Yat-sen University

7 Trust Management and Bad Data Reduction in Internet of Vehicles Using Blockchain and AI
Rashmi Erandika Ratnayake, Madhusanka Liyanage, Liam Murphy, University College Dublin

8 Uplink Power Allocation for RSMA-aided User-centric Cell-free Massive MIMO Systems
Manobendu Sarker, Abraham O. Fapojuwo, University of Calgary

9 Utility-Oriented Wireless Communications for 6G Networks: Semantic Information Transfer for IRS aided Vehicular Metaverse
Wang Zefan, Jun Zhao, Nanyang Technological University

10 Utilizing Unsupervised Learning for Improving ML Channel State Feedback in Cellular Networks
Bryse Flowers, University of California, San Diego; Adarsh Sawant, Runxin Wang, Dustin Zhang, Qualcomm Technologies, Inc.

11 Vibration Detection Based on Multi-Sensor Information Fusion for Industrial Internet of Things
Jie Zhang, Yifan Zhang, Bo Song, Yibin Zhang, Jinlong Sun, Nanjing University of Posts and Telecommunications

12 Physical Layer Security Over UAV-to-Ground Channels with Shadowing
Remon Polus, Claude D'Amours, Burak Kantarci, University of Ottawa

13 Robust Secure Precoding for NOMA Multi-beam Satellite Systems
Mengyan Huang, Guo Li, Nan Zhang, Fengkui Gong, Xidian University; Pengfei Xu, Xi'an Institute of Space Radio Technology

14 Relayed Collective Perception Service With Redundancy Mitigation and Time Synchronization for V2X Communications Networks
Yu-Kai Huang, Pradeep Chennakesavula, Jen-Ming Wu, Hon Hai Research Institute

V6: Positioning, Navigation, and Sensing

1 CloudVision: DNN-based Visual Localization of Autonomous Robots using Prebuilt LiDAR Point Cloud
Evgeny Yudin, Pavel Karpyshev, Mikhail Kurenkov, Alena Savinykh, Andrei Potapov, Evgeny Kruzhkov, Dzmitry Tsetserukou, Skolkovo Institute of Science and Technology

2 Joint Estimation on the Reflector Velocity and Normal Direction Through NLOS Echo Signals
Tianxiao Zhao, Fudan University; Jian Li, Shanghai Huawei Technologies Co., LTD.; Wenfei Yang, Yunhao Zhang, Huawei Technologies Co., Ltd.

3 Near Field iToF LIDAR Depth Improvement from Limited Number of Shots
Mena Nagiub, Valeo Schalter und Sensoren GmbH; Thorsten Beuth, Valeo Detection Systems GmbH; Ganesh Sistu, Valeo Vision

Systems; Heinrich Gotzig, Valeo Schalter und Sensoren; Ciaran Eising, University of Limerick

4 Recent Progress on 3GPP 5G Positioning
Yi Wang, Su Huang, Yingjie Yu, Huawei Technologies Co., Ltd.; Cheng Li, Huawei; Peter A. Hoeher, Kiel University; Anthony C. K. Soong, Futurewei Technologies

5 Temporal-frequency Features based Indoor Localization System under 5G Networks
Minmin Liu, Xi'an Jiaotong University; Xuewen Liao, Xi'an JiaoTong University; Zhenzhen Gao, Ang Li, Xi'an Jiaotong University; Chunlei Zheng, Shanghai Institute of Microsystem and Information Technology

6 Wi-Five: Optimal Placement of Wi-Fi Routers in 5G Networks for Indoor Drone Navigation
Alireza Famili, Tolga Atalay, Angelos Stavrou, Haining Wang, Virginia Tech

Friday 23 June 2023

V7: Radio Access and Heterogeneous Networks

1 Full-Link AoI Analysis of Uplink Transmission in Next-Generation FTTR WLANs
Jing Zhang, Jing Liu, Huazhong University of Science and Technology; Lin Xiang, Technische Universit at Darmstadt; XiaohuGe, Huazhong university of science and technology

2 High Reliability Transmission Scheme for Anchored Indoor New Radio Unlicensed Systems
Jiankang Wang, Samsung Research China ? Beijing (SRC-B); Peng Xue, Samsung Electronics; Hongliang Bian, Samsung Research China ? Beijing; Yue Yuan, Samsung Research China ? Beijing (SRC-B); Ying Wang, Samsung Research China-Beijing(SRC-B), Beijing, China; Nan Cao, Samsung Research China ? Beijing (SRC-B)

3 Improving Random Access with NOMA in mMTC XL-MIMO
Thiago Bruza, UEL - Brazil; Taufik Abrão, State University of Londrina

4 Joint Allocation on 3C Resources for Three-Tier Cooperation Mobile Computing Networks
Long Long, Zixu Zhao, Zaiwang Lu, Lei Li, University of Chinese Academy of Sciences; Zichen Liu, Institute of Computing

Technology; Yucheng Yhang, University of Chinese Academy of Sciences

5 Joint Cache Placement and NOMA-Based Task Offloading for Multi-User Mobile Edge Computing
Hanzhe Dai, Haifeng Wen, Hong Xing, The Hong Kong University of Science and Technology (Guangzhou); Zhiguo Ding, UMIST

6 Joint Scheduling and Power Allocation with Per-User Rate Constraints for Uplink MU-MIMO OFDMA Systems
Lin Zhang, Shengqian Han, Beihang University; Chenyang Yang, Beihang University, Beijing

7 Load Balancing in Small-Cell Access Point Placement
Govind Ravikumar Gopal, Bhaskar D. Rao, University of California San Diego; Gabriel Villardi, NICT

8 On Throughput and Reliability Enhancement via Relay-assisted Retransmission
Guanyu Lin, Chia-Hao Yu, Nathan Tenny, Alex C.-C. Hsu, MediaTek Inc.

