Final Program

VTC2024-Fall
WASHINGTON DC
Connecting the Mobile World

2024 IEEE 100th Vehicular Technology Conference

7 – 10 October 2024

Ronald Reagan Building and International Trade Center

Washington DC, USA

Welcome from the General Co-chairs

In our capacity as representatives of the organizing committee, we are deeply honored to extend a warm welcome to you for your participation in VTC2024-Fall, which is the 100th edition of the preeminent flagship conference of the Vehicular Technology Society (VTS). IEEE Vehicular Technology Conference (VTC) has consistently upheld its reputation as a distinguished platform for scholarly contributions, and we are delighted to have received a substantial number of exceptional submissions, which serve as the cornerstone for an outstanding technical program.

It is widely recognized that VTC diligently tracks the latest advancements in both academic and industrial research domains. In this fall, the VTC program shines brightly on the realms of machine learning, vehicular/Satellite communications, spectrum, NextG as well as their interconnected key technologies. The technical program also features six keynote presentations from leaders in academia, industry and government. VTC2024-Fall also features a set of panel sessions by highly visible experts across academia, industry, and government, providing the research community a stimulating opportunity to grasp the recent advancements in the field that are key to IEEE VTS.

It will undoubtedly be an inspiring experience to meet you in Washington DC, the national capital of the country where both IEEE VTS and VTC were originated. It is an ideal place to host 100th IEEE VTC and the 75th anniversary of IEEE VTS. At this very special moment and very special edition of IEEE VTC, we wish to extend our heartfelt appreciation to the invaluable team whose efforts have made the organization of this edition possible, including all the members of the organizing committee, and particularly, the Technical Program Co-Chairs, Michael Buehrer, Rui Dinis, and Song Guo. We also would like to thank all our distinguished speakers and panelists, who have agreed to address the conference attendees. We also wish to convey our deep appreciation to the extensive cohort of TPC members and reviewers who generously devote their time to uphold the rigor of our review process, as well as to our fellow members of the organizing committee.

Lastly, it's imperative to acknowledge that our achievements would have remained out of reach without the exceptional support of the IEEE VTS. We are deeply appreciative of the invaluable contributions from conference administrators Rodney C. Keele and Cerry Leffler, Publication Chair James Irvine, and Financial Chair J. R. Cruz.

Greetings and a warm welcome to Washington DC, the distinguished host city, and to IEEE VTC, the flagship conference proudly orchestrated by the IEEE VTS.

Lingjia Liu, John Smee and Tom Rondeau
General Co-chairs, IEEE VTC2024-Fall

Welcome from the TPC Co-chairs

On behalf of the Technical Program Committee, we would like to welcome you to the 100th IEEE Vehicular Technology Conference (VTC2024-Fall). 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 760 paper submissions, out of which 378 outstanding papers will be presented in 12 technical tracks and the recent results track that comprise the IEEE VTC2024-Fall technical program. In addition to the regular and recent results sessions, the conference will feature 15 topical workshops, 11 tutorials delivered by the leading experts in the field, a balanced mix from industry and academia of 6 extraordinary keynote speakers with broad experience in industry, government and academia as well as 4 exceptional industry panels delving into important topics such as high altitude platforms, DEI, future vehicular technologies and 6G. We would like to use this opportunity to thank all cochairs 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 VTC2024-Fall 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 VTC2024-Fall 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 Washington!

Mike Buehrer, Rui Dinis, and Song Guo
TPC Co-chairs, IEEE VTC2024-Fall

Welcome from the VTS President

On behalf of the IEEE Vehicular Technology Society (VTS), it is my great pleasure to welcome you to the 100th edition of the IEEE Vehicular Technology Conference, IEEE VTC2024-Fall, and the IEEE Vehicle Power and Propulsion Conference, IEEE VPPC 2024, in Washington, DC!

Both VTC and VPPC offer opportunities for you to report your latest R&D achievements, to get informed of various technological advances, to exchange ideas with technical leaders, and to network with your peers in the field of mobile communications and networks, connected vehicles, electric vehicles, autonomous driving, and more.

Organizing two world-class conferences requires a strong team of volunteers who have devoted both their time and their technical expertise. I would like to take this opportunity to thank and congratulate the VTC organizing committee, including General Co-Chairs Lingjia Liu, John Smee and Thomas Rondeau and Technical Program Committee Co-Chairs Mike Buehrer, Rui Dinis, and Song Guo, and the VPPC organizing committee, including General Chair Minh Ta and Co-Chair Hicham Chaoui, TPC Chair Joao Trovao, and TPC Vice-Chairs Nadia Yousfi Steiner and Ricardo De Castro. Both conferences would not be possible without the leadership of VTS Vice President for Conferences, J.R. Cruz. The organizing committees have been working diligently in planning and running this event with the excellent technical programs, tutorials, workshops, and industry panels. I would also like to recognize the generous support of the conference sponsors which will significantly enhance the experience of all participants in the conferences.

This is a key moment in our history. 2024 marks the 75th anniversary of the Vehicular Technology Society. The Society was first established in 1949 within the Institute of Radio Engineers (IRE) and under the name IRE Professional Group on Vehicular Communications (PGVC). We have partnered with the IEEE History Center to bring an exhibit of VT history to the Ronald Reagan Building. Please visit the exhibit and learn more about our shared history.

We also celebrate the 100th edition of the Vehicular Technology Conference. The first edition of VTC was held in 1950 in Detroit, Michigan (USA) with eight technical presentations, six exhibitors, and 94 registered attendees – how we have grown! We hope you will wear your 100th edition shirt proudly, take photos, make new connections, and enjoy the giveaways and special events this week, including the Banquet on Wednesday evening.

Finally, we commemorate the 140th anniversary of IEEE this year. If you are not yet a VTS member, I invite you to join while you are here in Washington, DC. We are offering complimentary membership to new members as an IEEE Day offer. Visit the VTS table in the exhibitors area to select promotional items and join the Society. As a member, you will benefit from all the services and resources that VTS provides. We look forward to your contributions to the VT community!

I would like to thank everyone for attending the conferences this year. Together, we are creating new history for VTS, VTC, and VPPC. I wish all of you a great time in Washington, DC!

Weihua Zhuang, *President*
IEEE Vehicular Technology Society

Organizing Committee

General Co-chairs	*Lingjia Liu*	Virginia Tech, USA
	John Smee	Qualcomm, USA
	Thomas Rondeau	Department of Defense, USA
Technical Program Co-Chairs	*Mike Buehrer*	Virginia Tech, USA
	Rui Dinis	Universidade Nova de Lisboa, Portugal
	Song Guo	Hong Kong University of Science and Technology, China
Publications Chair	*James Irvine*	University of Strathclyde, UK
Keynotes Chair	*Lajos Hanzo*	University of Southampton, UK
Panels Co-Chairs	*Alvin Chin*	University of Illinois, USA
	Wanshi Chen	Qualcomm, USA
	Martin Weiss	US DoD and University of Pittsburgh, USA
	Jorge Pereira	European Commission,
Workshops Co-Chairs	*Sumit Roy*	University of Washington, USA
	Zeng Kai	George Mason University, USA
	Ryan Thomas	Johns Hopkins University APL, USA
Publicity Co-chairs	*Chuan Huang*	Chinese University of Hong Kong (Shenzhen), China
	Bo Ji	Virginia Tech, USA
	Luca Lusvarghi	Universidad Miguel Hernandez de Elche, Spain
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

Advisory Committee

Robert Calderbank	Duke University, USA
Brian Daly	AT&T, USA
Gerhard Fettweis	TU Dresden & Barkhausen Institute, Germany
Andrea Goldsmith	Princeton University, USA
Javier Gozalvez	Universidad Miguel Hernandez de Elche, Spain

Logistics

IEEE eXpress Conference Publishing	*Christina Zarrello*	IEEE, USA
IEEE Conference Services	*Sean Skuba*	IEEE, USA

Technical Program Committee

Chairs	*Mike Buehrer*	Virginia Tech, USA
	Rui Dinis	Universidade Nova de Lisboa, Portugal
	Song Guo	Hong Kong University of Science and Technology, China
Vice-Chairs, 6G and Emerging Technologies	*Husheng Li*	Purdue University, USA
	João Guerreiro	FCT-UNL, Portugal
	Olga Galinina	TAU, Finland
Vice-Chairs, Antenna Systems, Propagation, and RF Design	*Greg Durgin*	Georgia Tech University, USA
	Majid Manteghi	Virginia Tech, USA
	Chris Anderson	NTIA, USA
Vice-Chairs, Electric Vehicles, Vehicular Electronics, and Intelligent Transportation	*Paulo Pereirinha*	Polytechnic Institute of Coimbra / INESC Coimbra, Portugal
	Christian Wietfeld	TU Dortmund University, Germany
	Mohsen Kandidayeni	University of Quebec Trois-Rivières, Canada
Vice-Chairs, IoV, IoT, M2M, Sensor Networks, and Ad-Hoc Networking	*Zhiguo Shi*	Zhejiang University, China
	Wenchao Xu	Hong Kong Polytechnic University, China
	Abdellah Chehri	Royal Military College of Canada, Canada
Vice-Chairs, Machine Learning for Communications	*Fen Hou*	University of Macau, Macau
	Hina Tabassum	University of York, UK
	Peng Li	University of Aizu, Japan
	Jingcai Guo	Hong Kong Polytechnic University, China

Vice-Chairs, Protocols, Security and Services for Wireless Networks	*Dajiang Chen*	University of Electronic Science and Technology of China, China
	Yipeng Zhou	Macquarie University, Australia
	Lin Gu	Huazhong University of Science and Technology, China
Vice-Chairs, Radio Access Technology and Heterogeneous Networks	*Daniel B. Costa*	King Fahd University of Petroleum & Minerals, Saudi Arabia
	Daniel Jakubisin	Virginia Tech, USA
	Dush Nalin Jayakody	Universidade Lusófona, Portugal
Vice-Chairs, Satellite Networks, Positioning Technologies, Localization and Navigation	*Pablo Madoery*	Carleton University, Canada
	Henk Wymeersch	Chalmers University, Sweden
	Marko Beko	University of Lisbon, Portugal
Vice-Chairs, Spectrum Management, Spectrum Sharing and Green Communications	*Telex Ngatched*	McMaster University, Canada
	Wen Wu	Peng Cheng Laboratory, China
	Ebrahim Bedeer Mohamed	University of Saskatchewan, Canada
Vice-Chairs, Transmission Technologies and Communication Theory	*Heidi Steendam*	Ghent University, Belgium
	Paschalis Sofotasios	Khalifa University, UAE
	Carmen D'Andrea	University of Cassino and Lazio Meridionale, Italy
	Mehmet Ilter	Tampere University, Finland
Vice-Chairs, Vehicular Communications, Vehicular Networks, and Telematics	*Mingjun Dai*	Shenzhen University, China
	Terry Guo	Tennessee Tech University, USA
	Deze Zeng	China University of Geosciences (Wuhan), China
Vice-Chairs, Recent Results	*Huawei Huang*	Sun Yat-Sen University, China
	William "Chris" Headley	Virginia Polytechnic Institute and State University, USA
	Seong Ki Yoo	Coventry University, UK
	Jin Nakazato	The University of Tokyo, Japan
	Nidhi Simmons	Queens's University Belfast, UK

TPC Members

Omid Abbasi, Carleton University
Ahmed H. Abd El-Malek, Egypt-Japan University of Science and Technology (E-JUST)
Mouhamed Abdulla, Sheridan Institute of Technology
Sylvester Boadi Aboagye, University of Guelph
Taufik Abrão, State University of Londrina
Traian Abrudan, Nokia Bell Labs
Koichi Adachi, The University of Electro-Communications
Stephen Adams, Virginia Tech
Ayaz Ahmad, SUPELEC
Ishtiaq Ahmad, Czech Technical University in Prague
Ashfaq Ahmed, Khalifa University
Bassel Al Homssi, UNSW
Ziad Qais Al Abbasi, The Middle Technical University (MTU) - Baquba Technical Institute
Wael Abd Alaziz, University of Sumer
Farman Ali, Sungkyunkwan University
Farah Alsallami, University of Leeds
Hirley Alves, University of Oulu
Mustafa Ammous, University of Toronto
SaiDhiraj Amuru, Samsung
Vlad Andrei, Technical University of Munich
Mahnoor Anjum, University of New South Wales
Imran Shafique Ansari, University of Glasgow
Antonios Argyriou, University of Thessaly
Muhammad Asad, The University of Tokyo
Mateen Ashraf, Tampere University
Muhammad Imran Aslam, NED University of Engineering and Technology
Edward Au, Huawei Technologies Co.
Kareem Emile Baddour, Communications Research Centre Canada
Jiyang Bai, Western University
Rojeena Bajracharya, Mälardalen University
Marco Baldi, Università Politecnica delle Marche
Naren Bao, The University of Tokyo
Vo Nguyen Quoc Bao, Van Lang University
Paolo Bellavista, University of Bologna
Mustapha Benjillali, INPT
Petros Bithas, National and Kapodistrian University of Athens
Amnart Boonkajay, Institute for Infocomm Research
Eirina Bourtsoulatze, University of Exeter
Alessandro Brighente, Università degli studi di Padova
Eyuphan Bulut, Virginia Commonwealth University
Chang Cai, The Chinese University of Hong Kong
Jun Cai, Concordia University
Sebastian Cammerer, NVIDIA
Yihan Cang, Southeast University
Jingyang Cao, Chongqing University of Posts and Telecommunications
Yuwen Cao, Donghua University
Charles Casimiro Cavalcante, Universidade Federal do Ceará
Chabalala Chabalala, University of the Witwatersrand
Yuyuan Chang, NTT DOCOMO
Subhankar Chatterjee, IIT Delhi
Adnan A. Cheema, Ulster University
Dajiang Chen, University of Electronic Science and Technology of China
Fangjiong Chen, South China University of Technology
Hui Chen, Chalmers University of Technology
Long Chen, Guangdong University of Technology
Mingkai Chen, Nanjing University of Posts and Telecommunications

Pingping Chen, Fuzhou University
Chung Shue Chen, Bell Labs Nokia
Lei Cheng, University of Electronic Science and Technology of China
Qingqing Cheng, UNSW
Sunghwan Cho, Korea Military Academy
Ji-Woong Choi, Daegu Gyeongbuk Institute of Science and Technology
Wan Choi, Seoul National University
Nam Hoai Chu, University of Technology Sydney
Omer Chughtai, COMSATS University Islamabad
Young Jin Chun, City University of Hong Kong
Domenico Ciuonzo, Univesity of Naples "Federico II"
Francisco da Costa Lopes, Electric Energy Research Center – CEPEL
Bin Dai, Nanjing University of Posts and Telecommunications
Haibo Dai, Nanjing University of Posts and Telecommunications
Penglin Dai, Southwest Jiaotong University
Yanpeng Dai, Dalian Maritime Universtiy
Yanpeng Dai, Xidian University
Shuping Dang, University of Bristol
Yongchao Dang, Aalto University
Muhammad Norfauzi Dani, Universiti Teknologi Brunei
Tasneem Darwish, St. Francis Xavier University
Nicolò Decarli, IEIIT-CNR
Benoît Denis, CEA-Leti Minatec
Ugo Dias, University of Brasilia
Hongyang Du, Nanyang Technological University
Qinghe Du, Xi'an Jiaotong University
Ankit Dubey, Indian Institute of Technology Jammu
Trung Q. Duong, Queen's University Belfast
Satyam Dwivedi, Ericsson
Daniel Egea, Universitat Autònoma de Barcelona
Abderrahmane El Mettiti, Mohammed V University in Rabat
Ahmad El-Banna, Shengzhen University
Basem M. ElHalawany, Benha University
Osama Elnahas, Shenzhen University
Maha Elsabrouty, Egypt-Japan University of Science and Technology
Amr El-Wakeel, West Virginia University
Muge Erel-Ozcevik, Manisa Celal Bayar University
Fran Fabra, Universitat Autònoma de Barcelona
Jiancun Fan, Xi’an Jiaotong University
Chao Fang, Beijing University of Technology
Fang Fang, Western University
Xiaojie Fang, Harbin Institute of Technology
Yuan Fang, City University of Hong Kong
Yimeng Feng, Macquarie University
Jorge Finochietto, Universidad Nacional de Cordoba
Nuno Miguel Fonseca Ferreira, Polytechnic Institute of Coimbra
Mostafa M. Fouda, Idaho State University
Juan Fraire, INRIA
Stephan Frei, TU Dortmund University
Yaru Fu, Hong Kong Metropolitan University
Takuya Fujihashi, Osaka University
Diluka Galappaththige, University of Alberta
Shijian Gao, The Hong Kong University of Science and Technology (Guangzhou)
Zhenzhen Gao, Xi'an Jiaotong University
Yu Ge, Chalmers University of Technology
Ahmad Gendia, Kyushu University
Anastassia Gharib, Carleton University
Alireza Ghasempour, University of Applied Science and Technology
Pejman Ghasemzadeh, Oklahoma State University
Khanh Tran Gia, Tokyo Institute of Technology
Carlos Antonio Gomez Vega, University of Ferrara
Ali Gorcin, Istanbul Technical University
Javier Gozálvez, Universidad Miguel Hernandez de Elche (UMH)
David Grace, University of York
Fabrizio Granelli, University of Trento
Lin Gu, Huazhong University of Science and Technology
Bicheng Guo, University of Waterloo
Hao Guo, Chalmers University of Technology
Mayank Gupta, Indian Institute of Technology Delhi
Rajesh Gupta, Nirma University
Carlos A. Gutierrez, Universidad Autonoma de San Luis Potosi
Sana Hafeez, University of Glasgow
Huimei Han, Zhejiang University of Technology
Muhammad Fainan Hanif, University of the Punjab
Wanming Hao, Zhengzhou University
Syed R. Hasan, Tennessee Tech University
Sherief Hashima, RIKEN-AIP
Syed Ali Hassan, National University of Sciences and Technology
Md. Zoheb Hassan, Universite Laval
Danping He, Beijing Jiaotong University
Hengtao He, Hong Kong University of Science and Technology
Jiayi He, Guangdong University of Technology
Mingcheng He, University of Waterloo
Ruisi He, Beijing Jiaotong University
Tengjiao He, Jinan University
Rym Hicheri, University of Agder
Seyyedali Hosseinalipour, University at Buffalo-SUNY
Yafei Hou, Okayama University
Andrej Hrovat, Jožef Stefan Institute
Anzhong Hu, Hangzhou Dianzi University
Bintao Hu, Xi'an Jiaotong-Liverpool University
Miao Hu, Sun Yat-sen University
Shisheng Hu, University of Waterloo
Shuyan Hu, Fudan University
Xintao Huan, Beijing Institute of Technology
Chongwen Huang, Zhejiang University
Huiping Huang, Chalmers University of Technology
Xiaoxia Huang, Sun Yat-sen University
Xinyu Huang, University of Waterloo
Yang Huang, Nanjing University of Aeronautics and Astronautics
Yu-Chih Huang, National Yang Ming Chiao Tung University
Khaled Humadi, Carleton University
Thien Huynh-The, Ho Chi Minh City University of Technology and Education
Seung-Hoon Hwang, Dongguk University
Giovanni Interdonato, University of Cassino and Southern Latium

Koji Ishibashi, The University of Electro-Communications
Sridhar Iyer, KLE Technological University
Wael Jaafar, École de Technologie Supérieure
Ehsan Javanmardi, The University of Tokyo
Anand Jee, Indian Institute of Technology Delhi
Yo-Seb Jeon, Pohang University of Science and Technology (POSTECH)
Han-You Jeong, Pusan National University
Baofeng Ji, Henan University of Science and Technology
Xiaodong Ji, Nantong University
Zelin Ji, Queen Mary University of London
Pengyi Jia, Western University
Fan Jiang, Xi'an University of Posts and Telecommunications
Hao Jiang, Nanjing University of Information Science & Technology
Qi Jiang, Xidian University
Jian Jiao, Harbin Institute of Technology (Shenzhen)
Yutao Jiao, PLA University of Science and Technology
Alyse Jones, Virginia Tech
Omprakash Kaiwartya, Nottingham Trent University
Zeeshan Kaleem, King Fahad University of Petroleum and Minerals
Aman Ved Kalia, Waymo LLC.
Anders E. Kalør, Aalborg University
Mohsen Kandidayeni, Université du Québec à Trois-Rivières
Abdulkareem Karasuwa, University of South Wales
Aymen Khaleel, Koc University
Hafiz Ahmad Khalid, Beijing University of Posts and Telecommunications
Ata Khalili, Friedrich-Alexander-University Erlangen-Nurnberg×
Majid Khoshafa, Memorial University of Newfoundland
Ho Van Khuong, Ho Chi Minh City University of Technology
Jacek Kibilda, Virginia Tech
Donghyeon Kim, Kyunghee University
Do-Yup Kim, Incheon National University
Hyowon Kim, Chungnam National University
Sooyoung Kim, Jeonbuk National University
Tae-Kyoung Kim, Gachon University
Adrian Kliks, Poznan University of Technology
Shun Kojima, The University of Tokyo
Kazuki Komatsu, Toyohashi University of Technology
Witold Krzymień, University of Alberta
Ravinder Kumar, Thapar University
Chinmoy Kundu, University College Dublin
Jesus Omar Lacruz, IMDEA Networks Institute
Xiaolong Lan, Sichuan University
Byungju Lee, Incheon National University
Jang-Won Lee, Yonsei University
Ming-Chun Lee, National Yang Ming Chiao Tung University
Xianfu Lei, Southwest Jiaotong University
Luciano Leonel Mendes, INATEL
Ka-Cheong Leung, National Sun Yat-Sen University
Israel Leyva-Mayorga, Aalborg University
Baogang Li, North China Electric Power University
Chunguo Li, Southeast University
Jun Li, Guangzhou University
Liang Li, Peng Cheng Laboratory
Min Li, Zhejiang University
Ming Li, Dalian University of Technology
Mushu Li, Lehigh University
Mushu Li, Toronto Metropolitan University
Mushu Li, University of Waterloo
Qihao Li, Jilin University
Shaofeng Li, Peng Cheng Laboratory
Shuangyang Li, TU Berlin
Taotao Li, Sun Yat-Sen University
Wenchao Li, University of Wollongong
Xingwang Li, Henan Polytechnic University
Xiuhua Li, Chongqing University
Xujie Li, Hohai University
Yiwei Li, National Tsing Hua University
Yong Li, Changchun University of Technology
Zongdian Li, Tokyo Institute of Technology
Chengsi Liang, University of Glasgow
Jinwen Liang, Hong Kong Polytechnic University
Guocheng Liao, Sun Yat-sen University
Xi Liao, Chongqing University of Post and Telecommunications
Sergi Liesegang, University of Cassino
Zhi Lin, PLA University of Science and Technology
Zhijian Lin, Fuzhou University
Changrong Liu, Soochow University
Dongxiao Liu, University of Waterloo
Ling Liu, Shenzhen University
Rang Liu, University of California Irvine
Ruiqi Liu, ZTE Corporation
Ruofeng Liu, Bosch Research
Shengbo Liu, Peng Cheng Laboratory
Song Liu, Google
Tingting Liu, Nanjing Institute of Technology
Yalin Liu, Hong Kong Metropolitan University
Yan Liu, Tongji University
Yinqiu Liu, NTU
Yuan Liu, Guangzhou University
Zhi Liu, The University of Electro-Communications
Zhilong Liu, Beijing Jiaotong University
Poonam Lohan, Punjab Engineering College
Huabing Lu, Dalian University of Technology
Ning Lu, Queen's University
Yunlong Lu, Beijing Jiaotong University
M. Carmen Lucas-Estañ, Universidad Miguel Hernández de Elche
Tham Mau Luen, Universiti Tunku Abdul Rahman
Haoxiang Luo, University of Electronic Science and Technology of China
Xiaofei Luo, Sun Yat-Sen University
Lu Lv, Xidian University
Shanxiang Lyu, Jinan University
Zhonghao Lyu, The Chinese University of Hong Kong, Shenzhen
Wenyan Ma, National University of Singapore
Renato Machado, Federal University of Santa Maria
Alvaro Omar Macias Fernandez, Université du Québec à Trois-Rivières
Mohammed Mahyoub, Carleton University
Sudhan Majhi, Indian Institute of Science Bengaluru
Omar Maraqa, McMaster University
Dileepa Marasinghe, University of Oulu

Mirco Marchetti, Università di Modena e Reggio Emilia
Jose Carlos Marinello Filho, Federal University of Technology - Parana
Luis Marques, Instituto Politécnico de Coimbra
Kazuki Maruta, Tokyo University of Science
Michalis Matthaiou, Queen's University Belfast
Bho Matthiesen, University of Bremen
Hamid Mcheick, University of Quebec at Chicoutimi
Neelesh Mehta, Indian Institute of Science
Zhen Mei, Nanjing University of Science and Technology
Horacio Mendoza, Universidad Nacional de Cordoba
Kaitao Meng, University College London
Yan Meng, Shanghai Jiao Tong University
Nobuhiko Miki, Kagawa University
Lin Min, Nanjing University of Posts and Telecommunications
Zeeshan Hameed Mir, Higher Colleges of Technology (HCT) Fujairah
Deepak Mishra, University of New South Wales (UNSW) Sydney
Takashi Miyamura, Senshu University
Mohammadali Mohammadi, Queen's University Belfast
Mohammad Mohammadpour, University of Quebec in Trois Rivieres
Carlos Molero, Universidad de Granada
Paulo Montezuma Carvalho, FCT- Universidade Nova de Lisboa
Jules M. Moualeu, University of the Witwatersrand
Xidong Mu, Queen Mary University of London
Tomoki Murakami, NTT Corporation
Liam Murphy, University College Dublin
Tatsuya Nagao, KDDI Research
Ahmed Nasser, Kyushu University
Ye Neng, Beijing Institute of Technology
Alon Newton, Ossia
Hien Quoc Ngo, Queen's University Belfast
Hieu C. Nguyen, University of Technology Sydney
Kien Nguyen, Chiba University
Toan-Van Nguyen, San Diego State University
Mohammadsaleh Nikooroo, University of Luxembourg
Toshihiko Nishimura, Hokkaido University
Carlos Rafael Nogueira da Silva, Federal University of Triˆangulo Mineiro
Hideki Ochiai, Osaka University
Hiraku Okada, Nagoya University
Samuel Okegbile, Concordia University
Man Ouyang, Beijing University of Posts and Telecommunications
Qiaolin Ouyang, Beijing Institute of Technology
Olutayo O. Oyerinde, University of the Witwatersrand
Cuneyd Ozturk, Northwestern University
Sangheon Pack, Korea University
Ivan Palama, University of Rome Tor Vergata and CNIT
Luca Pallotta, University of Basilicata
Filip Paluncic, University of Pretoria
Chunyu Pan, Beijing Information Science and Technology University
Jianxiong Pan, Beijing Institute of Technology
Yanjun Pan, University of Arkansas
Om Jee Pandey, IIT BHU
Shashi Raj Pandey, Aalborg University
Enrico Paolini, University of Bologna
Nikolaos Pappas, Linköping University
Jihong Park, Deakin University
Seok-Hwan Park, Jeonbuk National University
Faruk Pasic, TU Wien
João Pedro Pavia, ISCTE-IUL/ISTAR/Instituto de Telecomunicações
Yingying Pei, University of Waterloo
Paulo G. Pereirinha, Polytechnic Institute of Coimbra / INESC Coimbra
Viet Quoc Pham, University of Dublin
Michele Polese, Northeastern University
Francisco Rodrigo Porto Cavalcanti, Federal University of Ceara
Constantinos Psomas, University of Cyprus
Lorenzo Pucci, University of Bologna
Yazdan Ahmad Qadri, Yeungnam University
Aamir Qamar, COMSATS University Islamabad
Chenhao Qi, Southeast University
Chao Qiu, Tianjin University
Min Qiu, University of New South Wales
Kaige Qu, University of Waterloo
Sujan Rajbhandari, University of Strathclyde
Valentin Rakovic, Ss. Cyril and Methodius University in Skopje
Pablo Ramírez Espinosa, Universidad de Granada
Junhui Rao, HKUST
Danda B Rawat, Howard University
Zixiang Ren, University of Science and Technology of China
Olivier Renaudin, Fraunhofer IIS
Ignacio Rodriguez, University of Oviedo
Alexey Rolich, Sapienza University of Rome
Thomas Rosenstatter, Salzburg University of Applied Sciences
Debashri Roy, The University of Texas Arlington
Han Rui, BIT
Humphrey Rutagemwa, Communications Research Centre Canada
Nagham Saeed, University of West London
Nikos C. Sagias, University of Peloponnese
Ikjot Saini, University of Windsor
Kentaro Saito, Tokyo Institute of Technology
Sharief Saleh, Chalmers University of Technology
Ahmed Salem, Menofia University
Yukitoshi Sanada, Keio University
Stephan Sand, German Aerospace Center (DLR)
Malcolm Sande, The Independent Institute of Education (IIEMSA)
Frederico Santos, Polytechnic Institute of Coimbra
Victor D. N. Santos, Polytechnic Institute of Coimbra
Yuris Mulya Saputra, Universitas Gadjah Mada
Hirofumi Sasaki, NTT
Praveen Kumar Selvam, German Aerospace Center
Hyowoon Seo, Kwangwoon University
Mansoor Shafi, Spark NZ Ltd
Lin Shan, Shinshu University
Chenglong Shao, Kyushu Institute of Technology
Li-Hsiang Shen, National Central University
Zhichao Sheng, Shanghai University
Ray E. Sheriff, Edge Hill University
Enyu Shi, Beijing Jiaotong University

Zhenguo Shi, UNSW
Mahendra K. Shukla, Indian Institute of Information Technology Gwalior
Marco J. Silva, Polytechnic Institute of Coimbra
Keshav Singh, National Sun Yat-sen University
Hideya So, Shonan Institute of Technology
Paschalis Sofotasios, Khalifa University (UAE) and Tampere University
Javier Solano, European Institute for Energy Research
Gerd Sommerkorn, TU Ilmenau
Fuyuan Song, Nanjing University of Information Science and Technology
Xianxin Song, The Chinese University of Hong Kong Shenzhen
Saurav Sthapit, Coventry University
Jianfei Sun, Nanyang Technological University
Mao Sun, Sichuan Normal University
Qiang Sun, Nantong University
Ruijin Sun, Xidian University
Weifeng Sun, Dalian University of Technology
Himal A. Suraweera, University of Peradeniya
Katsuya Suto, The University of Electro-Communications
Hien Ta, International University
Bo Tan, Tampere University
Fengxiao Tang, Tohoku University
Jianhang Tang, Guizhou University
Na Tang, University of Sheffield
Xiao Tang, Northwestern Polytechnical University
Yujie Tang, Dalhousie University
Yinglei Teng, Beijing University of Posts and Telecommunications
Saqr Thabet, Macquarie University
Chen-Khong Tham, National University of Singapore
Christo Kurisummoottil Thomas, Virginia Tech
Charlie Thornton, Virginia Tech
Slavisa Tomic, Lusófona University
Joaquin Torres Sospedra, Universitat de València
Maymoonah Toubeh, Virginia Tech
Kentaroh Toyoda, A*STAR
Ljiljana Trajković, Simon Fraser University
Trung Duy Tran, Post and Telecommunications Institue of Technology
Ang-Hsun Tsai, Feng Chia University
Eirini-Eleni Tsiropoulou, University of New Mexico
Sho Tsugawa, University of Tsukuba
Manabu Tsukada, University of Tokyo
Daisuke Umehara, Kyoto Institute of Technology
Masahiro Umehira, Ibaraki University
Dhruva Ungrupulithaya, North Carolina State University
Muhammad Usman, Edge Hill University
Carlos Alberto Vieira Campos, Federal University of the State of Rio de Janeiro
Demosthenes Vouyioukas, University of the Aegean
Michael Walter, German Aerospace Center (DLR)
Chen Wang, Huazhong University of Science and Technology
Chun Wang, Sun Yat-sen University
Dawei Wang, Northwestern Polytechnical University (NWPU)
Jiacheng Wang, Nanyang Technological University
Kunlun Wang, ECNU
Qiu Wang, Xuzhou University of Technology
Qubeijian Wang, Northwestern Polytechnical University
Ruoxu Wang, University of Waterloo
Shuai Wang, Shenzhen Institute of Advanced Technology
Shuai Wang, Southeast University
Taotao Wang, Shenzhen University
Wei Wang, Dalian University of Technology
Wei Wang, Nanjing University of Aeronautics and Astronautics
Xiaoliang Wang, Nanjing University
Xu Wang, Queen's University
Yichen Wang, Xi'an Jiaotong University
Ying Wang, Stevens Institute of Technology
Zhaorui Wang, The Chinese University of Hong Kong
Zihuan Wang, University of British Columbia
Fengsheng Wei, Yangtze Delta Region Institute (Huzhou)
Yannan Wei, University of Waterloo
Ziling Wei, National University of Defense Technology
Jinbo Wen, Nanjing University of Aeronautics and Astronautics
Miaowen Wen, South China University of Technology
Christian Wietfeld, TU Dortmund University
Bochun Wu, Fudan University
Huaqing Wu, University of Calgary
Linlong Wu, University of Luxembourg
Yifei Wu, FAU
Le Xia, University of Glasgow
Minghua Xia, Sun Yat-sen University
Lin Xiang, Technische Universit\"at Darmstadt
Yilin Xiao, Shenzhen Institute of Artificial Intelligence and Robotics for Society
Yue Xiao, University of Electronic Science and Technology of China
Huiqiang Xie, Jinan University
Dongfang Xu, HKUST
Guanjun Xu, Hangzhou Dianzi University
Wenchao Xu, PolyU
Yongjun Xu, Chongqing University of Posts and Telecommunications (CQUPT)
Michel Yacoub, State University of Campinas
Yasunori Yagi, NTT
Syunya Yamada, Nagoya University
Hailiang Yang, Guangdong Laboratory of Artificial Intelligence and Digital Economy
Haojun Yang, University of Waterloo
Long Yang, Xidian University
Peng Yang, Huazhong University of Science and Technology
Qianqian Yang, Zhejiang University
Qinglin Yang, Guangzhou University
Shizhao Yang, Nanjing University of Posts and Telecommunications
Wanting Yang, Singapore University of Technology and Design
Evsen Yanmaz, Özyegin University
Kok-Lim Alvin Yau, Universiti Tunku Abdul Rahman
Qiang (John) Ye, University of Calgary
Dongdong Ye, Guangdong University of Technology
Yinghui Ye, Xi'an University of Posts & Telecommunications
Bo-Heng Yeh, National Tsing Hua University
Yue Yin, Keio University

Zhimeng Yin, City University of Hong Kong
Seong Ki Yoo, Coventry University
Byungha You, Kyung Hee University
Néji Youssef, Sup'Com
Chong Yu, University of Cincinnati
Jihong Yu, Beijing Institute of Technology
Keping Yu, Hosei University
Peng Yu, Beijing University of Posts and Telecommunications
Tianqi Yu, Soochow University
Jide Yuan, Soochow University
Weijie Yuan, Southern University of Science and Technology
Chau Yuen, Nanyang Technological University
Chao Zhai, Shandong University
Nurkhat Zhakiyev, Astana IT University
Yufeng Zhan, Beijing Institute of Technology
Jianxin Zhang, Xiamen University
Jie Zhang, The Hong Kong Polytechnic University
Jifa Zhang, Dalian University of Technology
Ran Zhang, University of North Carolina at Charlotte
Shaohu Zhang, University of North Carolina at Pembroke
Sheng Zhang, Nanjing University
Shuowen Zhang, The Hong Kong Polytechnic University
Wenyu Zhang, University of Science and Technology Beijing
Xianzhi Zhang, Sun Yat-sen University
Xinruo Zhang, University of Essex
Yan Zhang, The University of Akron
Yang Zhang, NUAA
Ziheng Zhang, Shanghai Jiao Tong University
Chengcheng Zhao, Zhejiang University
Chonghe Zhao, Shenzhen University
Fangzhou Zhao, University of Glasgow
Jun Zhao, Nanyang Technological University
Kanglian Zhao, Nanjing University
Ming-Min Zhao, Zhejiang University
Nan Zhao, Dalian University of Technology
Pincan Zhao, Xidian University
Ping Zhao, Donghua University
Jiakang Zheng, Beijing Jiaotong University
Meng Zheng, Shenyang Institute of Automation
Tongxing Zheng, Xi'an Jiaotong University
Fangtian Zhong, Montana State University
Liang Zhong, China University of Geosciences
Ruikang Zhong, Queen Mary University of London
Weifeng Zhong, Guangdong University of Technology
Xiaoxiong Zhong, Pengcheng Laboratory
Chengyi Zhou, Xidian University
Conghao Zhou, University of Waterloo
Jiafeng Zhou, University of Liverpool
Xusheng Zhu, Shanghai Jiao Tong University
Yongxu Zhu, Southeast University
Yixuan Zou, Queen Mary University of London
Hajar Zoubir, Hassania School of Public Works