9 System-level Simulation and Performance Evaluation for 6G Ultra Massive MIMO
Jing Guo, Lei Gao, Nanxi Li, Shan Yang, Jianchi Zhu, Xiaoming She, Jianxiu Wang, Peng Chen, China Telecom Research Institute

V8: Spectrum Management, Access, Services and Security

1 An Efficient Blockchain-based Privacy-Preserving Authentication Scheme in VANET
Shiyuan Xu, The University of Hong Kong; Xue Chen, The Hong Kong Polytechnic University; Weimin Kong, Tianjin Normal University; Yibo Cao, Yunhua He, Ke Xiao, North China University of Technology

2 Approximation of SINR and rate distributions in the presence of path-loss, shadowing and fast-fading
Imed Hadj-Kacem, Orange; Sana Ben Jemaa, Orange Labs

3 Satellite Resource Allocation via Dynamic Auctions and LSH-based Predictions
Lin Cheng, Bernardo Huberman, CableLabs

4 Multimodal LSTM forcasting for LEO Satellite Communication Terminal access
Honguang Li, University of Chinese Academy of Sciences; Yaoqi Liu, Institute of Computing Technology, Chinese Academy of Sciences; Jinglin Shi, :Institute of Computing Technology,Chinese

Academy; Yiqing Zhou, Ruilian Zhuo, Institute of Computing Technology, Chinese Academy of Sciences; Shaoyang Li, China Academy of Space Technology

5 Propagation Dynamics Based Resource Deployment Strategy for Edge Networks
Shaoshuai Fan, Hanlin Gao, Tian Hui, Shiyu Yang, Beijing University of Posts and Telecommunications

6 TDANet: An Efficient Solution For Short-Term Mobile Traffic Forecasting
Shuyang Li, Enrico Magli, Politecnico di Torino; Gianluca Francini, Telecom Italia

7 Packet Encoding Based on Encrypted Raptor Code for Secure Internet of Vehicles Communication
Junzhe Cheng, Dongyang Xu, Xi'an Jiaotong University; Gautam Srivastava, Brandon University; Keping Yu, Hosei University

V9: Transmission and Reception

1 A Lightweight Integrated Narrowband Interference Detection and Suppression Scheme for OTFS
Yuchen Wu, Pan Zhenni, Shigeru Shimamoto, Waseda University

2 A Novel Iterative Receiver for Clipping Distortion Recovery in OFDM Systems
Weilin Song, Xi'an Jiao Tong University; Heng Du, Xi?an Jiaotong University; Jiang Xue, Xi'an Jiaotong University

3 A Variable Step-Size l0-PRLS Algorithm and its Application in Sparse Channel Estimations
Yu Wang, Jun Tao, Southeast University

4 ABER Performance of Transmit Antenna Selection for Cooperative SM-MIMO System with DF Protocol
Abeer Mohamed, Zhiquan Bai, Ke Pang, Bangwei He, Yuanyuan Ma, Shandong University; Kyung Sup Kwak, Inha University

5 Capacity achieving quantizer design for multiple input-multiple output thresholding channels
An Vuong, Oregon State University; Thuan Nguyen, Tufts University; Thinh Nguyen, Oregon State University

6 Design and Analysis of LoS-MIMO System with a Uniform Cross Array Composed of Dual-polarized Antennas
Motoshi Tawada, Yoshichika Ohta, Atsushi Nagate, SoftBank Corp.

7 Duality between the Power Minimization and Max-Min SINR Balancing Symbol-Level Precoding
Junwen Yang, Ang Li, Xi'an Jiaotong University; Xuewen Liao, Xi'an JiaoTong University; Christos Masouros, University College London

8 Frequency-Dependent Beamforming for RIS-Assisted Wideband Terahertz Systems
WU JIAO, Byonhyo Shim, Seoul National University

9 Full-Duplex Mixed RF/FSO using Multiple Relays with Self-Interference
Akhilesh Kumar Savita, Anshul Jaiswal, IIT Roorkee; Ankit Garg, Netaji Subhas University of Technology

10 Hybrid Amplitude and Phase Coding for Intelligent Reflecting Surface Aided Channel Estimation
Yiyang Liang, Shuping Dang, Angela Doufexi, University of Bristol

11 Iterative Channel Estimation and Decoding For Monomial Codes
Anna Fominykh, Kirill Shabunov, Vladimir Lyashev, Huawei Technologies

12 Maximizing Optical Inter-DC Emergency Backup Reliability in Unpredictable Disasters
Ying Wang, Jiang Liu, Mingwei Cui, Weihong Wu, Tao Huang, Yunjie Liu, Beijing University of Posts and Telecommunications

13 Near-Field Beam Management with Ring-type Codebook
Fan Wang, Xin Wang, Xiang Li, Xiaolin Hou, Chen Lan, DOCOMO Beijing Communications Lab; Satoshi Suyama, Takahiro Asai, NTT DOCOMO, INC.

14 Ordered Iterative Methods for Low-Complexity Massive MIMO Detection
Beilei Gong, Ningxin Zhou, Zheng Wang, Southeast University

15 Parallelizable First-Order Fast Algorithm for Symbol-Level Precoding in Lage-Scale Systems
Junwen Yang, Ang Li, Xi'an Jiaotong University; Xuewen Liao, Xi'an JiaoTong University; Christos Masouros, University College London

16 Projection Riemannian Manifold based Regular Sparse Array Beamforming for Millimeter Wave Communication
Xiangli Lin, Caixia Cui, Qing Zhu, Ying Wang, Lefei Wang, Guangcan Yan, Ranran Zhang, Meifang Jing, Yi Zhao, Samsung Research Insitute China - Beijing(SRC-B)

17 RIS Assisted RF Communication Systems with H-ARQ Protocols and Imperfect CSI
Gyandeep Verma, Aashish Mathur, Indian Institute of Technology Jodhpur

18 SER Analysis and Joint Optimization in Nonlinear MIMO-OFDM Systems with Clipping
Yuyang Du, The Chinese University of Hong Kong; Liang Hao, Yiming Lei, Peking University

19 Fractional Delay-Doppler Channel Estimation in OTFS with Sparse Superimposed Pilots using RNNs
Sandesh Rao Mattu, A. Chockalingam, Indian Institute of Science, Bangalore

20 People Counting System Using mmWave MIMO Radar with 3D Convolutional Neural Network
Cheng-Che Shih, Xinrui Zhou, Thinh Nguyen, Oregon State University; Khanh D. Pham, Air Force Research Lab

21 An Iterative DoA Estimation Method for Uniform Circular Arrays with Weighted Baselines
Xiaorui Ding, Wenbo Xu, Beijing University of Posts and Telecommunications; Hui Liu, National Key Laboratory of Blind Signal Processing

22 Design of IRS-Assisted Non-Binary Channel-Coded Physical Layer Network Coding
Mahmoud AlaaEldin, University of Manchester; Emad Al-Susa, Manchester University; Karim Seddik, American University in Cairo

23 NOMA-aided double RIS under Nakagami-m fading: Channel and System Modelling
Wilson de Souza Junior, UEL; Taufik Abrão, State University of Londrina

Workshops

W1: 1st International Workshop on Sensing Advances in Wireless Networks (SAWN)

1 Keynote
Andrea Conti, University of Ferrara

2 Resource Optimization in Time-Varying Wireless Sensing and Localization Networks
Ruihang Zhang, Jiayan Yang, Tingting Zhang, Harbin Institute of Technology (Shenzhen)

3 Channel Interference Sensing Transformer for Spread Spectrum Communications with Attention Mechanism
Yi Wei, Zhejiang University; Shang-Rong Ou-Yang, Chao Li, Hengxiang He, Xiaoying Gu, Shanghai Aerospace Academy

4 Keynote
Qammer Abbasi, University of Glasgow

5 Radio-Based Sensing in Vehicular Environments: Robust Localization and Tracking of VRUs
Fabian de Ponte Müller, Martin Schmidhammer, Stephan Sand, German Aerospace Center (DLR)

6 Drone-based Underwater Sensor Network with Optical Camera Communication
Yuika Yasui, Asako Shigenawa, Yu Nakayama, Tokyo University of Agriculture and Technology

7 Panel session: Future Directions for Advanced Sensing in Research, Standards and Commercialization

8 Keynote: Review of Advanced Antennas for 5G and Beyond
Aly Fathy, University of Tennesse

9 Diagonal Waveform and Algorithm to Estimate Range and Velocity in Multi-Object Scenarios
Yi Geng, CICT mobile

10 Online Tensor Based Algorithm for Moving Object Detection with FMCW Radar
Yunfei Lu, Zhaoyang Zhang, Xin Tong, Zhaohui Yang, Zhejiang University

---

Tuesday, 20 June 2023 9:00 – 17:30   Affari 4th Floor
W2: 2nd Workshop on Mission Critical Communications

1 Keynote: The advent of Broadband Mission Critical Communications
Federico Frosali, Leonardo Company

2 Beamforming Design for Double-RIS Assisted UAV Communication with Limited Feedback in Disaster Scenarios
Sihui Shang, Dongyang Xu, Xi'an Jiaotong University

3 Rank and Condition Number Analysis for UAV MIMO Channels Using Ray Tracing
Donggu Lee, Ismail Guvenc, North Carolina State University

4* Fuzzy Secret Key Generation based on Phase Extraction and Constellation Rotation
Ning Shen, Qinghe Du, Lei Lu, Shijiao Zhang, Xi'an Jiaotong University