Reviewers

Luis F. Abanto-Leon
Aly Sabri Abdalla
Lwaa Faisal Abdulameer
Khaizuran Abdullah
Maryam Abdullah
Abhishek
Taufik Abrão
Traian Abrudan
Koichi Adachi
Stephen Adams
Asad Aftab
Ana Aguiar
Diego Aguiar Sousa
Ishtiaq Ahmad
Jawad Ahmad
Qasim Ahmed
Peter Akuon
Ziad Qais Al Abbasi
Wesam Al Amiri
Yosef Aladadi
Ali J. Al-Askery
Wael Abd Alaziz
Khalid Alhamdani
Raad Alhumaima
Moin Ali
Mohamad Alkadamani
Abdallah Abed Alfattah Alkhatib
Fernando Almeida
Ali Al-Naji
Mohamed Alouzi
Alaa A. R. Alsaeedy
Farah Alsallami
Luae Altarawneh
Mustafa Ammous
SaiDhiraj Amuru
Anandpushparaj. J
Vlad Andrei
Annu
André Antônio dos Anjos
Daniele Antonioli
Roberto Antonioli
Kabuto Arai
Fernando J. Aranda
Dalton Soares Arantes
Luca Arcangeloni
Antonios Argyriou
Muhammad Shahzad Arif
Muhammad Imran Aslam
Edward Au
Rafael Augusto Pedriali
Amirhossein Azarbahram
Qamar Bader
Eduardo Baena
Mingming Bai
Zhiyue Bai
Ashutosh Balakrishnan
Ashok Bandi
Bitan Banerjee
Paulo C. Bartolomeu
Sarah Basharat
chathuranga basnayaka
Vishaka Basnayaka
Michael Batistatos
Ahmad Bazzi
Alessandro Bazzi
Marko Beko
Paolo Bellavista
Andrey Belogaev
Karem BenChikha
Daniel Benevides da Costa
Mustapha Benjillali
Bhola
Pengqiang Bi
Stefan Boecker
Jonathan Boisclair
Veljko Boljanovic
Leonardo Bonati
Kumar Sai Bondada
Jean-Marie Bonnin
Amnart Boonkajay
Faouzi Bouali
Mondher Bouazizi
Nejib Boubaker
Eirina Bourtsoulatze
Manolis Bozis
Glauber Brante
Alessandro Brighente
R. Michael Buehrer
Eyuphan Bulut
chongxiao cai
Lin Cai
Xiao Cai
Xuesong Cai
Yujun Cai
Zeju Cai
Ziwei Cai
Sebastian Cammerer
Yihan Cang
Huanglin Cao
Pan Cao
Shengbin Cao
Xintai Cao
Yuwen Cao
Paulo Cardieri
Charles Casimiro Cavalcante
Cirine Chaieb
Krishna Chaitnya
Jian Chang
Zhouxi Chang
Subhankar Chatterjee
Adnan A. Cheema
Abdellah Chehri
Binbin Chen
Che Chen
Dajiang Chen
Fangjiong Chen
Guangji Chen
Hui Chen
Jale Chen
Jiali Chen
Jianguo Chen
Jingwen Chen
JinSong Chen
Jinyu Chen
Lijun Chen
Long Chen
Mingkai Chen
Mingxin Chen
Qinde Chen
Quan Chen
Quan Chen
Wei-Chang Chen
Weicong Chen
Weilong Chen
Xi Chen
Yang Chen
Youjia Chen
Yuhao Chen
Yu-Jia Chen
Yutong Chen
Zehao Chen
Zengzhe Chen
Zhenke Chen
Zhixiong Chen
Li Chenchen
Lei Cheng
Shao-Hung Cheng
Chi
Mayukh Roy Chowdhury
Nadezda Chukhno
Rodney Clint Keele
Carlos Coelho Teixeira
Daniel Corujo
Jose Costa-Requena
Salvatore D'Oro
Aloizio Da Silva
Rafael Valente da Silva
Xiaohai Dai
Yanpeng Dai
Yubin Dai
Carmen D'Andrea
Yongchao Dang
Nguyen Cong Danh
Tasneem Darwish
Soumyadeep Datta
Pedro H. C. de Souza
Jean Michel de Souza Sant'Ana
Nicolò Decarli
Weicao Deng
Xiaohong Deng
Benoît Denis
Francesca Di Murro
Melissa E. Diago-Mosquera
Chaozheng Ding
Jianyang Ding
Yaohong Ding
Rui Dinis
Benjamin W. Domae
Jiong Dong
Rongzhi Dong
Yuji Dong
Rahman Doost-Mohammady
Marcin Dryjański
Bingqian Du
Hongyang Du
Miao Du
Zhiyiong Du
Chenfeng Duan
Doan Duong
Harish K. Dureppagari
Greg Durgin
Satyam Dwivedi
Sina Ebrahimi
Daniel Egea
Abderrahmane El Mettiti
Stavros Eleftherakis
Muge Erel-Ozcevik
Parisa Eslami
Yasaman Ettefagh
Fran Fabra
Christian Facchi
Mohammed A. Fadhel
Hao Fan
Xiao Fan
Yejing Fan
Yunfeng Fan
Chao Fang
Xiaojie Fang
Mohammad Fardad
Laith Farhan
Abdallah Farraj
Jian Feng
Yimeng Feng
Andreas Festag
Gerhard Fettweis
Jorge Finochietto
Nuno Miguel Fonseca Ferreira
Juan Fraire
Stephan Frei
Yaru Fu
Takuya Fujihashi
Takeo Fujii
Fraida Fund
Slawomir Gajewski
Fei Gao
Shijian Gao
Yuan Gao
Zhenzhen Gao
Alan Gatherer
Yao Ge
Melina Juliane Geis
Gabriele Gemmi
Cong Geng
Ruopeng Geng
Xueyin Geng
Razieh Ghaderi
Sadik Kamel Gharghan
Anastassia Gharib
Alireza Ghasempour
Khanh Tran Gia
André Gomes
Samuel Gomes
Carlos Antonio Gomez Vega
Jie Gong
Ali Gorcin
Fabrizio Granelli
Lin Gu
Zaowei Guan
Igor Guerreiro
João Guerreiro
Riccardo Guerzoni
Paul Guinand
Baoshen Guo
Bicheng Guo
Chuqi Guo
fengxian guo
Hao Guo
Hong Guo
Hongzhi Guo
Jingcai Guo
Kai Guo
Miao Guo
Terry Guo
Yinghao Guo
Mayank Gupta
Carlos A. Gutierrez
Miguel Gutiérrez Gaitán
Ismail Guvenc
Marcus Haferkamp
Nazih Hajri
Hakimi
Samir M. Hameed
Amir Hamidi
Dalal Hammood
Chong Han
Huimei Han
Tianxiao Han
Xianghua Han
Yuming Han
Zhu Han
Muhammad Fainan Hanif

Rui Hao
Tian Hao
Takanori Hara
Eslam Hasan
Hamid Reza Hashempour
Md. Zoheb Hassan
Abhishek Hazra
Chengbing He
Chengyuan He
Guidong He
Jiayi He
Mingcheng He
Qi He
Qiang He
Qianqian He
Ruisi He
Shiming He
Tengjiao He
Zhengran He
Geert Heijenk
Rym Hicheri
Yassine Hmamouche
Linh T. Hoang
Seung-Eun Hong
Seyyedali Hosseinalipour
Fen Hou
Rui Hou
Yafei Hou
Anzhong Hu
Bintao Hu
Bintao Hu
Miao Hu
Shihong Hu
Shisheng Hu
Shisheng Hu
Meng Hua
Xintao Huan
Huan Huang
Huawei Huang
Huiping Huang
Mingfeng Huang
Qianyi Huang
Shaoyuan Huang
Shuangyao Huang
Xiaoxia Huang
Xinyu Huang
Yafan Huang
Yang Huang
Yu-Chih Huang
Khaled Humadi
Aamer Mohamed Huroon
Tran Quy Huu
Hiroki Iimori
Mehmet Ilter
João Henrique Inacio de Souza
James Irvine
Afifa Ishtiaq
Sridhar Iyer
Wael Jaafar
Daniel J. Jakubisin
Muhammad Ali Jamshed
Dushantha Nalin K. Jayakody
Bilal A. Jebur
Yo-Seb Jeon
Han-You Jeong
Baofeng Ji
Xiaodong Ji
Pengyi Jia
Pengyi Jia
Chengjun Jiang
Fan Jiang
Hao Jiang
Junwei Jiang
Peng Jiang
Qi Jiang
Jian Jiao
Jiulong Jiao
Haolin Jing
Liang Jinyu
Pedram Johari
Milad Johnny
Sokipriala Jonah
Alyse Jones
Pascal Jörke
Wang Junlong
Sripada Kadambar
Zeeshan Kaleem
Aman Ved Kalia
Anders E. Kalør
Florian Kaltenberger
Rajesh Kaluri
Madhan Raj Kanagarathinam
Mohsen Kandidayeni
Batuhan Kaplan
Yasemin Karacora
Erhan Karakoca
Shahab Karimi
Konstantinos Katsaros
Sefa Kayraklık
Furkan Keskin
Aymen Khaleel
Hafiz Ahmad Khalid
Zubair Khalid
Muhammad Abdullah Khan
Md Rayhan Khan
Muhammad Usman Khan
Yasin Khan
Stephen Kiambi
Do-Yup Kim
Nam-I Kim
Tae-Kyoung Kim
Guenter Klas
Adrian Kliks
Nobuyoshi Komuro
Lingzheng Kong
Xiangyu Kong
Julie Kub
Ryogo Kubo
Anitha Saravana Kumar
Brijesh Kumbhani
Fabian Kurtz
Harrison Kurunathan
Chuan-Chi Lai
Tianyu Lan
Alexandre Laurier
Lincoln Lavoie
Hoang D. Le
Jaebok Lee
Jaeduk Lee
Jang-Won Lee
Ao Li
Baozhu Li
Bingxian Li
Chunguo Li
Husheng Li
Jiangwei Li
Jiaxing Li
Jingwei Li
Jun Li
Kai Li
Miaoge Li
Min Li
Mingyi Li
Mushu Li
Peishi Li
Qihao Li
Ruoguang Li
Shuangyang Li
Shurong Li
Wei Li
Wenchao Li
Wen-Hsuan Li
Xinyang Li
Xiuhua Li
Xuehan Li
Yan Li
Yang Li
Yikai Li
Yiwei Li
Yuting Li
Yu-Ting Li
Zihao Li
Ziwei Li
Zongdian Li
Zhuotao Lian
Chengsi Liang
Jintao Liang
Jinwen Liang
Songsong Liao
Xi Liao
Yihuan Liao
Guangyu Lie
Sergi Liesegang
Jiao Lihua
Rafael Lima
Dan Lin
GuiPing Lin
Jianru Lin
Kuan-Yu Lin
Luning Lin
Shengbin Lin
Zhijian Lin
Binqi Liu
Boxun Liu
Changrong Liu
Chen Liu
Chen-Feng Liu
Fan Liu
Guohong Liu
Hanjie Liu
Hengyan Liu
Jiachen Liu
Jiahao Liu
Lei Liu
Ling Liu
Mengzhen Liu
Pei Liu
Rang Liu
Sheng Liu
Shenghao Liu
Shumei Liu
Song Liu
Tao Liu
Wenshuai Liu
Yalin Liu
Ying Liu
Yinqiu Liu
Yong Liu
Yu Liu
Yuan Liu
Zhe Liu
Zhi Liu
Zhilong Liu
Silas Lobo
Renato Lo Cigno
Tingyan Long
Chengkai Lou
Haodong Lu
Huabing Lu
Jialiang Lu
Kai Lu
Liyang Lu
Manwei Lu
Qing Lu
Yijun Lu
Zhaoyi Lu
Zhenyu Lu
M. Carmen Lucas-Estañ
Maria Cecilia Luna Alvarado
Haoxiang Luo
Sheng Luo
Tao Luo
Xiaofei Luo
Luca Lusvarghi
Xiaohan Lv
Zefang Lv
Chenlu Ma
Chuan Ma
Jiteng Ma
Junfei Ma
linfeng Ma
Qian Ma
Wengang Ma
Wenyan Ma
Xiaoyue Ma
Yuyin Ma
Alejandro I. Maass
Alvaro Omar Macias Fernandez
Pablo Madoery
Mohammed Mahyoub
Ritabrata Maiti
Muhammad Imran Majid
Ashkan Makhsoos
Apurbaa Mallik
Magnus Malmström
Simone Mangiante
Atheer Jabbar Mansoor
Majid Manteghi
Omar Maraqa
Hira Mariam
Vuk Marojevic
Luis Marques
Kazuki Maruta
Aashish Mathur
David Matolak
Elisabetta Matricardi
Triantafyllos Mavrovoltsos
Kayol Soares Mayer
Neelesh Mehta
Zhen Mei
Mariana Mello
Jing Men
Horacio Mendoza
Guiyu Meng
Tianhui Meng
Xiangtian Meng
Yan Meng
Marco Mezzavilla
Luis Miguel
Luis Miguel Perez
Nobuhiko Miki
Lin Min
Thuy Le Minh
Xu Minrui
Alessandro Mirri
Takashi Miyamura
Marc Moeneclaey
Mohammadreza Moghadari
Seyed Mohammad Hosseini
Mohammad Mahdi Mojahedian
Alejandro Molina-Galan
Atiquzzaman Mondal
Paulo Montezuma Carvalho
Doug Montgomery
Ioannis Moscholios
Ibrahem Mouhamad
Bhekisizwe Mthethwa
Malik Muhammad Saad
Tomoki Murakami
Liam Murphy
Adil fadhil Mushatet
Sarah Mohammed Mutar
Raheeb Muzaffar
Georgios Mylonopoulos
Kamesh Namuduri
Seyed bagher Hashemi Natanzi
Ali Nauman
Ye Neng
Michael Neri
Anh Phuong Ngo
Chi Nguyen
Phuc Doc Nguyen
Khai Nguyen
Van-Linh Nguyen
Trung Nguyen-Thanh
Jesper Ødum Nielsen
Mohammadsaleh Nikooroo
Toshihiko Nishimura
Nele Noels
Nicola Novello
Hideki Ochiai
Hiraku Okada
Rodolfo Oliveira
Abidemi Orimogunje
Tim O'Shea
Timothy Otim
Laurent Ouvry
Bei Ouyang
Cuneyd Ozturk
Sangheon Pack
Pablo Palacios
Ivan Palama
Kapila W. S. Palitharathna
Luca Pallotta
Filip Paluncic
Chunyu Pan
Jianxiong Pan
Ruixi Pan
Yanjun Pan
Shashi Raj Pandey
Xiaoyi Pang
Akshay Vayal Parambath
Seok-Hwan Park
Mohammad Parvini
Faruk Pasic
Manuel Patchou
Rui R. Paulo
Sai Pavan
Yanhua Pei
Yingying Pei
Haoran Peng
Hongfei Peng
Qiaoyan Peng
Yang Peng
Yuan Peng
Felipe Augusto Pereira de Figueiredo
Adrian Perez Aguilar
Jordi Pérez-Romero
Diane Peters
Giovanni Pettorru
Pablo Picazo
Gabriel Polvani
Tharindu D. Ponnimbaduge Perera
Francisco Rodrigo Porto Cavalcanti
Rithwik Premanand
Henglin Pu
Lorenzo Pucci
Luis Javier Puente Lam
Yazdan Ahmad Qadri
Liangxin Qian
Pan Qianqian
Jing Qiao
Liang Qiao
Yanduo Qiao
Meng Qin
Chao Qiu
Chi Qiu
Yunbo Qiu
Zhihao Qu
Faheem Quazi
Mahmoud Raeisi
Ammar Rafique
Balaji Ragothaman
Mushfiqur Rahman
Hanojhan Rajahrajasingh
Samikkannu Rajkumar
Urvashi Rani
Zhijie Rao
Marco Rapelli
Dinith Primal P. Rathu Baduge
Gautham Reddy
Juanjuan Ren
Junyu Ren
Xiaoxu Ren
Olivier Renaudin
Vanessa Rennó
Juan M. Rey
Guilherme Iecker Ricardo
Ramiro Robles
Rusber Rodriguez
José Rodríguez-Piñeiro
Alexey Rolich
Bo Rong
Shichu Rong
Yi Rong
José Rosado
Thomas Rosenstatter
Richard Rouil
Han Rui
Rachid Saadane
Nikos C. Sagias
Mohammed Saif
Ikjot Saini
Kentaro Saito
Emad Saleh
Sharief Saleh
Maryrajee Samuel
Yukitoshi Sanada
Stephan Sand
Malcolm Sande
Frederico Santos
Pedro M. Santos
Yuris Mulya Saputra
Hampei Sasahara
Hirofumi Sasaki
Olaf Saßnick
Hendrik Schippers
Florian Schmickmann
Naima Sehli
Dimitrios G. Selimis
Praveen Kumar Selvam
Zifan Sha
Rozita Shafie
Syed Waqas Haider Shah
Hmaied Shaiek
Zhendong Shan
N Shankaranarayanan
Prateek Shantharama
Chenglong Shao
Gourav Prateek Sharma
Salil Sharma
Anish Shastri
Li-Hsiang Shen
Shihao Shen
Xuelin Shen
Zhaoyan Shen
Ray E. Sheriff
Liqin Shi
Menghao Shi
Xiangting Shi
Zheng Shi
Zhenyu Shi
Zhiguo Shi
Takumi Shinohara
Jiale Shu
Peiyuan Si
Mihail L. Sichitiu
Hamza Siddig
Ivo Silva
Jitendra Singh
Keshav Singh
Rupender Singh
Simran Singh
Hideya So
Diego Gabriel Soares Pivoto
Paschalis Sofotasios
Javier Solano
Victoria Solto
Fuyuan Song
Heekang Song
Shihui Song
Xianxin Song
Marco Sousa
Rogério Sousa e Silva
Jaya Sravani Mandapaka
Daniel Stanko
Heidi Steendam
Raghav Subbaraman
Haijian Sun
He Sun
Mingyu Sun
Qiang Sun
Xiaoning Sun
Yifan Sun
Yifu Sun
Zhengqing Sun
Himal A. Suraweera
Katsuya Suto
Takumi Takahashi
Bo Tan
Ernest Tan
Fangqing Tan
Liang Tan
Aimin Tang
Bin Tang
Bo Tang
Guoming Tang
Jiashen Tang
Shiyue Tang
Zhiqing Tang
Zhixuan Tang
Akihito Taya
Yinglei Teng
Enrico Testi
Saqr Thabet
Sapna Thapar
Christo Kurisummoottil Thomas
Charlie Thornton
Guoda Tian
Miaomiao Tian
Wei Tian
Wen Tian
Krishan Kumar Tiwari
Stefano Tomasin
Hiromichi Tomeba
Slavisa Tomic
Eduardo Noboro Tominaga
Trung Duy Tran
Thong Nhat Tran
Riccardo Trivisonno
Po-Hsuan Tseng
Eirini-Eleni Tsiropoulou
Sho Tsugawa
Ion Turcanu
Sota Uchimura
Solomon Ugbane
Syed Asad Ullah
Masahiro Umehira
Amara Umer
Dhruva Ungrupulithaya
Edson Luiz Ursini
Muhammad Usman
Lorenzo Valentini
Rodolfo Valiente
Verónica Vasconcelos
Gudepu Venkateswarlu
Angelo Vera-Rivera
Carlos Alberto Vieira Campos
Ankur Vora
Vu
Recep Vural
Sravan Kumar Reddy Vuyyuru
Jayant Vyas
Aditya Wadaskar
Burhan Wafai
Niklas Wagner
Michael Walter
Yubo Wan
Bo Wang
Bogeng Wang
Bolun Wang
Chen Wang
Chun Wang
Dawei Wang
Die Wang
Fan Wang

Guijuan Wang
Haoda Wang
Kui Wang
Kunlun Wang
Like Wang
Liwei Wang
Qi Wang
Qian Wang
Qiu Wang
Qubeijian Wang
Rui Wang
Ruoxu Wang
Shaodong Wang
Shen Wang
Shuai Wang
Shuo Wang
Siming Wang
Taotao Wang
Tianli Wang
Wei Wang
Wenhua Wang
Wentao Wang
Xiaoliang Wang
Xu Wang
Xuefeng Wang
Xunze Wang
Yanyan Wang
Yichen Wang
Yilin Wang
Yulei Wang
Zihuan Wang
Fengchen Wei
Fengsheng Wei
Kang Wei
Qian Wei
Yannan Wei
Ziling Wei
Jinbo Wen
Sihan Wen
Zhang Wenqi
Christian Wietfeld
Bochun Wu
Guanlin Wu
Huaqing Wu
Jiajing Wu
Jiajun Wu
Jun Wu
Maoqiang Wu
Po-Chen Wu
Qiming Wu
Siyuan Wu
Yibo Wu
Yifei Wu
Zhying Wu
Zuodong Wu
Henk Wymeersch
Kaiwen Xia
Youhua Xia
Jiahai Xiao
Tingting Xiao
Yilei Xiao
Yilin Xiao
Yue Xiao
Zhixiong Xiao
Zichao Xiao
Jingchao Xie
Shaorui Xie
Shuzong Xie
Zaipeng Xie
Chihang Xu
Dongbo Xu
Guanjun Xu
Hao Xu
Jianpeng Xu
Miaomiao XU
Rui Xu
Wei Xu
Wenchao Xu
Xifeng Xu
Xinchen Xu
Yuanyuan Xu
Ziheng Xu
Biao Xue
He Xue
Muhammet Yaser Yagan
Syunya Yamada
Hamid Bakhshi Yamchi
Wenhao Yan
Yangwei Yan
Zijiang Yan
Changlin Yang
Chaoqun Yang
Hailiang Yang
Lijun Yang
Mingxin Yang
Qinglin Yang
Rui Yang
Sen Yang
Siyuan Yang
Wanting Yang
Xiao Yang
Xuan Yang
Yun Yang
Zonghui Yang
Yu Yao
Kok-Lim Alvin Yau
Qiang (John) Ye
Dongdong Ye
Dongmei Ye
Feng Ye
Xuezhou Ye
Bo-Heng Yeh
Haofei Yin
Yue Yin
Zishuo Yin
Seong Ki Yoo
Byungha You
Lizhao You
Chong Yu
Dan Yu
H. Yu
Ningning Yu
Tianqi Yu
Wentao Yu
Wentao Yu
Xinlong Yu
Zhenjie Yu
Jide Yuan
Weijie Yuan
Weijie Yuan
Yuan Yuan
Yuzhe Yuan
Yaxing Yue
Zhang Yuexia
Samuele Zanini
Mervat Zarour
Rafik Zayani
Shah Zeb
Deze Zeng
Guangyang Zeng
Kungan Zeng
Rongfei Zeng
Shuhao Zeng
Wenmin Zeng
Yue Zeng
Zhihong Zeng
Nurkhat Zhakiyev
Yufeng Zhan
Chen Zhang
Chuanfang Zhang
guoying Zhang
Hanwen Zhang
Haocheng Zhang
Huijiang Zhang
Jialin Zhang
Jianxin Zhang
Jie Zhang
Jielun Zhang
Jifa Zhang
Jingyu Zhang
Junhong Zhang
Junwei Zhang
Li Zhang
Lihao Zhang
Lushi Zhang
Pinchang Zhang
Qianqian Zhang
Qingquan Zhang
Ran Zhang
Ruihang Zhang
Shaohu Zhang
Shijie Zhang
Shoushuo Zhang
Tianyi Zhang
Tingting Zhang
Wei Zhang
Weiwei Zhang
Wenzhang Zhang
Xiang Zhang
Xiao Zhang
Xiayu Zhang
Xinrui Zhang
Xinruo Zhang
Xuemin Zhang
Yan Zhang
Ying Zhang
Yixiao Zhang
Yixin Zhang
Yongzhao Zhang
Yue Zhang
Yuhan Zhang
Yuning Zhang
Yuzhi Zhang
Zhe Zhang
Ziheng Zhang
Zongyu Zhang
Bingluo Zhao
Chonghe Zhao
Deng Zhao
Dongmei Zhao
Fangzhou Zhao
Heng Zhao
Hongfei Zhao
Jin Zhao
Jun Zhao
Lingchen Zhao
Ming-Min Zhao
Pincan Zhao
Ping Zhao
Shiyi Zhao
Xingyu Zhao
Yanchao Zhao
Yangliu Zhao
Yapeng Zhao
Yunzhi Zhao
Zhiwei Zhao
Ziyi Zhao
Li Zhaojie
Hongzhao Zheng
Jian Zheng
Meng Zheng
Qianrong Zheng
Yixian Zheng
Pan Zhenni
Fangtian Zhong
Weifeng Zhong
Chengyi Zhou
Conghao Zhou
Hao Zhou
Momiao Zhou
Tao Zhou
Xiaoli Zhou
Xiaoyi Zhou
Xingyu Zhou
Yizhi Zhou
Zhi Zhou
Jiajie Zhu
Jianlin Zhu
Jun Zhu
Lingrui Zhu
Wenbin Zhu
Yuheng Zhu
Zhihao Zhuang
Shun Zhuge
Changhong Zou
Yanbin Zou
Yifei Zou
Yixuan Zou

Tutorials

A range of tutorials will be held on Monday 7 October 2024 given by experts from industry and academia.

Monday, 7 October 2024 9:00-12:30 Continental A

T1: Near-Field Communications for 6G: Fundamentals, Challenges, Potentials, and Future Directions

Linglong Dai, Tsinghua University, China

The promising technologies for 6G including ultra-massive multiple-input-multiple-output (UM-MIMO), reconfigurable intelligent surface (RIS) and terahertz (THz) communications share a common feature: A very large number of antennas is required to achieve their expected performance, i.e., extremely large antenna arrays (ELAA) are essential for these different promising candidate technologies for 6G. ELAA for 6G not only means a sharp increase in the number of antennas, but also results in a fundamental change in the electromagnetic (EM) characteristics. The EM radiation field can generally be divided into far-field and near-field regions. The boundary is determined by the Rayleigh distance, which is proportional to the product of the square of the array aperture and the carrier frequency. With the significant increase of the antenna number and carrier frequency in future 6G systems, the near-field region of ELAA will expand by orders of magnitude. Therefore, near-field communications will become essential for future 6G networks.

In this tutorial, the near-field communication techniques for 6G will be discussed. Specifically, the fundamental difference between far-field and near-field communications will be clarified at first, where we explain the principle to determine the boundary of near-field and far-field regions for MIMO communications and RIS-aided communications. Then we investigate the near-field communication techniques that are designed to compensate for the performance loss of far-field techniques in the near-field region. Moreover, we also introduce the techniques that exploit the nature of near-field spherical wavefront for capacity enhancement and accessibility improvement. Finally, several open problems and future research directions are pointed out.

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), near-field communications, millimeter-wave and Terahertz communications, wireless AI, and electromagnetic information theory. He has received 6 conference Best Paper Awards at IEEE ICC/GLOBECOM/VTC, etc. 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, the IEEE ICC Outstanding Demo Award in 2022, and the National Science Foundation for Distinguished Young Scholars in 2023. He was listed as a Highly Cited Researcher by Clarivate from 2020 to 2023. He was elevated as an IEEE Fellow in 2021.

Monday, 7 October 2024 14:00-17:30 Polaris A

T2: Generative and Discriminative AI Models for Physical Layer Communication Challenges

Andrea Tonello, University of Klagenfurt, Austria

This tutorial focuses on machine learning for communications and more in detail on generative models to learn the signal statistics and enable a number of relevant applications in communications. An information theoretic approach is followed throughout the tutorial to explain the methods and the neural architectures presented. The theoretical concepts are accompanied by concrete application examples.

Learning the statistics of physical phenomena has been a long-time research objective. The advent of machine learning methods has offered effective tools to tackle such an objective in several data science domains. Some of those tools can be used in the domain of communication systems and networks. We emphasize that a distinction has to be made among data learning and signal learning. The former paradigm is typically applied to higher protocol layers, while the latter to the physical layer. Historically, stochastic models derived from the laws of physics have been exploited to describe the physical layer. From these models, transmission technology has been developed and performance analysis carried out. Nevertheless, this approach has shown some shortcomings in complex and uncertain environments.

Based on these preliminary considerations, in this tutorial, we will review basic concepts about the high order statistical description of random processes and conventional random signal generation methods. Then, recent generative and discriminative models capable of firstly learning the hidden/implicit distribution and then generating synthetic signals will be discussed. We will review the concept of copula and motivate the use of recently introduced segmented neural network architectures that operate in the uniform probability space. The application of such models to classic (but still open) problems in communications will be illustrated, including:

a) synthetic channel and noise modeling,
b) coding/decoding design in unknown channels,
c) channel capacity estimation.

In the above-mentioned problems, a key enabling component is the ability to estimate mutual information. This will lead us to the description of known and novel mutual information estimators. Their application will be considered to derive optimal decoding strategies with deep learning neural architectures obtained from an explainable mathematical formulation. Then, the joint design of the coding and decoding scheme aiming to achieve channel capacity will be considered. This will lead us to the discussion on autoencoders. Finally, the most ambitious goal of estimating capacity in unknown channels. This last goal rendered possible by the exploitation of cooperative methods that learn the capacity using neural mutual information estimation.

The tutorial will substantiate the theoretical aspects with several application examples not only in the wireless communication context but also in the less known power line communication domain (that has application in in-vehicle communications); the latter domain being perhaps more challenging giving the extremely complex nature of the channel and noise.

Andrea Tonello is professor of embedded communication systems at the University of Klagenfurt, Austria. He has been associate professor at the University of Udine, Italy, technical manager at Bell Labs-Lucent Technologies, USA, and managing director of Bell Labs Italy. He is co-founder of the spinoff company WiTiKee and has a part-time associate professor post at the University of Udine, Italy. Dr. Tonello received the PhD from the University of Padova, Italy (2002). He was the recipient of several awards including: the Lucent Bell Labs Recognition of Excellence Award (1999), the RAENG (UK) Distinguished Visiting Fellowship (2010), the IEEE Vehicular Technology Society Distinguished Lecturer Award (2011-15), the IEEE Communications Society (ComSoc) Distinguished Lecturer Award (2018-19), the IEEE ComSoc TC-PLC Interdisciplinary and Research Award (2019), the IEEE ComSoc TCPLC Outstanding Service Award (2019), and the Chair of Excellence from UC3M (2019-20). He also received 10 best paper awards. He was/is associate editor of IEEE TVT, IEEE TCOM, IEEE ACCESS, IET Smart Grid, Elsevier Journal of Energy and Artificial Intelligence. He was the chair of the IEEE ComSoc Technical Committee on PLC (2014-18), and the director for industry outreach in the IEEE ComSoc board of governors (2020-21). and the IEEE ComSoc Technical Committee on Smart Grid Communications (2020-23).

Monday, 7 October 2024 9:00-12:30   Polaris B/C

T5: Integrated Satellite-Aerial-Terrestrial Wireless Networks for Global Connectivity

Mustafa Kishk, Maynooth University, Ireland; Mohamed-Slim Alouini, King Abdullah University of Science and Technology, Saudi Arabia

This tutorial will cover the following areas:

- Digital divide and current status of connectivity in rural and remote areas,
- Drone-enabled wireless networks main advantages, challenges, and their potential applications in rural areas,
- The influence of the limited flight time on the performance of the drone-enabled wireless network,
- Existing solutions that can extend the flight time of drones,
- Potential Applications of LEO satellite-based wireless communications,
- Stochastic geometry basics and its application in the analysis of LEO satellite enabled wireless networks,
- Using stochastic geometry-based frameworks for end-to-end latency analysis in LEO satellite-based wireless networks,
- Different routing techniques for LEO satellite communications,
- Novel stochastic geometry-inspired routing techniques,
- Performance of multiple routing techniques in the existing LEO satellite constellations,
- Open research problems in the area of stochastic geometry-based analysis of LEO satellite-enabled communications.

Mustafa A. Kishk [S'16, M'18] is an Assistant Professor in the Electronic Engineering Department at Maynooth University Ireland. Before that, he was a postdoctoral research fellow in the communication theory lab at KAUST. He received his B.Sc. and M.Sc. degree from Cairo University in 2013 and 2015, respectively, and his Ph.D. degree from Virginia Tech in 2018. His current research interests include UAV-enabled communication systems and satellite communications.

Mohamed-Slim Alouini [S'94-M'98-SM'03-F'09] was born in Tunis, Tunisia. He received the Ph.D. degree in Electrical Engineering from the California Institute of Technology (Caltech), Pasadena, CA, USA, in 1998. He served as a faculty member in the University of Minnesota, Minneapolis, MN, USA, then in the Texas A&M University at Qatar, Education City, Doha, Qatar before joining KAUST, Thuwal, Makkah Province, Saudi Arabia as a Professor of Electrical Engineering in 2009. His current research interests include the modeling, design, and performance analysis of wireless communication systems.

Monday, 7 October 2024 14:00-17:30   Online

T9: From 1 to 100: Standardization in the Communications Industry

Ruiqi (Richie) Liu, ZTE Corporation; Tianqi Mao, Beijing Institute of Technology, China; Leyi Zhang, ZTE Corporation, China

Standardization is shaping the way the communication industry moves forward, and is the key to research and development of current and future networks. Despite the fact that many researchers devoted lots of efforts in bridging the scientific society and the industry, there still exists a gap in between, making it challenging for scientific researchers to correctly understand where the industry is heading as well as creating impact to the industry with their work. This gap is largely due to the fact that communication technologies are evolving in an unprecedented pace and the standards are getting more complicated for freshmen to comprehend. In this tutorial, the instructor aims to provide the audience with basic knowledge to be able to find, read and understand standard documents when needed, and even try to impact the standards with their work.

Ruiqi (Richie) Liu (S'14-M'20) received the B.S. and M.S. degree (with honors) in electronic engineering from the Department of Electronic Engineering, Tsinghua University in 2016 and 2019 respectively. He is now a master researcher in the wireless and computing research institute of ZTE Corporation, responsible for long-term research as well as standardization. His research interests include reconfigurable intelligent surfaces and integrated sensing and communications. He is the author or co-author of several books and book chapters. He has made significant contributions to standardization of 5G / 5G-advanced in 3GPP by authoring and submitting more than 500 technical documents with over 100 approved, and serving as a rapporteur. He served as the chair of multiple correspondence groups in ITU-R WP5D towards 6G. He currently serves as the Vice Chair of ISG RIS in the ETSI. He actively participates in *organizing committees, tutorials, workshops, symposia and industry sessions in global conferences as the chair, organizer, moderator, panelist or invited speaker. He served as the Deputy Editor-in-Chief of IET Quantum Communication, the Editor of ITU Journal of Future and Evolving Technologies and Guest Editor or Lead Guest Editor for a series of special issues. He is a voting member of the ComSoc industry communities board. His recent awards include the 2022 SPCC-TC Outstanding Service Award and the Beijing Science and Technology Invention Award (Second Prize, 2023).*

Tianqi Mao (Member, IEEE) received the B.S., M.S. (Hons.), and Ph. D (Hons.) degrees from Tsinghua University in 2015, 2018 and 2022, respectively. He is currently working as an Associate Professor with the Advanced Research Institute of Multidisciplinary Sciences, Beijing Institute of Technology, Beijing, China. He has authored over 40 journal and conference papers including 3 Highly Cited Papers of ESI (as the first author). His current research interests include terahertz communications, optical wireless communications and integrated sensing and communications. He was a recipient of the 8th Young Elite Scientists Sponsorship Program by China Association for Science and Technology, the Science and Technology Award (Second Prize) of China Institute of Communications, the Excellent Master Dissertation of Chinese Institute of Electronics, the Special Scholarship of Tsinghua University, the Outstanding Ph.D. Graduate of Beijing City and the Outstanding Master Graduate of Tsinghua University. He is currently an Associate Editor of IEEE Communications Letters and IEEE Open Journal of Vehicular Technology, and is a Guest Editor of IEEE Open Journal of the Communications Society. He was also the Exemplary Reviewer of IEEE Transactions on Communications and Communications Letters.

Leyi Zhang (S'22-M'23) received the B.S. and M.S. degree (with honors) in electronic engineering from the Department of Electronic Information Engineering, Beihang University in 2020 and 2023 respectively. She is working as a researcher with the technology planning department of ZTE Corporation, responsible for long-term research as well as standardization. Her research interests include network security and quantum communication. She has many peer-reviewed publications. She took part in many international academic conferences as the session chair or invited speaker. She participated in national key research projects as the research assistant or researcher. She actively participates in global standardization activities through platforms such as ITU-T, 3GPP, ETSI and CCSA. She currently serves as the chief delegate of ZTE to ITU-T SG17.

Monday, 7 October 2024 14:00-17:30 Polaris B/C

T10: On the Road 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 highlight a range of large-scale search problems in wireless communications and exploit the benefits of quantum search algorithms, as exemplified by multi-user detection, by joint-channel estimation and data detection, localization and routing problems of networking, for example.

We survey advances in quantum key distribution networks.

Lajos Hanzo (http://www-mobile.ecs.soton.ac.uk, https://en.wikipedia.org/wiki/Lajos_Hanzo) is a Fellow of the Royal Academy of Engineering, FIEEE, FIET, Fellow of EURASIP and a Foreign Member of the Hungarian Academy of Sciences. He coauthored 2000+ contributions at IEEE Xplore and 19 Wiley-IEEE Press monographs. He was bestowed upon the IEEE Eric Sumner Technical Field Award.

Monday, 7 October 2024 9:00-12:30 Polaris A

T11: Why OTFS 2.0? – How to Enable AI/ML in 6G, How to Integrate Sensing and Communications

Saif Khan Mohammed, Indian Institute of Technology Delhi; Ronny Hadani, University of Texas at Austin; Ananthanarayanan Chockalingam, Indian Institute of Science Bangalore; Robert Calderbank, Duke University

Machine Learning (ML) methods have revolutionized image and natural language processing and can be expected to improve traditional methods of communication based on mathematical models. However, 6G presents a deeper opportunity to reflect on the fundamentals of wireless communication, as it becomes more and more difficult to estimate, track and equalize channels with Doppler spreads measured in KHz. This tutorial is not organized around the question of how ML can improve traditional methods of wireless communication. It addresses the more fundamental question of what are the characteristics of a physical layer that ML algorithms want to see.

The tutorial introduces Orthogonal Time Frequency Space (OTFS) 2.0 modulation which is designed to make communication and radar sensing more predictable when compared to OTFS 1.0. OTFS 1.0 (or MC-OTFS) was designed as an OFDM overlay, and has been the focus of most research attention so far. We emphasize predictability since this is the characteristic that improves performance of ML algorithms and is fundamental to the question of whether functions like scheduling can move from the base station to the cloud. The OTFS 2.0 carrier waveform is a pulse in the delay-Doppler (DD) domain, formally a quasi-periodic localized function with specific periods along delay and Doppler. Viewed in the time domain, it is realized as a pulse train modulated by a tone (pulsone). We begin by showing that when the channel delay spread is less than the delay period, and the channel Doppler spread is less than the Doppler period, the OTFS 2.0 input-output (I/O) relation is predictable and non-fading. Given the I/O response at one DD point in a frame, it is possible to predict the I/O response at all other points. It is possible to learn the I/O relation without estimating the channel, opening up the possibility of a model-free mode of operation. The counterpart of predictability in radar sensing is unambiguous delay-Doppler estimation.

The tutorial then describes how filters in the discrete delay-Doppler (DD) domain can be used to design noise-like waveforms that enable joint sensing and communication. It then describes how to design transmit filters that optimize the tradeoff between predictability and time/bandwidth expansion. Finally, it considers tracking of multiple targets in radar applications to demonstrate the advantages of the OTFS 2.0 waveforms.

The tutorial aligns with growing international interest in spectrum sharing and new waveforms for 6G.

Saif Khan Mohammed is a Professor with the Department of Electrical Engineering, Indian Institute of Technology Delhi (IIT Delhi). He currently holds the Jai Gupta Chair at IIT Delhi. He received the B.Tech. degree in Computer Science and Engineering from IIT Delhi, New Delhi, India, in 1998, and the Ph.D. degree from the Electrical Communication Engineering Department, Indian Institute of Science, Bangalore, India, in 2010. His main research interests include, waveforms for high mobility scenarios in sixth generation (6G) communication systems, wireless communication using large antenna arrays, coding and signal processing for wireless communication systems, information theory, and statistical signal processing. He currently serves as an Editor for the IEEE Transactions on Wireless Communications and in the past he has served as an Editor for the IEEE Wireless Communications Letters and Physical Communication journal (Elsevier). He holds four granted U.S. patents and three granted Indian patents in his area of research. He received the 2017

NASI Scopus Young Scientist Award and the Teaching Excellence Award at IIT Delhi for the year 2016–2017. He was also a recipient of the Visvesvaraya Young Faculty Fellowship from the Ministry of Electronics and IT, Government of India, from 2016 to 2019.

Ronny Hadani is an associate professor in the Mathematics Department of the University of Texas at Austin. Prior to that he was a Dickson post-doctoral fellow in the University of Chicago. His field of expertise is representation theory and harmonic analysis. Hadani is a co- founder of Cohere technologies and currently serves as its Chief Science Officer. Hadani is a coinventor of the OTFS modulation technique and has been granted over 70 OTFS related patents. Hadani holds a PhD in pure mathematics from Tel-Aviv University under advisory of Professor Joseph Bernstein and a Master degree in applied mathematics from The Weizmann Institute of Science under advisory of Professor David Harel.

Ananthanarayanan Chockalingam is a Professor in the Department of Electrical Communication Engineering, Indian Institute of Science, Bangalore, India, working in the area of wireless communications. He has made pioneering contributions in the area of large-scale/massive MIMO systems. He has served as an Associate Editor of the IEEE Transactions On Vehicular Technology, as an Editor of the IEEE Transactions On Wireless Communications, and as a Guest Editor for the IEEE Journal on Selected Areas in Communications and IEEE JOURNAL of Selected Topics in Signal Processing. He is a Fellow of the Indian National Academy of Engineering, the National Academy of Sciences, India, the Indian National Science Academy, and the Indian Academy of Sciences. He is a recipient of the prestigious J. C Bose Fellowship from the Science and Engineering Research Board, Department of Science and Technology, Government of India. He is an author of the book on `Large MIMO Systems' published by Cambridge University Press.