5 MIMO-aided Irregular Repetition Schemes for Mission Critical Communications
Linlin Zhao, Jilin University; Shaodan Ma, University of Macau; Guanghua Yang, JiNan University; Xuefen Chi, Wanting Yang, Jilin University

6 Novel Preamble for Accurate Synchronization of Frequency Hopped OFDM Links
Vignesh Ramachandran, K Giridhar, Indian Institute of Technology Madras

7 Keynote: Localization-of-Things: From Foundation To Operation Toward 6G Ecosystem
Moe Win, MIT

8 MARL-based Random Access Scheme for Delay-constrained umMTC in 6G
Jiseung Youn, Joohan Park, Soohyeong Kim, Seyoung Ahn, Abdul Rahim Ansari, Sunghyun Cho, Hanyang University

9 Neural Network Based Node Prioritization for Efficient Localization
Carlos Antonio Gomez Vega, University of Ferrara; Moe Z. Win, Massachusetts Institute of Technology; Andrea Conti, University of Ferrara

10 Performance Comparison of Numerical Optimization Algorithms for RSS-TOA-Based Target Localization
Halim Lee, Jiwon Seo, Yonsei University

11 Deployment of a UAV-Based Fire Detection System
Rushiv Arora, Mohammadjavad Khosravi, Saeede Enayati, Hossein Pishro-Nik, University of Massachusetts, Amherst

12 Optimizing Tethered UAV Deployment for On-Demand Connectivity in Disaster Scenarios
Balaji Kirubakaran, Jiri Hosek, Brno University of Technology

13 Experimental Quality Assessment of Cellular Networks and their Utilization for UAV Services
Radek Mozny, Pavel Masek, Martin Stusek, Brno University of Technology; Karol Molnar, Honeywel; Marketa Palenska, Honeywell; Dmitri Moltchanov, Tampere University; Jiri Hosek, Brno University of Technology

* Paper will be presented in virtual form only

Tuesday, 20 June 2023 9:00 – 17:30   Affari 2.2
W3: 5G for Railways - Challenges and Opportunities for Operational and Passenger Connectivity

1 Keynote: 5GRACOM project
Bernd Holfeld, Deutschebahn

2 5GMED Seamless Connectivity for Digital Trains
Jad Nasreddine, i2CAT Foundation; Juan Agustí, COMSA; Philippe Veyssiere, IRT Saint Exupery; Paul Caranton, SNCF Voyageurs; Nuria Trujillo, Hispasat; Pascal Deliège, Projets Groupe SNCF; Luca Petrucci, Axbryd; Nathan Sanchiz-Viel, Jean-Emmanuel Deschaud, MINES Paris, PSL Research University, CAOR; Judit Bastida, José López Luque, Cellnex Telecom S.A.; Francisco Vázquez-Gallego, i2CAT Foundation; Manuel Alfageme Alonso, COMSA

3 Keynote: CCAM perspectives
TBA

4 Experimental Trials for the Future Railway Mobile Communication System in 5GRail Project
Sébastien Tardif, Kontron Transportation; Nazih Salhab, SNCF-Réseau; Vassiliki Nikolopoulou, UIC (International Union of Railways); Michael Kloecker, Nokia Solutions and Networks; Bernd Holfeld, Deutsche Bahn; Farid Bazizi, Kontron Transportation; Dan Mandoc, UIC (International Union of Railways); Marion Berbineau, Université Gustave Eiffel; Stefanos Gogos, UNIFE

5 Field Evaluation of MCx Implementations for the Future Railway Mobile Communication System
Friederike Maier, Deutsche Bahn; Shirish Kendre, DB Netz; Maksym Tyrskyy, Deutsche Bahn; Arne Weber, DB Netz; Ulrich Geier, Manfred Taferner, Peter Beicht, Kevin Wriston, Endri Stefani, Kontron Transportation; Jens Koecher, Funkwerk Systems GmbH

6 Train Antennas Requirements, Design and Integration for 5GRail Project
Nazih Salhab, Ahmad Haidar, Juan José Munoz Vargas, Clement Reboul, SNCF-Réseau

7 Keynote: Cyber security for Railway
Simone Soderi, IMT Lucca

8 Adaptable Communications System for train remote driving
Wael Cherif, Christophe Vitry, Lorraine Durieux, Thales

9 Implementing Edge Computing architectures for railway applications: An example using the Emu5GNet platform
Tidiane Sylla, université Gustave Eiffel; Léo Mendiboure, Marion Berbineau, Université Gustave Eiffel; Radheshyam Singh, DTU Electro; Jose Soler, DTU Fotonik; Lars Dittmann, DTU

10 An MDP approach for radio resource allocation in urban Future Railway Mobile Communication System (FRMCS) scenarios
Vincent Corlay, Jean-Christophe Sibel, Mitsubishi Electric R&D Centre Europe

11 Reconfigurable Intelligent Surface Assisted Railway Communications: A survey
Aline Habib, IMT Atlantique; Ammar El Falou, King Abdullah University of Science and Technology (KAUST); Charlotte Langlais, IMT Atlantique, Lab-STICC, UBL; Marion Berbineau, Université Gustave Eiffel

12 A Sequence Spread Modulation Scheme Based on Orthogonal Time Frequency Space
Yuge Cao, Beijing University of Posts and Telecommunications

Tuesday, 20 June 2023 9:00 – 11:45   Virtual
W4: 6G-empowered Robotic Vehicles for Sustainable Development (VeSUS)

1 Keynote: 6G enabled Robots
Xueli An, Huawei

2 Keynote: Challenges and Methods to Tackle Robotic Service Requirements in 6G Mobile Networks
Sebastian Robitzsch, InterDigital

---

3 EMS-SLAM: Edge-Assisted Multi-Agent System Simultaneous Localization and Mapping
Kai Hu, Lei Zhan, Southern University of Science and Technology; Longhao Zou, Zuozhou Chen, Peng Cheng Laboratory, Department of Broadband Communication; Gabriel-Miro Muntean, Dublin City University

2 Fuzzy Logic-based Adaptive Multimedia Streaming for Internet of Vehicles
Abid Yaqoob, Gabriel-Miro Muntean, Dublin City University

3 Joint Deployment and Task Scheduling in IRS-assisted Wireless Inland Ship MEC Network
Yangzhe Liao, Yuanyan Song, Lin Liu, Yi Han, Wuhan University of Technology

4 QoE-aware 360-degree Video Streaming for Autonomous Vehicles
Yi Han, Wuhan University of Technology; Ammar A. Q. Aldaif, Huijun Yuan, Yi Zhong, Yi Zheng, School of Information Engineering, Wuhan University of Technology; Yangzhe Liao, Wuhan University of Technology; Qing Li, Peng Cheng Laboratory

5 Trustworthy Routing in VANET: A Q-learning Approach to Protect Against Black Hole and Gray Hole Attacks
Elham Mohammadzadeh Mianji, Gabriel-Miro Muntean, Irina Tal, Dublin City University

---

Tuesday, 20 June 2023 9:00 – 12:30   Oince
W5: 6th Workshop on Connected Intelligence for IoT and Industrial IoT Applications- C3IA
1 Energy-aware Theft Detection based on IoT Energy Consumption Data
Zunaira Nadeem, Queen Mary University, London; Zeeshan Aslam, Bahria University, Islamabad; Mona Jaber, Queen Mary University of London; Adnan Qayyum, Information Technology University, Lahore; Junaid Qadir, Qatar University, Doha

2 Glaucoma Retinal image Classification Based on Multichannel Gabor filtering and Deep Transfer Learning
Mohamed Chaabane, Hassania School of Public Works; Hasna Chaibi, Supmti; El Rharras Abdessamad, Hassania School of Public Works; Saadane Rachid, SIRC/LAGES-EHTP Hassania School of Public Works; Chehri Abdellah, Royal Military College of Canada

3 Identification and Categorization of Unusual Internet of Vehicles Events in Noisy Audio
Farkhund Iqbal, Zayed University; Ahmad Abbasi, Abdul Rehman Javed, Air University; Gautam Srivastava, Brandon University; Zunera Jalil, Air University; Thippa Reddy G, VIT University, India

4 IRS-Assisted Millimeter-wave Massive MIMO with Transmit Antenna Selection for IoT Networks
Taissir Elganimi, University of Tripoli; Khaled Rabie, Manchester Met University; Galymzhan Nauryzbayev, Nazarbayev University

5 LoRa-PUF: A Two-Step Security Solution for LoRaWAN
Mohammed Bello Aliyu, Maryam Hafeez, Anju Johnson, University of Huddersfield

6 Model-based and Model-free Prescriptive Maintenance on Edge Computing Nodes
Chen-Khong Tham, Naman Sharma, Jingrui Hu, National University of Singapore

7 Reconfigurable Intelligent Surfaces and DF-relay Improved Spectral Efficiency in Cognitive Radio Networks
Abderrahmane El Mettiti, Mohammed V University in Rabat, Morocco; Mohammed Saber, Hassania School of Public Works; hasna chaibi, Supmti; A. Badaoui, Laboratory LASTIMI,Mohammed V University, Rabat; Abdellah Chehri, RMC, Kingston University; Rachid Saadane, SIRC-LaGeS Hassania School of Public Works

---

Tuesday, 20 June 2023 8:45 – 12:30 Virtual
W6: IEEE VTC Spring 3rd Workshop on Sustainable and Intelligent Green Internet of Things for 6G and Beyond
1 Communication and Sensing for Autonomous Systems
Syed Ali Raza Zaidi, University of Leeds

2 6G driven Vehicular Tracking in Smart Cities using Intelligent Reflecting Surfaces
Atif Shakeel, Adeel Iqbal, COMSATS University Islamabad; Ali Nauman, Yeungnam University, Republic of Korea; Riaz Hussain, COMSATS University Islamabad; Xingwang Li, Henan Polytechnic University; Khaled Rabie, Manchester Met University

3 A Novel Multi-User Space-Time Block Coding based Superposition Transmission for Future Generation Wireless Networks
Muhammad Farhan Khan, University College Cork, Ireland; Dirk Pesch, University College Cork

4 A Software-Defined Networking based Simulation Framework for Internet of Space Things
Awais Aziz Shah, University of Glasgow