Robert Calderbank directs the Rhodes Information initiative at Duke University, where he is a Distinguished Professor of Electrical and Computer Engineering, Computer Science and Mathematics. He started his career in the Mathematical Sciences Research Center at Bell Labs, and he left AT&T in 2003 as Vice President for Research. Dr. Calderbank directed the Program in Applied and Computational Mathematics at Princeton University before joining Duke University in 2010. He was elected to the National Academy of Engineering in 2005, and to the American Academy of Arts and Sciences in 2022. Dr. Calderbank received the 2015 Hamming Medal, and the 2015 Shannon Award. Dr. Calderbank is known for contributions to voiceband modem technology at the dawn of the internet, and for contributions to wireless communication that are incorporated in billions of cell phones. He has also made contributions to quantum error correction that provide a foundation for fault tolerant quantum computation.

Monday, 7 October 2024 14:00-17:30   Continental A

T12: Designing green future networks: Achieving net-zero energy sustainability

Swades De, Indian Institute of Technology Delhi, New Delhi, India; Li-Chun Wang, National Yang Ming Chiao Tung University, Hsinchu, Taiwan

Realizing energy sustainable communication networks has been a key challenge in the upcoming sixth generation (6G) networks. Recent years have witnessed the significant increase in network energy consumption with the steady rise in user Quality of Service (QoS) requirements due to the advent of Internet of Things (IoT), in addition to upcoming 6G network services. Network energy solutions are strongly correlated with the cost involved to the mobile operator in deploying the solution, necessitating a detailed techno-economic network analysis. In this tutorial we discuss system level node and network solutions towards achieving the prospects of achieving net-zero energy sustainability. In an ambient powered and grid connected multi-base station (BS) scenario, we present detailed techno-economic analysis highlighting the key challenges and system constraints. In an environment prone to space-time varying double stochasticity arising from the inherent cellular traffic and energy harvest, novel network operation frameworks involving cellular traffic and/or green energy balancing are presented. These frameworks are analyzed with respect to user QoS guarantee, network grid energy consumption, and the operator net revenue detailing the capital and operational expenditure gains. Next, we demonstrate the tradeoffs associated when designing the network from diverging perspectives, namely, carbon minimization and operator revenue maximization. We motivate that the power grid connectivity plays a vital role in achieving energy sustainability as well as scalability to the operator through cost profitability, thereby highlighting the efficacy of networked ambient powered BSs. The tutorial then motivates towards designing integrated aerial-terrestrial networks, presenting green network infrastructure framework. The tutorial concludes by presenting some open issues associated with designing future networks.

Swades De (Senior Member, IEEE) received the B.Tech. degree in Radiophysics and Electronics from the University of Calcutta in 1993, the M.Tech. degree in Optoelectronics and Optical communication from IIT Delhi in 1998, and the Ph.D. degree in Electrical Engineering from the State University of New York at Buffalo in 2004. Dr. De is currently a Professor with the Department of Electrical Engineering, IIT Delhi. Before moving to IIT Delhi in 2007, he was a Tenure-Track Assistant Professor with the Department of ECE, New Jersey Institute of Technology, Newark, NJ, USA, from 2004–2007. He worked as an ERCIM Post-doctoral Researcher at ISTI-CNR, Pisa, Italy (2004), and has nearly five years of industry experience in India on telecom hardware and software development, from 1993–1997, 1999. His research interests are broadly in communication networks, with emphasis on performance modeling and analysis. Current directions include resource allocation, energy harvesting, wireless energy transfer, energy sustainable and green communications, spectrum sharing, smart grid networks, and IoT communications. Dr. De currently serves as an Associate Editor of IEEE Transactions on Wireless Communications, IEEE Transactions on Vehicular Technology, and IEEE Wireless Communications Magazine.

Li-Chun Wang (Fellow, IEEE) received Ph. D. degree from the Georgia Institute of Technology, Atlanta, in 1996. From 1996 to 2000, he worked at AT&T Laboratories, where he was a Senior Technical Staff Member in the Wireless Communications Research Department. Since August 2000, he has joined the Department of Electrical and Computer Engineering at National Yang Ming Chiao Tung University in Taiwan. He is now a Chair Professor and is jointly appointed by the Department of Computer Science and Information Engineering from the same university. Dr. Wang was elected to an IEEE Fellow in 2011 for his contributions to cellular architecture and radio resource management in wireless networks. He has won two Distinguished Research Awards from Taiwan's Ministry of Science and Technology (2012, 2017). He was the co-recipients of IEEE Communications Society Asia-Pacific Board Best Award (2015), Y. Z. Hsu Scientific Paper Award (2013), and IEEE Jack Neubauer Best Paper Award (1997). His recent research interests are in the areas of cross-layer optimization for wireless systems, data-driven radio resource management, software-defined heterogeneous mobile networks, big data analysis for industrial Internet of things, and AI-enabled unmanned aerial vehicular (UAV) networks. He holds 26 US patents, written over 300 journal and conference papers, and co-edited the book, "Key Technologies for 5G Wireless Systems," (Cambridge University Press 2017).

The following tutorials have been cancelled.

T3: Cellular-Connected Drones in 5G and Beyond

Aymen Fakhreddine, University of Klagenfurt, Austria

T4: Beyond Bits – from Age of Information to Goal-Oriented Semantic Networks

Maice Costa, Virginia Tech National Security Institute, USA; Yalin E. Sagduyu, Sastry Kompella, Nexcepta, USA

T6: AI/ML and Security in Wireless Communications

Shengjie Xu, University of Arizona, USA; Yi Qian, University of Nebraska-Lincoln, USA

T7: How to Build Trustworthiness in Connected Autonomous Systems?

Lei Zhang, University of Glasgow, UK

T8: Multiband Wireless Networks for 6G and Beyond – Modeling, Analysis, and Resource Allocation

Hina Tabassum, York University, Canada; Mohamed-Slim Alouini, King Abdullah University of Science and Technology, Saudi Arabia; Hong-Chuan Yang, Victoria University, Canada

Keynotes

Tuesday, 8 October 2024, 9:00–9:45 Amphitheater

Reimagining 6G

Andrea Goldsmith, *Dean of Engineering and Applied Sciences, Princeton University*

As 5G takes to the airwaves, we now turn our imagination to the next generation of wireless technology and what it will enable. The rollout of 5G has, so far, provided only incremental benefits to consumers and operators relative to 4G. Will 6G be different? Can we make it so? 6G aspires to not only support significantly higher data rates than 5G, but also improved reliability along with excellent coverage indoors and out, including for underserved areas. New physical layer and antenna array techniques will be needed to opportunistically exploit available spectrum. New architectures including edge computing must be designed to drastically enhance efficient resource allocation while also reducing latency for real-time control. Breakthrough energy-efficiency architectures, algorithms and hardware will be needed so that wireless devices can be powered by tiny batteries, energy-harvesting, or over-the-air power transfer. And machine learning may play a big role in the underlying technologies for NextG as well as the "killer apps" that will drive its deployment and success. This talk will describe what 6G might look like along with some of the innovations and breakthroughs required to realize this vision.

Andrea Goldsmith is the Dean of Engineering and Applied Science and the Arthur LeGrand Doty Professor of Electrical and Computer Engineering at Princeton University. She was previously the Stephen Harris Professor of Engineering and Professor of Electrical Engineering at Stanford University, where she is now Harris Professor Emerita. Her research interests are in information theory, communication theory, and signal processing, and their application to wireless communications, interconnected systems, and neuroscience. She founded and served as Chief Technical Officer of Plume WiFi (formerly Accelera, Inc.) and of Quantenna (QTNA), Inc, and she currently serves on the Board of Directors for Medtronic (MDT) and Crown Castle Inc (CCI). Dr. Goldsmith is a member of the National Academy of Engineering and the American Academy of Arts and Sciences, a Fellow of the IEEE and of Stanford, and has received several awards for her work, including the IEEE Sumner Technical Field Award, the ACM Athena Lecturer Award, the ComSoc Armstrong Technical Achievement Award, the Kirchmayer Graduate Teaching Award, the WICE Mentoring Award, and the Silicon Valley/San Jose Business Journal's Women of Influence Award. She is author of the book "Wireless Communications" and co-author of the books "MIMO Wireless Communications" and "Principles of Cognitive Radio," as well as an inventor on 29 patents. She received the B.S., M.S. and Ph.D. degrees in Electrical Engineering from U.C. Berkeley. Dr. Goldsmith is currently the founding Chair of the IEEE Board of Directors Committee on Diversity, Inclusion, and Ethics. She served as President of the IEEE Information Theory Society in 2009, as founding Chair of its Student Committee, and as founding Editor-in-Chief of the IEEE Journal on Selected Areas of Information Theory. She has also served on the Board of Governors for both the IEEE Information Theory and Communications Societies. At Stanford she served as Chair of Stanford's Faculty Senate and for multiple terms as a Senator, and on its Academic Council Advisory Board, Budget Group, Committee on Research, Planning and Policy Board, Commissions on Graduate and on Undergraduate Education, Faculty Women's Forum Steering Committee, and Task Force on Women and Leadership.

Tuesday, 8 October 2024, 9:45–10:30 Amphitheater

From Assembly Line to Digital Algorithms: Ford's Agile Approach to Software-Defined Vehicles

Matt Jones, *Executive Director, Global Technology Platforms, Ford Motor Company*

Building a software-defined vehicle is fundamentally different from building a traditional car. This presentation examines Ford's transition to an agile, DevOps-driven development process, establishing a robust software factory capable of handling the complexity and speed required for continuous innovation. We'll discuss how we're managing the challenges of integrating vast amounts of software from diverse sources, ensuring quality throughout the development lifecycle. A key element will be the strategic use of OTA updates to deliver performance enhancements, and new features directly to customers, creating a dynamic and evolving vehicle experience. We'll also explore the implications of this approach for the future of vehicle ownership and the automotive ecosystem.

Matt Jones, executive director of technology platforms, oversees the Connected Vehicle Software, Research & Advanced Engineering, Global Technology Strategy, and Technology Platform Program Management teams at Ford Motor Company. His responsibilities include delivery, development, research and planning activities in digital software and systems, electrification, automated systems, robotics, sustainability, materials and manufacturing. Prior to joining Ford, Dr. Jones led the delivery of safety-critical connected intelligent systems as Wind River's corporate vice president of global engineering, accelerating the digital transformation across verticals from aerospace to industrial, defense to medical, and networking to automotive. Dr. Jones also serves on the AUTOSAR executive board and as the president of COVESA, the alliance previously known as the GENIVI. Dr. Jones was previously at Virgin Hyperloop One. As senior vice president he led the software and embedded hardware engineering teams, tasked with providing all the systems needed to manage, control, and operate an autonomous hyperloop system. Prior to Virgin Hyperloop One, he was chief product officer at moovel Group, Daimler's mobility solutions company. Before moovel, he was director of future technology at Jaguar Land Rover. Dr. Jones holds a Master of Engineering degree in electronics and electrical engineering from the University of Birmingham in England. He is a Fellow of the Institution of Mechanical Engineers and a Chartered Engineer within the Institution of Engineering & Technology (IET).

Wednesday, 9 October 2024, 8:30–9:10 Amphitheater

Advanced control of electric vehicles and development of wireless in-wheel motors

Hiroshi Fujimoto, *Professor, The University of Tokyo*

This keynote is presented in conjunction with IEEE VPPC 2024, and a full description and Professor Fujimoto's bio can be found in the program for that conference.

Wednesday, 9 October 2024, 9:10–9:50 Amphitheater

Driving Safer Roads for All: V2X Connectivity and the National Roadway Safety Strategy

Robert C. Hampshire, *Principal Deputy Assistant Secretary for Research and Technology and Chief Science Officer, United States Department of Transportation*

As technological advancements accelerate, the convergence of Vehicle-to-Everything (V2X) communication and the National Roadway Safety Strategy (NRSS) is revolutionizing transportation safety. In this keynote, Dr. Robert C. Hampshire, Principal Deputy Assistant Secretary for Research and Technology and Chief Science Officer at the U.S. Department of Transportation, will explore how V2X technologies are transforming road safety by enhancing vehicle connectivity and protecting vulnerable road users (VRUs).

Dr. Hampshire will outline the U.S. DOT's comprehensive V2X strategy, focusing on its role in supporting NRSS goals to reduce traffic fatalities and serious injuries. By leveraging real-time communication between vehicles, infrastructure, pedestrians, and cyclists, this strategy aims to create a more responsive and interconnected transportation ecosystem. He will also discuss the critical role of V2X in addressing the unique safety needs of VRUs, emphasizing the importance of deploying scalable, secure, and interoperable solutions.

Attendees will gain insight into USDOT's vision for a safer, smarter transportation network and the roadmap for integrating cutting-edge connectivity solutions to support a more secure, accessible, and resilient future for all road users..

Dr. Robert C. Hampshire serves as the Deputy Assistant Secretary for Research and Technology and Chief Science Officer. Hampshire was previously an associate professor at the Gerald R. Ford School of Public Policy at the University of Michigan. He was also a research associate professor in both the U-M Transportation Research Institute (UMTRI) and Michigan Institute for Data Science (MIDAS), and an affiliated faculty member in the Department of Industrial and Operations Engineering (IOE).

His unique blend of engineering systems research with public policy has made him a leader in not only transportation research, but also on the disparate impact of policy decisions in transportation systems. This has led to important strides in our understanding of transportation equity. His research applies operations research, data science, and systems approaches to analyze novel transportation systems such as smart parking, connected vehicles, autonomous vehicles, ride-hailing, bike sharing, car sharing, as well as, pedestrian and bicyclist safety. His research focuses on environmental impacts, equity, and access to opportunities. His work has been cited widely, and covered by major press outlets. He has worked extensively with both public and private sector partners worldwide. He has also been a faculty member at Carnegie Mellon University and a visiting professor at Massachusetts Institute of Technology. Hampshire received a PhD in operations research and financial engineering from Princeton.

Wednesday, 9 October 2024, 9:50–10:30 Amphitheater

Unlocking the Potential of 6G: Trustworthy Robotics and Ultra-Efficient GearboxPHY

Gerhard Fettweis, *Vodafone Chair Professor, Dresden University of Technology*

6G technology will unlock numerous new consumer applications in robotics and extended reality (XR). To achieve this, several challenges must be addressed, with two key issues highlighted here.

Firstly, as we move (remote control) real object by the network this can cause harm in our real world. When interacting with robotic assistants or XR, users must be able to trust them as much as, if not more than, they trust human interactions. Actually, they should be trusted even more for good reasons. How can we learn from human interaction to build a model for trustworthiness and trust? We must develop a model for trust based on human interactions. Trustworthiness has been standardized as the ability of defined characteristics to meet stakeholders' expectations in a verifiable way (ISO/IEC TS 5723:2022). This is just a starting point; the challenge lies in incorporating this into a decision-making model. By taking initial characteristics into consideration, we have designed platform chips that show very promising cost-benefit results.

Secondly, 6G must be able to leapfrog to a new level of energy efficiency in the radio access network. With anticipated data rate increases of 100x, we need far more than 100x improvement in energy per bit. We previously proposed the GearboxPHY to address this challenge. Now, with detailed models of the entire transceiver chain, the full potential of this approach is clear, and the projected silicon cost overhead is minimal. And, the silicon cost overhead projection is minimal.

In combination of addressing trustworthiness and sustainability with the GearboxPHY we show a path for unravelling a world on consumer Tactile Internet: enabling robotics and XR on a wide scale.

Gerhard Fettweis earned his Ph.D. degree from Aachen University of Technololgy (RWTH) in 1990. From 1990 to 1991, he was Visiting Scientist at the IBM Almaden Research Center in San Jose, CA, developing signal processing innovations for IBM's disk drive products. From 1991 to 1994, he was a Scientist with TCSI Inc., Berkeley, CA, responsible for signal processor IC development projects for cellular phone chip-sets. Since 1994 he holds the Vodafone Chair at Technische Universität Dresden, Germany. Gerhard Fettweis has co-authored 500 publications and more than 25 patent families. He was TPC Chair of IEEE ICC 2009 (Dresden), and chair of the 2012 Technology Time Machine (TTM) conference. Among receiving other awards, as the Alcatel-Lucent Research Award, he is an IEEE Fellow, a member of the German National Academy of Sciences Leopoldina, and a member of the German Academy of Science and Engineering. During his career, Dr. Fettweis has led research on wireless transmission and chip design, helped establish eleven tech start-ups and secured €500 million in funding for projects in broadband wireless, network performance measurement, satellite communications, IoT solutions, and machine vision for manufacturing. Start-ups founded by Dr. Fettweis include: Systemonic (now NXP and ST-NXP Wireless), Radioplan (Actix), Signalion, InCircuit, Dresden Silicon (Signalion), Freedelity, RadioOpt, and Blue Wonder Communications. In his current role of "Vodafone Academic Ambassador", he assists Vodafone in strategic guidance of international academic research collaborations.

Thursday, 10 October 2024, 8:30–9:10 Amphitheater

Electric Vehicle Charging with AC/DC Microgrids Structure

Yunwei (Ryan) Li, *Chair of the Department of Electrical and Computer Engineering, University of Alberta*

Dr. Yunwei (Ryan) Li is currently a University of Alberta Senior Engineering Research Chair and Chair of the Department of Electrical and Computer Engineering. Dr. Li received the Ph.D. degree from Nanyang Technological University, Singapore. Dr. Li was a Visiting Scholar with the Aalborg University, Denmark in 2005, and a Postdoctoral Research Fellow at Ryerson University, Canada 2006 – 2007. In 2007, he also worked at Rockwell Automation Canada before joined University of Alberta. His research interests focus on power electronics and their applications in distributed energy resources, microgrids, renewable energy, transportation electrification, and electric motor drives. His research has produced more than 450 papers with over 24,000 citations. Dr. Li is currently the Vice President for Products of IEEE Power Electronics Society (PELS). He was the Editor-in-Chief for IEEE Transactions on Power Electronics Letters 2019-2023. Prior to that, he was Associate Editor for IEEE Transactions on Power Electronics, IEEE Transactions on Industrial Electronics, IEEE Transactions on Smart Grid, and IEEE Journal of Emerging and Selected Topics in Power Electronics. Dr. Li served as the general chair of IEEE Energy Conversion Congress of Exposition (ECCE) in 2020. Dr. Li received the Nagamori Foundation Award in 2022 and the Richard M. Bass Outstanding Young Power Electronics Engineer Award from IEEE PELS in 2013. He is a Fellow of IEEE, a Fellow of Canadian Academy of Engineering, and recognized as the Clarivate Highly Cited Researcher.

Thursday, 10 October 2024, 9:10–9:50 Amphitheater

Keynote

Aprille Ericsson, *Assistant Secretary of Defense Science and Technology, US Department of Defense*

Dr. Aprille J. Ericsson is the Assistant Secretary of Defense for Science and Technology (ASD(S&T)). In this role, she directs the organization responsible for the oversight of and advocacy for the Department of Defense science and technology (S&T) enterprise, including S&T workforce and laboratory infrastructure policy, Federally Funded Research and Development Centers, and University-Affiliated Research Centers. She oversees a broad portfolio of S&T programs, including basic research, Small Business Innovation Research/Small Business Technology Transfer, and DoD Manufacturing Technology, including the nine Manufacturing Innovation Institutes. Additionally, as the ASD(S&T), Dr. Ericsson is responsible for focused outreach and interaction with Historically Black Colleges and Universities and Minority Institutions, which encourage diversity, equity, inclusion, and accessibility, and kindergarten-twelfth grade (K-12) programs. Furthermore, she is responsible for the Department's technology and program protection initiatives. Prior to this appointment, Dr. Ericsson spent more than 31 years at the National Aeronautics and Space Administration (NASA) in various positions. In 2017, Dr. Ericsson was appointed the New Business Lead for the NASA Goddard Space Flight Center (GSFC) Instrument Systems and Technology Division. At NASA, Dr. Ericsson also served as the NASA GSFC Program Manager for Small Business and Innovative Research within the Innovative Technology and Partnerships Office. Additionally, she served as the GSFC Deputy to the Chief Technologist for the Engineering and Technology Directorate; Headquarters Program Executive for Earth Science; Headquarters Business Executive for Space Science; and an Instrument Project Manager for instruments, which includes the James Webb Space Telescope. Dr. Ericsson holds a B. Sc. in aeronautical and astronautical engineering from the Massachusetts Institute of Technology and a M. Sc. and PhD in mechanical engineering, aerospace option from Howard University. Dr. Ericsson also earned leadership and management certificates from Radcliffe College and Johns Hopkins University. Dr. Ericsson is a recipient of numerous awards, including the Western Society of Engineers 2016 Washington Award; The Engineering Honor Society 2018 Tau Beta Pi Distinguished Alumnus award; and the top American Society of Mechanical Engineering award, the Ralph Coates Roe Medal (2022). Dr. Ericsson was the first African American female, as well as the first American, to receive a Ph.D. in mechanical engineering from Howard University, the aerospace option from Howard University, and the first African American female to receive a Ph.D. in engineering at NASA GSFC.

Thursday, 10 October 2024, 9:50–10:30 Amphitheater

The Road to 6G – Driving Advanced Wireless Innovations for the Next Decade

John Smee, *Senior Vice President Engineering and Global Head of Wireless Research, Qualcomm*

6G promises to redefine the boundaries of digital communication and connectivity to enable new user experiences with an increasing focus on ubiquitous connectivity and sustainability. This presentation highlights the key technology vectors of AI-native wireless, scalable network architecture, and digital-physical convergence that will drive 6G innovation. We will give an overview of a range of new and enhanced use cases enabled by 6G, from immersive communications with boundless extended reality to smarter AI-enabled applications of the future. Join us to discover what the next decade holds as we pave the way for 6G, driving innovation and transforming our digital world.

Dr. John E. Smee is Senior VP of Engineering and Head of Wireless Research at Qualcomm Technologies Inc. He joined Qualcomm in 2000, holds over 75 U.S. Patents, and has been involved in the system design for a variety of projects focused on the innovation and commercial launch of wireless communications systems such as CDMA EVDO, IEEE 802.11, 3G CDMA, 4G LTE, and 5G NR. His work involves taking advanced system designs and signal processing techniques from theory to final product through design, standardization, and implementation. He is currently a 5G project engineering lead in Qualcomm's wireless research and development group. Dr. John Smee was chosen to participate in the National Academy of Engineering Frontiers of Engineering program and is a recipient of the Qualcomm Distinguished Contributor Award for Project Leadership. He received his Ph.D. in electrical engineering from Princeton University, and also holds an M.A. from Princeton and an M.Sc. and B.Sc. from Queen's University.

Panels

Tuesday, 8 October 2024, 11:00-12:30 Hemisphere A

6G: Where and When

Moderator:	**Robert Calderbank**	*Duke University*
Panelists:	**Tom Rondeau**	*OUSD*
	Charlie Zhang	*Samsung Research America*
	Junyi Li	*Qualcomm*
	Jonathan Ashdown	*AFRL/RI*
	Scott Migaldi	*T-Mobile*
	Ali Khayrallah	*Ericsson*

George Orwell advanced the idea that "Every generation imagines itself to be more intelligent than the one that went before it, and wiser than the one that comes after it". What distinguishes the economic and social environment that 6G will be entering? How does cloudification of the Radio Access Network (RAN) change the economics of networks? Can 6G be deployed without Open RAN? And what might a diffusive development of 6G look like?

Robert Calderbank directs the Rhodes Information Initiative at Duke University, where he is a Distinguished Professor. He is known for contributions to voiceband modem technology, to quantum information theory, and for co-invention of space-time codes for wireless communication. His research papers have been cited more than 50,000 times, and his inventions are found in billions of consumer devices. Dr. Calderbank was elected to the National Academy of Engineering in 2005, to the National Academy of Inventors in 2015, and to the American Academy of Arts and Sciences in 2022. He has received a number of awards, including the 2013 IEEE Hamming Medal for contributions to information transmission, and the 2015 Claude E. Shannon Award.

Tom Rondeau is the Principal Director for the FutureG Office for the US Department of Defense, serving in the Office of the Undersecretary of Defense for Research and Engineering (OUSD(R&E)). In his role, Dr. Rondeau is responsible for the research, funding, and execution of programs to advance warfighting capabilities using future-generation wireless technologies. Prior to this role, Dr. Rondeau spent more than six years as a DARPA program manager leading efforts that challenged and advanced studies in a variety of relevant warfighting fields, including software defined arrays, software defined radio, new edge and embedded processor architectures, and new approaches to data protection through advanced cryptographic techniques. His work at DARPA earned him the Distinguished Public Service Medal. His work as Principal Director for FutureG & 5G will continue to advance wireless networking concepts for national security. Prior to joining DARPA, Dr. Rondeau ran the GNU Radio project and consulted on wireless communications problems. He has also worked as a visiting researcher with the University of Pennsylvania and as an Adjunct with the IDA Center for Communications Research in Princeton, NJ. Dr. Rondeau holds a Ph.D. in electrical engineering from Virginia Tech, and his dissertation won the Council of Graduate Schools' 2007 Outstanding Dissertation Award in math, science, and engineering.

Charlie Zhang is an SVP at Samsung Research America, where he leads research, prototyping, and standardization for 5G/6G and other wireless systems. He is also a Corporate VP and head of the global 6G team at Samsung Research. He is currently serving as the ATIS North America Next-G Alliance Full Member Group Vice Chair. He was the Board Chair of the FiRa Consortium from May 2019 to May 2023, and the Vice Chairman of the 3GPP RAN1 working group from 2009 to 2013, where he led development of LTE and LTE-Advanced technologies. He worked for Nokia Research Center and Motorola Mobility for 6 years before joining Samsung in 2007. He received his Ph.D. degree from the University of Wisconsin, Madison. Dr. Zhang is a Fellow of IEEE.

Junyi Li is a Vice President of Engineering and Qualcomm Fellow at Qualcomm. Junyi was a key inventor of Flash-OFDM, the first commercially deployed OFDMA-based mobile broadband wireless communications system. He was a co-founder of Flarion Technologies, a startup acquired by Qualcomm in 2006. Prior to that, he was with Bell Labs research. Since joining Qualcomm, Junyi has spearheaded research projects on D2D communications, V2V communications, and mmWave communications. He received a Qualcomm IP Excellence Award in 2020 and currently he holds more than 2,000 U.S. granted patents. He is a Fellow of the IEEE and co-authored the book, "OFDMA Mobile Broadband Communications," published by Cambridge University Press.

Jonathan Ashdown was born in Niskayuna, NY, USA. He received the B.S., M.S., and Ph.D. degrees from Rensselaer Polytechnic Institute, Troy, NY, USA, in 2006, 2008, and 2012, respectively, all in electrical engineering. His Ph.D. dissertation was on a high-rate ultrasonic through-wall communication system using MIMO-OFDM in conjunction with interference mitigation techniques. In 2012, he was a recipient of the Best Unclassified Paper Award at the IEEE Military Communications Conference. From 2012 to 2015, he worked as an electronics engineer with the Department of Defense (DoD), Naval Information Warfare Center Atlantic, Charleston, SC, USA where he was involved in several basic and applied research projects for the U.S. Navy, mainly in the area of software defined radio. In 2015, he transferred within DoD. He is currently a senior electronics engineer with Air Force Research Laboratory, Rome, NY, USA, where he is involved in the research and development of advanced emerging communications and networking technologies for the U.S. Air Force. He currently serves as the Government Principal Investigator (PI) for the 5G Dynamic Spectrum Sharing effort at Hill AFB and currently serves as PI on the 5G at Playas Research and Training Center (PRTC) under OUSD(R&E)'s FutureG Initiative.

Scott Migaldi leads standards development for current and next-generation wireless systems at T-Mobile USA. His team is responsible for representing the needs of T-Mobile USA in the development of industry standards. Participating in organizations such as ATIS, Next G Alliance, GSMA, 3GPP, ITU, OMA, Global Platform, and many others. He serves on the Board of the Open Mobile Alliance and Global Platform Organizations. Before joining T-Mobile USA Scott was Director of Mobile Wireless Broadband Standards at Motorola. He managed a CDMA systems engineering group that deployed the first commercial CDMA system in the US. He also led Motorola's subscriber product engineering group into the emerging Asian market in the early 1990's, developing the first Chinese character display cellular phone. Scott has developed communication, instrumentation and telemetry systems for the Strategic Defense Initiative and the NASA Space Shuttle programs.

Ali Khayrallah is senior technical advisor with the Advanced Technology Group at Ericsson in Santa Clara, CA. He has been with Ericsson in various research positions, in Santa Clara, CA, where he led a team shaping future wireless technology, and earlier in Research Triangle Park, NC. His current focus is on 6G in the US, and partnering with government, academia and industry to energize research towards 6G and beyond. His external activities include NSF partnerships on wireless and semiconductor research, ATIS Next G Alliance, FCC TAC, and 5G Americas. He has contributed to the development of 5G, 4G, 3G, Bluetooth, mobile satellite, land mobile radio etc. Previously, he was on the faculty of the University of Delaware. He received a Ph.D. and an M.S. from the University of Michigan, Ann Arbor, and a B.Eng. from the American University of Beirut. He holds 120+ patents and received the Ericsson inventor of the year award.

Tuesday, 8 October 2024, 14:00-15:30 Amphitheater

The Sprint to the Stratosphere: Opportunities, Challenges, State of the Art, and Research Directions

Moderators:	**Mohamed-Slim Alouini**	*KAUST, Saudi Arabia*
	Halim Yanikomeroglu	*Carleton University, Canada*
Panelists:	**Alberto Carrasco-Casado**	*NICT, Japan*
	Graeme Daly	*Stratotegic Inc., Canada*
	Douglas Hutchison	*Abside Networks, USA*
	Barry A. Matsumori	*Skydweller Aero, USA*
	Veena Rawat	*GSMA, USA*
	Russel Van Der Werff	*Aerostar, USA*

High altitude platform stations (HAPS) have recently emerged as a new key stratospheric player in non-terrestrial networks (NTN) alongside satellites and low-altitude platforms. In this special session (in the form of short presentations followed by a panel discussion involving academics as well as engineers/scientists from the industry), we present the main advantages and applications of HAPS in comparison to other NTN platforms. We also discuss the current challenges that HAPS need to overcome before gaining wide adoption worldwide. We plan also to go over the state of the art in this industry as well as on-going research activity in this promising area.

Objectives of the panel include to understand the role of HAPS in non-terrestrial networks (NTN); to identify key advantages and applications of HAPS; to examine the challenges facing HAPS; to review the state of the art in HAPS technology; to foster industry and academic collaboration in the HAPS area and to evaluate the tuture prospects of HAPS.

Dr. Mohamed-Slim Alouini, was born in Tunis, Tunisia. He earned his Ph.D. from the California Institute ofTechnology (Caltech) in 1998 before serving as a faculty member at the University of Minnesota and later at Texas A&M University at Qatar. In 2009, he became a founding faculty member at King Abdullah University of Science and Technology (KAUST), where he currently is the Al-Khawarizmi Distinguished Professor of Electrical and Computer Engineering and the holder of the UNESCO Chair on Education to Connect the Unconnected. Dr. Alouini is a Fellow of the IEEE and OPTICA and his research interests encompass a wide array of research topics in wireless and satellite communications. He is currently particularly focusing on addressing the technical challenges associated with information and communication technologies (ICT) in underserved regions and is committed to bridging the digital divide by tackling issues related to the uneven distribution, access to, and utilization of ICT in rural, low-income, disaster-prone, and hard-to-reach areas.

Dr. Halim Yanikomeroglu is a Chancellor's Professor in the Department of Systems and Computer Engineering at Carleton University, Ottawa, Canada. His research interests cover many aspects of wireless communications and networks including non-terrestrial networks (NTN). He gives 20-25 invited seminars, keynotes, panel talks, and tutorials every year. His extensive collaborative research with industry resulted in 40 granted patents. Dr. Yanikomeroglu is a Fellow of IEEE, Engineering Institute of Canada (EIC), Canadian Academy of Engineering (CAE), and Asia-Pacific Artificial Intelligence Association (AAIA). He is a Distinguished Speaker for IEEE Communications Society and IEEE Vehicular Technology Society, and an Expert Panelist of the Council of Canadian Academies (CCA|CAC). Dr. Yanikomeroglu is currently serving as the Chair of the Steering Committee of IEEE's flagship wireless event, Wireless Communications and Networking Conference (WCNC). He is a member of a number of IEEE committees and councils. He has also served in the editorial boards of various IEEE periodicals. Dr. Yanikomeroglu received several awards for his research, teaching, and service. He holds a PhD degree in electrical and computer Engineering from University of Toronto.

Dr. Alberto Carrasco-Casado is a Telecommunications Engineer from Spain, currently living in Tokyo, Japan, since 2015. He holds a PhD in Electrical, Electronic and Automatic Engineering, as well as three Master's Degrees in Telecommunications, Space Science and Technology, and Advanced Electronic Systems. He has received various awards for his work related to space laser communications, including the successful completion of satellite missions. In his 20-year career, he has conducted research at various top-class universities and national research institutes on topics such as quantum key distribution and optical wireless communications. After spending the last 10 years at the Japanese National Institute of ICT, he currently holds a permanent position as a senior researcher, leading a research line focused on developing novel space laser-communication terminals, including an ongoing satellite mission scheduled for launch in 2026.

Graeme Daly is an accomplished engineering leader, currently serving as the Head of Engineering at Stratotegic. Prior to this, Graeme dedicated over five years to designing and certifying aviation software at Pratt and Whitney Canada, showcasing his expertise in the aerospace sector. Graeme holds a Bachelor of Applied Science from Queen's University and a Master of Engineering from the University of Toronto Institute for

Aerospace Studies. Presently, Graeme is at the forefront of developing a comprehensive navigation solution for Lighter than Air High Altitude Platform Systems (HAPS) with an objective to make HAPS a more viable solution to connect the unconnected. Graeme's blend of practical experience and academic excellence positions him as a key player in the engineering landscape of Canada's aerospace industry.

Doug Hutchison has been focusing on hard communications problems for multiple decades including Abside's eight years with the Google Loon team. Abside delivered the world's first and only commercial stratospheric base station to date with a 1.4 kg LTE remote radio head (RRH) as part of the Loon 15 kg total four cell eNB solution that served commercial users on multiple continents. After Loon, Abside continued developing and flying complete stratospheric LTE solutions including flying the eNB and core. Building on the Google Loon technology success Abside today produces the largest commercial digital array for terrestrial 5G as part of their complete gNB solution and Abside has also started work on very large stratospheric arrays, the next evolution in stratospheric base station technology.

Barry Matsumori is the President and Chief Operating Officer of Skydweller Aero. He is a space industry veteran that has had executive leadership roles at SpaceX, Virgin, and Impulse Space. At SpaceX, he was Sr. VP of Sales and Business development and his team was responsible for the rapid growth of SpaceX from 2011 to 2015. He was also the CEO of BridgeComm, a laser communications company where he co-developed a patented design for signal transmission. At Additionally, Mr. Matsumori has a background in communications technology as an early member of Qualcomm along with experience in other telecommunications companies. Mr. Matsumori has a B.S. in Business from Arizona State University and a M.S. in Electrical Engineering from the University of Arizona. He is also named in over 20 patents.

Dr. Veena Rawat, O.C., Hon Doc., is President of Expert Strategies International, a US-based consulting firm, advising national and international organizations on telecommunication policies and regulations. She is consulting for GSMA as Senior Spectrum Advisor. In 2014 she was awarded 'Officer of the Order of Canada' for her "contributions to telecommunications engineering and for leadership in establishing the global regulatory framework for radio spectrum management". She had many trailblazer 'firsts' and has a long list of national and international awards. She is a Fellow of WWRF and of Canadian Academy of Engineering and member of the External Advisory Board of Spectrum X of NSF (National Science Foundation), their innovation center for spectrum.

Russ Van Der Werff serves as Vice President of Stratospheric Solutions at Aerostar. Aerostar has been in the stratosphere since its founding in 1956, building systems for NASA, the U.S. military, and commercial enterprises such as Loon. Aerostar balloons have logged over a million hours in the stratosphere over the last five years. Russ has twenty years of engineering and leadership experience, and has had the privilege of growing the Stratospheric Solutions team from a couple dozen to more than one hundred engineers, designers, operators, and technicians. He also serves as a stratospheric ambassador, spreading the Gospel of Ballooning, and presented a HAPS-related TED talk ("To the Stratosphere!"). Prior to Aerostar, Russ was Director of Product Management for Sencore, a private company building video transcoders and satellite modulators for broadcast applications. Russ holds Bachelor's degrees in Electrical Engineering, Computer Science, and Mathematics, as well as a Master's degree in Business Administration.

Tuesday, 8 October 2024, 19:15-21:00 Auditorium Ballroom

Wireless Futures Evening Pizza and Soda Panel

Moderator:	**Lajos Hanzo**	*University of Southampton, UK*
Panelists:	**Gerhard Fettweis**	*Technische Universität Dresden, Germany*
	Andrea Goldsmith	*Princeton University, USA*
	Khaled Letaief	*Hong Kong University of Science and Technology*
	Ted Rappaport	*New York University, USA*

Whilst the 5G have been rolled out across much of the developed world, researchers have turned their attention to next-generation systems. Numerous technical solutions are under consideration both in the world of academia and industry, but there is a pressing need for considering the use-cases as well, which fundamentally determine the deliberations of the standards bodies as well, such as the 3GPP. It is anticipated that the following topics would be touched upon by the speakers and the audience: PHY solutions, such as OTFS, OTSM, ODMM, new channel coding schemes, cell-free networking and cross-layer operation, wireless security including QKD, multi-component optimization for determining the Pareto-front of all optimal solutions, URLLC+ - just to name a few.

Lajos Hanzo's bio appear on Page 14.

Gerhard Fettweis's bio appear on Page 17.

Andrea Goldsmith's bio appear on Page 16.

Khaled Letaief is a is a distinguished leader in wireless communications and networks, specializing in artificial intelligence, integrated sensing and communication, distributed intelligence, edge computing, and 6G systems. He is a member of the United States National Academy of Engineering and the Hong Kong Academy of Engineering Sciences, holding fellowships with IEEE and the Hong Kong Institution of Engineers. His accolades include the 2024 Distinguished Purdue University Alumni Award, the 2022 IEEE Communications Society Edwin Howard Armstrong Achievement Award, the 2019 Joint Paper Award from IEEE Communications Society and Information Theory Society, and the 2016 IEEE Marconi Prize in Wireless Communications. Since 1993, Dr. Letaief has been with the Hong Kong University of Science and Technology (HKUST), where he has held various leadership positions, including Senior Advisor to the President and Dean of Engineering. His commitment to professional societies is evident in his role as the founding Editor-in-Chief of IEEE Transactions on Wireless Communications, as well as his service on the IEEE Board of Directors and as President of the IEEE Communications Society. He has also chaired multiple prestigious conferences, including IEEE GLOBECOM and IEEE VTC. Dr. Letaief earned his BS, MS, and Ph.D. degrees from Purdue University and received an honorary Ph.D. from the University of Johannesburg in 2022.