5 Dedicated versus Shared Element-Allotment in IRS-aided Wireless Systems: When to Use What?
Mahnoor Anjum, Muhammad Abdullah Khan, National University of Sciences & Technology (NUST); Sarah Basharat, NUST; Syed Ali Hassan, National University of Sciences and Technology; Haejoon Jung, Kyung Hee University

6 Deep Q-Learning Based Resource Allocation in 6G Interference Systems With Outage Constraints
Saniul Alam, Sadia Islam, Jahangirnagar University; Muhammad RA Khandaker, Heriot-Watt University; Risala Tasin Khan, Jahangirnagar University; Faisal Tariq, University Glasgow; Apriana Toding, Universitas Kristen Indonesia Paulus

7 Energy-Efficient RIS-Enabled NOMA Communication for 6G LEO Satellite Networks
Wali Ullah Khan, Eva Lagunas, Asad Mahmood, Symeon Chatzinotas, Bjorn Ottersten, University of Luxembourg

8 Joint Precoding and Combining for Quantized Full-Duplex MU-MIMO Systems
Seunghyeong Yoo, Seokjun Park, Ulsan National Institute of Science and Technology; Jinseok Choi, Korea Advanced Institute of Science and Technology

9 K-DUMBs IoRT: Knowledge Driven Unified Model Block sharing in the Internet of Robotic Things
Muhammad Waqas Nawaz, University of Glasgow

10 Multi-Objective Optimization for 3D Placement and Resource Allocation in OFDMA-based Multi-UAV Networks
Asad Mahmood, Thang X. Vu, Shree Krishna Sharma, Symeon Chatzinotas, Bjorn Ottersten, University of Luxembourg

11 VehA & PedA Mobility based Scheduling in Future Communication Networks
Khuram Ashfaq, Ghazanfar Ali Safdar, University of Bedfordshire; Masood Ur-Rehman, University of Glasgow

---

Tuesday, 20 June 2023 9:00 – 17:00 Affari Adua Hall 2
W7: Next Generation Multiple Access (NGMA) for Future Wireless Communications
1 Common Rate Allocation and Power Control Optimization for RSMA-Based Visible Light Communications
Jianfei Hu, Chen Sun, Jiaheng Wang, Xiqi Gao, Southeast University; Chunming Zhao, National Mobile Communications Research Lab., Southeast University

2 Performance Analysis of Ambient Backscatter Uplink NOMA Networks
Athanasios Chrysologou, Nestor Chatzidiamantis, Aristotle University of Thessaloniki; Alexandros Boulogeorgos, University of Piraeus; George Karagiannidis, Aristotle University of Thessaloniki

3 Federated Learning with Unsourced Random Access
Yuqing Tian, Jingze Che, Zhaoyang Zhang, Zhaohui Yang, Zhejiang University

4 Keynote
Kai-Kit Wong, University College London

5 Distance-Aware Subarray Selection for Terahertz Ultra-Massive MIMO Systems
Yiying Liu, Wu Jiao, Seungnyun Kim, Byonhyo Shim, Seoul National University

6 On the Performance of NOMA-OFDM Systems with Time-Domain Interleaving
Welelaw Yenieneh Lakew, Arafat Al-Dweik, Khalifa University; Mahmoud Aldababsa, Nisantasi University; Mohammed Abou-Khousa, Baker Mohammad, Khalifa University

7 Contextual Multi-Armed Bandit based Beam Allocation in mmWave V2X Communication under Blockage
Arturo Medina Cassillas, King's College London; Abdulkadir Kose, Abdullah Gul University; Haeyoung Lee, University of Hertfordshire; Chuan Heng Foh, University of Surrey; Bruce Leow, University Teknologi Malaysia

8 Rate-Splitting Multiple Access Precoding for Selective Security
Sangmin Lee, Seokjun Park, Ulsan National Institute of Science and Technology; Jeonghun Park, Yonsei University; Jinseok Choi, Korea Advanced Institute of Science and Technology

9 Integrated-Navigation-and-Communication (INAC): A Reconfigurable Intelligent Surface (RIS)-aided Approach
ZhaoQichao, Wenfei Gong, Tianwei Hou, Beijing jiaotong university; Xin Sun, Beijing Jiaotong University; Eliane Bodanese, Anna Li, Queen Mary University of London

10 Keynote
Qiang Ni, Lancaster University

11 Performance Analysis of Broadband Countermeasure Cancellation in Multiple-access Datalink Networks
Qiaran Lu, Fangmin He, Zhong Yang, Yaxing Li, Hongbo Liu, Naval University of Engineering

12 Performance Trade-off for NOMA-based Integrated Localization and Communication Systems
Lincong Han, Qixing Wang, Jing Jin, Xiaozhou Zhang, Liang Ma, Yajuan Wang, Zixiang Han, Guangyi Liu, China Mobile Research Institute; Xinwei Yue, Beijing Information Science and Technology University

---

Tuesday, 20 June 2023 9:00 – 15:30   Congressi - Room 4
W8: Special workshop on digital twin-enabled industrial wireless control: communications, sensing and computation

---

Tuesday, 20 June 2023 9:00 – 12:30   Affari 3.2
W9: Technologies and Proof-of-Concept Activities for 6G 2023 (TPoC6G 2023)

1 Opening Address
Kenichi Higuchi, Tokyo University of Science

2 Keynote: Research and Development of Wireless Technologies for 6G/IOWN
Hedekazu Murata, Yamaguchi University

3 Cloud and Edge Computing Empowered Mobility Digital Twin for Autonomous Driving: Design and Proof-of-Concept
Kui Wang, Zongdian Li, Tao Yu, Kei Sakaguchi, Tokyo Institute of Technology

4 Measurement and Characteristic Analysis of RIS-assisted Wireless Communication Channels in Sub-6 GHz Outdoor Scenarios
Jifeng Lan, Jian Sang, Mingyong Zhou, Boning Gao, Shengguo Meng, Xiao Li, Wankai Tang, Southeast University; Shi Jin, Southern University; Qiang Cheng, Tie Jun Cui, Southeast University; Ertugrul Basar, Koc University

5 Measurement-based Analysis and Modeling of Channel Characteristics in an Indoor-office Scenario at 100 GHz
Shenrong Li, Pan Tang, Tong Yu, Beijing University of Posts and Telecommunications; Zhaowei Chang, Beijing University of Posts and Telecommuniation; Zhenfeng Huang, Yunhao Ni, Wenqi Zhao, Zhang Jianhua, Beijing University of Posts and Telecommunications

6 Clustering Method in Downlink Cell-Free MIMO Using Layered Partially Non-orthogonal ZF-Based Beamforming
Daisuke Ishii, Takanori Hara, Tokyo University of Science; Nobuhide Nonaka, NTT DOCOMO, INC.; Kenichi Higuchi, Tokyo University of Science

7 A PUCCH Coverage Enhancement Scheme for 5G/6G Wireless Communications
Wenqi Luo, Beijing University of Posts and Telecommunications

8 Proposal of Self-Interference Canceller Using DMRS for Full Duplex Mobile Communications
Takumi Yasaka, Kogakuin University; Takayuki Yamada, Satoshi Suyama, NTT DOCOMO, INC.; Hiroyuki Otsuka, Kogakuin University

9 Improving Semi-Blind Interference Suppression on Multi-Cell Massive MIMO Systems by Multi-Antenna Users
Kazuki Maruta, Tokyo University of Science

10 Time-Varying Channel Prediction for Pilot Contamination Mitigation in Hybrid Massive MIMO Communications
Yuki Ono, Yuyuan Chang, Kazuhiko Fukawa, Tokyo Institute of Technology; Satoshi Suyama, Takahiro Asai, NTT DOCOMO, INC.

11 Null-Space Expansion Technique for Linear MIMO Reception over Time-Variant Channels
Yuki Ohi, Hidekazu Murata, Yamaguchi University; Makoto Taromaru, Fukuoka University; Tatsuhiko Iwakuni, Nippon Telegraph and Telephone Corporation; Daisei Uchida, NTT; Naoki Kita, NTT Access Network Service Systems Laboratories

12 User-initiated Suboptial Multiuser Joint Transmit-Receive Diversity in An Asymmetric MIMO Fading Channel
Fumiyuki Adachi, Tohoku University; Ryo Takahashi, Panasonic System Networks R&D Lab. Co., Ltd.

Tuesday, 20 June 2023 9:00 – 12:30   Congressi - Room 5
W10: The 3rd International Workshop on Electromagnetic Information Theory (EIT 2023)

1 A Novel GBSM for Holographic MIMO Communication Systems
Zheng-Rong Jin, Nanjing University of Aeronautics and Astronautics; Yue Yang, Jie Huang, Cheng-Xiang Wang, Southeast University; Qiuming Zhu, Nanjing University of Aeronautics and Astronautics

2 Cell throughput analysis for downlink multi-user MIMO transmission with radiation pattern reconfigurable antennas
Xi Li, Huawei Technologies, China; Chen Hu, Shijie Cai, Kunpeng Liu, Long Shen, Huawei Technologies; Hongjing Xu, Huawei Technologies, China; Qiang Li, Peng Cheng Laboratory, China

3 Electromagnetic Information Theory in Phase-Space: A Quantum Tunnelling Approach
Gabriele Gradoni, University of Surrey; David Miller, Stanford University; Stephen Creagh, University of Nottingham

4 Multi-band channel measurement and characterization for 5G-Advanced wireless communications
Chao Li, Shanghai Huawei Technologies Co., Ltd.; Hao Chen, Peng Cheng Laboratory, Shenzhen, China; Cen Ling, Huawei Technologies Co., Ltd.

5 On the Passive Beamforming for Reconfigurable Intelligent Reflecting Surfaces with Low Resolution ADCs and Phase Noise
Yasser Ahmed, Cairo University

6 Optimization of Directivity, Realized Gain and Efficiency for Multi-dimensional Antenna Array
Qian Zhu, Rui Ni, Ganghua Yang, Huawei Technologies Co. Ltd.; Qiang Li, Peng Cheng Laboratory, China

Tuesday, 20 June 2023 14:00 – 17:30   Oince
W11: The 5th International Workshop on Intelligent Communication Network Technologies (ICNET-5)

1 A Federated Channel Modeling System using Generative Neural Networks
Saira Bano, University of Pisa; Pietro Cassara, Institute of Information Science and Technology (ISTI), CNR; Nicola Tonellotto, University of Pisa; Alberto Gotta, ISTI-CNR

2 A Novel Statistically-Aided Learning Framework for Precise Localization of UAVs
Akash Kumar Mandal, Indian Institute of Technology Delhi; Jun-Bae Seo, Gyeongsang National University; Swades De, Indian Institute of Technology Delhi; Ajay K Poddar, Synergy Microwave Corp.; Ulrich Rohde, Federal University of the Joint Forces, Germany.