Ted Rappaport is the David Lee/Ernst Weber Professor in Electrical and Computer Engineering at the Tandon School of Engineering at New York University (NYU), and is a professor in the NYU Courant Computer Science Dept. and the NYU

Grossman School of Medicine. He founded the NYU WIRELESS research center in 2012 and the wireless research centers at the University of Texas Austin (WNCG) and Virginia Tech (MPRG) earlier in his career. He has authored or co-authored widely used textbooks on wireless communications, millimeter wave communications, smart antennas, and simulation. He founded two businesses that were sold to publicly traded companies — TSR Technologies, Inc. which pioneered software defined radios for cellphone/paging over-the-air intercept and the first Emergency-911 (E911) cellphone position location system, and Wireless Valley Communications, Inc., a leader in site-specific wireless deployment, and was an advisor to Straight Path Communications which sold 5G millimeter wave spectrum to Verizon. He is a licensed Professional Engineer and is in the Wireless Hall of Fame, a member of the U.S. National Academy of Engineering, a Fellow of the U.S. National Academy of Inventors, recipient of IEEE's Eric Sumner Award, and a life member of the American Radio Relay League.

Wednesday, 9 October 2024, 11:00-12:30 Amphitheater

Future Perspectives - looking beyond 100

Moderator:	**Jorge Pereira**	*European Commission*
Panelists:	**Eric Burger**	*Virginia Tech & Commonwealth Cyber Initiative, USA – Cybersecurity*
	Mischa Dohler	*Ericsson Inc., USA - Generative AI*
	Monisha Ghosh	*Notre Dame Univ., ex-FCC, USA - Spectrum & Spectrum Management*
	Joseph Mitola III	*ENSCO, USA - Cognitive Everything*
	Ingrid Moerman	*imec-UGent, Belgium - Deterministic Wireless Communications*

The 100th VTC is a major opportunity to look ahead and try to anticipate the future, or at least the main challenges that will keep motivating new generations of Engineers. This speculative panel will bring together renown experts in a variety of areas underpinning the challenges and developments around telecoms in general, and Vehicular communications and ancillary technologies in particular.

Jorge Pereira obtained the Engineering and M.Sc. degrees in Electrical and Computer Engineering from Instituto Superior Técnico (IST), Lisbon, Portugal in 1983 and 1987, respectively, and a Ph.D. in Electrical Engineering-Systems from the University of Southern California (USC), Los Angeles, in 1993. He has been with the European Commission since September 1996, becoming Principal Scientific Officer in 2005. He has been dealing with ICT, covering a broad variety of areas, with a focus on networking, devices, applications and services, experimentation, testing and validation, as well as deployment. He is, since 2016, in the area of Future Connectivity Systems, focusing on 5G and beyond, where he is responsible for the areas of Advanced Spectrum Management; optical-wireless convergence; Connected and Automated Mobility (CAM); Public Protection and Disaster Relief (PPDR) and sustainability in telecom. Previously, he had worked at GTE Labs (1993-96) where he was responsible for the Communications aspects of the US National ITS Architecture study. He is a Chartered Electrical Engineer in Portugal and a Member of the IEEE, where he is Associate Editor for Mobile Radio, including Vehicular Communications, for the IEEE VTS Magazine, and co-chair of the IEEE Future Networks CAM and Public Safety working groups. He also served as Associate Editor of the ACM Transactions on Sensor Networks..

Eric W. Burger is Research Director of the Commonwealth Cyber Initiative and holds appointments as Research Professor of ECE and Research Professor of Public Policy at Virginia Tech. He is Director of the Next G Alliance's ARLO, leading North America's efforts to contribute to 6G standardization. He served in government as the Assistant Director of Cybersecurity and Telecommunications in the White House Office of Science and Technology Policy and as the CTO of the U.S. Federal Communications Commission. He has served as General Chair of IEEE DySPAN and IEEE CNS and TPC chair of numerous other IEEE conferences. Prior to academia, he was CTO of several publicly traded and private equity network equipment manufacturers. He has over 20 published 3GPP, IETF, and W3C standards and over 20 issued U.S. Patents. He received his SBEE, MBA, and Ph.D. from the Massachusetts Institute of Technology, Katholieke Universiteit Leuven, and Illinois Institute of Technology.is not available at time of going to press.

Mischa Dohler is now VP Emerging Technologies at Ericsson Inc. in Silicon Valley, working on cutting-edge topics of 5G/6G, AR and Generative AI. He serves on the Spectrum Advisory Board of Ofcom and on the AI/ML Technical Advisory Committee of the FCC.

He is a Fellow of the IEEE, the Royal Academy of Engineering, the Royal Society of Arts (RSA), the Institution of Engineering and Technology (IET); the AP Artificial Intelligence Association (AAIA); and a Distinguished Member of Harvard Square Leaders Excellence. He was awarded the Doctor Honoris Causa by INSA, France. He is a serial entrepreneur with 5 companies; composer & pianist with 5 albums on Spotify/iTunes. He is a frequent keynote, panel and tutorial speaker, and has received numerous awards. He has pioneered several research fields, contributed to numerous wireless broadband, IoT/M2M and cyber security standards, holds a dozen patents, was the Editor-in-Chief of two journals, has more than 300 highly-cited publications, and authored several books.

He was Professor in Wireless Communications at King's College London and Director of the Centre for Telecommunications Research from 2013-2021, driving cross-disciplinary research and innovation in technology, sciences and arts. He is the Cofounder and former CTO of the IoT-pioneering company Worldsensing; cofounder and former CTO of the AI-driven satellite company SiriusInsight.AI, and cofounder of the sustainability company Movingbeans. He also worked as a Senior Researcher at Orange/France Telecom from 2005-2008.

Monisha Ghosh is a Professor of Electrical Engineering at the University of Notre Dame and a member of the Notre Dame Wireless Institute. She is also the Policy Outreach Director for SpectrumX, the first NSF Center for Spectrum Innovation and the co-chair of the FCC's Technological Advisory Council (TAC) Working Group on Advanced Spectrum Sharing. Her research interests are in the development of next generation wireless systems: cellular, Wi-Fi and IoT, with an emphasis on spectrum sharing and coexistence. Prior to joining the University of Notre Dame in 2022, she was the Chief Technology Officer at the Federal Communications Commission, a Program Director at the National Science Foundation, Research Professor at the University of Chicago and spent 24 years in industry research at Bell Labs, Philips Research and Interdigital working on a wide variety of wireless systems: HDTV, Wi-Fi, TV White Spaces and cellular.

She obtained her B.Tech from IIT Kharagpur in 1986 and Ph.D. from USC in 1991. She is a Fellow of the IEEE..

Dr. Joe Mitola currently serves as Chief Technologist for the ENSCO Mission Systems Group, Cocoa Beach, Florida where he contributes to software-defined and cognitive networks, radios, and systems. His cyber focus concerns the defeat of Stuxnet-class Advanced Persistent Threat (APT) malware in such systems. Dr. Mitola coined the terms software radio (1989) and cognitive radio (1996); and authored the seminal IEEE papers and the first graduate textbooks on both subjects. His Cognitive Radio Architecture text was translated into Chinese in 2010 where it contributed cognition architectures to 5G. To help protect increasingly software-defined systems, in 2012 Dr. Mitola co-founded Hackproof Technologies Inc with The Honorable Michael W. Wynne, 21st Secretary of the Air Force. Widely sought-after as keynote speaker, SME, and consultant in software radio, cognitive radio, and hardware-enhanced cybersecurity, Dr. Mitola's degrees include the Doctorate and Licentiate in Teleinformatics from KTH, The Royal Institute of Technology, Stockholm (2000) for Cognitive Radio, MSE from The Johns Hopkins University for Stochastic Optimal Control and the BS in Electrical Engineering from Northeastern University with Highest Honors. He has been awarded multiple US and Chinese patents for secure systems. Dr. Mitola was elected by his peers to Life Fellow of the IEEE.

Ingrid Moerman received her degree in Electrical Engineering (1987) and the Ph.D. degree (1992) from Ghent University, where she became a part-time professor in 2000. She is a staff member at IDLab, a core research group of imec with research activities embedded in Ghent University and the University of Antwerp. Ingrid Moerman is coordinating the research activities on intelligent Wireless Networking (iWiNe) at Ghent University, where she is leading a team of more than 30 researchers. Ingrid Moerman is also Program Manager of the 'Deterministic Connected Systems' track, part of the CONNECTED COMPUTING program at imec. In this role, she coordinates research activities on wired/wireless communication stacks and connectivity services using programmable wireless & wireline hardware and driven by professional and mission-critical applications that require deterministic end-to-end guarantees in terms of throughput, bounded latency, and reliability in smart application areas like industrial automation, vehicular networks, safety-critical operations, professional entertainment, etc.

Thursday, 10 October 2024, 11:00-12:30 Amphitheater

Open Radio Access Networks

Moderator:	**Martin B Weiss**	*OUSD (R&E) FutureG*
Panelists:	**Ajay Rajkumar**	*AT&T*
	Chih-Lin I	*China Mobile Research Institiute*
	Douglas Knisely	*Qualcomm*
	Havish Koorapaty	*Ericsson*
	Jeff Reed	*Virginia Tech*
	Sumit Roy	*University of Washington*

The Open Radio Access Network (RAN) architecture for current and future generation mobile systems is taking hold commercially. This approach to provisioning RANs disaggregates a traditional integrated RAN into standardized components with standardized interfaces. The goal of this approach is to give network operators the flexibility to choose components from a larger ecosystem of network equipment vendors. In addition, the Open RAN includes the ability for operator or end user led network control through xApps and rApps that execute on the Radio Intelligent Controller (RIC) which can control many aspects of RAN operations.

Led by mobile network operators, the O-RAN Alliance has been the principal organization that has been involved in setting these standards. Today, most network equipment vendors have announced an Open RAN strategy for the product roadmap. While the Open RAN architecture promises to unleash innovation in the RAN components and in the service delivery mechanism, it introduces some challenges for mobile network operators (MNOs), as well. These challenges include system integration, end-to-end quality assurance, and managing/deconflicting active xApps and rApps. Furthermore, it remains unclear in these early stages if this disaggregated architecture will be economically sustainable.

This panel will offer attendees thoughts on questions such as:

- When is the Open RAN deployment model sustainable? We will discuss Private networks, enterprise, and macro network deployment models as a basis for analysis.
- How can Open RAN provide a pathway to 6G?
- How can Network Equipment Vendors profit in an Open RAN environment?
- What evidence do we have that Open RAN can promote the velocity of innovation in hardware and services

Dr. Martin Weiss is currently the Director for FutureG Applied Research, and Technical Lead for Resilient and Open Commercial Solutions within the Office of the Under Secretary of Defense for Research and Engineering. In this capacity, Dr. Weiss oversees multiple efforts to promote FutureG applied research which enable government, academia, and industry to build commercially useful solutions to meet the Department of Defense's wireless communications needs.

Prior to joining the FutureG Office, Dr. Weiss was a Professor in the Department of Informatics and Networked Systems in the School of Computing and Information and is Associate Director of the Center for Governance and Markets at the University of Pittsburgh. He was a founding member of SpectrumX, a National Science Foundation-funded Spectrum Innovation Institute. He earned his PhD. in Engineering and Public Policy from Carnegie Mellon University, Master of Science in Engineering in Computer, Control, and Information Engineering from the University of Michigan, and a Bachelor of Science in Engineering in Electrical Engineering from Northeastern University. His research interest is on the governance of technological systems and infrastructures.

He has been studying dynamic spectrum access, and the economic perspective of spectrum sharing and mobile telecommunication standards such as 3GPP.

Dr. Ajay Rajkumar currently works at AT&T Labs in Network Chief Technology Organization on RAN Transformation. One of his responsibilities at AT&T includes standardization and realization of an end-2-end Open RAN architecture that achieves greater level of automation and optimization. Earlier, he was the Consulting Engagement Leader with Nokia Bell Labs Consulting and Director in Mobile Networks CTO at Nokia. Dr. Rajkumar was named the top 10 inventors at Nokia Murray Hill for all times. He has received the IEEE Region 1 Technology Innovation award for pioneering work in modeling, service applications, network performance, end-to-end flat mobile network architectures, and seamless handovers across heterogeneous wireless networks. Dr. Rajkumar received Bell Labs President's Award for Design and Prototype of Base Station Router (BSR) which has since its early days evolved into Mobile Edge Computing and its concepts used to develop flat IP architectures across several cellular standards. Dr. Rajkumar was the Founding Chair of IEEE 802.21 for Media Independent Handover. He has many reviewed publications, book chapters and has received more than 70 patents in diverse areas of technology. Dr. Rajkumar holds a Ph.D. in Computer Science from Courant Institute of Mathematical Sciences, New York University.

Dr. Chih-Lin I is the Chief Scientist of Wireless Technologies at ChinaMobile. She received her Ph.D. in Electrical Engineering from Stanford University. She has won the 2005 IEEE ComSoc Stephen Rice Prize, 2018 IEEE ComSoc Fred W. Ellersick Prize, 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 Co-Chair of the O-RAN Technical Steering Committee and an O-RAN Executive Committee Member. 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 three books.

She is a Life Fellow of IEEE and a Fellow of WWRF. Her current research interests center around ICDT Deep Convergence: "From Green & Soft to Open & Smart".

Douglas Knisely is currently a Senior Director of Technical Standards at Qualcomm, where he shares his time among spectrum sharing, open RAN, and other standardization activities, as well as championing the integration of Open Source software with industry standards. Prior to Qualcomm, Doug worked at AT&T Bell Laboratories, AT&T Computer Systems, NCR, Lucent Technologies, and Airvana. Doug has been a pioneer of Open RAN within Qualcomm, and has also been a leading contributor in the O-RAN Alliance since its inception, currently focusing on 6G research and promoting Open Source Open RAN platforms through O-RAN, OAI, and the Linux Foundation. He also holds leadership positions in the O-RAN Alliance Standards Development Task Group (SDFG) and Next Generation Research Group (nGRG) , and is a board member of Linux Foundation Networking (LFN), the WInnForum ,and Open Air Interface, and advocates driving coordination and cooperation among all stakeholding organizations in the Open RAN Open Source Platform ecosystem.

Havish Koorapaty has B.S., M.S., and Ph.D. degrees in Computer Engineering from North Carolina State University. He has more than 25 years of experience with Ericsson, where he has worked in the general area of wireless communications systems including cellular and satellite systems. His work spans a wide range of topics including error control coding, location determination and tracking, mobile phone systems engineering, 4G and 5G broadband wireless system design, wireless backhaul solutions, energy efficiency, spectrum sharing and small cells. He has over 250 technical papers and patents in these areas and was the recipient of the Ericsson Inventor of the Year award in 2016.

Havish has represented Ericsson in standardization efforts in the 3GPP, TIA, IEEE and ETSI standardization bodies. He has been involved in standardization efforts in 3GPP for 5G NR and LTE including serving as the rapporteur for the licensed-assisted access study and work items. He was the recipient of the 3GPP Excellence Award in 2015. Havish served as a vice-chairman in 3GPP RAN1 from November 2017 to November 2021 and as a founding co-chair for the O-RAN next Generation Research Group (nGRG) from July 2022 to October 2023. He currently works on 6G systems, serving as the technical coordinator for Ericsson's contributions to the ATIS Next Gen Alliance as well as monitoring 6G initiatives globally.

Dr. Jeffrey Reed is the Willis G. Worcester Professor of ECE. Professor Reed's research interests are wireless communications, wireless security, cognitive radio, software radio, telecommunications policy, and spectrum access. Reed has co-authored more than 500 articles and books. In addition, Reed co-founded several commercial companies, including Federated Wireless, which commercializes spectrum sharing; PFP Cybersecurity, which provides security solutions for IoT devices; and Cirrus360, which produces tools for O-RAN development and private networks. Reed is the Founding Director of Wireless@Virginia Tech, a university research center, and co-founder of Virginia Tech's Hume Center for National Security and Technology, where he served as the Interim Director. He also served as the Interim Director of the Commonwealth Cyber Initiative and is currently its CTO. Dr. Reed is a Fellow of the IEEE For contributions to software radio and communications signal processing and for leadership in engineering education

Dr. Sumit Roy received the B. Tech. degree from the Indian Institute of Technology (Kanpur) in 1983, and the M. S. and Ph. D. degrees from the University of California (Santa Barbara), all in Electrical & Comp. Engineering in 1985 and 1988 respectively, as well as an M. A. in Statistics and Applied Probability in 1988. He was appointed to Integrated Systems Professor (2014-19) of Electrical & Computer Engineering, Univ. of Washington-Seattle where his research and technology transition interests have included design and evaluation of wireless communication and sensor network systems with an emphasis on 5G & beyond technologies, multi-standard inter-networking and coexistence using software-defined networking approaches. He spent 2001-03 at Intel Wireless Technology Lab as a Senior Researcher engaged in systems architecture and standards development for ultra-wideband systems (Wireless PANs) and next generation high-speed wireless LANs. He has been active in IEEE Communications Society in various roles (journal editor and Distinguished Lecturer) and was elevated to IEEE Fellow in 2007. He served 2 terms as (elected) member of Executive Committee, National Spectrum Consortium dedicated to efficient spectrum sharing between Federal and commercial networks and is the co-author of IEEE TAES 2016 Best paper award for work on Radar-Comm coexistence. He recently served as Program Lead for Innovate Beyond 5G for OUSD R&E within the 5G-to-xG initiative where he helped define and execute a research and prototyping agenda as part of US DoD's evaluation and adoption of beyond 5G for national defense applications. Panelists not available at time of going to press.

VTS Workshop

Tuesday, 8 October 2024, 14:00 – 17:30 Oceanic A

Joint Workshop on Diversity & Inclusion, Young Professional and Education

Moderator:	**Carmela Cozzo**	*Samsung, USA*
Keynotes:	**Sirin Tekinay**	*National Science Foundation, USA*
	Laura Bottomley	*North Carolina State University, USA*
	AnneMarie Glebinski	*Interdigital, USA*
	Octavia A. Dobre	*Memorial University, Canada*
Panelists:	**Ping Wang**	*York University, Canada*
	Taimoor Abbas	*Interdigital, Canada*
	James Irvine	*University of Strathclyde, UK*

The aim of this workshop is to promote Diversity, Career Advancement, and Outreach in the IEEE Vehicular Technology Society—and in the Engineering Community as a whole—by fostering the connection of women, under-represented groups, professionals from academia and industry at all stages of their engineering careers. The workshop intends to create an opportunity for sharing experiences and views on how to enhance diversity and inclusion to benefit the Engineering Community, and we encourage everyone to attend and contribute their experiences and ideas.

The first section of the workshop prior to the mid-afternoon break will feature presentations by keynotes Sirin Tekinay, Laura Bottomley, AnneMarie Glebinski and Octavia Dobres. After they break they will be joined by others for a panel to discuss what can be gained from having a diverse personal network, and a mentoring session in small groups.

Industry Tutorial

Monday, 7 October 2024, 14:00 – 17:30 Hemisphere A

Moving from Field to Lab: Virtual Drive Testing

Our patron Keysight is providing a free tutorial open to all delegates

The rapid deployment of 5G technologies, including 5G New Radio (NR) in both non-standalone (NSA) and standalone (SA) modes, Non-terrestrial Networks (NTN) presents significant challenges for mobile operators and manufacturers of 5G devices, chipsets, and network equipment. To meet the high expectations for quality of service, advanced test solutions are essential. This tutorial explores the concept of field-to-lab automation, which enables virtual drive testing of mobile devices and networks within controlled lab environments. By replicating real-world scenarios, this approach allows for comprehensive, efficient, and cost-effective evaluations, ultimately enhancing product quality and user satisfaction.

Registration

Registration will take place in the Amphitheater Foyer. Hours are:

- Monday 7 October 0700 – 1730
- Tuesday 8 October 0700 – 1730
- Wednesday 9 October 0800 – 1730
- Thursday 10 October 0800 – 1730

Social Events

Coffee breaks will take place in the Atrium Ballroom. Lunches are included in the full registration. The lunches will be in the Atrium Ballroom. You will need your ticket to gain entry. Do not forget these as they cannot be replaced. The reception on Monday evening, which is also in the Atrium Ballroom, is open to all attendees, including student and life registrations.

We are planning a beautiful evening under the stars with a fun and picturesque Washington, DC Signature Dinner Cruise on the Potomac River! Our banquet will be an incredible night out with a delicious chef-curated buffet, savored alongside the breathtaking backdrop of the city skyline. While staying cozy and warm in the comfortable indoor spaces, you'll soak in spectacular views of Washington, DC's iconic landmarks, such as the Washington Monument and Lincoln Memorial. This unforgettable dining experience is complete with beer and wine, a live DJ entertainment, games, open-air decks, and dancing into the night! Set sail for a one-of-a-kind dinner cruise evening you won't soon forget!

We will be leaving on charter busses from the Ronald Reagan Convention Center beginning at 5:30pm on the 9th and will begin pick up after the dinner at 9:30pm to return to the Convention Center. You must have a banquet ticket to join. If your registration package does not include the banquet, you can always go the registration site and add a ticket there.

Technical Workshops

Monday, 7 October 2024 9:00 - 12:30 Hemisphere A

W1: 1st IEEE Workshop on UAV Communication and Experimentation

The airborne network has attracted growing attention and emerged as a crucial element in the development of interconnected space-air-terrestrial communication systems, particularly for the advancement beyond 5G. As compared to terrestrial networks, airborne devices such as unmanned aerial vehicles (UAVs), can potentially offer higher wireless coverage to users, more flexible network configurations to meet various requirements, and less capital costs. Along with performance validation via theoretical analysis and computer simulations, there is a growing trends to carry out field experimentations, which can give a more comprehensive understanding of system capability that accounts for varying propagation conditions, hardware impairments, and measurements inaccuracies. The aim of this workshop is to bring together researchers, industry practitioners, and individuals working on experimentation and research to share their new ideas, latest findings, and state-ofthe- art results. First, this workshop will identify challenges and gaps in existing UAV experimentation research. Second, the workshop will disseminate latest findings, solutions, and results in UAV experimentation, especially in large-scale testbeds, such as AERPAW. Third, the workshop will discuss future trends and roadmap in development, testing, and deployment in the context of UAV experimentation.

Workshop Chairs
Haijian Sun, University of Georgia
Ismail Guvenc, North Carolina State University
Fraida Fund, New York University

Technical Program Committee
Aloizio Da Silva, Virginia Tech University
Rudra Dutta, North Carolina State University
Jiaqi Huang, University of Central Missouri
Yili Jiang, Georgia State University
Venkataramani Kumar, University of Puerto Rico at Mayaguez
Vuk Marojevic, Mississippi State University
Kamesh Namuduri, University of North Texas
Mihail L. Sichitiu, North Carolina State University
Feng Ye, University of Wisconsin-Madison
Jielun Zhang, University of North Dakota

Program

Monday, 7 October 2024 9:00 - 10:35 Hemisphere A

Session I

Chair: Ismail Guvenc

Keynote: U.S. Department of Transportation: Integration of Advanced Aviation Communications Technologies
Christopher Nassif, USDOT

1 **Advancing Experimental Platforms for UAV Communications: Insights from AERPAW'S Digital Twin**
Joshua Moore, Aly Sabri Abdalla, Charles Ueltschey, Vuk Marojevic, Mississippi State University; Anil Gurses, Ozgur Ozdemir, Mihail L. Sichitiu, Ismail Guvenc, North Carolina State University

2 **Bayesian Optimization for Fast Radio Mapping and Localization with an Autonomous Aerial Drone**
Paul S. Kudyba, Qin Lu, Haijian Sun, University of Georgia

3 **Joint UAV-based Directional THz Communication and 3D Map Construction**
Mohammad Taghi Dabiri, Qatar University; Khalid Qaraqe, TAMU; Mazen O. Hasna, Qatar University; Saud Althunibat, Al-huseein Bin Talal University

Monday, 7 October 2024 10:50 - 12:25 Hemisphere A

Session II

Chair: Haijian Sun

Keynote: Advanced Air Mobility: Transitioning from Concept to Real-World Implementation
Kamesh Namuduri, University of North Texas.

1 **Millimeter Wave Radar Measurements: Distinguishing UAS and Birds Based on 60 GHz micro-Doppler Signatures**
Seongjoon Kang, NYU; Henrik Forsten, VTT Technical Research Centre of Finland; Panagiotis Skrimponis, NYU; Martins Ezuma, NCSU; Marco Mezzavilla, NYU; Ismail Guvenc, North Carolina State University; Sundeep Rangan, NYU; Vasilii Semkin, VTT Technical Research Centre of Finland

2 **UAV Trajectory Planning for Adaptive Bitrate Applications using an Inextensibility Metric**
Sonali Chaudhari, Rudra Dutta, North Carolina State University

3 **Vibration and Mobility Analysis of Hovering Rotary Wing UAV for Adaptive FSO Beam Alignment**
Sahil Nazir Pottoo, UiT The Arctic University of Norway

W2: 3rd IEEE Workshop on B5G/6G support for space/air/ground/marine/submarine cooperative, connected, and autonomous vehicles (CCAVs)

Cooperative, connected, and autonomous vehicles (CCAVs) have attracted tremendous research attention from both academia and industry, aiming at delivering a "society in motion" featured with unprecedented travel experience and significantly enhanced traffic efficiency and safety. The potential of the fifth generation (5G) of mobile networks to support CCAVs has been established from numerous seminal studies and field trials. From an initial interest in the ground segment to a new trend in exploring other domains (e.g., space, air and water), CCAVs have been pivotal to enable ubiquitous, seamless, and scalable mobility. In this context, the aim of this workshop is to assess the capabilities of beyond 5G (B5G) and sixth generation (6G) mobile networks to support CCAVs across all possible (i.e., space, air, ground, marine and submarine) segments. First, the workshop will identify the gaps of the existing 5G solutions in supporting the cooperation, connectivity, and autonomy elements of CCAVs. Second, the workshop will disseminate the latest findings and solutions assessing the capabilities of future B5G/6G networks in filling those gaps arising from a variety of CCAV use cases. Third, the workshop will analyse and discuss pressing challenges and future trends in the development, testing and deployment of CCAVs from various perspectives, including new algorithms, metrics, tools, and materials.

General Chair:
Faouzi Bouali, Coventry University, UK
Technical Program Committee
Ahmad Bazzi, New York University (NYU) Abu Dhabi
Jean Michel de Souza Sant'Ana, University of Oulu
Sina Ebrahimi, Coventry University
Weijie Yuan, Southern University of Science and Technology

Program

Monday, 7 October 2024 13:00 – 14:10 Virtual

Session I

Welcome note and workshop overview
Faouzi Bouali, University of Doha for Science and Technology (UDST)

1 **Frame Structure and Protocol Design for Sensing-Assisted NR-V2X Communications**
Fan Liu, Southern University of Science and Technology

2 **Integration of NTNs in 5G/6G Networks: State of Play and Way Forward**
Alessandro Guidotti, University of Bologna

3 **Aerial-Terrestrial Heterogeneous Networks for Urban Air Mobility**
Mohamed-Slim Alouini, King Abdullah University of Science and Technology (KAUST)

Monday, 7 October 2024 14:20 – 15:35 Virtual

Session II

1 **Intelligent UAV Swarm Coexistence in DTV Bands**
Rajrshi Dubey, Ashutosh Balakrishnan, Swades De, Indian Institute of Technology Delhi

2 **Adaptive Prediction Approach for 3D Geometry-based communication**
Mervat Zarour, Qiuheng Zhou, Sergiy Melnyk, German Research Center for Artificial Intelligence; Hans Schotten, University of Kaiserslautern

3 **Cooperative UAV-Relay based Satellite Aerial Ground Integrated Networks**
Bhola, National Yang Ming Chiao Tung University; Yu-Jia Chen, National Central University; Ashutosh Balakrishnan, Swades De, Indian Institute of Technology Delhi; Li-Chun Wang, National Yang Ming Chiao Tung University

4 **GCN-based Cooperative Localization using Sidelink Communication in 3GPP Urban Environment**
Hongseok Jung, Minsoo Chung, Iqra Hammed, Sunwoo Kim, Hanyang University

Closing note
Faouzi Bouali, University of Doha for Science and Technology (UDST)

W3: 3rd International Workshop on Sensing Advances in Wireless Networks (SAWN)

The increasingly wide deployment of space-air-ground-underwater communication networks, 4G/5G mobile communication networks, WiFi networks, vehicle-to-everything (V2X) networks, Internet of Things (IoT), and other wireless sensor networks or side-links becomes making all connected seamlessly with the aid of ubiquitous radio waves. Radio waves in the transmission experience wireless channel that varies with both propagation environment and spectrum frequency, thereby resulting in the channel features such as line-of-sight (LOS) or non-line-of-sight (NLOS) and sparse or many multiple paths that experienced in rich or low scattering environment at sub-6GHz microwave or mmwave/THz/visible light. From communication perspective, the channel gain matters much in the link budget design. However, more detailed information contained in the wireless channel need to be retrieved and utilised for the potentials of sensing objects and environment in addition to communication.

Research efforts are well underway to address the applications of sensing in wireless networks via radio waves, e.g., localisation, sensing and imaging. As wireless networks are expanding rapidly with aid of modern digital technologies and artificial intelligence (AI), more advanced sensing functionalities and capacities are desired to be achieved in wireless networks but meanwhile many challenges arise.

The goal of the workshop is to pursue advanced sensing techniques including localization, radar sensing and imaging and their applications in wireless networks, since new or more advanced sensing techniques need to be developed, especially when they adapt to different types of wireless networks or meet different sensing service needs. This workshop aims at bringing together researchers and engineers from academia and industry in order to identify and discuss the major technical challenges, recent breakthroughs, and new applications related to sensing advances in wireless networks (SAWN).

Workshop Chairs:
Husheng Li, Purdue University, USA
Pan Cao, University Hertfordshire, UK
Tingting Zhang, Harbin Institute of Technology, China

Papers

Monday, 7 October 2024 9:00 - 17:30 Meridian B

1 **Adaptive VMD-Based Vital Signs Recognition Using Maximum Cross-Correlation with IR-UWB Radar**
GuiPing Lin, Jing Men, Tingting Zhang, Harbin Institute of Technology (Shenzhen)

2 **Age of Information for Slotted ALOHA with Synchronization Frames at Multiple Access Points**
Changhao Song, Mangang Xie, Baozhen An, Qianqian Wang, Yue Wang, Northwest Normal University

3 **A Super-Resolution and High-Accuracy Range Estimation Algorithm for ISAC Systems**
Yi Geng, CICT mobile

4 **Data Correction-Based Model-Driven 3D Radiation Directional Pattern Construction for 5G Base Stations**
Qiancheng Ye, Nanjing University of Aeronautics and Astronautics; He Li, States Key Laboratory of Air Traffic Management System; Zhipeng Lin, Qiuming Zhu, Qianhao Gao, Nanjing University of Aeronautics and Astronautics; Baohua Cao, topyoung; Tao Liu, Nanjing University of Aeronautics and Astronautics; Jun Zhou, Shanghai Institute of Satellite Engineering

5 **Drones Classification based on Millimeter Wave Radar Cross Section via Deep Learning**
Lina Wang, Lily Meng, Oluyomi Simpson, Pan Cao, University of Hertfordshire

6 **Dynamic beam scheduling of Multi-NGSO Systems Based on Deep Reinforcement Learning**
Xia Xie, Bowen Feng, Lirong An, Yi Yang, Harbin Institute of Technology (Shenzhen); Zhang Qinyu, Harbin Institute of Tech.

7 **Dynamic Role-Switching for Cooperative Covert Communication**
Abbas Arghavani, Mälardalen University; Elisabeth Uhlemann

8 **ML-Based Channel Parameters Estimation For Sensing Applications in Industrial IoT Scenarios**
Alessia Tarozzi, Roberto Verdone, University of Bologna

9 **On Estimating the Angle of Arrival and Doppler Frequency in Bistatic and Multistatic Systems**
Michel Gonzaga dos Santos, Federal University of Ceará; Gabor Fodor, Ericsson Research; Yuri Silva, Walter Cruz, Igor Palhano, Federal University of Ceará

10 **Power Allocation for Uplink Sensing and Communication in Cell-free ISAC Systems with Multi-Antenna Users and Multibeam**
Igor Palhano, Roberto Antonioli, Yuri Silva, Federal University of Ceará; Gabor Fodor, Ericsson Research; Walter Cruz, Michel Gonzaga dos Santos, Federal University of Ceará

11 **Sensing Performance of the IEEE 802.11bf Protocol and Its Impact on Data Communication**
Anirudha Sahoo, Tanguy Ropitault, NIST; Steve Blandino, NIST and Prometheus Computing LLC; Nada Golmie, NIST

W4: 6G-Empowered Ambient Intelligence: Advances, Challenges, and Opportunities (6G-EmAI)

The "Workshop on 6G-Empowered Ambient Intelligence: Advances, Challenges, and Opportunities" is a pioneering gathering designed to explore the intersection of Ambient Intelligence and 6G wireless communication technology. Ambient Intelligence, a visionary concept embodying intelligent environments tailored to support diverse populations, is expected to revolutionize various domains, including smart cities. At the heart of this transformation lies 6G technology, the next evolution in wireless communication infrastructure.

This workshop serves as a platform for researchers and professionals across disciplines to converge and engage in profound discussions surrounding Ambient Intelligence. By fostering collaboration among experts specializing in sensing technologies, communication systems, artificial intelligence, and human-machine interaction, this event aims to showcase cutting-edge research and innovation in the realm of Ambient Intelligence. Participants will have the unique opportunity to explore recent advancements, address pressing challenges, and build collaborative prospects within this dynamic field. Throughout the workshop, attendees will immerse themselves in a stimulating environment characterized by insightful presentations, interactive sessions, and knowledge-sharing forums. From exploring novel sensing technologies to dissecting cognitive computing approaches, and from scrutinizing AI-enhanced communication technologies to identifying ways to push further the mainstream to make AI part of their life, this workshop promises to be an opportunity for fellow researchers to exchange ideas and insights. Ultimately, the event seeks to catalyze advancements in Ambient Intelligence by fostering interdisciplinary collaboration and driving forward the boundaries of knowledge in this burgeoning domain.

General Chairs:
Tomoaki Ohtsuki, Keio University, Japan
Octavia A. Dobre, Memorial University, Canada
Zhu Han, University of Houston, USA
Technical Program Committee
Mondher Bouazizi, Keio University
Tu Dac Ho, Norwegian University of Science and Technology
Liu Jiang, Waseda University
Quazi Mamun, Charles Sturt University
Toru Namerikawa, Keio University
Megumi Saito, Waseda University
Siyuan Yang, Keio University
Yue Yin, Keio University
Kazutoshi Yoshii, Waseda University
Shuhao Zeng, University of Houston
Pan Zhenni, Waseda University
Thomas Erich Zinner, Norwegian University of Science and Technology

Papers

Monday, 7 October 2024 9:00 - 12:30 Oceanic A

1 **An Integrated Approach To Mitigating Systemic Cyber Risk In Autonomous Electric Vehicles**
Quazi Mamun, Charles Sturt University; Pan Zhenni, Shigeru Shimamoto, Waseda University

2 **Enhanced User Clustering and Pairing Scheme for NOMA-Aided UAV Networks**
Yue Yin, Mondher Bouazizi, Siyuan Yang, Tomoaki Ohtsuki, Keio University

3 **Misalignment-Robust Modulation Scheme for UCA-Based OAM Multiplexing Systems**
Yusho Nakawaki, Kazuma Uesugi, Kazutoshi Yoshii, Shigeru Shimamoto, Waseda University

4 **Model Predictive Control Algorithm Based on Signal Temporal Logic Specifications with Disturbances Guaranteeing Feasibility**
Akira Kuchiki, Toru Namerikawa, Keio University

5 **Multi-Dimensional Representation for Semantic Communication: A New Horizon for Customized Visualization of Shared Knowledge**
Mondher Bouazizi, Tomoaki Ohtsuki, Keio University

6 **Optimizing mmWave UAV Networks: Mobility-Aware Deployment and Resource Allocation**
Sicong Li, Kazutoshi Yoshii, Shigeru Shimamoto, Waseda University; Tu Dac ho, Norwegian University of Science and Technology

7 **Power-Division Integrated Sensing and Communication waveform based on ZC-OFDM**
Mao Wang, Kazutoshi Yoshii, Shigeru Shimamoto, Waseda University; Mizuki Funakoshi, Ayumu Yabuki, Hideto Funayoshi, SoftBank Research Institute of Advanced Technology, SoftBank Corp.

8 **Privacy-Preserving Spatial Crowdsourcing in Smart Cities Using Federated and Incremental Learning Approach**
Md Mujibur Rahman, Quazi Mamun, Charles Sturt University; Jun Wu, Waseda University

9 **QoS aware Joint Radar Communication Optimization via Backtrack based Training Network**
Wang Junlong, Pan Zhenni, Shigeru Shimamoto, Waseda University

Monday, 7 October 2024 9:00 - 17:30 Hemisphere B

W5: AI for 6G: Sustainability, Reliability, and Trustworthiness

The upcoming 6G era promises unprecedented wireless connectivity and network capabilities, enabled by artificial intelligence and full utilization of machine learning across the network stack. However, realizing this vision requires addressing key challenges in tailoring AI/ML techniques to meet sustainability, reliability, and trustworthiness requirements for 6G networks. This one-day workshop aims to bring together researchers, industry players, and vendors to exchange ideas on AI-driven innovations that address these critical issues. Technical paper presentations will highlight innovations in energy-efficient AI models, flexible air interfaces, resilient networks, explainable AI, human-network interfaces, and secure/privacy-preserving communications. Invited talks and panel discussions with industry leaders will provide unique perspectives on integrating AI for sustainability, reliability, and trust into future 6G architectures and applications. The workshop will foster cross-disciplinary collaborations, bridge gaps between AI theory and mobile communication practice, and elucidate high-impact research directions for AI-enabled 6G developments.

Workshop Chairs
Sina Shafaei, Vodafone Group Services GmbH, Germany
Philipp Schulz, Technical University of Dresden, Germany
Muhammad Qurratulain Khan, TU Dresden, Germany
Mohammad Parvini, TU Dresden, Germany
Riccardo Trivisonno, Huawei Technologies, Germany
Guenter Klas, Vodafone Group, UK
Simone Mangiante, Vodafone Group Services GmbH, Germany

Technical Program Committee
Qasim Ahmed, University of Huddersfield
Abdelaali Chaoub, INPT
Daniel Corujo, Instituto de Telecomunicações Aveiro
Gerhard Fettweis, TU Dresden
Riccardo Guerzoni, DOCOMO Eurolabs
Muhammad Khan, Dresden University of Technology
Adrian Kliks, Poznan University of Technology
Israel Leyva-Mayorga, Aalborg University
Toon Norp, TNO
Mohammad Parvini, Technische Universität Dresden
Shilpa Talwar, Intel Corporation

Papers

1 **ConTST: Predicting Mobile Subnetwork Encounters in Dynamic Factories with Time Series Transformers**
Kilian Müller, Norman Franchi, Friedrich-Alexander-University, Erlangen-Nurnberg (FAU)

2 **Deploying AI-Based Applications with Serverless Computing in 6G Networks: An Experimental Study**
Marc Michalke, Chukwuemeka Muonagor, Admela Jukan, Technische Universität Braunschweig

3 **Evaluation of Transformer Empowered Channel Prediction for 5G and Beyond Communication**
Qiuheng Zhou, Sergiy Melnyk, German Research Center for Artificial Intelligence; Donglin Wang, RPTU Kaiserslautern Landau; Hans Schotten, University of Kaiserslautern

4 **Vehicle Traffic Density Estimation with Deep Learning for Predicting Communication Traffic Volume by Vehicle Communication Services**
Yoshie Morita, Kengo Tajiri, Yoichi Matsuo, NTT Corporation

W8: First Workshop on Research and Innovation in Testing and Integration for Open Radio Access Networks (RitiRAN)

This workshop brings together researchers from academia, industry, and government focused on advancing the state of the art on testing and integration for Open Radio Access Network (RAN) systems. We will attract papers and demos on new results and techniques aimed at achieving true interoperability in Open RAN networks and systems, including testing of disaggregated RAN components, RAN Intelligent Controllers (RICs), and of data-driven RAN optimization solutions with Artificial Intelligence (AI) and Machine Learning (ML). The workshop represents an opportunity to network and share results across various initiatives in the Open RAN testing research and development space, including the projects part of the U.S. National Telecommunications and Information Administration (NTIA) Public Wireless Supply Chain Innovation Fund (PWSCIF) and ORAN ALLIANCE Open Testing and Integration Centers (OTICs) and PlugFests.

Workshop Co-chairs:
Michele Polese, Northeastern University, USA
Lopamudra Kundu, NVIDIA, USA

Technical Program Committee
Aly S. Abdalla, Mississippi State University
Eduardo Baena, Northeastern University
Leonardo Bonati, Northeastern University
Binbin Chen, Singapore University of Technology and Design
Rahman Doost-Mohammady, Rice University
Salvatore D'Oro, Northeastern University
Alan Gatherer, Cirrus360
Gabriele Gemmi, Northeastern University

Syed Rafiul Hussain, Pennsylvania State University
Pedram Johari, Northeastern University
Florian Kaltenberger, Eurecom and Northeastern University
Julie Kub, NTIA
Lincoln Lavoie, UNH-IOL
Vuk Marojevic, Mississippi State University
Marco Mezzavilla, Politecnico di Milano
Doug Montgomery, NIST
Marie-Jose Montpetit, Iowa State University
Tim O'Shea, DeepSig
Tony Quek, Singapore University of Technology and Design
Balaji Ragothaman, KeySight
Richard Rouil, NIST
Ivan Seskar, Rutgers Winlab
Vijay Shah, George Mason University
N. K. Shankaranarayanan, Rutgers Winlab
Bo Tang, Worcester Polytechnic Institute
Gudepu Venkateswarlu, IIT Dharwad

Program

Monday, 7 October 2024 9:00 - 9:45 Oceanic B

Session I : Keynote

Latest developments within O-RAN TIFG
Eng Wei Koo, Keysight

Monday, 7 October 2024 9:45 - 10:30 Oceanic B

Session II : Energy

1 **POET: A Platform for O-RAN Energy Efficiency Testing**
N Shankaranarayanan, Zhuohuan Li, Ivan Seskar, Prasanthi Maddala, Rutgers University; Sarat Puthenpura, Alexandru Stancu, Open Networking Foundation; Anurag Agarwal, Cognizant

2 **Energy Saving and Traffic Steering Use Case and Testing by O-RAN RIC xApp/rApp Multi-vendor Interoperability**
Arda Akman, Juniper Networks; Pablo Oliver, Vodafone; Michael Jones, Keysight Technologies; Peyman Tehrani, AirHop Communications; Marcin Hoffmann, Rimedo Labs; Jia Li, Keysight Technologies

Monday, 7 October 2024 11:00 - 12:30 Oceanic B

Session III : Systems for Open RAN Testing

1 **Testing Open RAN in the Cloud (TORC)**
Sridhar Rajagopal, John Baker, Mavenir Systems; Ramu Akula, Amazon

2 **Soft Tester UE: A Novel Approach for Open RAN Security Testing**
Joshua Moore, Aly Sabri Abdalla, Charles Ueltschey, Vuk Marojevic, Mississippi State University

3 **Open6G OTIC: A Blueprint for Programmable O-RAN and 3GPP Testing Infrastructure**
Gabriele Gemmi, Michele Polese, Pedram Johari, Stefano Maxenti, Northeastern University; Michael Seltser, Cerbo IO; Tommaso Melodia, Northeastern University

4 **Directed Testing of ORAN using a Partially Specified Declarative Digital Twin**
Alan Gatherer, Chaitali Sengupta, Sudipta Sen, Jeff Reed, Cirrus360

Monday, 7 October 2024 14:00 - 15:15 Oceanic B

Session IV : Testing Experiences

1 **Consistent and Repeatable Testing of mMIMO O-RU across labs: A Japan-Singapore Experience**
Nguyen Thanh Tam, Ngo Van Mao, Binbin Chen, Singapore University of Technology and Design; Mitsuhiro Kuchitsu, Rakuten Mobile, Inc.; Serena Wai, Seitaro Kawai, Kenya Suzuki, Eng Wei Koo, Keysight Technologies; Tony Q.S. Quek, Singapore University of Technology and Design

2 **How Critical is Site-Specific RAN Optimization? 5G Open-RAN Uplink Air Interface Performance Test and Optimization from Macro-Cell CIR Data**
Johnathan Corgan, Nitin Nair, Rajib Bhattacharjea, Wan Liu, DeepSig Inc.; Serhat Tadik, Georgia Institute of Technology; Tom Tsou, Timothy O'Shea, DeepSig Inc.

2 **Consistent and Repeatable Testing of O-RAN Distributed Unit (O-DU) across Continents**
Van Tuan Ngo, Ngo Van Mao, Binbin Chen, Singapore University of Technology and Design; Gabriele Gemmi, Eduardo Baena, Michele Polese, Tommaso Melodia, Northeastern University; William Chien, Synergy Design Tech; Tony Q.S. Quek, Singapore University of Technology and Design

Monday, 7 October 2024 14:00 - 15:15 Oceanic B

Session V : Panel

Open RAN testing and Integration

W9: Hexa-X-II 6G Workshop

The Hexa-X-II project is the European flagship 6G research project, aimed to define the 6G end-to-end system delivering novel services for 6G as well as conducting research on enabling technologies for 6G. The Next G Alliance (NGA) is the leading North American 6G initiative aimed at advancing the technology readiness through private sector-led efforts. Together Hexa-X-II and NGA will provide an overview of the work by the largest European and North American initiatives towards 6G, presented by the Hexa-X-II Technical Manager and the NGA Roadmap to 6G working group chair. The workshop will also present academic and industrial visions on how to address the 6G usage scenarios outlined by ITU-R (as defined in ITU-R M.2160), namely Immersive communication, Artificial intelligence and communication, Integrated sensing and communication, Ubiquitous connectivity, Massive communication, and Hyper reliable and low-latency communication.

Workshop Co-chairs:
Patrik Rugeland, Ericsson, Sweden
Mikko Uusitalo, Nokia Bell Labs, Finland
Mauro Boldi, Telecomm Italia, Italy

Program

Monday, 7 October 2024 9:00 - 10:30 Meridian C

Session I – 6G System

Keynote 1: Hexa-X-II: the European 6G flagship project
Patrik Rugeland, Ericsson (Technical Manager in Hexa-X-II)

Keynote 2: Next G alliance: North American view on 6G
Amitava Ghosh, Nokia (Chair, National 6G Roadmap WG, Next G Alliance)

Monday, 7 October 2024 11:00 - 12:30 Meridian C

Session II – Enabling the 6G Use Cases

1 **Path to 6G: Key innovations to enable next-generation immersive communication**
Junyi Li, Engineering, Qualcomm

2 **Building Trustworthy communications networks: AI in 6G PHY**
Rafael Schaefer, TU Dresden

3 **Integration is all you need: a vision of joint sensing, learning, and communication networks**
Nuria Gonzalez-Prelcic, University California San Diego

4 **6G for Ubiquitous connectivity**
Amina Boubendir, Airbus

5 **Key 6G Technologies from Device Perspective to Enable Differentiated User Experience**
Doru Calin, Mediatek USA

6 **Imagine Hyper reliable and low-latency communication in industrial verticals – where can it help and what is needed?**
Michael Bahr, Siemens AG

W10: IEEE Workshop on B5G/6G Support for Next-generation Industrial Internet-of-Things (B5G/6G-NG-IIoT)

Industrial internet-of-things (IIoT) use cases (e.g., self-driving cars and Industry 4.0) have stringent requirements (e.g., lowlatency and high-reliability) that are out of reach of legacy connectivity solutions (e.g., Wi-Fi and 4G). While the advanced 5G features (e.g., time-sensitive networking (TSN) and ultra-reliable low-latency communication (URLLC)) can meet some of these requirements, they fall short in supporting the most demanding use cases. In this context, this workshop aims at exploring the latest features and components of beyond 5G (B5G) and 6G networks to overcome the limits of 5G. First, the workshop will identify the gaps of the existing 5G solutions in supporting the most advanced IIoT use cases. Second, the workshop will disseminate the latest findings and solutions assessing the capabilities of future B5G/6G networks in filling those gaps, including optimised protocols, architectural innovation (e.g., advanced network slicing, next-generation multi-access edge computing (MEC) and Open RAN), novel algorithms, metrics, and tools. Third, the workshop will analyse and discuss pressing challenges and future trends in the development, integration, testing, and deployment of B5G/6G technological components to better serve the specific needs of IIoT use cases.

Workshop Co-chairs:
Faouzi Bouali, Coventry University, UK
Tan Zheng Hui Ernest, Advanced Remanufacturing and Technology Centre, Singapore

Technical Program Committee
Sina Ebrahimi, Coventry University
A.S. Madhukumar, Nanyang Technological University
Atiquzzaman Mondal, IIIT Guwahati
Ernest Tan, Agency for Science, Technology and Research

Program

Monday, 7 October 2024 9:00 – 9:50 Virtual

Session I

Welcome note and workshop overview
Faouzi Bouali, University of Doha for Science and Technology (UDST)

Intelligent Edge Computing for Industrial Internet of Things: Opportunities and Challenges
Yan Zhang, University of Oslo

Open 6G: Toward Open, Programmable, and AI-Powered NextG Systems
Tommaso Melodia, Northeastern University

Monday, 7 October 2024 10:00 – 11:15 Virtual

Session II

1 **Age of Information for Joint Sensing, Transmission and Computation in Mobile Edge Computing**
Baozhen An, Mangang Xie, Changhao Song, Yaping Wang, Qianqian Wang, Northwest Normal University

2 **Minimizing Age of Information in wireless powered communication network based on short packet communication**
Xiaoping Ma, Xiangdong Jia, Yue Li, Kailai Xue, Northwest Normal University

3 **Control-Aware Transmit Power Allocation for 6G In-Factory Subnetwork Control Systems**
Daniel Abode, Aalborg University; Pedro Maia de Sant Ana, Alexander Artemenko, Robert Bosch GmbH; Ramoni Adeogun, Gilberto Berardinelli, Aalborg University

4 **RIS assisted Cooperative Computation Offloading for Autonomous Vehicle in Mobile Edge Computing**
Osama Saleem, INSA Rouen; Awais Bin Bin Asif, National University of Sciences and Technology; Soheyb Ribouh, University of Rouen Normandy; Nouman Ashraf, TU Dublin; Hassaan Khaliq Qureshi, National University of Sciences and Technology (NUST), Pakistan

Closing
Faouzi Bouali, University of Doha for Science and Technology (UDST)

W11: 5G for Connected and Automated Mobility – Addressing Continuity of Service

In the context of the European Union (EU)-funded 5G Public-Private Partnership (5G-PPP), a number of projects were launched aiming at delivering the full potential of 5G to provide advanced Connected and Automated Mobility services across Europe, focusing on ensuring continuity of service across borders, but also in case of National roaming. The projects addressed road, rail, inland waterways and coastal maritime transport corridors, and involved as well non-EU partners. At the end of the 5G PPP program, this workshop will provide an opportunity to present achievements and lessons learned of these European projects, and look into the subsequent phase of deployment across the Trans-European Transport Network (TEN-T).

Workshop Chair: ***Jorge Pereira***, European Commission, Belgium

Program

Monday, 7 October 2024 9:00 - 10:30 Amphitheater

Context, Objectives, Lessons Learned and Next Steps
Jorge Pereira, EC

Cross-Border Corridors : Road I

5G-MOBIX
You-Jun Choi, Katech, SK

5G-CARMEN
Edwin Fischer, DT, DE

5GCroCo
Miquel Payaró, CTTC, ES

5G-Blueprint: Road
Johann Marquez-Barja, imec-UAntwerpen, BE

Monday, 7 October 2024 11:00 - 11:40 Amphitheater

Cross-Border Corridors : Road I

5GMED
Francisco Vázquez Gallego, i2cat, ES

5G-ROUTES: Road
Andrea Gentili, VTT, FI

Monday, 7 October 2024 11:40 - 12:40 Amphitheater

Cross-Border Corridors : Rail

5G-VICTORI: Rail trials
TBC, Univ. Patras, EL

5GRAIL: 5G for FRMCS including cross-border issues
Dan Mandoc, UIC, BE

5GMED: Rail trials
Paul Caranton, SNCF, FR

Monday, 7 October 2024 13:45 - 14:25 Amphitheater

Cross-Border Corridors : Waterways & Coastal Maritime

5G-Blueprint + VITAL-5G – Waterways
Ghazaleh Kia, Seafar, BE

5G-ROUTES: Maritime
Andrea Gentili, VTT, FI

Monday, 7 October 2024 14:25 – 14:50 Amphitheater

Business Models

Edwin Fischer, DT, DE

Monday, 7 October 2024 14:50 – 15:30 Amphitheater

Logistics

VITAL-5G
Johann Marquez-Barja, imec-UAntwerpen, BE

5G-LOGINNOV
Eusebiu Catana, ERTICO, BE

Monday, 7 October 2024 16:00 – 17:00 Amphitheater

Network Applications

5G-IANA
Christina Anagnostopoulou, ICCS, EL

5GASP
Rafael Direito, IT Aveiro, PT

5GMETA
Oihana Otaegui, Vicomtech, ES

Monday, 7 October 2024 17:00 – 17:30 Amphitheater

International dimension – partners in 5G-PPP Projects

V2X communication-supported cooperative automated mobility
You-Jun Choi, Katech, SK

Closing
Jorge Pereira, EC

W12: The Interplay Between Digital Twins and 6G

In the rapidly evolving technological landscape, digital twins (DT) and 6G fields have become increasingly intertwined. A DT is a virtual replica of a physical object, process, or system that can be used for various purposes, such as simulation, monitoring, analysis, and control. Therefore, 6G can benefit from the DT in terms of network optimization, maintenance based on prediction, security enhancement, real-time monitoring, and management. Meanwhile, 6G empowers DT by environment sensing, data transmission, computing offloading, etc. This workshop aims to explore the mutual benefit between these two areas, focusing on how advancements in DT technologies have propelled the growth of 6G and vice versa. This workshop is expected to bring together and disseminate state-of-the-art research contributions that promote the research in this field and gather contributions from industry and academia on the DT-empowered 6G and 6G-enhanced DT. Participants will gain insight into the foundational principles, current trends, and future directions of DT and wireless communications, fostering a comprehensive understanding of their interplay and implications for various industries.

Workshop Co-chairs:
Xiaoli Chu, University of Sheffield, UK
Yuan Gao, Shanghai University, China
Bintao Hu, Xi'an Jiaotong-Liverpool University, China
Jianbo Du, Xi'an University of Posts & Telecommunications, China

Technical Program Committee
Yuming Han, Texas A&M University
Saeed R. Khosravirad, Nokia Bell Labs
Miguel López-Benitez, University of Liverpool
Danaisy Prado-Alvarez, Universitat Politècnica de València
Qinghua Wang, Kristianstad University
H. Yu, Shanghai University
Yixin Zhang, Beijing University of Posts and Telecommunications
Zhicai Zhang, Hainan University

Program

Monday, 7 October 2024 14:00 - 15:30 Meridian C

Session I

Keynote
Qiang (John) Ye, University of Calgary

1 **Assessing Urban Safety: A Digital Twin Approach Using Streetview and Large Language Models**
Yuhan Cheng, Meta; Zhengcong Yin, Diya Li, Esri; Zhuoying Li, Johns Hopkins University

2 **C2S: An Transformer-Based Framework to Extrapolate Sensing Channel From Communication Channel**
Yuan Gao, Shanghai University

3 **Digital Twin-Empowered Offloading Optimisation and Resource Allocation for UAV-Assisted IoT Network Systems**
Bintao Hu, Wenzhang Zhang, Xi'an Jiaotong-Liverpool University; Saba Al-Rubaye, Cranfield University; Haibo Zhang, University of Otago; Xinheng Wang, Shuangyao Huang, Xi'an Jiaotong-Liverpool University

Monday, 7 October 2024 14:00 - 17:30 Meridian C

Session II

1 **LINKs: Large Language Model Integrated Management for 6G Empowered Digital Twin NetworKs**
Shufan Jiang, Bangyan Lin, Yue Wu, East China University of Science and Technology; Yuan Gao, Shanghai University

2 **Task Offloading and Primary Node Selection in Blockchain, Digital Twin, and MEC Enabled Internet of Vehicles**
Jianbo Du, Xi'an University of Posts and Telecommunications

W13: Channel Modeling and Propagation for Highly Mobile Communications

Mobile communications are constantly evolving to meet society's demands for more and better communication services. The global rollout of the fifth-generation (5G) of mobile cellular communications is currently underway, with the promise of revolutionizing the communications landscape by improving user experience with interactive and haptic communications, and enabling machine-oriented services that are fundamental for industry automation, intelligent transportation, e-health, and others. Although the future of 5G and beyond 5G (B5G) networks looks bright, the design of such networks continues to be a challenging task due to the stringent performance requirements that these networks should meet to deliver ultra-reliable and low-latency services with enhanced mobilty. In particular, the optimization of the radio access network of 5G, as well as its redesign toward the transition to sixth-generation (6G) networks, call for the development of accurate channel models that capture the rapidly time-varying characteristics of mobile radio reception in highly mobile indoor and outdoor environments. This workshop is organized by the Technical Committee on Propagation of the IEEE Vehicular Technology Society with the aim of providing a global perspective on open problems, current research trends, new results and ideas, and hot topics in the area of channel modeling and propagation for enhanced mobility use cases of 5G, 5G-Advanced, 6G, and other mobile communication networks.

Workshop Co-chairs:
David Matolak, University of South Carolina, USA
Carlos A. Gutierrez, UASLP, Mexico
Jose Rodriguez-Piñeiro, Tongji University, China
Daniel Benevides da Costa, King Fahd University of Petroleum & Minerals, Saudi Arabia
Ke Guan, Beijing University, China
Michael Walter, German Aerospace Center, Germany

Technical Program Committee
Xuesong Cai, Lund University
Aniruddha Chandra, NIT Durgapur
Ashish Goswami, Adani University
Petros Karadimas, Edinburgh Napier University
Wilhelm Keusgen, Technische Universität Berlin
Juyul Lee, ETRI
Mir Lodro, University of Bristol
Wahyu Pamungkas, Institut Teknologi Telkom Purwokerto
Stefan Schwarz, TU Wien
Linlong Wu, University of Luxembourg
Xingqi Zhang, University of Alberta

Program

Monday, 7 October 2024 9:00 - 10:30 Meridian D&E

Session I

Opening
David Matolak, University of South Carolina

Keynote: Bell Labs recent propagation measurements and models for next generation wireless systems
Reinaldo Valenzuela, Nokia-Bell Labs, USA

1 **Air-to-Ground Channel Modeling for UAVs in Rural Areas**
Anil Gurses, Mihail L. Sichitiu, North Carolina State University

3 **V2I Channel Stationarity Distance in the 5 GHz Band**
Zeenat Afroze, David Matolak, University of South Carolina

Monday, 7 October 2024 11:00 - 12:30 Meridian D&E

Session II

1 **Comparative BER Performance Analysis of Two Novel Methods for the Simulation of Correlated MIMO Fading Channels in 3D Environments**
Raul A. Fabián-Rodríguez, Carlos A. Gutierrez, Universida Autónoma de San Luis Potosí; José Rodríguez-Piñeiro, Tongji University

2 **LSTM-based Head-on Collision Warning System with a Decentralized Radio Sensing Approach**
Jorge Cardenas-Amaya, UASLP; Omar Contreras-Ponce, Robert Bosch Mexico; Carlos A. Gutierrez, Ruth Aguilar-Ponce, Francisco R. Castillo-Soria, UASLP; Cesar A. Azurdia-Meza, Universidad de Chile, Chile

Panel: Channel Modeling & Propagation for Highly Mobile Communications: Future Challenges
Reinaldo Valenzuela, Nokia-Bell Labs; Wilhelm Keusgen, TU Berlin; Juyul Lee, ETRI; David Matolak, University of South Carolina

W14: 1st Workshop on Positioning Technologies for 5G & 6G (POSIT-6G)

Positioning remains a wide spread solutions from a variety of use cases and scenarios in 5G & 6G, such as autonomous driving, precision agriculture and asset tracking. On the last use case, as the trend towards deploying private 5G networks (e.g., in ports, production facilities, warehouses, etc.) gains traction, 5G could offer a single communication and tracking solution to serve an entire campus. The first release of 5G-Advanced, in Release-18, calls for expanded and improved positioning targetting sub-10cm accuracy. This challenging goal will require researchers and developers to improve positioning technology to deal with the wide variety of scenarios that can emerge.

Workshop Chair:
Pedro Santos, Instituto Politécnico do Porto, Portugal

Workshop Co-chairs:
Miguel Gutiérrez Gaitán, Pontificia Universidad Católica de Chile

Papers

Monday, 7 October 2024 14:00 - 17:30 Oceanic A

1 **A Localization Error Upper-bound with Range Measurements to Transmitters with Uncertain Positions**
Zak (Zaher) Kassas, Artun Sel, Samer Hayek, The Ohio State University

2 **AoA-aided Kalman Filter to Mitigate False Data Injections Attacks in Vehicular Scenarios**
Luis Javier Puente Lam, Cister Research Centre/ISEP; Pedro M. Santos, CISTER Research Centre

3 **Cooperative AoA Wireless Positioning using LSTM Neural Network: Preliminary Results**
Pedro M. Santos, CISTER Research Centre; Luis Javier Puente Lam, Cister Research Centre/ISEP

4 **Dynamic User grouping based on Location and Heading in 5G NR Systems**
Dino Pjanic, Korkut Emre Arslantürk, Xuesong Cai, Fredrik Tufvesson, Lund University

5 **Opportunistic Navigation Exploiting Always-On and On-Demand 5G Downlink Signals on a Ground Vehicle**
Zak (Zaher) Kassas, Faezeh Mooseli, Samer Hayek, Sharbel Kozhaya, The Ohio State University

Monday, 7 October 2024 14:00 - 17:30 Meridian D&E

W15: Workshop on Intelligent Device-to-Device Communication for 6G and Beyond

The International Telecommunication Union (ITU) has put forward the concept of International Mobile Telecommunication-2030 (IMT-2030) network paradigm or Beyond-5G (B5G) network. The new verticals in the IMT-2030 network include Further enhanced Mobile Broadband (FeMBB), Enhanced Ultra-Reliable and Low Latency Communication (ERLLC), and ultramassive Machine Type Communication (umMTC). The applications of these service type verticals are diverse and the requirements are heterogeneous in nature. The common network requirement in these service types are ultra-reliability in terms of packet delivery ratio and low latency communication. Moreover, the concept of Internet-of-Everything (IoE) in IMT-2030 paradigm require massive network resources due to exponential increase in connected devices. Moreover, the vision of 6th Generation (6G) network is to have Self-Organizable Network (SON) and Self-Sustainable Network (SSN). Device-to-Device (D2D) communication also known as Proximity Services (ProSe) is standardized in 5G and B5G network by 3rd Generation Partnership Project (3GPP). D2D communication offers support in broad use cases, which includes; data offloading, communication relay, Vehicle-to-Everything (V2X), cooperative communication, and network, cooperative learning. In order to support IoE, network should support cooperative communication and resource sharing at every tier, that is, at user equipment, edge and fog nodes, core network, and cloud tier. The amalgamation of D2D communication and Machine Learning (ML) is considered to be a prime piece of 6G jigsaw puzzle of SON and SSN. The Physical and Data Link layer in the latest Releases by 3GPP have interdepended functionality, i.e., the flexible frame size of MAC layer depends on the frequency numerology used in Physical layer. Therefore, there is a dire need for innovative and efficient resource sharing and allocation for D2D methodologies to enable SON and SSN in 6G communication. Motivated from the requirements of B5G and 6G, this workshop targets to disseminate the largest research work in the domain of cooperative communication, device-to-device communication, machine learning, and cooperative learning towards enabling SON and SSN for future generation communication networks.

Workshop Co-chairs:
Muhammad Ali Jamshed, University of Glasgow, UK
Ali Nauman, Yeungnam University, Republic of Korea

Technical Program Committee
Abderrahmane El Mettiti, Mohammed V University in Rabat
Saadane Rachid, SIRC/LAGES-EHTP Hassania School of Public Works

Papers

1 **Enhancing Spectral Efficiency in IoT Networks using Deep Deterministic Policy Gradient and Opportunistic NOMA**
Neha Mazhar, Syed Asad Ullah, National University of Sciences & Technology (NUST); Haejoon Jung, Kyung Hee University; Qurrat-Ul-Ain Nadeem, NYU Abu Dhabi; Syed Ali Hassan, National University of Sciences and Technology

2 **Exploring Feature Importance and Explainability Towards Enhanced ML-Based DoS Detection in AI Systems**
Lesther Santana, Paul Bady Yakubu, Evans Owusu, Mohamed Rahouti, Fordham University; Abdellah Chehri, Royal Military College of Canada; Kaiqi Xiong, Univ. of South Florida; Yufeng Xin, University of North Carolina

3 **Leveraging Blockchain-as-a-Certificate Authority for Authentication in 6G-Enabled Spatial Crowdsourcing Drone Services**
Junaid Akram, Ali Anaissi, The University of Sydney; Sagar Sidana, , McKinsey & Co; Deepak Kumar, National Institute of Technology Meghalaya; Rutvij H. Jhaveri, Pandit Deendayal Energy University

4 **Performance Enhancement of C-V2X Mode-3 with Smart Handover and Wide Area DENM Propagation**
Moin Ali, Su Min Kim, Junsu Kim, Tech University of Korea

5 **Wireless Security and IoT Device Identification using RF Fingerprinting and Deep Learning**
Nordine Quadar, Abdellah Chehri, Royal Military College of Canada; Benoit Debaque, Research and Technology Center Thales-Canada

VTC2024-Fall Technical Papers

Tuesday 8 October 2024

Tuesday, 8 October 2024 11:00 - 12:30 Hemisphere B

1B: V2X I

1 **Considerations for Distributed Deployment of 5G NR V2X**
Gabi Sarkis, Qualcomm Technologies, Inc; Dan Vassilovski, Qualcomm Technologies, Inc.; Ahmed Farhan Hanif, Qualcomm Technologies, Inc; Tien Viet Nguyen, Qualcomm Technologies, Inc.; Hong Cheng, Shuanshuan Wu, Shailesh Patil, Qualcomm Technologies, Inc; Gene Marsh, Qualcomm Technologies, Inc.

2 **Cooperative Perception Using V2X Communications: An Experimental Study**
Faisal Hawlader, François Robinet, Raphael Frank, University of Luxembourg

3 **Digital Twin-Empowered Routing Management for Reliable Multi-Hop Millimeter Wave V2X**
Supat Roongpraiwan, Zongdian Li, Tao Yu, Kei Sakaguchi, Tokyo Institute of Technology

4 **Evaluation of C-V2X devices to deploy a C-ITS information distributor system based on a V2I2V architecture**
Lluc Feixa-Morancho, Pau Feixa-Morancho, Marc Codina, Jordi Marias-i-Parella, i2CAT Foundation; Jordi Casademont, Universitat Politecnica de Catalunya; Bruno Cordero, Francisco Vázquez-Gallego, i2CAT Foundation

5 **Full Duplex-Driven Resource Reselection in 5G-V2X Sidelink Mode 2 Under Mixed Periodic and Aperiodic Traffic Scenarios**
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

Tuesday, 8 October 2024 11:00 - 12:30 Oceanic A

1C: Channel Capacity and Estimation

2 **Influence of the Path Delay Differences on the Channel Capacity in MIMO OWC Systems**
Alexander Frömming, Lars Haering, Andreas Czylwik, University of Duisburg-Essen

3 **Sparse Bayesian Learning Using Complex t-Prior for Massive Multi-User MIMO Channel Estimation**
Kengo Furuta, Takumi Takahashi, Hideki Ochiai, Osaka University

4 **Student-T Prior Sparse Bayesian Learning for Improved Channel Estimation in OTFS systems**
Wenduo Qiu, Xiaoxu Zhang, Southwest Jiaotong University; George Karagiannidis, Aristotle University of Thessaloniki; Li Hao, Xueping Lan, Southwest Jiaotong University

5 **Turbo Inverse-Free Successive Linear Approximation VBI for Joint Grid Parameters and Channel Estimation in OTFS Systems**
Sijia Qiu, Ming Lei, Ming-Min Zhao, Yunlong Cai, Minjian Zhao, Zhejiang University

Tuesday, 8 October 2024 11:00 - 12:30 Meridian B

1D: Privacy and Security I

1 **A Resource-efficient Text-to-Text Transfer Transformer Encoder-based Vertical Hybrid Model for Malicious URLs Detection**
Zihan Zhao, Jinhua Chen, Franck Junior Aboya Messou, Robert Katabarwa, Keping Yu, Hosei University

2 **Active RIS Empowered Secure MISO Systems: AN and RIF Approaches**
Ming Yu, Jinjin Chu, Dalian University of Technology; Rang Liu, University of California Irvine; Peishi Li, Ming Li, Qian Liu, Dalian University of Technology

3 **Active RIS-aided Uplink for Robust and Secure Multi-User Private Industrial Network**
Sandeep Singh, Allu Raviteja, National Sun Yat-sen University; Sandeep Kumar Singh, Motilal Nehru National Institute of Technology Allahabad; Keshav Singh, National Sun Yat-sen University; Aryan Kaushik, University of Sussex; Meng-Lin Ku, National Central University

4 **BlockFL: A Blockchain-enabled Federated Learning System for Securing IoVs**
Jawad Rahman, Charles Roeder, Oscar De La Cruz, Tyler Baudier, Wenjia Li, New York Institute of Technology

5 **Combat Jamming: An Innovative Mini-Slot Frequency Hopping in B5G Networks.**
Walaa Alqwider, Minglong Zhang, Aly Sabri Abdalla, Vuk Marojevic, Mississippi State University

Tuesday, 8 October 2024 11:00 - 12:30 Meridian C

1E: Recent Results I

1 **A Formal Quality Control System for Millimetre-Wave Channel Sounder Verification**
Xin Chen, David Michelson, The University of British Columbia

2 **A Novel Approach for Integrated Vehcile Dynamics Management Using Improved Adaptive Neural Network**
Fangrui Guo, UCLA; Quan Zhang, Xi'an Jiaotong-Liverpool University

3 **Adaptability-Driven Multi-Objective Hardware Optimization for Vehicular Systems**
Julian Demicoli, Sebastian Steinhorst, Technical University of Munich

4 **Adaptive Pilot Pattern Design for Ultra-Low Latency Communication in B5G/6G Systems**
Fayad Haddad, Carsten Bockelmann, Armin Dekorsy, University of Bremen

5 **Adaptive Residual Vector Quantization for Dynamic Mode Decomposition-Based CSI Feedback in MIMO Systems**
Lingrui Zhu, Fayad Haddad, Carsten Bockelmann, Armin Dekorsy, University of Bremen

Tuesday, 8 October 2024 11:00 - 12:30 Meridian D&E

1F: Vehicular Networks I

1 **5G Network Architecture and Configuration Choices to Support Teleoperated Driving at Scale**
Mª Carmen Lucas Estañ, Universidad Miguel Hernandez de Elche (UMH); Baldomero Coll-Perales, Universidad Miguel Hernandez de Elche; Mohammad Irfan Khan, 2InfoTech Labs, Toyota Motor North America R&D; Javier Gozálvez, Universidad Miguel Hernandez de Elche (UMH); Sergei S. Avedisov, Toyota North America R&D - InfoTech Labs; Onur Altintas, Toyota Motor North America R&D; Miguel Sepulcre, Universidad Miguel Hernandez de Elche (UMH)

2 **A Comparative Study of Stationary and Dynamic Vehicular Micro Clouds: A Case of Vehicle Platooning for Incident Management**
Jonathan Sukhu, McMaster University; Hao Yang, McMaster University, Department of Civil Engineering; Harith Abdulsattar, Saiedeh Razavi, McMaster University; Seyhan Ucar, InfoTech Labs, Toyota Motor North America R&D; Yashar Zeiynali Farid, Toyota North America R&D - InfoTech Labs

		Hemisphere A (A)	Hemisphere B (B)	Oceanic A (C)	Meridian B (D)	Meridian C (E)	Meridian D&E (F)	Polaris A (G)	Polaris B/C (H)	Continental B (I)	Continental C (J)	Oceanic B (K)	Amphitheater (L)
MONDAY 7 October													
7:00-17:30		Registration (Amphitheater Foyer)											
9:00-17:30		Tutorials and Workshops											
18:00-20:00		VTC2024-Fall & VPPC 2024 Opening Reception (Auditorium Ballroom)											
TUESDAY 8 October													
7:00-17:30		Registration (Amphitheater Foyer)											
8:30-9:00		Welcome: General Co-chairs, TPC Co-chairs and VTS President (Amphitheater)											
9:00-10:30		Keynotes: Andrea Goldsmith, Princeton University & Matt Jones, Executive Director, Ford Motor Company (Amphitheater)											
10:30-11:00		Refreshments (Auditorium Ballroom)											
11:00-12:30	(1)	Panel: 6G: Where and When	V2X I	Channel Capacity and Estimation	Privacy and Security I	Recent Results I	Vehicular Networks I	Advanced 5G Systems	Deep Learning in Communications I	Transmission Technologies I	Heterogeneous Networks I	Intelligent Transportation I	VPPC 2024 Opening Keynote: Burak Ozpineci, Oak Ridge National Lab
12:30-14:00		Lunch (Auditorium Ballroom)											
14:00-15:30	(2)	Ad-Hoc Networks	V2X II	Joint Workshop on Diversity & Inclusion, Young Professional and Education	Privacy and Security II	Recent Results II	Vehicular Networks II	Advanced Techniques in Communication	Deep Learning in Communications II	Energy Generation and Storage	Electric Railway	IEEE VTS Motor Vehicles Challenge 2024 I	Panel: The Sprint to the Stratosphere
15:30-16:00		Refreshments (Auditorium Ballroom)											
16:00-17:30	(3)	5G/MIMO Systems	V2X III	Joint Workshop on Diversity & Inclusion, Young Professional and Education	Privacy and Security III	Recent Results III	Spectrum Management	Autonomous Systems	Federated Learning	Transmission Technologies II	Heterogeneous Networks II	Intelligent Transportation II	Panel: EVs: Perspectives from Industry and Government
19:15-21:00		Wireless Futures Evening Pizza and Soda Panel (Auditorium Ballroom)											
WEDNESDAY 9 October													
8:00-17:30		Registration (Amphitheater Foyer)											
8:30-10:30		Keynotes: Hiroshi Fujimoto, The University of Tokyo, Robert C. Hampshire, US Dept. of Transportation & Gerhard Fettweis, Dresden University of Technology (Amphitheater)											
10:30-11:00		Refreshments (Auditorium Ballroom)											
11:00-12:30	(4)	RIS/IRS	V2X IV	Unmanned Vehicle Communications I	Energy Storage I	Recent Results IV	6G in Vehicular Communications		Learning Techniques for Vehicular Communications	Hydrogen Fueling Infrastructure and Fuel Cell Vehicles	Vehicular Electronics and Intelligent Transportation I	EMR and Other Graphic Descriptions I	Panel: Future Perspectives - looking beyond 100
12:30-14:00		Awards Luncheon (Auditorium Ballroom)											
14:00-15:30	(5)	RIS-aided Communication	Applications for IoV/IoT	Unmanned Vehicle Communications II	Power Electronics	Recent Results V	Antennas, Propagation, and RF Design		Machine Learning I	Control and Energy Management	Vehicular Electronics and Intelligent Transportation II	EMR and Other Graphic Descriptions II	Precoding/Coding
		Refreshments (Auditorium Ballroom)											
16:00-17:30	(6)	Satellite Networks I	Communications for IoV/IoT	Unmanned Vehicle Communications III	Motor Drives	Recent Results VI	Localization I		Machine Learning II	Modeling, Analysis and Simulation	Batteries, Charging Systems and Infrastructures	Recent Results I	Energy Efficiency in Communications
18:00-22:00		VTC2024-Fall and VPPC 2024 Banquet River Cruise											
THURSDAY 10 October													
8:00-17:30		Registration (Amphitheater Foyer)											
8:30-10:30		Keynotes: Yunwei (Ryan) Li, University of Alberta, Aprille Ericsson, US Department of Defense & John Smee, Qualcomm (Amphitheater)											
10:30-11:00		Refreshments (Auditorium Ballroom)											
11:00-12:30	(7)	Satellite Networks II	IoT	Vehicular Communications I	Radio Access Technology I	Emerging Technology for Communication	Localization II		ML Techniques	Recent Results II	Recent Results III	Social, Economic and Urban Impacts of Electric Vehicles and Infrastructures	Panel: Open Radio Access Networks
12:30-14:00		Awards Luncheon (Auditorium Ballroom)											
14:00-15:30	(8)	Vehicle Safety I	IoV and Autonomous Vehicles	Vehicular Communications II	Radio Access Technology II	Next Generation Wireless	Positioning		mmWave with ML	Beam Management in Advanced Systems	Communication Channels	MIMO in Advanced Systems	Energy Management for Vehicles
15:30-16:00		Refreshments (Auditorium Ballroom)											
16:00-17:30	(9)	Vehicle Safety II	Protocols and Services for Wireless Networks	Semantic and Image Techniques	Radio Access Technology III	Sensor Networks	Positioning Technologies		Networks with ML	Beamforming	Communication Theory	MIMO in Transmission	Power Allocation

VTC Sessions and General Sessions - Black Text on White

VPPC Sessions - White Text on Black

3 **A Robust Clustering Scheme for Vehicular Communication Networks**
Maryam Hosseini, Gunes Karabulut Kurt, Polytechnique de Montreal

4 **Downlink Pilot Based Integrated Sensing and Communication in Cell-Free Networks**
Jiangwei Liao, University of Kent

5 **Semi-supervised Federated Learning for Misbehavior Detection of BSMs in Vehicular Networks**
Jiaqi Huang, University of Central Missouri; Yili Jiang, Georgia State University; Sohan Gyawali, East Carolina University; Zhiguo Zhou, University of Kansas Medical Center and Cancer Center; Fangtian Zhong, Montana State University

Tuesday, 8 October 2024 11:00 - 12:30 Polaris A

1G: Advanced 5G Systems

Chair: Ming Li, Dalian University of Technology

1 **Open-Source Software-Based Beyond 5G Emulator for Evaluating Dynamic Full-Duplex Cellular System**
Kazuki Takeda, Keiichi Mizutani, Hiroshi Harada, Kyoto University

2 **Performance Evaluation of Low Sub-THz 5G NR Sidelink for Ultra-Wideband Short-Range Communication**
Ryogo Okura, Yusuke Koda, Hiroshi Harada, Kyoto University

3 **Proactive Resource Management for Seamless Service: A Transition from 5G-Basic to 5G-Advanced Network Slicing**
Muhammad Ashar Tariq, Kyungpook National University; Malik Saad, Kyunpook National University; Mahnoor Ajmal, Donghyun Jeon, Kyungpook National University; Jinhong Kim, Electronics and Telecommunications Research Institute; Dongkyun Kim, Kyungpook National University, South Korea