3 Latency-aware V2X Operation Mode Coordination in Vehicular Network Slicing
Mohammad Fardad, Gabriel-Miro Muntean, Irina Tal, Dublin City University

4 Leveraging Transfer Learning for Production-Aware Slicing in Industrial Networks
Naveenta Gautam, Indian Institute of Technology; Alessandro Lieto, Ilaria Malanchini, Qi Liao, Nokia Bell Labs

5 Mitigating Unnecessary Handovers in Ultra-Dense Networks through Machine Learning-based Mobility Prediction
Donglin Wang, Technical University of Kaiserslautern; Anjie Qiu, RPTU Kaiserslautern-Landau; Sanket Partani, University of Kaiserslautern; Qiuheng Zhou, German Research Center for Artificial Intelligence(DFKI); Hans D.Schotten, Technical University of Kaiserslautern

6 Prediction of Communication Delays in Connected Vehicles and Platoons
Shahriar Hasan, Mälardalen University; Joseba Gorospe, Arrate Alonso Gómez, Mondragon Unibertsitatea; Svetlana Girs, Elisabeth Uhlemann, Mälardalen University

7* Securing Internet of Vehicles Protocols using ASCON and GIFT-COFB
Wissal BenMassaoud, Darshan M, Lakehead University; Rutvij Jhaveri, Pandit Deendayal Energy University- PDEU (Formerly PDPU); Gautam Srivastava, Brandon University

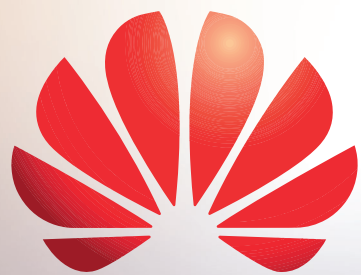** Paper will be presented in virtual form only*

Tuesday, 20 June 2023 9:00 – 10:30   Virtual
W12: Workshop on Energy Efficiency of Open Radio Access Networks

1 Keynote
2 Energy Efficiency of Open Radio Access Network: A Survey
Attai Abubakar, Oluwakayode Onireti, Yusuf Sambo, Lei Zhang, University of Glasgow; Ragesh Goshalakkal Keeramkulangara, Indian Institute of Information Technology, Kottayam; Muhammad Ali Imran, University of Glasgow

WORKSHOPS & TUTORIALS — TUESDAY 20 June

Time	Affari 2.1	Affari 2.2	Affari Adua Hall 2	Affari 3.2	Affari 4th floor	Congressi - Room 4	Congressi - Room 5	Congressi - Room 6	Congressi - Room 9	Congressi - Room 101	Oince
7:00-17:30					Registration (Palazzo Degli Affari Entrance)						
9:00-10:30	W1: 1st International Workshop on Sensing Advances in Wireless Networks (SAWN)	W3: 5G for Railways - Challenges and Opportunities for Operational and Passenger Connectivity	W7: Next Generation Multiple Access (NGMA) for Future Wireless Communications	W9: Technologies and Proof-of-Concept Activities for 6G 2023 (TPoC6G 2023)	W2: 2nd Workshop on Mission Critical Communications	W8: Special Workshop on Digital Twin-enabled Industrial Wireless Control: Comms, Sensing and Computation	W10: The 3rd International Workshop on Electromagnetic Information Theory (EIT 2023)	T10: Introduction to Quantum Communications	T9: Integrating Terrestrial and Non-terrestrial Networks: 3D Spectrum Sharing Opportunities and Challenges	T1: Multi-Antenna and In-Band Full Duplex Radio Techniques for Connected Intelligence for IoT and Industrial IoT Applications- C3JA	W5: 6th Workshop on Vehicle-to-Everything (V2X) Communications
10:30-11:00	(cont)	(cont)	(cont)	(cont)	Refreshments (Passi Perduti - 1st floor of Auditorium)						
11:00-12:30	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)
12:30-14:00	Lunch on your own										
14:00-15:30	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	T4: Cooperative Connected and Automated Mobility: Status and Perspectives for Day-2-and-beyond Services	T8: Signals and Waveforms for Sustainable Multifunctional 6G Networks and Beyond	T2: Road Communication Using Visible Light…Road Ahead
15:30-16:00	Refreshments (Passi Perduti - 1st floor of Auditorium)										
16:00-17:30	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	(cont)	W11: The 5th International Workshop on Intelligent Communication Network Technologies (ICNET-5)
18:00-20:00	Welcome Reception (Firenze Fiera Garden Area)										

HUAWEI

VTC2023-Spring
FLORENCE
Connecting the Mobile World

IEEE VTS