Tuesday, 8 October 2024 11:00 - 12:30 Polaris B/C

1H: Deep Learning in Communications I

1 **Comparative Evaluation of Model Based Deep Learning Receivers in Coded MIMO Systems**
Aritra Mazumdar, Aalborg University; Carles Navarro Manchon, Keysight Technologies; Oana Elena Barbu, Nokia; Ramoni Adeogun, Aalborg University

2 **Deep Neural Network Based Reduced-Complexity Detector for Grassmann Constellation**
Ryusei Baba, Yokohama National University; Hiroki Iimori, Dr. Chandan Pradhan, Dr. Szabolcs Malomsoky, Ericsson Research; Dr. Naoki Ishikawa, Yokohama National University

3 **Deep Reinforcement Learning Based Computing Resource Allocation in Fog Radio Access Networks**
Tong Zhaowei, Zhuoran Li, Ahmad Gendia, Osamu Muta, Kyushu University

4 **Deep-Unfolded Iterative Soft-Input Soft-Output SIC Receiver for Coded MIMO Systems**
Aritra Mazumdar, Aalborg University; Oana Elena Barbu, Nokia, Denmark; Ramoni Adeogun, Aalborg University

5 **Model-Driven Deep Learning for Joint Waveform and Beamforming Design in RIS-ISAC Systems**
Peng Jiang, Dalian University of Technology; Rang Liu, University of California Irvine; Ming Li, Wei Wang, Qian Liu, Dalian University of Technology

Tuesday, 8 October 2024 11:00 - 12:30 Continental B

1I: Transmission Technologies I

Chair: Rui Dinis, Universidade Nova de Lisboa

1 **Design of Double-Hop Relay-Supported Mixed RF-THz Wireless Link**
Anil Yadav, Ranjan K. Mallik, Indian Institute of Technology Delhi

2 **Experimental Evaluation of OTFS for Underwater Acoustic Communications**
Yukang Xue, Xiyuan Zhu, Uzma Khan, Yahong Rosa Zheng, Lehigh University

3 **FSF-LoRa: Fractional-Spreading-Factor-LoRa for Flexible Resource Allocation**
Ryoya Saito, Koichi Adachi, The University of Electro-Communications

4 **Low-Complexity DoA Estimation using Transmissive Intelligent Surfaces**
Jingyuan Zhang, Ching-Lun Tai, Raghupathy Sivakumar, Douglas M. Blough, Georgia Institute of Technology

5 **Nonlinearity-Aided Hybrid ARQ for Satellite Communications**
João Madeira, Universidade Nova de Lisboa - Faculdade de Ciências e Tecnologias; Zahra, Instituto de Telecomunicações; João Guerreiro, FCT-Universidade Nova de Lisboa, Instituto de Telecomunicações; Rui Dinis, Universidade Nova de Lisboa

Tuesday, 8 October 2024 11:00 - 12:30 Continental C

1J: Heterogeneous Networks I

1 **A Scalable and Low-Complexity Coordination Framework for Self-Organizing Networks**
Eunsok Lee, Kihoon Kim, Subin Han, Sangheon Pack, Korea University

2 **Deployment Optimization for Mobile Integrated Access and Backhaul Nodes in Air-Ground Integrated Networks**
Cheng-Han Sung, Chun-Hao Chang, Ming-Chun Lee, National Yang Ming Chiao Tung University

3 **Improved Immersive Content Delivery in a Combined Service-based-Virtualized/Open-RAN Network Environment**
Rufino Cabrera, Jon Montalban, Erick Jimenez, Eneko Iradier, Pablo Angueira, University of the Basque Country; Gabriel-Miro Muntean, Dublin City University

4 **Latency in a 5G Network with Heterogeneous Traffic Containing Smart Grid URLLC Packets**
Priya Raghuraman, Mesut E. Baran, Ismail Guvenc, North Carolina State University

5 **Maritime Multi-hop Communication via 5G Core Networks: An Indoor Testbed Setup and Evaluation**
Seppo Horsmanheimo, Lotta Tuomimäki, Andrea Gentili, Johan Scholliers, VTT Technical Research Centre of Finland; Arvi Sadam, Ericsson; Kati Kõrbe Kaaree, Tallinn University of Technology

Tuesday, 8 October 2024 11:00 - 12:30 Oceanic B

1K: Intelligent Transportation I

1 **Enhancing Track Management Systems with Vehicle-To-Vehicle Enabled Sensor Fusion**
Thomas Billington, Ansh Gwash, Aadi Kothari, Lucas Izquierdo, Timothy Talty, Virginia Polytechnic Institute and State University

2 **Future Use Cases for Vehicular Communication based on Connected Functions**
Falk Dettinger, Matthias Weiß, Michael Weyrich, University of Stuttgart

3 **Millimeter Wave Cellular Networks for Teleoperated Vehicles: A Simulation Study**
Arno Troch, Michael Peeters, IDLab, University of Antwerp - imec; Johann Marquez-Barja, University of Antwerp - imec

4 **RealCAN: bringing real-time capabilities to canplayer**
Giovanni Gambigliani Zoccoli, Università di Modena e Reggio Emilia; Dario Stabili, University of Bologna; Mirco Marchetti, Università di Modena e Reggio Emilia

5 **Real-time Data-driven Smart Traffic Light Co-operative Framework for E-SIOV Mobility Management**
Anuj Sachan, Indian Institute of Technology Roorkee; Nisha Singh Chauhan, Thapar Institute of Engineering and Technology, Patiala; Neetesh Kumar, Indian Institute of Technology Roorkee

Tuesday, 8 October 2024 14:00 - 15:30 Hemisphere A

2A: Ad-Hoc Networks

1 **DDQN based Routing Algorithm for IRS-Assisted MANET Without Explicit CSI**
Xinyu Zhou, Ming-Min Zhao, Ming Lei, Zijian Chen, Minjian Zhao, Yunlong Cai, Zhejiang University

2 **Digital Twin Enabled Data-Driven Approach for Traffic Efficiency and Software-Defined Vehicular Network Optimization**
Mohammad Sajid Shahriar, North Carolina State University; Suresh Subramaniam, George Washington University; Motoharu Matsuura, University of Electro-Communications; Hiroshi Hasegawa, Nagoya University; Shih-Chun Lin, North Carolina State University

3 **Mobility-Adaptive Digital Twin Modeling for Post-Disaster Network Traffic Prediction**
Dong Jia, Qiang (John) Ye, University of Calgary

4 **Performance Evaluation of Coordination Function Selection in Multi-AP Coordination for Next-Generation Wireless LANs**
Kouki Iizuka, Hiroaki Hashida, Yuichi Kawamoto, Nei Kato, Tohoku University; Yoshio Urabe, Panasonic Intellectual Property Management Co., Ltd.; Hiroyuki Motozuka, Panasonic Corporation

Tuesday, 8 October 2024 14:00 - 15:30 Hemisphere B

2B: V2X II

1 **Generation of V2X messages from Carla Simulator for cooperative perception: Application to pedestrian safety**
Juliette Grosset, IMT Atlantique; Jean-Marie Bonnin, IRISA, IMT Atlantique; Alain-Jérôme Fougères, ECAM Rennes; Manabu Tsukada, the University of Tokyo; Moïse Djoko-Kouam, ECAM Rennes

2 **Impact of the DMRS Pattern on NR V2X Sidelink Communications**
Luca Lusvarghi, Baldomero Coll-Perales, Javier Gozálvez, Universidad Miguel Hernandez de Elche (UMH)

3 **Network Slicing as the Ultimate Enabler of Enhanced Service Quality in Vehicular-to-Everything (V2X) World**
Xhulio Limani, University of Antwerp-imec, IDLab; Vincent Charpentier, University of Antwerp-imec, IDLab-Faculty of Applied Engineering; Arno Troch, IDLab, University of Antwerp - imec; Miguel Camelo, University of Antwerp; Johann Marquez-Barja, Nina Slamnik-Kriještorac, University of Antwerp - imec

4 **Optimum Antenna Separation for V2V MIMO with Ground Reflections**
Gowhar Javanmardi, University of Porto; Ramiro Samano-Robles, Polytechnic Institute of Porto

Tuesday, 8 October 2024 14:00 - 15:30 Meridian B

2D: Privacy and Security II

1 **Detection and Mitigation of Subtle Feature-map Attacks in Pseudo Parallel Collaborative CNN Models for Distributed Edge Intelligence**
Syed R. Hasan, Tennessee Tech University

2 **GAN-Assisted Secret Key Generation Against Eavesdropping In Dynamic Indoor LiFi Networks**
Elmahedi Mahalal, Tennessee Technological University; Muhammad Ismail, TnTech, USA; Zi-Yang Wu, Northeastern University; Mostafa M. Fouda, Idaho State University; Zubair MD Fadllulah, Western University Canada

3 **Homomorphic Encryption-Enabled Federated Learning for Privacy-Preserving Intrusion Detection in Resource-Constrained IoV Networks**
Manh Bui, Hieu C. Nguyen, Dinh Thai Hoang, Diep Nguyen, University of Technology Sydney

4 **Incremental Learning for Enhancing Misbehavior Detection in Multi-Access Vehicular Networks**
Lan-Huong Nguyen, Van-Linh Nguyen, Ren-Hung Hwang, National Chung-Cheng University

Tuesday, 8 October 2024 14:00 - 15:30 Meridian C

2E: Recent Results II

1 **Closed-Form Performance of Receiver Beamformer Driven by Imperfect Clock Distribution Circuit**
Terry Guo, Tennessee Tech University

2 **Decentralized User Association Method to Maximize System-Level Throughput Satisfaction Rate in Co-existing Networks with HAPS and Terrestrial BSs**
Shoki Ikeda, Takanori Hara, Tokyo University of Science; Yuki Hokazono, Satoshi Suyama, Satoshi Nagata, NTT DOCOMO INC.; Kenichi Higuchi, Tokyo University of Science

3 **Demonstration on Practical Coherent Joint Transmission (CJT) with Phase Synchronization by Wireless Two-way Interferometry**
Kenichi Takizawa, NICT; Takaaki Nara, Tohoku University; Hajime Susukita, NICT

4 **Design and Development of Super-Compact Millimeter Wave Antenna for Future 5G Vehicular Applications**
Mehr E Munir, Moustafa M. Nasralla, Haleem Farman, Prince Sultan University

5 **Digital Twin Aided RIS Communication: Robust Beamforming and Interference Management**
Sadjad Alikhani, Ahmed Alkhateeb, Arizona State University

Tuesday, 8 October 2024 14:00 - 15:30 Meridian D&E

2F: Vehicular Networks II

1 **Latency Analysis of In-Vehicle Network for Advanced Driver Assistance System**
Hanyoung Park, Minji Cho, Yongjae Jang, DGIST; Ji-Woong Choi, Daegu Gyeongbuk Institute of Science and Technology

2 **Multi-Carrier MVNO Architecture for Mission-Critical Services**
Kengo Sasaki, Yuma Taguchi, Masaki Takanashi, Katsushi Sanda, Toyota Central R&D Labs., Inc.; Akihiro Nakao, University of Tokyo

3 **Service-Oriented Architecture Over UDSoCAN**
Brian Berg, Polaris Industries

4 **State Consistent Edge-enhanced Perception for Connected and Automated Vehicles**
Can Carlak, University of Michigan; Bo Yu, Fan Bai, General Motors Research; Z. Morley Mao, University of Michigan

5 **UE Cooperation between Vehicle UE and In-Vehicle UE for 5G/6G Connected Vehicles**
Arzu Karaer, Mohit Narula, Rohit Mann, Udita Bhattacherjee, Tien Viet Nguyen, Dev Putchala, Qualcomm Technologies, Inc.; Shailesh Patil, QUALCOMM; Gene Marsh, Qualcomm Technologies, Inc.

Tuesday, 8 October 2024 14:00 - 15:30 Polaris A

2G: Advanced Techniques in Communication

Chair: Yu Wang, Temple University

1 **Multi-View mmWave Radar Imaging With Few Measurements Based on Random Phase Shifting**
Weijie Zhou, Zhaoyang Zhang, Jingze Che, Xin Tong, Lei Liu, Zhejiang University

2 **Secured Quantum Identity Authentication Protocol for Quantum Networks**
Mohamed Shaban, Tennessee Technological University; Muhammad Ismail, TnTech

3 **Temporal Prompt Engineering for Generative Semantic Communication**
Yiru Wang, Peking University; Wanting Yang, Zehui Xiong, Singapore University of Technology and Design; Yuping Zhao, Peking University

Tuesday, 8 October 2024 14:00 - 15:30 Polaris B/C

2H: Deep Learning in Communications II

1 **Deep Learning Aided Robust RSRP Prediction in Cellular Networks**
Tanutsorn Wongphatcharatham, Watid Phakphisut, King Mongkut's Institute of Technology Ladkrabang; Tanun Jaruvitayakovit, Advanced Wireless Network Company Limited; Amnart Boonkajay, Institute for Infocomm Research; Jiajia Huang, Institute for Infocomm Research, A*STAR Research Entities

2 **Deep Learning-based Joint Pilot and Data Power Control in Cell-Free Massive MIMO Networks**
Nuwanthika Rajapaksha, Nandana Rajatheva, Matti Latva-aho, University of Oulu

3 **Occupancy-level-aware Indoor Terahertz Channel Prediction: A Robust Deep Learning Approach**
Eslam Hasan, Elmahedi Mahalal, Tennessee Technological University; Muhammad Ismail, TnTech; Zi-Yang Wu, Northeastern University; Mostafa M. Fouda, Idaho State University; Nei Kato, Tohoku University

4 **On Transfer Learning for a Fully Convolutional Deep Neural SIMO Receiver**
Uyoata Etuk Uyoata, Ramoni Adeogun, Aalborg University

5 **Performance Analysis and Improvement of Deep Reinforcement Learning based Hybrid Beamforming Design for Multi-User Systems**
Juhyoung Sung, Wongj Jeon, Sungyoon Cho, Kiwon Kwon, Kyoungwon Park, Korea Electronics Technology Institute

Tuesday, 8 October 2024 11:00 - 12:30 Hemisphere A

3A: 5G/MIMO Systems

1 **Autonomous Decentralized TRP Group Selection to Maximize System Throughput in Downlink Distributed MIMO System**
Koki Maeda, Takanori Hara, Tokyo University of Science; Satoshi Suyama, NTT DOCOMO, INC.; Satoshi Nagata, NTT DOCOMO INC.; Kenichi Higuchi, Tokyo University of Science

2 **Beam Selection Method Based on Angle-Domain Adaptive Beam Grouping for Massive MIMO Analog Beamforming Using NOMA in Cellular Downlink**
Azusa Matsumoto, Nobuhide Nonaka, Takanori Hara, Kenichi Higuchi, Tokyo University of Science

3 **BLER-SNR Curves for 5G NR MCS under AWGN Channel with Optimum Quantization**
Lianet Méndez-Monsanto Suárez, Universidad Carlos III de Madrid; Abigail MacQuarrie, Mostafa Rahmani Ghourtani, University of York; Manuel José López Morales, Ana García-Armada, Universidad Carlos III de Madrid; Alister Burr, University of York

4 **Traffic Priority-Aware 5G NR-U/Wi-Fi Coexistence with Deep Reinforcement Learning**
Mohammad Reza Fasihi, Brian L. Mark, George Mason University

Tuesday, 8 October 2024 16:00 - 17:30 Hemisphere B

3B: V2X III

1 **Proactive Resource Allocation in C-V2X for CACC-based Platoon Driving Service**
Taesik Nam, Yonsei University; Seungjae Lee, Hanyang University; Nathan Jeong, University of Alabama; Han-Shin Jo, Hanyang University; Jong-Gwan Yook, Yonsei University

2 **Revolutionizing Over-the-Air Updates: Practical Dual-band V2X Measurements**
Sherief Hashima, RIKEN-AIP; Zongdian Li, Tokyo Institute of Technology; Kohei Hatano, Kyushu University; Kei Sakaguchi, Tokyo Institute of Technology

3 **Security Architecture for Vehicle to Emergency Services (V2S) Communicating Over MQTT-SN**
Hemant Gupta, Amiya Nayak, University of Ottawa

4 **Task-oriented V2X Communications using Large Multi-modality Model**
Hyunsoo Kim, Seokhyun Jeong, Byonhyo Shim, Seoul National University

5 **Towards Smarter Vehicular Communications: Leveraging ORAN for Enhanced V2V Resources Management**
Franci Gjeci, Eugenio Moro, Francesco Linsalata, Ilario Filippini, Antonio Capone, Politecnico di Milano

Tuesday, 8 October 2024 16:00 - 17:30 Meridian B

3D: Privacy and Security III

1 **Mutual Authentication Protocol for Secure Vehicular Platoon Admission**
Rohini Poolat Parameswarath, Biplab Sikdar, National University of Singapore

2 **PriMiRe: Privacy-Preserving Misbehavior Reporting for ETSI C-ITS**
Alexander Willecke, Fynn Schulze, Lars Wolf, Technische Universität Braunschweig

3 **Secure Integrated Sensing and Communications (S-ISAC) Network**
Terry Guo, Tennessee Tech University; Husheng Li, Purdue University

4 **Timeliness in NextG Spectrum Sharing under Jamming Attacks with Deep Learning**
Maice Costa, Virginia Tech; Yalin Sagduyu, Intelligent Automation Inc./University of Maryland

Tuesday, 8 October 2024 16:00 - 17:30 Meridian C

3E: Recent Results III

1 **Employing signal statistics for universal fingerprinting solution**
Lucie Klus, TAU; Simona Lohan, Mikko Valkama, Tampere University

2 **Factor Graph Hopping Based FH-SCMA for Band-Limited and Large-Scale IoT Networks**
Qi Zeng, Sichuan University; Zilong liu, University of Essex

3 **Grant-Free Access in Multi-Cell Massive MIMO through Learning Cooperative Activity Detection over Riemannian Manifolds**
Rashed Shelim, Virginia Tech; Ahmed S. Ibrahim, Florida International University

4 **Hybrid Beamforming Optimization for mmWave IRS-Aided MIMO systems**
Jeongjae Lee, Songnam Hong, Hanyang University

5 **A Study on Bandwidth Management and User Classification in Hotspot Scenarios**
Iago Diogenes do Rego, Vicente Sousa, Universidade Federal do Rio Grande do Norte; Dario Vieira, EFREI; Eriberto Silva, Augusto Venâncio, Universidade Federal do Rio Grande do Norte

Tuesday, 8 October 2024 16:00 - 17:30 Meridian D&E

3F: Spectrum Management

Chair: Conghao Zhou, University of Waterloo

1 **A Measurement Campaign of Commercial Private Network Deployment in Indoor and Outdoor Environments**
Vanlin Sathya, Celona; Onur Sahin, Izmir Turk College, Izmir, Turkey; Lyutianyang Zhang, University of Washington; Mehmet Yavuz, Celona

2 **LTE-V2X Scalability and Spectrum Requirements to support Multiple V2X Services**
Miguel Sepulcre, Universidad Miguel Hernandez de Elche (UMH); Takayuki Shimizu, Toyota Motor North America; Javier Gozálvez, Universidad Miguel Hernandez de Elche (UMH); Mohammad Irfan Khan, 2InfoTech Labs, Toyota Motor North America R&D; Baldomero Coll-Perales, Mª Carmen Lucas Estañ, Universidad Miguel Hernandez de Elche (UMH); Onur Altintas, Toyota Motor North America R&D

3 **Opportunistic WiFi Spectrum Reuse for Car Density Estimation**
Wesam Al Amiri, James T. Jones, Terry Guo, Allen B. MacKenzie, Tennessee Technological University

4 **Scalable Spectrum Monitoring for Spectrum Management in Commercial Mobile Bands**
Humphrey Rutagemwa, Colin Brown, Ryan Fabek, Communications Research Centre Canada

5 **Towards Flexible Spectrum Access: Data-Driven Insights into Spectrum Demand**
Mohamad Alkadamani, Amir Ghasemi, Communications Research Centre Canada; Halim Yanikomeroglu, Carleton University

Tuesday, 8 October 2024 16:00 - 17:30 Polaris A

3G: Autonomous Systems

1 **Augmenting Dynamic Deadline-Driven Model with Deep Learning for Safer Autonomous Driving**
Yang Wu, Chien-Chung Shen, University of Delaware

2 **Autonomous Traffic and Communication Integrated Simulator for V2X Performance Evaluation**
Seungjae Lee, Hanyang University; Taesik Nam, Yonsei University; Kiwoong Park, Donghyeok Shin, Hanyang University; Wonyul Kang, Institute of Vehicle Engineering; Yongjae Jang, Jeonghwan Kim, DGIST; Ji-Woong Choi, Daegu Gyeongbuk Institute of Science and Technology; Jeongho Kwak, DGIST; Han-Shin Jo, Hanyang University

3 **IEEE 802.11 VANETs for Safety of Autonomous Driving: QoS Requirements & Benchmarking**
Xiaomin Ma, Oral Roberts University

4 **LSM: A Comprehensive Metric for Assessing the Safety of Lane Detection Systems in Autonomous Driving**
Jörg Gamerdinger, Sven Teufel, Stephan Amann, Georg Volk, Oliver Bringmann, University of Tübingen

5 **Tentacles: A Middleware with Multi-Network Communication Reliability for Vehicle-Infrastructure Cooperative Autonomous Driving**
Tianze Wu, Sa Wang, Yungang Bao, SKLP, Institute of Computing Technology, CAS & UCAS; Weisong Shi, University of Delaware, USA

Tuesday, 8 October 2024 16:00 - 17:30 Polaris B/C

3H: Federated Learning

1 **A Byzantine-Fault-Tolerant Federated Learning Method Using Tree-Decentralized Network and Knowledge Distillation for Internet of Vehicles**
Jinhua Chen, Zihan Zhao, Franck Junior Aboya Messou, Robert Katabarwa, Hosei University; Osama Alfarraj, King Saud University; Keping Yu, Hosei University; Mohsen Guizani, Qatar University

2 **FedRME: Distributed Radiomap Estimation via Federated Learning**
Weishan Zhang, George Mason University; Yue Wang, Georgia State University; Lingjia Liu, Virginia Tech; Zhi Tian, George Mason University

3 **Latency Minimization in Heterogeneous Federated Learning through Joint Compression and Resource Allocation**
Ouiame Marnissi, Hajar El Hammouti, ElHoucine Bergou, Mohammed VI Polytechnic University

4 **Over-the-Air Federated Learning with Model Heterogeneity: A Comparative Study**
Yi-Cheng Lai, Ronald Y. Chang, Academia Sinica; Wei-Yu Chiu, National Tsing Hua University

Tuesday, 8 October 2024 16:00 - 17:30 Continental B

3I: Transmission Technologies II

1 **Pilotless Self-Interference Canceller of IBFD for BLE in the Presence of Fractional Delay Paths**
Koichi Nishikawa, Shinsuke Ibi, Doshisha University; Takumi Takahashi, Osaka University; Hisato Iwai, Doshisha University

2 **Random Access Preamble Detection in OFDM Systems Using Constant-Amplitude Sequences**
Po-Jen Chen, Yen-Chia Tseng, Shih-Hao Lu, National Taiwan University; Wei-Chang Chen, National Taipei University of Technology; Char-Dir Chung, National Taiwan University

3 **Self-Interference Suppression with Length-Adaptive Digital Filter in In-Band Full-Duplex Relay**
Nann Win Moe Thet, Kenichi Takizawa,National Institute Of Information And Communications Technology

4 **Separation of Jamming and Useful Signals Using Blind Source Separation and Bussgang Technique**
Krzysztof Weso?owski, Poznan University of Technology

5 **Timing and Carrier Synchronization in SC-FDMA Extended System for DVB-RCS2**
Ke Zhou, Jie Wang, Chen Ming, Nengtang Hua, Huilin Song, Southeast University

Tuesday, 8 October 2024 16:00 - 17:30 Continental C

3J: Heterogeneous Networks II

1 **Joint Optimization of Computation and Communication Resources for RIS-Aided Multi-Cell Multi-User Wireless Caching Networks**
Yue-Rong Huang, Ming-Chun Lee, National Yang Ming Chiao Tung University

2 **Multi-User Signal Detection with UAV Relay Station in Uplink Heterogeneous Network**
Mana Furuichi, Yukitoshi Sanada, Keio University

3 **Robust Optimization of Computing and Communication Resources for Cache-Aided Wireless Edge Networks with Uncertainty**
Ming-Chun Lee, Yue-Rong Huang, National Yang Ming Chiao Tung University

4 **Slice-aware Resource Allocation and Admission Control for Smart Factory Wireless Networks**
Regina Ochonu, Universitat Politècnica de Catalunya, Barcelona Spain; Josep Vidal, UPC

5 **Smart Band Association for Wireless IoT Networks: a Personalized Federated Multi-Agent Deep Reinforcement Learning Approach**
Hugo De Oliveira, Paris-Saclay University, France - SOKENDAI, Japan; Megumi Kaneko, National Institute of Informatics; Lila Boukhatem, Paris-Saclay University, France

Tuesday, 8 October 2024 16:00 - 17:30 Oceanic B

3K: Intelligent Transportation II

1 **Drone-Car Collaboration for Advanced Mobility: A Survey**
Khairul Mottakin, Demetrius Johnson, Jonathan Schall, Ryan Sauer, Olivia Pellegrini, Jie Shen, Zheng Song, University of Michigan at Dearborn

2 **Enhancing LoRaWAN-Based Railway Signalling Systems for Secondary Lines: A Probabilistic Analysis of Multi-Hop Localization**
Danila Ferretti, WiLab, CNIT & La Sapienza, University of Rome; Davide Amato, Sadel S.p.A. AlmaViva Group; Roberto Verdone, DEI, University of Bologna

3 **ManeuverStack - A Stacked Vehicle Maneuver Prediction Model**
Pandeeswari Sankaranarayanan, Sruthi Sathy, Arvind Ramanujam, Rajesh Jayaprakash, Tata Consultancy Services

4 **Micro AI-For-Mobility â€“ Research Platform for AIBased Control Methods**
Daniel Diegel, Daniel Pölzleitner, DLR; Daniel Baumgartner, Deutsches Zentrum für Luft- und Raumfahrt; Jonathan Brembeck, German Aerospace Center (DLR)

5 **Railway LiDAR semantic segmentation based on intelligent semi-automated data annotation**
Florian Wulff, Bernd Schäufele, Fraunhofer Institute for Open Communication Technologies (FOKUS); Julian Pfeifer, Daimler Center for Automotive Information Technology Innovations; Ilja Radusch, Daimler Center for Automotive IT Innovations

Wednesday 9 October 2024

Wednesday, 9 October 2024 11:00 - 12:30 Hemisphere A

4A: RIS/IRS

1 **3D Codebook Construction Strategy based on Control Accuracy Index for Intelligent Reflecting Surface in Near-field**
Ryuhei Hibi, Hiroaki Hashida, Yuichi Kawamoto, Nei Kato, Tohoku University

2 **A Radio-Frequency-Based 2-D Convolutional Layer using Transmissive Intelligent Surfaces**
Jingyuan Zhang, Haige Chen, Douglas M. Blough, Georgia Institute of Technology

3 **A Radio-Frequency-Based Fully Connected Layer using 1-Bit and 2-Bit Transmissive Intelligent Surfaces**
Jingyuan Zhang, Haige Chen, Douglas M. Blough, Georgia Institute of Technology

4 **Frequency-Domain Equalization for GSVD based MIMO-NOMA Communications**
Oussama Ben Haj Belkacem, Instituto de Telecomunicacoes; Rui Dinis, Universidade Nova de Lisboa

5 **Reconfigurable Intelligent Surface Enabled Over-the-Air Federated Learning: A Deep Reinforcement Learning Approach**
Meng-Qian Alexander Wu, Ronald Y. Chang, Academia Sinica

Wednesday, 9 October 2024 11:00 - 12:30 Hemisphere B

4B: V2X IV

1 **Collision Avoidance at Intersection Using Vehicle-to-Vehicle Communication**
Logan McCorkendale, Skyler Hawkins, University of North Texas; Shane Nicole, Unmanned Experts; Jaya Sravani Mandapaka, Zachary McCorkendale, Kamesh Namuduri, University of North Texas

2 **MPMP: A Protocol to Transmit Long Messages for V2X Applications**
Gregory Su, Ragunathan "Raj" Rajkumar, Carnegie Mellon University

3 **Packet Rate Control for Maneuver Coordination in Congested V2X Communication Environments**
Daniel Maksimovski, Christian Facchi, Andreas Festag, Technische Hochschule Ingolstadt

4 **V2XArcSim: Evaluation of Efficient and Scalable 5G-based V2X Infrastructure Architectures**
Rahul Varma Chintalapati, Nishith Tripathi, Jeffrey.H.Reed, Virginia Tech

Wednesday, 9 October 2024 11:00 - 12:30 Oceanic A

4C: Unmanned Vehicle Communications I

1 **Assessing EKF-based Orientation Uncertainties and its Impact on the Channels of UAV-mounted RIS**
David Mueller, Kevin Weinberger, Raphael Dyrska, Aydin Sezgin, Martin Moennigmann, Ruhr-Universitaet Bochum

2 **Cluster Based Pseudo Hierarchical Decentralized Federated Learning in UAV Networks**
Veera Manikantha Rayudu Tummala, Abhishek Hazra, Indian Institute of Information Technology, Sri City; Alakesh Kalita, Singapore Institute of Technology and Design; Mohan Gurusamy, National University of Singapore

3 **DroneCAST – Physical Layer Design and Measurement-based Simulation Analysis in Urban Drone-to-Drone Communication Scenarios**
Dennis Becker, Lukas Marcel Schalk, German Aerospace Center (DLR)

4 **Camera Parameters Division Multiplexing Signal Transmission for Optical Camera Communication**
Mayu Ishii, Tokyo University of Agriculture and Technology; Shun Kaizu, Sony Semiconductor Solutions Corporation; Yu Nakayama, Tokyo University of Agriculture and Technology

5 **IRS-Assisted UAV Based FSO System: Modeling Approach for Hovering UAV**
Jinendra Sipani, Indian Institute of Technology Delhi; Pranav Sharda, University of Oxford; Manav R Bhatnagar, IIT Delhi

Wednesday, 9 October 2024 11:00 - 12:30 Meridian C

4E: Recent Results IV

1 **Incentive Mechanism Design in Semi-Asynchronous Blockchain-based Federated Learning**
Xuanzhang Liu, Jiyao Liu, Temple University; Xinliang Wei, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences; Yu Wang, Temple University

2 **Network Traffic Modelling and Prediction for 6G Metaverse Applications**
Haesik Kim, VTT Technical Research Centre of Finland

3 **Fixed Broadband Service via Starlink in Under-Served Areas - the Danish case**
Troels B. Sørensen, Preben Mogensen, Melisa López Lechuga, Aalborg University

4 **Load-Aware Handover Optimization in Heterogeneous Networks: A Multi-Objective Learning Approach**
Kihoon Kim, Eunsok Lee, Chanbin Bae, Sangheon Pack, Korea University

5 **Multi-Hop Communication System with Multi-Antenna Beamforming in IRDT Protocol**
Keigo Saito, Takeo Fujii, Koji Ishibashi, The University of Electro-Communications; Yu Shibata, Soma Toki, Jumpei Doi, Toru Hatae, Tokyo Gas Co. Ltd.

Wednesday, 9 October 2024 11:00 - 12:30 Meridian D&E

4F: 6G in Vehicular Communications

Chair: Kamesh Namuduri, University of Northern Texas

1 **6G Schedule and Application Traffic Alignment for Efficient Radio Resource Utilization**
Damir Hamidovic, Armin Hadziaganovic, Mahin Ahmed, Silicon Austria Labs; Raheeb Muzaffar, Silicon Austria Labs GmbH; Marilet De Andrade, Ericsson Research, Sweden; Joachim Sachs, Ericsson Research; Hans-Peter Bernhard, Silicon Austria Labs

2 **A Multi-Modal Simulation Framework to Enable Digital Twin-based V2X Communications in Dynamic Environments**
Lorenzo Cazzella, Francesco Linsalata, Maurizio Magarini, Matteo Matteucci, Umberto Spagnolini, Politecnico di Milano

3 **Integrated Communication and Sensing for Meeting Automotive Requirements in 5G/6G Connected Vehicles**
Preeti Kumari, Stelios Stefanatos, Arvind Singh Naruka, Hailiang Cai, Avinash Kondeppady, Ravi Gummadidala, Abdullah Njie, Arzu Karaer, Arik Gubeskys, Dev Putchala, Kapil Gulati, Gene Marsh, Shailesh Patil, Qualcomm Technologies, Inc.

4 **Using Meta-surfaces for Eliminating RF Cables in 5G/6G Connected Vehicles**
Sourjya Dutta, Kapil Gulati, Sungkil Rho, Patrick Connor, Allen Tran, Arik Gubeskys, Gene Marsh, Shailesh Patil, Qualcomm Technologies, Inc.

Wednesday, 9 October 2024 11:00 - 12:30 Polaris B/C

4H: Learning Techniques for Vehicular Communications

1 **A Joint Communication and Learning Design for Secure Federated Learning with Differential Privacy**
Licheng Lin, Zhaohui Yang, Qianqian Yang, Zhejiang University; Mingzhe Chen, University of Miami

2 **Collaborative CNN-Based Federated Learning for Steering Control in Diverse Driving Conditions**
Dhia Neifar, University of Michigan Dearborn; Junaid Farooq, University of Michigan-Dearborn; Hakim Ghazzai, King Abdullah University of Science and Technology; Mohamed Hadded, Abu Dhabi University

3 **Decentralized Federated Learning Using the Metropolis-Hastings for Highly Dynamic UAVs**
Mohammed Mynuddin, North Carolina A&T State University; Zayed Uddin Chowdhury, Happy Returns LLC; Reza Ahmari, Mahmoud Nabil, North Carolina A&T State University; Ahmad Alsharif, University of Alabama; Abdollah Homaifar, North Carolina A&T State University

4 **SON-RRM Intelligent Optimization Based on Cross-Layer Deep Reinforcement Learning**
Qianqian Wu, Hongcheng Zhuang, Lin Zhang, Sun Yat-sen University

Wednesday, 9 October 2024 14:00 - 15:30 Hemisphere A

5A: RIS-aided Communication

1 **Capacity-Maximizing Dynamic User Association in Double RIS-Aided Broadcast Networks**
Alireza Vahid, Rochester Institute of Technology

2 **Impact of Near-Field Conditions on the Performance of RIS-aided mmWave Communication Strategies**
David Campoy García, Olga Munoz, Antonio Pascual-Iserte, Universitat Politècnica de Catalunya

3 **Integrating Reconfigurable Intelligent Surfaces (RISs) into Indoor D-MIMO Networks for 6G**
Akshay Vayal Parambath, Chalmers University of Technology; Jose Flordelis, Sony Europe; Charitha Madapatha, Chalmers University of Technology; Fredrik Rusek, Erik L. Bengtsson, Sony Europe; Tommy Svensson, Chalmers University of Technology

4 **Joint Estimation of Direct and RIS-assisted Channels with Tensor Signal Modelling**
Alexander James Fernandes, Ioannis Psaromiligkos, McGill University

5 **RIS-Aided Phase Noise Compensation in MIMO Frequency-Selective Systems**
Pooja Nuti, The University of Texas at Austin; Keith R. Tinsley, Tektronix, Inc.; Brian Evans, The University of Texas at Austin

Wednesday, 9 October 2024 14:00 - 15:30 Hemisphere B

5B: Applications for IoV/IoT

1 **Is Collaborative Data Uploading Feasible? A Case for Los Angeles with Vehicular Micro Clouds**
Chunghan Lee, Toyota Motor North America R&D; Takamasa Higuchi, Toyota Motor Corporation; Seyhan Ucar, InfoTech Labs, Toyota Motor North America R&D; Naoya Kaneko, Toyota Motor Corporation; Onur Altintas, Kentaro Oguchi, Toyota Motor North America R&D

2 **MEC-Hopper: DRL-Based Adaptive Multi-Hop Service Provisioning in UAV-Assisted MEC**
Divya D Kulkarni, Manit Baser, Mohan Gurusamy, National University of Singapore

3 **Respiration and Heart Rate Estimation Using FMCW Radar on the Continuum**
Abdulellah Almalki, Huaping Liu, Oregon State University; Khurram Usman Mazher, Qualcomm Technologies Inc.

4 **SafeWalk: Early Warning System for Pedestrians**
Diogo Dias, INESC-ID, Insituto Superior Técnico, Universidade de Lisboa; Pedro Rosa, Miguel L. Pardal, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa

Wednesday, 9 October 2024 14:00 - 15:30 Oceanic A

5C: Unmanned Vehicle Communications II

1 **Deep Reinforcement Learning for Task Partitioning and Partial Offloading in UAV Networks**
Veera Manikantha Rayudu Tummala, Abhishek Hazra, Indian Institute of Information Technology, Sri City; Mohan Gurusamy, National University of Singapore; Sampath Kumar, Srivikas Varasala, Suhas N Reddy, Indian Institute of Information Technology, Sri City

2 **FedWAvg: Mitigating Model Contamination in UAV Networks through Federated Weighted Average for Weather Forecasting**
Balavardhan Reddy Konda, Veera Manikantha Rayudu Tummala, Indian Institute of Information Technology, Sri City; Mohan Gurusamy, National University of Singapore; Abhishek Hazra, Sai Kumar Reddy Ganugapenta, Praveen Kumar Siraparapu, Indian Institute of Information Technology, Sri City

3 **Joint Communication and Computing Resource Allocation for MEC-Empowered Control-Oriented UAV Systems**
Daohong Shen, Chengleyang Lei, Wei Feng, Tsinghua University; Yunfei Chen, University of Durham; Jinxia Cheng, China Mobile Research Institute; Ning Ge, Tsinghua University

4 **Multi-UAV-Assisted Emergency Caching Networks: UAV Location and NOMA Power Optimization**
Yue Yin, Tomoaki Ohtsuki, Keio University

5 **UAV Selection in Aerial Integrated Sensing and Communication Networks**
Petros Bithas, National and Kapodistrian University of Athens; George Efthymoglou, Athanasios Kanatas, University of Piraeus; Konstantinos Maliatsos, University of the Aegean

Wednesday, 9 October 2024 14:00 - 15:30 Meridian C

5E: Recent Results V

1 **On-Demand Collaborative Sensing with Digital Twin-Driven Resource Allocation**
Mushu Li, Lehigh University; Jie Gao, Carleton University; Conghao Zhou, University of Waterloo; Lian Zhao, Toronto Metropolitan University; Xuemin (Sherman) Shen, University of Waterloo

2 **Outdoor THz channel measurements at 300 GHz with observed multipath components beyond 1 km**
Wilhelm Keusgen, Technische Universität Berlin; Taro Eichler, Rohde & Schwarz

3 **Performance of Ambient Backscatter-Assisted NOMA signalling in an mMTC Network**
Sneha Singhal, Anand Jee, Shankar Prakriya, Indian Institute of Technology, Delhi

4 **Robust Precoding for FDD MISO Systems via Minorization Maximization**
Donia Ben Amor, Michael Joham, Wolfgang Utschick, Technical University of Munich

Wednesday, 9 October 2024 14:00 - 15:30 Meridian D&E

5F: Antennas, Propagation, and RF Design

Chair: Josep Jornet, Northeastern University

1 **A Millimeter Wave Air Filled SIW Horn Antenna with Tilted Beam**
Asif Alam, Florida International University; Muhmmad Shah Alam, Khalid AlMuhanna, Imam Mohammad Ibn Saud Islamic University

2 **Antenna beamwidth-dependent sub-THz propagation characteristics based on indoor measurements at 159 GHz**
Juyul Lee, Jae Joon Park, Heon-Kook Kwon, Byung Su Kang, Myung-Don Kim, ETRI

3 **Beamforming Design using UE Positions and 3D Terrain-Building in HAPS System**
Zhaojie Li, Siyuan Yang, Yue Yin, Mondher Bouazizi, Tomoaki Ohtsuki, Keio University

4 **Exact Statistics and Tight Approximations for RIS-Assisted Communications**
Maria Cecilia Luna Alvarado, University of Campinas, Brazil; Carlos Rafael Nogueira da Silva, Federal University of Tri?angulo Mineiro, Uberaba, Brazil; Nidhi Simmons, Queen's University Belfast; Paschalis Sofotasios, Khalifa University (UAE) and Tampere University; Simon L. Cotton, Queen's University Belfast; Michel Yacoub, State University of Campinas

5 **Indoor Propagation for Localization Purposes: from Underwater to the Air at 433MHz**
Michael Ta, Efrei Research Lab and Gustave Eiffel; Elizabeth Colin, EFREI Paris; Laurie Conteville, Efrei Paris Panthéon Assas Université; Jean Marc Laheurte, ESYCOM

6 **Via Assisted Dual-Band Array With High Isolation**
Durga Prasad Purbey, Indian Institute of Technology Kharagpur; Sandip Ghosal, National Institute of Technology Rourkela; Arijit De, Indian Institute of Technology Kharagpur

Wednesday, 9 October 2024 14:00 - 15:30 Polaris B/C

5H: Machine Learning I

1 **A Novel Intrusion Detection System Using Cyclic Redundancy Check Field for In-Vehicle Networks**
Hyungchul Im, Naeun Park, Seongsoo Lee, Soongsil university

2 **Bayesian Prediction for Dynamic Radio Tnterference**
Viet-Hoa Nguyen, Mitsubishi Electric R&D Centre Europe

3 **Distributed DQN-Based Frequency Block-Dependent Sleep Control of Base Stations for Improving Energy Efficiency Both in Up and Downlinks**
Yuma Shishido, Takanori Hara, Tokyo University of Science; Satoshi Suyama, Satoshi Nagata, NTT DOCOMO INC.; Kenichi Higuchi, Tokyo University of Science

4 **LoGra: an LSTM-DDPG Integrated MPQUIC Scheduler for Mobile Video Streaming**
VU, Hanoi University of Science and Technology; Trung Nguyen-Thanh, Phenikaa University; Thi Ha Ly Dinh, Nguyen Phi Le, Hanoi University of Science and Technology; Kien Nguyen, Chiba University

5 **Low Complexity CSI Feedback Method Using Reformer**
Yuki Saito, Mondher Bouazizi, Tomoaki Ohtsuki, Keio University

Wednesday, 9 October 2024 14:00 - 15:30 Amphitheater

5L: Precoding/Coding

1 **A Dynamic Adaptive SCL Decoding for Polar Codes Based on Frozen Bits**
Yupeng Jiang, Lijun Zhang, Beijing Jiaotong University

2 **MIMO Precoding at the Speed of Wireless: Precoder Prediction for MIMO-OTFS Systems**
Evan Allen, Karim Said, Virginia Tech; Robert Calderbank, Duke University; Lingjia Liu, Virginia Tech

3 **Polar Coded HARQ NOMA in Block Fading Channel with Short Code Length**
Huan-Lin Lai, Hsuan-Jung Su, National Taiwan University

4 **Precoder Design for Time-Varying mmWave MIMO Detection Based on Expectation Propagation**
Tomoharu Furudoi, Takumi Takahashi, Osaka University; Shinsuke Ibi, Doshisha University; Hideki Ochiai, Osaka University

5 **Recursive polar code construction for higher-order modulation**
Kirill Ivanov, Wei Yang, Jing Jiang, Qualcomm Technologies, Inc.; Liangming Wu, Qualcomm

Wednesday, 9 October 2024 16:00 - 17:30 Hemisphere A

6A: Satellite Networks I

Chair: Van-Linh Nguyen, National Chung-Cheng University

1 **Can Unsynchronized LEOs Provide 3D Orientation for a Ground Receiver?**
Don-Roberts Emenonye, Harpreet S. Dhillon, R. Michael Buehrer, Virginia Tech

2 **Evaluation and Analysis of Interference in NGSO Mega-Constellations in a Multi-Beam Satellite Scenario**
Kevin T. Li, Christian A. Hofmann, Andreas Knopp, Bundeswehr University Munich

3 **Integration of LoS MIMO RF and Optical Links via HAPS for High-Capacity Satellite Feeder Links**
Sayed Hasan Hariq, Rohit Iyer Seshadri, Hughes

4 **Seamless 5G Automotive Connectivity with Integrated Satellite Terrestrial Networks in C-Band**
Hung Nguyen-Kha, Vu Nguyen Ha, Eva Lagunas, Symeon Chatzinotas, University of Luxembourg; Joel Grotz, SES. S.A.

Wednesday, 9 October 2024 16:00 - 17:30 Hemisphere B

6B: Communications for IoV/IoT

2 **Multiple Access Point Coordinated Orthogonal Frequency Division Multiple Access Considering Channel Fairness of Non-Coordinated Nodes**
Mitsuni Hinohara, Hiroaki Hashida, Yuichi Kawamoto, Nei Kato, Tohoku University; Yoshio Urabe, Panasonic Intellectual Property Management Co., Ltd.; Hiroyuki Motozuka, Panasonic Corporation

3 **Phase Optimization and Relay Selection for Joint Relay and IRS-Assisted Communication**
Uyoata Etuk Uyoata, Aalborg University; Mobayode O. Akinsolu, Wrexham University; Abimbola O. Sangodoyin, University of Lincoln; Enoruwa Obayiuwana, University of Ife; Ramoni Adeogun, Aalborg University

4 **System-Level Emulation of 5G Sidelink MANETs**
Jamie Sloop, Evan Allen, Charlie Thornton, Lingjia Liu, Virginia Tech; Fred Templin, Boeing Research & Technology; Daniel J. Jakubisin, Virginia Tech

5 **Throughput Maximization in Grant-Free Power-Domain NOMA for 3D Distributed Users by Stochastic Geometry**
Yuta Ueda, Takeshi Hirai, Naoki Wakamiya, Osaka University

Wednesday, 9 October 2024 16:00 - 17:30 Oceanic A

6C: Unmanned Vehicle Communications III

1 **Enhancing Millimeter Wave Link Capacity in Adverse Weather Using Hybrid UAV Relays**
Muhammad Nafees, John Thompson, James Hopgood, University of Edinburgh

2 **Evaluation of Radio Interference Areas by Flight Path and Antenna Directivity of UAV in Urban Area**
Hideya So, Shonan Institute of Technology

3 **Experimental Evaluation of a Low-Cost UAV-Based System for Locating Ground Transmitters**
Boris Galkin, Lester Ho, Tyndall National Institute; Paul Brophy, Civil Defence, Ireland; Holger Claussen, Tyndall National Institute

4 **Narrowband Power Spectral Density Estimation Using a 40 MHz Channel Sounder on SDR Platform for UAV Applications**
Juan Muñoz, Pedagogical and Technological University of Colombia; Herman Fernández, Universidad Pedagógica y Tecnológica de Colombia; Lorenzo Rubio, Vicent Rodrigo Peñarrocha, Juan Reig, Universitat Politècnica de València

Wednesday, 9 October 2024 16:00 - 17:30 Meridian C

6E: Recent Results VI

1 **Reinforcement Learning-based UL/DL Splitter for Latency Reduction in Wireless TSN Networks**
Margarita Cabrera-Bean, Wenli Pan, Josep Vidal, Universitat Politècnica de Catalunya UPC

2 **System-Level Performance Metrics Sensitivity of an Electrified Heavy-Duty Mobile Manipulator**
Mohammad Bahari, Alvaro Paz, Jouni Mattila, Tampere University

3 **Towards effective V2X maneuver coordinations: state machine, challenges and countermeasures**
Rafael Molina-Masegosa, Universidad Miguel Hernandez de Elche (UMH); Sergei S. Avedisov, Toyota North America R&D - InfoTech Labs; Miguel Sepulcre, Javier Gozálvez, Universidad Miguel Hernandez de Elche (UMH); Yashar Zeiynali Farid, Toyota North America R&D - InfoTech Labs; Onur Altintas, Toyota Motor North America R&D

4 **VR Tells: C-V2X Will Help Your Driving**
Dhruba Sunuwar, Seungmo Kim, Georgia Southern University

5 **Wi-Fi 6E Mesh Networks: Where To Place The Extenders?**
Alejandro Ramírez-Arroyo, Sebastian Bro Damsgaard, Gilberto Berardinelli, Troels B. Sørensen, Preben Mogensen, Aalborg University; Jesper Kaagaard, Sky Labs Aalborg

Wednesday, 9 October 2024 16:00 - 17:30 Meridian D&E

6F: Localization I

Chair: Haesik Kim, VTT Technical Research Centre of Finland

1 **A New Weighted Least Squares Method for TDOA-AOA Localization**
Abdulellah Almalki, Huaping Liu, Oregon State University; Yanbin Zou, Shantou University

2 **A Robust UAV-Based Approach for Power-Modulated Jammer Localization Using DoA**
Zexin Fang, Bin Han, Hans D. Schotten, RPTU Kaiserslautern-Landau

3 **Channel Covariance based Fingerprint Localization**
Xinze Li, Hanan Al-Tous, Aalto University; Salah Eddine Hajri, Huawei Technologies CO. LTD.; Olav Tirkkonen, Aalto University

4 **Enabling Dynamic Indoor Localization by Employing Intersection over Union as a Metric**
Lucie Klus, Roman Klus, TAU; Joaquin Torres Sospedra, Universitat de València; Simona Lohan, Tampere University; Ivo Silva, Cristiano Pendão, University of Minho; Mikko Valkama, Tampere University

5 **Enhanced K-SVD Based Approach for Multi-Source 3D Localization with a Mobile Receiver**
Amir Mansourian, Alireza Fadakar, Saeed Akhavan, University of Tehran

Wednesday, 9 October 2024 16:00 - 17:30 Polaris B/C

6H: Machine Learning II

1 **Modeling of Time-varying Wireless Communication Channel with Fading and Shadowing**
Youngmin Lee, Xiaomin Ma, Andrew S.I.D. Lang, Oral Roberts University

2 **Optimizing LGBM for Multi-Classification of 5G SA Traffic**
Bounlhom Aphayavong, Shanghai-Paris Elite Institution of Technology; Xiao Fei, Jialiang Lu, Shanghai Jiao Tong University; Philippe Martins, Telecom Paris

3 **Parameterized and Custom Loss Functions: A Case for Network Traffic Prediction**
Evren Tuna, ULAK Communications Inc; Alkan Soysal, Virginia Tech

4 **Perception Assisted Millimeter Wave Beam Management for 5G/6G Connected Vehicles**
Mahmoud Ashour, Himaja Kesavareddigari, Kapil Gulati, Qualcomm Technologies, Inc.; Hong Cheng, Qualcomm Technologies, Inc; Gene Marsh, Qualcomm Technologies, Inc.; Shailesh Patil, QUALCOMM

5 **Plug-in UL-CSI-Assisted Precoder Upsampling Approach in Cellular FDD Systems**
Yu-Chien Lin, University of California at Davis; Yan Xin, Samsung Research America; Ta-Sung Lee, National Yang Ming Chiao Tung University; Charlie Zhang, Samsung; Yibo Ma, University of California, Davis; Zhi Ding, University of California at Davis

Wednesday, 9 October 2024 16:00 - 17:30 Amphitheater

6L: Energy Efficiency in Communications

Chair: Gunes Karabulut Kurt, Polytechnique Montreal

1 **RIS-Based Dual-Functional Access Point for Energy Efficiency in Cell-Free Systems**
Manwei Lu, Dalian University of Technology; Rang Liu, University of California Irvine; Sifan Liu, Ming Li, Wei Wang, Qian Liu, Dalian University of Technology

2 **Towards Energy- and Cost-Efficient 6G Networks**
Tommy Azzino, Aria Hasanzade Zonuzy, Jianghong Luo, Navid Abedini, Tao Luo, Qualcomm Technologies Inc

3 **UE-Assisted Energy Management for Predictive Traffic-Based Cell Switching in Base Stations**
Ping Chang, Yu-An Shao, Hung Pei-Yu, National Central University; Sheng-Shih Wang, Lunghwa University of Science and Technology; Shiann-Tsong Sheu, National Central University

Thursday 10 October 2024

Thursday, 10 October 2024 16:00 - 17:30 Hemisphere A

7A: Satellite Networks II

Chair: Hideya So, Shonan Institute of Technology

1 **Flexible User Mapping and Resource Allocation for Enhanced System Capacity in Multi-beam GEO Satellite Systems**
XinyuePeng, Haoyu Du, Chaoqun Cao, Chen Ming, Southeast University

2 **From Universe to Metaverse: IRS-Assisted Efficient Transmission for Hybrid Earth-Moon Network**
Chengcheng Lv, Shanghai Institute of Microsystem and Information Technology; Fei Shen, Chinese Academy of Sciences; Feng Yan, Lianfeng Shen, Southeast University; Yi Wu, Fujian Normal University

3 **Perspective on the impact of the massiveness of mega-constellations on diverse ecosystems**
Oscar Baselga, i2CAT Foundation; Anna Calveras, Universitat Politècnica de Catalunya; J.A. Ruiz-de-Azua, i2CAT Foundation

4 **Robust Positioning with LEO Satellites: Double-Difference Doppler Shift-Based Approach**
Md. Ali Hasan, Ajou University; M. Humayun Kabir, Islamic University, Bangladesh; Md. Shafiqul Islam, Sangmin Han, Wonjae Shin, Korea University

5 **Statistical Distribution of Beamforming Gains in Satellite Swarms Under Imperfect Phase Synchronization**
Biniam Tamiru, Konstantinos Ntontin, Liz Martinez Marrero, Symeon Chatzinotas, University of Luxembourg

Thursday, 10 October 2024 11:00 - 12:30 Hemisphere B

7B: IoT

1 **5G-IoT and Sustainability: Smart City Use Case**
Laurence Banda, University of the Witwatersrand; Mjumo Mzyece, Northwestern College; Fisseha Mekuria, Malmö University

2 **A Measurement-informed Approach to Modeling Underground IoT Communications**
Rummana Rahman, University of California, Irvine; Cheng-Hsun Lin, Cheng-Hsin Hsu, National Tsing Hua University; Nalini Venkatasubramanian, University of California, Irvine

3 **Enhancing Short-Term Load Forecasting in Internet of Things: A Hybrid Attention-based CNN-BiLSTM with Data Augmentation Approach**
Franck Junior Aboya Messou, Jinhua Chen, Robert Katabarwa, Hosei University, Japan; Zihan Zhao, Keping Yu, Hosei University

4 **MQTT-EES: Optimizing Energy Efficiency by Aggregating Sensing Tasks on IoT Devices**
Nico Bokhari, Zhengquan Li, University of Michigan; Zheng Song, University of Michigan at Dearborn

5 **UAV-Enabled Covert Cross-Technology Communication in Heterogeneous IoT Networks**
Xiaohao Xia, Haitham H. Esmat, Beatriz Lorenzo, Dennis Goeckel, University of Massachusetts

Thursday, 10 October 2024 11:00 - 12:30 Oceanic A

7C: Vehicular Communications I

1 **An Experimental Study of 2.4 GHz LoRa in Air-to-Ground Communication**
Néstor J. Hernández Marcano, Aarhus University; Christoffer Gjedsted Brask, Develco A/S; Liping Shi, Rune Hylsberg Jacobsen, Aarhus University

2 **Beamforming-enhanced Conditional Handover for Air-to-Ground Communications in 6G**
Stefan Neumann, Hamburg University of Technology; Thomas Meyerhoff, Airbus; Aizaz Shah, Rainer Grünheid, Gerhard Bauch, Hamburg University of Technology

3 **Feasibility of Radiated Two Stage Test Method on Evaluation of Vehicular 5G MIMO Performance**
Tai Huang, China Industry Innovation Alliance of ICVs; Ying Deng, Shuang Wan, China ICVs Research Institue Co. Ltd

4 **Impact of HARQ Retransmissions on Information Age in 5G NR Sidelink**
Chinmay Mahabal, Takayuki Shimizu, Toyota Motor North America

5 **Implementation and Experimental Evaluation of Nullforming-Based Interference Reduction Scheme for HAPS-Terrestrial Spectrum Sharing**
Koji Tashiro, Tsutomu Ishikawa, Kenji Hoshino, Atsushi Nagate, SoftBank Corp.

Thursday, 10 October 2024 11:00 - 12:30 Meridian B

7D: Radio Access Technology I

1 **Cooperative Detection for MEC Aided Multi-Static ISAC Systems**
Yihan Cang, Chen Ming, Southeast University; Zhaohui Yang, Zhejiang University

2 **Data-Driven Positioning of Drone Base Stations in Emergency Scenarios**
Tom Pijnappel, Eindhoven University of Technology; Hans van den Berg, TNO Information and Communication Technology; Sem Borst, Eindhoven University of Technology; Remco Litjens, TNO

3 **Dynamic Inter-Cell Interference Coordination to Optimize XR and eMBB Coexistence**
Pouria Paymard, Aalborg University; Abolfazl Amiri, Nokia; Troels E. Kolding, Nokia Bell Labs; Klaus Pedersen, Nokia

4 **Multi-Agent Deep Reinforcement Learning for Energy Efficient Multi-Hop STAR-RIS-Assisted Transmissions**
Pei-Hsiang Liao, National Yang Ming Chiao Tung University; Li-Hsiang Shen, National Central University; Po-Chen Wu, Kai-Ten Feng, National Yang Ming Chiao Tung University

5 **Remote Radio Head Multiclustering based Cell-Free Massive MIMO Systems**
Pere Garau Burguera, Hanan Al-Tous, Olav Tirkkonen, Aalto University

Thursday, 10 October 2024 11:00 - 12:30 Meridian C

7E: Emerging Technology for Communication

Chair: Naoki Ishikawa, Yokohama National University

1 **A Measurement of Commercial Outdoor Private Network Deployment in Refinery Industry**
Vanlin Sathya, Celona

2 **Autonomous Decentralized TRP Group Selection and Bandwidth Allocation in Downlink Distributed MIMO with Overlapped TRP Group Configuration**
Yuta Yagi, Takanori Hara, Tokyo University of Science; Satoshi Suyama, Satoshi Nagata, NTT DOCOMO INC.; Kenichi Higuchi, Tokyo University of Science

3 **Distributed Critic-Based Neuro-Fuzzy Learning in Swarm Autonomous Vehicles**
Javad Soleimani, École Polytechnique; Reza Farhangi, Université de Montréal; Gunes Karabulut Kurt, Polytechnique de Montreal

4 **Gradient Descent-based Optimal Sequence Design for Primary Synchronization Signal**
Byung-Jae Kwak, Jin Kyeong Kim, Woncheol Cho, Young-Jo Ko, Heesoo Lee, Electronics and Telecommunications Research Institute

5 **Grover Adaptive Search for Maximum Likelihood Detection of Generalized Spatial Modulation**
Kein Yukiyoshi, Taku Mikuriya, Yokohama National University; Hyeon Seok Rou, Giuseppe Abreu, Constructor University; Naoki Ishikawa, Yokohama National University

6 **Performance Analysis of a RIS-HAPS Assisted FSO-UWOC System for Ground-Air-Underwater Connectivity**
Rima Deka, Indian Institute of Information Technology Guwahati; Md Sahabul Alam, California State University, Northridge; Imtiaz Ahmed, Howard University; Sanya Anees, Netaji Subhas University of Tehnology

Thursday, 10 October 2024 11:00 - 12:30 Meridian D&E

7F: Localization II

Chair: Haleem Farman, Prince Sultan University

1 **Localization Using Convolutional Neural Networks with Mobile Array**
Alireza Fadakar, Amir Mansourian, Saeed Akhavan, University of Tehran

2 **Multipath Assisted Near-Field Localization for STAR-RIS Based mmWave Systems**
BinLiang Li, Fengjiao Zhang, Ming-Min Zhao, Ming Lei, Min Li, Zhejiang University

3 **Multi-Technology Localization-Assisted Millimeter Wave Beam Tracking**
Ramya Vasist, Vladica Sark, Jesus Gutiérrez, IHP - Leibniz-Institut für innovative Mikroelektronik; Eckhard Grass, IHP and Humboldt Uni

4 **RIS-aided Location Estimation Based on MVDR in Near-Field Conditions**
Adrián Pastor, Antonio Pascual-Iserte, Olga Munoz, Universitat Politècnica de Catalunya

5 **Sub-Resolution mmWave FMCW Radar-based Touch Localization using Deep Learning**
Raghunandan M Rao, Amit Kachroo, Koushik A Manjunatha, Morris Hsu, Rohit Kumar, Amazon Lab126

Thursday, 10 October 2024 11:00 - 12:30 Polaris B/C

7H: ML Techniques

1 **Beyond Linear Binning: Logarithmic Insights for Calibrated Machine Learning in Wireless Systems**
Rashika Raina, Nidhi Simmons, Queen's University Belfast; David E. Simmons, Dhali Holdings Ltd.; Michel Yacoub, State University of Campinas

2 **Multi-Agent Reinforcement Learning Approach Scheduling for In-X Subnetworks**
Ashvin Srinivasan, Ugrasen Singh, Olav Tirkkonen, Aalto University

3 **A Novel Approach to Signal Strength Prediction Using Machine Learning**
Mostafa S. Jassim, Thomas Kürner, Technische Universität Braunschweig

4 **Spectrum Prediction via Graph Structure Learning**
Dong Yang, Yue Wang, Zhipeng Cai, Yingshu Li, Georgia State University

5 **Towards Efficient and Private Machine Learning in Vehicular Networks: A Federated Learning Approach using Homomorphic Encryption**
Hieu C. Nguyen, Manh Bui, Dinh Thai Hoang, Diep Nguyen, Eryk Dutkiewicz, University of Technology Sydney

Thursday, 10 October 2024 14:00 - 15:30 Hemisphere A

8A: Vehicle Safety I

1 **AROD: Adaptive Real-Time Object Detection Based on Pixel Motion Speed**
Yu Liu, Kyoung-Don Kang, SUNY Binghamton

2 **Consensus-based Attack Detection and Cooperative Perception of Connected Vehicles**
Muzaffer Citir, Technische Universität Berlin; Sangyoung Park, Technical University of Berlin

3 **Enhancing Driver Awareness of Vulnerable Road Users through In-Vehicle Auditory Signals**
Kyoko Takii, Fuma Sawa, Wataru Kobayashi, Osaka University; Sangyoung Park, Technical University of Berlin; Muzaffer Citir, Technische Universität Berlin; Hiroki Nishikawa, Ittetsu Taniguchi, Takao Onoye, Osaka University

4 **On Enhancing Intersection Applications With Misbehavior Detection and Mitigation**
Jiahao Zhang, Ziyi Liu, Ines Ben Jemaa, Francesca Bassi, IRT Systemx; Fawzi Nashashibi, Inst. National de Recherche en Informatique et en Automatique (INRIA)

5 **Real time Risk Assessment for Autonomous Vehicles in Vehicular Security**
Yaman Qendah, Dominik Püllen, Stefan Katzenbeisser, University of Passau

Thursday, 10 October 2024 14:00 - 15:30 Hemisphere B

8B: IoV and Autonomous Vehicles

1 **3GPP SEAL as an Edge Application: The Ultimate Enabler of Flexible and Universal Communication between Vulnerable Road Users and Autonomous Vehicles**
Vincent Charpentier, University of Antwerp-imec, IDLab-Faculty of Applied Engineering; Amaryllis Leyendeckers, University of Antwerp Faculty of Applied Engineering; Miguel Camelo, University of Antwerp; Johann Marquez-Barja, University of Antwerp - imec; Nina Slamnik-Krijestorac, University of Antwerp

2 **AdaptAV: Continuous Adaption of Vision Models for Autonomous Vehicles Using Cloud-based Oracle**
Yuheng Zhu, Dhruva Ungrupulithaya, Boluo Ge, Man-Ki Yoon, North Carolina State University

3 **Communication-Aware Consistent Edge Selection for Mobile Users and Autonomous Vehicles**
Nazish Tahir, Ramviyas Parasuraman, Haijian Sun, University of Georgia

4 **LSTM-Based Proactive Congestion Management for Internet of Vehicle Networks**
Aly Sabri Abdalla, Mississippi State University; Ahmad Al-Kabbany, Ehab Badran, Arab Academy for Science, Technology, and Maritime Transport; Vuk Marojevic, Mississippi State University

5 **QoS-Aware Tripartite Evolutionary Game Strategy: A Task-Driven Performance Optimization Based on ISCC for IoV**
Shanhao Zhan, Gaoyu Luo, Xiamen University; Zhibin Gao, Jimei University; Yifeng Zhao, Lianfen Huang, Xiamen University

Thursday, 10 October 2024 14:00 - 15:30 Oceanic A

8C: Vehicular Communications II

1 **A Framework for Constrained Deployment Optimization of Wireless Mobile Sensor Networks**
Mohammadreza Barzegaran, Hamid Jafarkhani, University of California, Irvine

2 **LSTM-based Head-on Collision Warning System with a Decentralized Radio Sensing Approach**
Jorge Cardenas-Amaya, UASLP; Omar Contreras-Ponce, Robert Bosch Mexico; Carlos A. Gutierrez, Ruth Aguilar-Ponce, Francisco R. Castillo-Soria, Autonomous University of San Luis Potosí; Cesar A. Azurdia-Meza, Universidad de Chile

3 **Merits of intent sharing communication for platooning: energy efficiency and road capacity**
Ahmadreza Moradipari, Sergei S. Avedisov, Toyota North America R&D - InfoTech Labs

4 **Power Scheduling and Cost Optimization of a Grid Integrated PV and BESS Fast Charging using SARSA Reinforcement Learning**
Arifa Sultana, Xiang Ma, Hongjie Wang, Rose Qingyang Hu, Utah State University

5 **Quick SOME/IP - QUIC-based Service-Oriented Middleware for Software-Defined Vehicles**
Yang Wu, Chien-Chung Shen, University of Delaware

Thursday, 10 October 2024 14:00 - 15:30 Meridian B

8D: Radio Access Technology II

1 **An Improved Two-Stage Time Synchronization Scheme for OTFS Systems**
Chin-Liang Wang, Yu-Tang Li, Kai-Hsiang Ma, National Tsing Hua University

2 **RANFusion: A Comprehensive Tool for Simulating Handover In Next-G RAN**
Seyed bagher Hashemi Natanzi, Bo Tang, Worcester Polytechnic Institute

3 **Study on architecture and procedure for joint transmission including frame retransmission for IEEE 802.11 wireless LAN**
Keiichiro Mori,, Norimasa Yafune, Kazunobu Serizawa, Takuya Kurihara, Kazuto Yano, Toshikazu Sakano, Advanced Telecommunications Research Institute International

Thursday, 10 October 2024 14:00 - 15:30 Meridian C

8E: Next Generation Wireless

Chair: Sabit Ekin, Texas A&M University

1 **CSI Acquisition for Aerial IRS Supported Cell-Free Communication Systems**
Sarah Tanzina, Bangladesh University of Engineering and Technology; Imtiaz Ahmed, Howard University; Md Sahabul Alam, California State University, Northridge; Lutfa Akter, Bangladesh University of Engineering and Technology (BUET); Kamrul Hasan, Tennessee State University; Samia Tasnim, University of Toledo

2 **Digital Twin Powered Next Generation Wireless Networks: Construction, Validation, and Applications**
Aditya Jolly, Berk Akgun, Balwinder Sachdev, Divya Ravichandran, Muruganandam Jayabalan, Roohollah Amiri, Vikas Jain, Vinay Chande, Yitao Chen, Rupesh Acharya, Chandresh Tiwari, Connor Woodahl, Srinivas Yerramalli, Arumugam Kannan, Xiaoxia Zhang, Abhishek Kumar, Hai Hong, John Boyd, Rajat Prakash, Suresh Babu Mummana, Sumanth Govindappa, James Wilson, Qualcomm Technologies, Inc.

3 **Guiding Wireless Signals with Arrays of Metallic Linear Fresnel Reflectors: A Low-cost, Frequency-versatile, and Practical Approach**
Hieu Le, Oguz Bedir, Jian Tao, Mostafa Ibrahim, Sabit Ekin, Texas A&M University

4 **Large Language Models (LLMs) Assisted Wireless Network Deployment in Urban Settings**
Nurullah Sevim, Mostafa Ibrahim, Sabit Ekin, Texas A&M University

Thursday, 10 October 2024 14:00 - 15:30 Meridian D&E

8F: Positioning

Chair: Ugrasen Singh, Aalto University

1 **Implementation of an Transfer Learning and Fingerprint-Based Positioning System**
Nam-I Kim, TaeJung Kim, Electronics and Telecommunications Research Institute; Yujin Moon, Ewha Womans University; Young Hoon Jung, Kyungpook National University; Jee-Hyeon Na, Hungsub Kim, Electronics and Telecommunications Research Institute

2 **Joint Positioning and Cooperative Wireless Sensing: Design and Over-The-Air Verification**
Yucheng Dai, Qualcomm; Wooseok Nam, Qualcomm Technologies Inc; Jingchao Bao, Alireza Nooraiepour, Sony Akkarakaran, Qualcomm; Tao Luo, Qualcomm Technologies Inc

3 **Measurement Performance Verification of Asynchronous Method for Simultaneous Estimation of Object Position and Orientation**
Jaroslaw Sadowski, Olga Blaszkiewicz, Krzysztof Cwalina, Alicja Olejniczak, Piotr Rajchowski, Jacek Stefanski, Gdansk University of Technology

4 **Minimal Configurations to Achieve 3D Positioning with Unsynchronized LEO Satellites**
Don-Roberts Emenonye, Harpreet S. Dhillon, R. Michael Buehrer, Virginia Tech

5 **Towards End-to-end Implementation of 5G Positioning with Off-the-shelf Devices**
Samuele Zanini, IMT School for Advanced Studies, Lucca; Luca Petrucci, University of Rome Tor Vergata; Ivan Palama, University of Rome Tor Vergata and CNIT; Giuseppe Bianchi, University of Rome Tor Vergata; Stefania Bartoletti, University of Rome

Thursday, 10 October 2024 14:00 - 15:30 Polaris B/C

8H: mmWave with ML

1 **Energy-Efficient Sleep Mode Optimization of 5G mmWave Networks Using Deep Contextual MAB**
Saad Masrur, Ismail Guvenc, North Carolina State University; David Lopez Perez, Politechnical University of Valencia

2 **Online Energy-Efficient Beam Bandwidth Partitioning in mmWave Mobile Networks**
Zoubeir Mlika, Tri Nhu Do, Ecole Polytechnique Montreal; Adel Larabi, Jennie Diem Vo, Ericsson Canada; Jean-François Frigon, École Polytechnique de Montréal; François Leduc-Primeau, Ecole Polytechnique Montreal

3 **Pilot-less Machine Learning aided Phase Noise Estimation for 5G mmWaves Practical Deployments**
Lianet Méndez-Monsanto Suárez, Universidad Carlos III de Madrid; Randy Verdecia, Universidad Politécnica de Madrid; Ana García-Armada, Universidad Carlos III de Madrid; José I. Alonso, Universidad Politécnica de Madrid; Miguel Ángel Vázquez, CTTC; Ana Isabel Pérez-Neira, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC)

4 **Transformer-based Predictive Channel Estimation for mmWave Massive MIMO Systems**
Hyungyu Ju, Seokhyun Jeong, Seoul National University; Byungju Lee, Incheon National University; Byonhyo Shim, Seoul National University

5 **Visual Transformers for Cooperative Device-free Object Localization Using mmWave Signals**
Ziqi Wang, University of California, Los Angeles; June Namgoong, Taesang Yoo, Wooseok Nam, Qualcomm Technologies Inc; Yucheng Dai, Qualcomm; Akash Doshi, Tao Luo, Qualcomm Technologies Inc

Thursday, 10 October 2024 14:00 - 15:30 Continental B

8I: Beam Management in Advanced Systems

Chair: Terry Guo, Tennessee Technological University

1 **Distance-Dependent Beam Split Aided Low-Overhead Near-field Wideband Beam Training**
Tianyue Zheng, Linglong Dai, Tsinghua University

2 **Joint Beam and Power Allocation for Energy Efficient Capacity Enhancement in RIS-Assisted mmWave Networks**
Huan-Hsung Lin, Sau-Hsuan Wu, Chun-Hsien Ko, Yu-Chih Huang, National Yang Ming Chiao Tung University

3 **Multi-modal Sensing-aided Beam Management for 6G Communication Systems**
Hyunsoo Kim, Taeyup Roh, Byonhyo Shim, Seoul National University

4 **Sub-THz Communications Beyond 6G: Experimental Platform for Testing Beam Realignment Algorithms**
Sergey Petrushkevich, Northeastern University; Vitaly Petrov, KTH Royal Institute of Technology; Josep M. Jornet, Northeastern University

5 **Tiled Beamspace Processing for Scaling mmWave Massive MU-MIMO**
Jiyoon Han, University of Michigan; Canan Cebeci, University of California, Santa Barbara; Wei Tang, Zhengya Zhang, University of Michigan; Upamanyu Madhow, University of California, Santa Barbara

Thursday, 10 October 2024 14:00 - 15:30 Continental C

8J: Communication Channels

Chair: Imtiaz Ahmed, Howard University

1 **Analysis of 3GPP and Ray-Tracing Based Channel Model for 5G Industrial Network Planning**
Gurjot Singh Bhatia, SIRADEL; Universite Paris-Saclay; Yoann Corre, SIRADEL; Linus Thrybom, ABB AB, Corporate Research; Marco Di Renzo, CentraleSupélec, Paris-Saclay University

2 **Large-scale Outdoor Cell-free mMIMO Channel Measurement in an Urban Scenario at 3.5 GHz**
Yuning Zhang, Thomas Choi, Zihang Cheng, University of Southern California; Issei Kanno, Masaaki Ito, KDDI Research, Inc.; Jorge Gomez, Hussein Hammoud, Bowei Wu, Ashwani Pradhan, Kelvin Arana, Pramod Krishna, Tianyi Yang, Tyler Chen, Ishita Vasishtha, Haoyu Xie, Linyu Sun, Andreas F. Molisch, University of Southern California

3 **Terahertz and Millimeter-Wave D2D Channel Characterization in an Office Workstation**
Sahaj K. Jha, Georgia Institute of Technology; Linyu Sun, Naveed Abbasi, University of Southern California; Seun Sangodoyin, Georgia Institute of Technology

Thursday, 10 October 2024 14:00 - 15:30 Oceanic B

8K: MIMO in Advanced Systems

Chair: Husheng Li, Purdue Unviersity

1 **Massive MIMO Channel Estimation using few parameters in sparse propagation environments**
Álvaro, Matilde Sánchez-Fernández, Universidad Carlos III de Madrid; Xavier Artiga, Miguel Ángel Vázquez, centre tecnològic de telecomunicacions de catalunya; Antonia Tulino, Università di Napoli Federico II

2 **Performance of Linear MIMO Receiver Using Null-Space Expansion Technique over Time-Variant Channels**
Shohei Kobayashi, 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

3 **Performance of User Grouping Schemes in Collaborative MIMO Reception with a Focus on User Fairness**
Eiku Ando, Yukitoshi Sanada, Keio University

4 **Point Cloud Geometry and Attribute Transmission over MIMO Channels**
Miyata Naruto, Takuya Fujihashi, Takumi Takahashi, Osaka University; Shunsuke Saruwatari, Takashi Watanabe, Osaka University

5 **Sensing-aided Multi-modal Channel Prediction in 6G mmWave Massive MIMO Systems**
Jihoon Moon, Khoa Anh Ngo, Byonhyo Shim, Seoul National University

6 **Wireless Mobile Distributed-MIMO for 6G**
Kumar Sai Bondada, Daniel J. Jakubisin, Karim Said, R. Michael Buehrer, Lingjia Liu, Virginia Tech

Thursday, 10 October 2024 14:00 - 15:30 Amphitheater

8L: Energy Management for Vehicles

1 **Energy-Cautious Designation of Kinematic Parameters for a Sustainable Parallel-Serial Heavy-Duty Manipulator Driven by Electromechanical Linear Actuator**
Alvaro Paz, Mohammad Bahari, Jouni Mattila, Tampere University

2 **Optimizing EV Charging Recommendations Using Graph Neural Networks**
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

3 **Practical Battery Health Monitoring using Uncertainty-Aware Bayesian Neural Network**
Yunyi Zhao, ZHANG Wei, Singapore Institute of Technology; Qingyu Yan, Nanyang Technological University, Singapore; Man-Fai Ng, Agency for Science, Technology and Research; B. Sivaneasan, Singapore Institute of Technology; Cheng Xiang, National University of Singapore

4 **SkyGrid: Energy-Flow Optimization at Harmonized Aerial Intersections**
Sahand Khoshdel, Fatemeh Afghah, Qi Luo, Clemson University

5 **Utilizing Data-Driven Techniques to Improve Predictive Modeling of Connected Electric Vehicle Energy Consumption**
Ahmed ramzi Houalef, Florian Delavernhe, Université de Bourgogne; Sidi-Mohammed Senouci, University of Bourgogne, ISAT Nevers; El-Hassane Aglzim, Univ. Bourgogne Franche-Comte ISAT-DRIVE Nevers, France

Thursday, 10 October 2024 16:00 - 17:30 Hemisphere A

9A: Vehicle Safety II

1 **Advancing Autonomous UAVs: Safe Navigation and Object Avoidance in Dynamic Airspace**
Gavin Halford, University of North Texas

2 **Application of Commercial Connected Vehicle Telematics Data to Evaluate Drivers' Behavior at the Onset of Yellow in a Signalized Corridor**
Shoaib Mahmud, Yuhan Zhang, Christopher Day, Iowa State University

3 **Enhancing Traffic Light Detection and Classification through Federated Learning**
Ioannis Vondikakis, Ilias Panagiotopoulos, George Dimitrakopoulos, Harokopio University of Athens (HUA)

4 **Evaluating Vision-Language Models for Zero-Shot Detection, Classification, and Association of Motorcycles, Passengers, and Helmets**
Lucas Choi, Archbishop Mitty; Ross Greer, University of California San Diego

5 **Evaluation of Multi-Camera-Based Localization for Accurate Collision Risk Detection**
Maxime Cancouet, Romain Bellessort, Eric Nassor, Hervé Ruellan, Canon Research Centre France; Jean-Marie Bonnin, IRISA, IMT Atlantique

Thursday, 10 October 2024 16:00 - 17:30 Hemisphere B

9B: Protocols and Services for Wireless Networks

1 **Development of high-speed multipath backhaul system for a terahertz wireless LAN**
Norimasa Yafune, Kazuto Yano,, Keiichiro Mori,, Toshikazu Sakano, Advanced Telecommunications Research Institute International

2 **Implementing NAT Hole Punching with QUIC**
Liang Jinyu, Shenzhen University; Wei Xu, New York University; Taotao Wang, Qing Yang, Shengli Zhang, Shenzhen University

3 **Intelligent Handover Management Enabled by O-RAN and Deep Reinforcement Learning**
Jiongyu Dai, Shadab Mahboob, Haining Wang, Lingjia Liu, Virginia Tech

4 **Multipath Routing Compatible Congestion Control**
Tianfang Chang, Lin Cai, University of Victoria

5 **On Minimizing Symbol Error Probability for Antipodal Beamforming in MIMO Gaussian Wiretap Channels**
Nam Nguyen, An Vuong, Oregon State University; Thuan Nguyen, Worcester Polytechnic Institute; Thinh Nguyen, Oregon State University

Thursday, 10 October 2024 16:00 - 17:30 Oceanic A

9C: Semantic and Image Techniques

1 **Adaptive HARQ Design for Semantic Image Transmission**
Haiqian Liu, Ming-Min Zhao, Ming Lei, Liyan Li, Yunlong Cai, Minjian Zhao, Zhejiang University

2 **Channel Knowledge Maps Construction Based on Point Cloud Environment Information**
Yancheng Wang, Yutao Li, Guanying Chen, Chuan Huang, Chinese University of Hong Kong

3 **Knowledge-Aided Semantic Communication Leveraging Probabilistic Graphical Modeling**
Haowen Wan, Qianqian Yang, Jiancheng Tang, Zhiguo Shi, Zhejiang University

4 **Leveraging Neural Radiance Field and Semantic Communication for Robust 3D Reconstruction**
Rui Xu, Gaolei Li, Xi Lin, Shanghai Jiao Tong University; Yuchen Liu, North Carolina State University; Mingzhe Chen, University of Miami; Jianhua Li, Shanghai Jiao Tong University

5 **NeRA: Neural Reflectance and Attenuation Fields for Radio Map Reconstruction**
Yutao Li, Yancheng Wang, The Chinese University of Hong Kong, Shenzhen; Chuan Huang, Chinese University of Hong Kong

Thursday, 10 October 2024 16:00 - 17:30 Meridian B

9D: Radio Access Technology III

1 **Evaluation of Tomlinson-Harashima Precoding for Cellular System**
Omid Saatlou, Interdigital; Mehrtash Mehrabi, InterDigital Communications, Inc.; Loïc Canonne-Velasquez, InterDigital Canada; Mohammad Irfan, Afshin Haghighat, InterDigital Communications Inc.

2 **Experimental Evaluation of WLAN-based Object Detection Using CSI in Outdoor and Large-scale Indoor Environments**
Shunsuke Shimizu, Osamu Muta, Kyushu University; Shinya Otsuki, Tomoki Murakami, Hanae Otani, NTT Corporation

3 **Throughput Performance of Uplink Beamforming Transmission through Terminal Collaboration**
Riku Nakaoka, Eiku Ando, Yukitoshi Sanada, Keio University

Thursday, 10 October 2024 16:00 - 17:30 Meridian C

9E: Sensor Networks

1 **DBDCC: Density based Distorted Circle Clustering for Energy Efficient Wireless Sensor Networks**
Kandarp Devmurari, DA IICT Gandhinagar, Microsoft India; Manish Kumar, DA IICT Gandhinagar, India; Kunwar Pritiraj Rajput, SPARC, University of Luxembourg, Luxembourg

2 **Low-Cost Airdropping Sensor System Based on Light Balloons and LoRa Communication**
Tatsuya Iizuka, Naoto Endo, Hiroshi Matsubara, Masaki Hisada, Nippon Telegraph and Telephone Corporation

3 **Novel Environmental Recognition Scheme with Mobile Data Gathering Station in Physical Wireless Parameter Conversion Sensor Networks**
Toshi Ito, Osamu Takyu, Shinshu University; Mai Ohta, Fukuoka University; Takeo Fujii, Koichi Adachi, The University of Electro-Communications

4 **Smart Road Stud: Wireless Sensor Networks for Vehicle Sensing**
Yanli Sun, Harbin Institute of Technology; Yimeng Feng, Macquarie University; Hua Wang, Wei Quan, Harbin Institute of Technology; Hao Li, Broadvision Engineering Consultants; Jiayu Sun, Jixuan Cheng, Harbin Institute of Technology

Thursday, 10 October 2024 16:00 - 17:30 Meridian D&E

9F: Positioning Technologies

Chair: Uyoata Etuk Uyoata, Aalborg University

1 **A Genetic Algorithm approach for Antenna Delay calibration in UWB ranging**
Julien Schrive, Qorvo Inc.; Adrien van den Bossche, Réjane Dalce, Thierry Val, Institut de Recherche en Informatique de Toulouse

2 **MARL-aided Spectral Efficiency Maximization in Multi-Tier NTN Operating Multi-Connectivity with Different Waveforms for PAYG Service**
Michael N. Dazhi, Hayder Al-Hraishawi, Bhavani Shankar, Symeon Chatzinotas, University of Luxembourg

3 **Multi-Source 2D-AOA Estimation via Deep Learning**
Alireza Fadakar, Ashkan Jafari, Saeed Akhavan, School of Electrical and Computer Engineering, University of Tehran

Thursday, 10 October 2024 16:00 - 17:30 Polaris B/C

9H: Networks with ML

1 **A DRL-Based NOMA Power Allocation Scheme for LEO Satellite Networks**
Jiun-Ian Lee, Yi-Huai Hsu, Yuan Ze University; Shi-Sheng Sun, National Chengchi University

2 **Investigating Sparse Neural Networks for Radio Frequency Fingerprint Identification**
Emma Bothereau, Alice Chillet, Robin Gerzaguet, Matthieu Gautier, Olivier Berder, University of Rennes 1 / IRISA

3 **LoRa Radio Frequency Fingerprinting Using a Hybrid Quantum-Classical Neural Network**
To Truong An, Simon L. Cotton, Queen's University Belfast; Junqing Zhang, University of Liverpool; Yuan Ding, Heriot-Watt University; Trung Q. Duong, Queen's University Belfast

4 **Unsupervised Graph-based Learning Method for Sub-band Allocation in 6G Subnetworks**
Daniel Abode, Ramoni Adeogun, Aalborg University; Lou Salaun, Nokia Bell Labs; Renato Abreu, Thomas Jacobsen, Nokia Standards; Gilberto Berardinelli, Aalborg University

Thursday, 10 October 2024 16:00 - 17:30 Continental B

9I: Beamforming

1 **3D Beamforming Through Joint Phase-Time Arrays**
Ozlem Yildiz, New York University; Ahmad AlAmmouri, Jianhua Mo, Younghan Nam, Samsung Research America; Elza Erkip, New York University; Charlie Zhang, Samsung

2 **Distortion-Aware Beamforming Design for MU-MISO Systems**
Mengzhen Liu, Dalian University of Technology; Rang Liu, University of California Irvine; Ming Li, Qian Liu, Dalian University of Technology

3 **Joint Beamforming and Subcarrier Allocation Design for MIMO-OFDM Dual-Functional Radar and Communication Systems**
Yun-Shuo Liu, S.-F. Wu, Ming-Chun Lee, Chi-Han Chou, Ta-Sung Lee, National Yang Ming Chiao Tung University

4 **Robust Beamforming With Multi-Panel Array for mmWave Channels Over Mobility and Blockage**
Kanta Terui, Kabuto Arai, Koji Ishibashi, The University of Electro-Communications

Thursday, 10 October 2024 16:00 - 17:30 Continental C

9J: Communication Theory

1 **Advancing 5G Duplexing to 6G**
Muhammad Abdelghaffar, Qualcomm Technologies; Thomas V.P. Santhappan, Qualcomm Technoglies; Yeliz Tokgoz, Kiran Mukkavilli, Qualcomm Technologies; Tingfang Ji, Qualcomm Technologies Inc.

2 **Information-Theoretic Analysis of Vision-Aided ISAC over a Discrete Memoryless Channel**
Xiangliu Tu, Virginia Tech; Husheng Li, Purdue University; Harpreet S. Dhillon, Virginia Tech

3 **Simulation Research of LDPC Coding Schemes in Satellite Communication with SC-FDMA**
Nengtang Hua, Jie Wang, Chen Ming, Ke Zhou, Huilin Song, Southeast University

4 **Volterra-Based Machine Learning Compensation of Non-Linear Distortions in an Optoelectronic Terahertz Communication System**
Bashar Husain, Kevin Kolpatzeck, Lars Haering, Andreas Czylwik, University of Duisburg - Essen

Thursday, 10 October 2024 16:00 - 17:30 Oceanic B

9K: MIMO in Transmission

1 **A Triangular Lattice Framework for Massive MIMO Pilot Decontamination Schemes**
Jacob Peterson, Toluwaleke Olutayo, Benoit Champagne, McGill University

2 **Approximate Partially Decentralized Linear EZF Precoding for Massive MU-MIMO Systems**
Brikena Kaziu, Nikita Shanin, Friedrich-Alexander-Universität (FAU) Erlangen-Nürnberg; Danilo Spano, Li Wang, Huawei Technologies Sweden AB; Wolfgang Gerstacker, Universität Erlangen-Nürnberg; Robert Schober, Friedrich-Alexander-Universität Erlangen-Nürnberg

3 **Scalable Reciprocity OTA Calibration for Cell-Free Massive MIMO System**
Dekun Zhang, B. Bai, Xidian University; Weixiao Meng, Harbin Institute of Technology

Thursday, 10 October 2024 16:00 - 17:30 Amphitheater

9L: Power Allocation

1 **Energy-Efficient Power Allocation in Multi-User mmWave Systems With Rate-Splitting Multiple Access**
Jared Everett, Mohammad Reza Fasihi, Igor Griva, Brian L. Mark, George Mason University

2 **Joint User Association and Power Allocation in Multi-connectivity Enabled mmWave Networks: a Perspective of Rate Trade-off among Users**
Songze Li, ZheJiang University of Technology; Ailing Chen, Zhenzhou Tang, Wenzhou University

3 **Low-Complexity Power Allocation for Outage Balancing in NOMA Systems with Imperfect CSIT**
Shih-Hsuan Huang, Chin-Liang Wang, National Tsing Hua University

4 **Power Allocation for Frequency-Modulated OFDM Wireless Systems**
Joohyun Son, Sooyong Choi, Yonsei University; Ian P. Roberts, University of California, Los Angeles; Daesik Hong, Yonsei University

VTC2024-Fall Virtual Papers

Tuesday 8 October 2024

Tuesday, 8 October 2024 11:00 - 12:30 Online

1Va: 6G and Emerging Technologies

1 **Ambiguity Function Analysis of Frequency-Hopping MIMO Radar with Movable Antennas**
Xiang Chen, Ming-Min Zhao, Liyan Li, Minjian Zhao, Zhejiang University

2 **A Socio-Economic Approach towards Trustworthy 6G Marketplaces of Softwarized Resources**
Lalita Jagadeesan, Ilaria Malanchini, Nokia Bell Labs; Lizette Velazquez, Nokia

3 **Benchmarking Network Functionality: Performance Evaluation of SDN Controllers on Different Network Functions**
Md Fahad Monir, Azwad Fawad Hasan, Independent University, Bangladesh; Md Mozammal Hoque, University of Houston; Tarem Ahmed, Independent University, Bangladesh; Fabrizio Granelli, University of Trento

4 **Compatibility study of Orthogonal Time Frequency Space and 5G NR based on Open Source RAN**
Bingxuan Li, Luhan Wang, Jingguo Zhao, Zhaoming Lu,Beijing University of Post and Telecommunication

5 **Desired Signal Power Maximization With Interference Alignment for RIS Aided MIMO Interference Network**
Kaimin Wang, Cong Sun, Beijing University of Posts and Telecommunications

6 **Improving Connectivity Of RIS-Assisted UAV Networks Using RIS Partitioning And Deployment**
Mohammed Saif, Shahrokh Valaee, University of Toronto

7 **Joint Waveform Design for Communication and Sensing with Adjustable PAPR**
Berkan Kilic, Kenan Turbic, Martin Kasparick, Slawomir Stanczak, Fraunhofer Heinrich Hertz Institute

8 **Single-Snapshot SLAM in Wireless Communication with Single-Antenna Transceivers**
Meng Zhang, Shidong Zhou, Tsinghua University

9 **Wireless Powered and Backscattering Mobile Edge Computing Systems with Movable Antennas**
Yining Zhang, Juai Wu, Bin Lyu, Nanjing University of Posts and Telecommunications; Yan Liu, Tongji University

10 **Active IRS-Enabled Integrated Sensing and Communication: Extending Sensing Coverage to Non-Line-of-Sight Areas**
Song Fan, Huan Zhang, Yu Sun, Hu Jin, Hanyang University

11 **Cramer-Rao Lower Bound and Fairness Optimization in STAR-RIS Assisted ISAC Systems**
Ruidong Wang, Yuwen Cao, Donghua University; Tomoaki Ohtsuki, Keio University; Jiguang He, TII

12 **Enhanced Vehicle Detection by Optimized Image Compression in NextG Wireless Network Autonomous Vehicles System**
Md Fahad Monir, Md Junayed Hossain, Mohammad Barkatullah, Independent University Bangladesh; Md Mozammal Hoque, University

of Houston; Md. Zoheb Hassan, Universite Laval; Tarem Ahmed, Independent University Bangladesh

13 **How Phase Errors Influence Phase-Dependent Amplitudes in Near-Field RISs?**
Ke Wang, Macao Polytechnic University; Rongbin Chen, Jiangmen Polytechnic; Chan-Tong Lam, Benjamin K. Ng, Chaorong Zhang, Macao Polytechnic University

14 **Riding over Multiuser NOMA Carrier: A Spectrally-Efficient RIS-Enabled Symbiotic Backscatter System**
Mingkai Chen, Haiyang Ding, National University of Defense Technology; Maged Elkashlan, Queen Mary University of London; Chau Yuen, Nanyang Technological University; Jules M. Moualeu, University of the Witwatersrand; Shilian Wang, Zhen Wen, National University of Defense Technology; Fambirai Takawira, University of the Witwatersrand

15 **TransRx-6G-V2X : Transformer Encoder-Based Deep Neural Receiver For Next Generation of Cellular Vehicular Communications**
Osama Saleem, INSA Rouen; Soheyb Ribouh, University of Rouen Normandy; Mohammed Alfaqawi, VEDECOM; Abdelaziz Bensrhair, INSA Rouen; Pierre Merdrignac, VEDECOM Institute

16 **Deep Learning based Multi-objective Admission Control: A Novel O-RAN Compliant Approach**
Marwan Mansour, Dell Technologies Egypt; Umair Sajid Hashmi, Jeebak Mitra, Dell Technologies Canada; Zeyad Abdelrahim, Hala Hamdy, Mina Khalaf, Omar Nael, Dell Technologies Egypt; Gwenael Poitau, Dell Technologies Canada; Mohamed Abouzeid, Dell Technologies Egypt

17 **Doppler Ambiguity Elimination Using 5G Signals in Integrated Sensing and Communication**
Keivan Khosroshahi, Université Paris-Saclay, CNRS, CentraleSupélec; Philippe Sehier, Nokia; Sami Mekki, Nokia Networks France

18 **Hybrid-RIS Empowered UAV-Aided ISAC Systems**
Prajwalita Saikia, National Sun Yat-sen University; Anand Jee, Indian Institute of Technology Delhi, India; Keshav Singh, National Sun Yat-sen University; Theodoros Tsiftsis, University of Thessaly; Alexandros Boulogeorgos, University of Piraeus

19 **Leveraging parallelizability and channel structure in THz-band, Tbps channel-code decoding**
Hakim Jemaa, King Abdullah University of Science and Technology; Hadi Sarieddeen, American University of Beirut (AUB); Simon Tarboush, Independent Researcher; Mohamed-Slim Alouini, Tareq Y. Al-Naffouri, King Abdullah University of Science and Technology

Tuesday, 8 October 2024 11:00 - 12:30 Online

1Vb: Antenna Systems, Propagation, and RF Design

1 **105 GHz Indoor Omnidirectional Power Delay Profile Measurement in Personal Office Desktop Environment**
Masaki Maeda, Yusuke Koda, Norichika Ohmi, Hiroshi Harada, Kyoto University

2 **A Fast Rotating-Mirror Sounder for Dynamic Millimeter-Wave Channel Characterization**
Ali Al-ameri, Juan Sanchez, Fredrik Tufvesson, Xuesong Cai, Lund University

3 **A Two-Stage Estimator for Time-Varying Millimetre Wave Channel via Covariance Matrix**
Tianyu Jiang, Yan Yang, Beijing Jiaotong University

4 **An Experimental Study of E-Band Transmission Performance over 52-Kilometer Terrestrial Links**
Zhenyang Guo, Bofan Wu, Xiqing Liang, Jinghan Gao, Xichen Liu, Xianbing Zou, Xiang Gao, University of Electronic Science and Technology of China

5 **Multi-Frequency Channel Measurement in Smart Factories: Comparative Analysis with 3GPP InF Scenarios**
Qingmei Mo, Yuxiang Zhang, Jialin Wang, Zeyong Chai, Huiwen Gong, Yameng Liu, Zhang Jianhua, Beijing University of Posts and Telecommunications

6 **Analyzing Non-Stationary TDL Channel Models Based on Measurement Data**
Mahboubeh Ansari, Lennart Thielecke, Thomas Kürner, Technische Universität Braunschweig

Tuesday, 8 October 2024 14:00 - 15:30 Online

2V: Electric Vehicles, Vehicular Electronics and Intelligent Transportation

1 **3D YOLO-SM: End-to-End Approach for Real-time Traffic Light Detection and Recognition in Complex Scenarios**
Kshitiz Kumar, D Santhosh Reddy, P. Rajalakshmi, Indian Institute of Technology Hyderabad

2 **A Cost-Sensitive LSTM Model for Driving Risk Assessment from Vehicular Trajectory Data**
Osho, Pranay, Pradeep Kumar, Suchetana Chakraborty, Indian Institute of Technology, Jodhpur

3 **Anomaly Detection in Autonomous Vehicleâ€™s Lidar Sensor Data Using Variational Autoencoders**
Nourhane Sboui, Mohamed Hadded, Abu Dhabi University; Hakim Ghazzai, King Abdullah University of Science and Technology; Mourad Elhadef, Abu Dhabi University; Gianluca Setti, King Abdullah University of Science and Technology (KAUST)

4 **Multi-Robot Energy Persistence using Load Sharing for Battery Driven Robots**
Sanghamitra Mishra, Arijit Mondal, Samrat Mondal, Indian Institute of Technology Patna

5 **NR-V2X for Cooperative Adaptive Cruise Control**
Ameur Lelio Chelli, Maria Luisa Merani, University of Modena and Reggio Emilia; Luca Lusvarghi, Universidad Miguel Hernandez de Elche; Federico Pasquinucci, University of Modena and Reggio Emilia; Riccardo Donà, Konstantinos Mattas, Biagio Ciuffo, EU Joint Research Center

6 **Privacy-Preserving Training of Monocular Depth Estimators via Self-Supervised Federated Learning**
Elton Soares, IBM Research; Carlos Alberto Vieira Campos, Federal University of the State of Rio de Janeiro

7 **Towards Efficient and Sustainable Transportation: A Novel Energy Management Strategy for Multi-Stack Fuel Cell Electric Vehicles**
Kemal Kaya, Onur Dömez, Burhan Özece, AVL Research & Engineering

8 **Charging Scheduling with Computation Energy Consumption and Carbon Tax in Vehicle Networks**
Lu Peng, Biling Zhang, Beijing University of Posts and Telecommunications; Jung-Lang Yu, Fu Jen Catholic University

9 **Crowdsensing the Speed Violation Detection with Privacy Preservation**
Sai V. Mullapudi, Iman Vakilinia, Zornitza G. Prodanoff, University of North Florida; Wenqiang Jin, Hunan University

10 **Evaluating Driver Reactions to Speed Bumps and Potholes for Enhancing Autonomous Vehicle Performance**
Rishav Kumar, Devadas Kuna, D Santhosh Reddy, Indian Institute of Technology, Hyderabad; Yuki Uetsuki, Sonkar Dinesh, Suzuki Motor Corporation, Japan; P. Rajalakshmi, NMICPS TiHAN, Indian Institute of Technology Hyderabad

11 **Evaluating Energy Consumption Prediction Models of a Quadcopter Unmanned Aerial Vehicle**
Arupa Sarkar, University of Wollongong; Fendy Santoso, Charles Sturt University; Jun Shen, University of Wollongong; Bo Du, Griffith University; Akbar Telikani, Jun Yan, University of Wollongong

12 **Real-time RL-based Matching with H3 Geohash Partitioning in Smart Freight Platform**
Ali Shiri, Polytechnique Montréal; Asad YarAhmadi, Samira Keivanpour, Polytechnique Montreal; Amina Lamghari, University du Québec à Trois-Rivières

13 **Robust Adaptive Modular Perception System (RAMPS): A Node-Based Processing Framework for Training and Testing Vehicle Perception Systems**
Daniel Kent, Dominic Mazza, Hayder Radha, Michigan State University

14 **SMEBE-CAN: Selective Multicast Encryption Enabled Broadcast Encryption for CAN 2.0B**
Basker Palaniswamy, Ting-Yu Chen, Arijit Karati, National Sun Yat-sen University

15 **State Model and Energy Consumption Analysis based on Automotive Lighting Signals**
Osman Aksu, Michael Schmid, BMW AG

Tuesday, 8 October 2024 16:00 - 17:30 Online

3V: IoV, IoT, M2M, Sensor Networks, and Ad-Hoc Networking

1 **Age of Information Analysis for Task Offloading in an Energy Harvesting Status Update System**
Islam S. Abdelfattah, Faculty of Engineering, Alexandria University; Ahmed H. Abd El-Malek, Egypt-Japan University of Science and Technology (E-JUST); Ahmed Y. Zakariya, Faculty of Engineering, Alexandria University; Sherif I. Rabia, Alexandria University

2 **Age of Information Optimization Using a Hybrid Preemptive/Non-Preemptive Discipline**
Tamer E. Fahim, Egypt-Japan University of Science and Technology (E-JUST); Sherif I. Rabia, Alexandria University; Ahmed H. Abd El-Malek, W.K. Zahra, Egypt-Japan University of Science and Technology

3 **A Receiver-Agnostic Radio Frequency Fingerprint Identification Approach in Low SNR Scenarios**
Jiaming Wu, Yan Zhang, Kaien Zhang, Zunwen He, Wancheng Zhang, Beijing Institute of Technology

4 **Average Age of Information for Multi-Source Single Buffer Preemption Queueing Model with Packet Dropping in Service**
Xingyuan Zhang, Xiangdong Jia, Heng Chang, Hailong Tian, Northwest Normal University

5 **Cognitive RAN-Aware Transport Layer for NR-V2X Communications in 5G and Beyond Networks**
Swaraj Kumar, Samsung Research Bangalore; Shreyanshu Agarwal, Vasanth Kanakaraj, Samsung Research; P Keerthi Priya, Smasung Research; Issaac Kommineni, Samsung Research

6 **Continual MARL-assisted Traffic-Adaptive GC-MAC Protocol for Task-Driven Directional MANETs**
Qinyu Wang, Chan Wang, Rongpeng Li, Hanyu Wei, Minjian Zhao, Zhejiang University

7 **Criticality-Aware Load-Balanced Scheduling Algorithm for Teleoperated Vehicles Controlled over Vehicle-to-Infrastructure Network**
Subhendu Bhadra, Sangyoung Park, Technical University of Berlin

8 **Harmonic Long-Range Backscatter with Frequency-Shifted Lightweight Tag**
Junliang Lin, Xiannan Zhang, Rongtao XU, Gongpu Wang, Beijing Jiaotong University; Tony Q.S. Quek, Singapore University of Technology and Design

9 **Improved Sparse Activity Detection Based on Optimized Measurement Matrix in mMTC**
Jianyu Wang, Liu Yang, Chaoyuan Bai, Southwest Jiaotong University; Heng Liu, Key Lab of Information Coding and Transmission

10 **Joint Optimization in MEC Incorporating MD Preference: A Hybrid GA and AFSA Scheme**
Yunan Dong, Jianhua Pei, Kun Wu, Tsinghua Shenzhen International Graduate School; Yuhan Dong, Xiao-Ping Zhang, Tsinghua University

11 **Online Partitioned Scheduling over RSU for Computation Offloading in Vehicular Edge Computing**
Tanniru Abhinav Siddharth, Kethu Sesha Sarath Reddy, Joseph John Cherukara, Deepak Gangadharan, International Institute of Information Technology, Hyderabad

12 **Maximizing Efficiency: Relocation and Deduplication for Result Caching in Distributed and Collaborative Edge Computing Networks**
Abbas Yekanlou, Jun Cai, Samuel Okegbile, Concordia University

13 **Open-Set RF Fingerprint Identification with Synthetic Feature Constraint**
Wang Qiexiang, Haohao Sun, Yazhou Sun, Zhongfang Wang, Jian Wang, Xudong Zhang, Tsinghua University

14 **Optimizing Signal Transmission in Underground WSN: Addressing Multipath Fading with Random Walk Kalman Filter and Diffusion LMS**
Suryaia Rahman, Md Fahad Monir, Md Zahangir Alam, Tarem Ahmed, Independent University, Bangladesh

15 **Packet Reception Analysis of C-V2X Mode 4 Communication for Highway Scenarios**
Kai-Yu Lin, Chih-Yu Wen, National Chung Hsing University

16 **Performance Evaluation of Hierarchical Federated Learning on Resource-Constrained IoT Systems**
Mumin Adam, KFUPM University; Uthman Baroudi, KFUPM

17 **PMB filter based distributed tracking of multiple extended targets under different resolutions**
Yue Li, Lin Gao, Huaguo Zhang, Wanchun Li, Ping Wei, Hao Mou, University of Electronic Science and Technology of China

18 **SAMO: A Sequential Pattern Mining Model for Evaluating Road Criticality in Urban Traffic Networks**
Nourhan Bachir, University of Liege; Hassan Harb, Chamseddine Zaki, American University of the Middle East; Roland Billen, University of Liège

19 **Secondary Access Class Barring for Machine Type Communications with PUSCH Resource Constraints**
Yuxuan Wen, Liu Yang, Chaoyuan Bai, Southwest Jiaotong University; Heng Liu, Key Lab of Information Coding and Transmission

20 **The Impact of Blind Retransmissions on the Age of Information in NR-V2X**
Maria Bezmenov, Robert Bosch GmbH; Zoran Utkovski, Slawomir Stanczak, Fraunhofer Heinrich Hertz Institute

21 **Time-Critical Collaborative Update for Digital Twins in Road Traffic Environments**
Shih-Jui Wang, Ru-Jun Wang, Wen-Tsuen Chen, National Tsing Hua University

22 **Load Estimation in a Two-Priority mMTC Random Access Channel**
Ahmed Elmeligy, Ioannis Psaromiligkos, McGill University; Au Minh, Hydro-Quebec Research Institute (IREQ)

23 **Methodology for an Offline Outlier Detection in a Dynamic Measurement Data Set**
Osman Aksu, Michael Schmid, BMW AG

24 **OpenConvoy: Universal Platform for Real-World Testing of Cooperative Driving Systems**
Owen Burns, Hossein Maghsoumi, Israel Charles, Yaser P. Fallah, University of Central Florida

25 **An Efficient Federated Learning Framework for IoT Intrusion Detection**
Yushen Chen, Fang Fang, Boyu Wang, Western University; Lan Zhang, Clemson University

26 **Enhancing V2X Communication with Active RIS: A MADRL Approach with Perfect and Imperfect CSI**
Prajwalita Saikia, Keshav Singh, Wan Jen Huang, National Sun Yat-sen University; Wael M. Bazzi, American University in Dubai; Sudip Biswas, Indian Institute of Information Technology, Guwahati

Wednesday 9 October 2024

Wednesday, 9 October 2024 11:00 - 12:30 Online

4V: Machine Learning for Communications

1 **A Deep Learning-Based Hybrid Precoding With True-Time-Delay for THz Massive MIMO Systems**
Lei Wang, Huimin Zhang, Zeyi Hong, Yinghui Zhang, Shun Na, Yang Liu, Inner Mongolia University

2 **An Intelligent Relay Nodes Deployment Method Based on Multi-Agent Deep Reinforcement Learning For Emergency Communications**
Kaiming Liu, Beijing University of Posts and Telecommunications

3 **Federated DDQN-Based Frequency Hopping Strategy for FANETs in Complex Jamming Environments**
Wenxuan Tao, Ningbo Zhang, Beijing University of Posts and Telecommunications; Teng Sun, The 54th Research Institute of CETC; Guangqian Peng, Hao Chen, Beijing University of Posts and Telecommunications

4 **Federated Meta-Learning based End-to-End Communication Against Channel-Aware Adversaries**
Runzhuo Yang, Donghang Liu, Dou Li, Zhimin Liu, Peking University

5 **Modulation Classification in NOMA Systems using Lightweight Dual-Pooling CNN with Superposed Constellation Density Grids (SCDGs)**
Surbhi Gehlot, Narendra Kumar, Suraj Srivastava, Sandeep Kumar Yadav, Indian Institute of Technology, Jodhpur

6 **QSR: Q-Learning Based Algorithm of Support Recovery for Sparse Signals**
Tianzhi Zhou, Yibo Wang, Zhangyan Wu, Beijing University of Posts and Telecommunications; Hengwei Liang, Nanjing University of Science and Technology; Yuan Qi, Rongrong Qian, Beijing University of Posts and Telecommunications

7 **Refining Wireless Propagation Models using Domain-Informed GANs amid Data Scarcity**

8 **SNN-Based Early HARQ Predictor Design For 5G Networks**
Wenbin Zhao, Zhouyou Gu, Branka Vucetic, Wibowo Hardjawana, The University of Sydney

9 **UAV-RIS-Aided Energy-Efficient and QoS-Aware Emergency Communications Based on DRL**
jiawei Hu, Ying Ju, Xidian University; Haoyu Wang, University of California Irvine; Lei Liu, Qingqi Pei, Xidian University; Y. G. Shee, Universiti Tunku Abdul Rahman; Xiaojie Zhu, King Abudula University of Science and Technology; Celimuge Wu, The University of Electro-Communications, Japan

10 **Unsupervised Learning Based Symbol-Level Precoding Design for Amplitude Phase Modulation**
Liangyuan Zhao, Ju Hao, XiaoWu Ou, Yin Xu, Dazhi He, Shanghai Jiao Tong University; Sung-Ik Park, Electronics and Telecommunication Research Institute; Namho Hur, Radio and Broadcasting Technology Laboratory; Wenjun Zhang, Shanghai Jiao Tong University

11 **Sparse Recurrent Neural Network Architecture for Turbo Decoding in NextGen Communication Systems**
Madhan Raj Kanagarathinam, Samsung R&D Institute India Bangalore; Swaraj Kumar, Samsung Research Bangalore; Krishna M. Sivalingam, Indian Institute of Technology Madras, Chennai, India; Richa Gaba, Samsung Research Bangalore

12 **Comparative Analysis of Machine Learning Models: Ransomware Severity Prediction Using MITRE Cyber Analytics Repository**
Mohammed Omar Azhar, Farha Jabin Oyshee, Md Fahad Monir, Razib Hayat Khan, Tarem Ahmed, Independent University, Bangladesh; Khorshed Alam, United International University

13 **Refining Wireless Propagation Models using Domain-Informed GANs amid Data Scarcity**
Waseem Raza, University of Oklahoma; Syed Basit Ali Zaidi, University of Glasgow; Muhammad Umar Bin Farooq, Haneya Naeem Qureshi, Ali Imran, The University of Oklahoma

14 **Complex-Valued Neural Network Detection for RIS-Assisted Generalized Spatial Modulation**
Yuyan Liu, Chaorong Zhang, Benjamin K. Ng, Chan-Tong Lam, Macao Polytechnic University

15 **Traffic Distribution Generation Considering Spatial Continuity for Base Station Sleep Control**
Natsuki Morita, Fujitsu limited; Yoshihiro Okawa, Jun Kakuta, Masatoshi Ogawa, Fujitsu Limited

16 **Stackelberg Game Based Performance Optimization in Digital Twin Assisted Federated Learning over NOMA Networks**
Bibo Wu, Fang Fang, Western University; Ming Zeng, Laval University; Xianbin Wang, Western University

Wednesday, 9 October 2024 14:00 - 15:30 Online

5Va: Protocols, Security and Services for Wireless Networks

1 **Differentially Private Energy Sharing Among Smart Grid-Powered Base Stations**
Liwan Qi, Bochun Wu, Fudan University; Fei Wang, Hexi University; Kai Li, Real-Time and Embedded Computing Systems Research Centre; Wei Ni, CSIRO; Abbas Jamalipour, The University of Sydney

2 **Efficient Normalizing Flow-Based Radio Frequency Fingerprinting Identification for Network Security**
Weiwei Zeng, Helin Yang, Kailong Lin, Liang Xiao, Xiamen University

3 **Implementation of a Secure Cellular Stream Cipher System for Multimedia Encryption**
Priyanka Peri, Jayati Dutta, Indian Institute of Technology Hyderabad; Rohith Malkuchi, Virginia Polytechnic Institute and State University

4 **Leveraging Data-Driven Deep Neural Network for IEEE 802.11bd Receiver Design**
Ziyi Zhang, Yin Jiang, Hu Zhao, Bowen Xiao, Yan Long, Honghao Ju, Southwest Jiaotong University

5 **Location Privacy Protection and 911 Task Allocation in Vehicle-Based via Differential Privacy**
Deyuan Qu, Dominic Carrillo, Sudip Dhakal, Mike Degany, Chenxi Qiu, Qing Yang, University of North Texas

6 **Secrecy Performance of Joint Antenna and User Selection in Cognitive Ambient Backscattering Communications**
Ahmed N. Elbattrawy, Egypt-Japan University of Science and Technology; Ahmed H. Abd El-Malek, Egypt-Japan University of Science and Technology (E-JUST); Sherif I. Rabia, Alexandria University; W.K. Zahra, EJUST

7 **A Power Allocation Strategy in Moblie Edge Computing for Maximizing Sum Secrecy Rate**
Jiahui Mao, Wensong Liao, Chong Tan, Hong Liu, Min Zheng, Shanghai Institute of Microsystem and Information Technology CAS

Wednesday, 9 October 2024 14:00 - 15:30 Online

5Vb: Radio Access Technology and Heterogeneous Networks

1 **A Reduced Complexity Generic NOMA MAP Receiver for Wideband MIMO Channels**
Hasan Aykut Șatana, Nokia; Gokhan Muzaffer Guvensen, Middle East Technical University (METU)

2 **Channel Estimation for Reconfigurable Intelligent Surface-aided 6G NOMA Systems using CNN-based Quantum LSTM Model**
Nhien Thoong, Memorial University; Adnan A. Cheema, Ulster University; Saeed R. Khosravirad, Nokia Bell Labs; Octavia A. Dobre, Memorial University; Trung Q. Duong, Queen's University Belfast

3 **Maximum Effective Throughput for Uplink NOMA Systems With Practical Modulations**
Yifei Song, Yuan Wang, Tianying Zhong, Jiaheng Wang, Southeast University; Yuan Yin, Nanhang Jincheng College; Xiqi Gao, Southeast University

4 **NDAC powered deep-level cloudification technology for mobile robotics**
Haiyang Zhang, Nokia Bell Labs; Yanni Zhou, Fei Gao, Nokia Bell Labs China; Xiaobing Leng, Pengfei Gui, Nokia Bell Labs

5 **Reduced-Overhead CSI Feedback for Massive MIMO through Selective Component Processing**
Fuhao Li, Tiposi Inc.; Ifiok Udoidiok, Jielun Zhang, University of North Dakota

6 **A Joint Spectral Efficiency Optimization Algorithm Based on Greedy Algorithm and Improved PSO for Cell-free Massive MIMO Networks**
Zeyi Hong, Yi Luo, Shun Na, Qintuya Si, Yang Liu, Inner Mongolia University

7 **Coverage Analysis of a THz Aerial Base Station Wireless Network in a Finite Area**
Hadeel Obaid, Tampere University; Yongxu Zhu, Southeast University; Bo Tan, Tampere University

8 **SIC-based Random Multiple Access Protocol: Fixed or Adaptive Approach**
Asmad Bin Abdul Razzaque, Andrea Baiocchi, Sapienza University of Rome

9 **Reducing Age of Collection with Dynamic-Frame Time Division Multiple Access**
Yurong Lai, Xinhui Han, Xueer Wang, Haoyuan Pan, Shenzhen University

10 **Robust and Secure Transmission Design in Multi-User STAR-RIS-Aided Communications**
Sonia Pala, Keshav Singh, National Sun Yat-sen University; Omid Taghizadeh, Lenovo Deutschland GmbH; Cunhua Pan, Southeast University; Chih-Peng Li, National Sun Yat-sen University, Taiwan

11 **Analysis of Potential Joint Transmission Gains based on Measurements in Different Environments**
Ola Bidhan, Michael Einhaus, HTWK Leipzig; Thomas Kürner, Technische Universitaet Braunschweig

Wednesday, 9 October 2024 16:00 - 17:30 Online

6V: Recent Results

1 **2D Spatial CFAR for Lidar Point Cloud Ground Removal and Object Classification**
Asma Omri, Mariem Mezghani, Jaser Rayeh SUP'COM; Sofiane Sayahi, ACTIA Engineering Services; Hichem Besbes, Sup'Com, Université of Carthage

2 **AoI Analysis for Automatic Repeat-Request in Vehicular Cooperative Perception Networks**
Qinan Huang, Jianhua Zeng, Chongtao Guo, Jing Liu, Haoyuan Pan, Shenzhen University

3 **Blockchain-Enabled Rental System for Agricultural Asset Management Using Hyperledger Fabric**
Ishtiaque Ahmed Toke, Md Fahad Monir, Independent University, Bangladesh; Md. Zoheb Hassan, Universite Laval; Tarem Ahmed, Independent University, Bangladesh

4 **Deep Learning-Based Trojan Detection in Network Traffic: A CNN-BiLSTM Approach**
Md Mozammal Hoque, University of Houston; Khorshed Alam, United International University; Md Fahad Monir, Md Tarek Habib, Independent University, Bangladesh

5 **Distance-Based Queue Modeling in Sidelink C-V2X Communication for Platooning: Towards 6G-V2X**
ANNU, IIT Hyderabad

6 **Energy Detection-Based Spectrum Sensing over Shadowed UAV-to-Ground Channels**
Remon Polus, Claude D'Amours, University of Ottawa

7 **Energy-Efficient Beamforming for Wireless Backhaul under Non-Uniform Traffic**
Zhengzheng Yuan, Harbin Institute of Technology (Shenzhen); Fu-Chun Zheng, Harbin Institute of Technology (Shengzhen) & The University of York

8 **Enhanced OTFS using Channel Modulation and Delay-Doppler Indexing**
Nabarun Roy, Indian Institute of Science, Bengaluru; A Chockalingam, Indian Institute of Science

9 **Joint Optimization of Computing and Routing in LEO Satellite Constellations with Distributed Deep Reinforcement Learning**
Shaohua Xia, Jiangtao Luo, Yongyi Ran, Chongqing University of Posts and Telecommunications

10 **LiDAR-GNSS Fusion to Initiate Localization at Intermediate Points on a 3D Point Cloud Map**
Abhishek Thakur, Rakshith Ram C.A., Srivishnu Sathvik, P. Rajalakshmi, Indian Institute of Technology Hyderabad

11 **LLM for Complex Signal Processing in FPGA-based Software Defined Radios: A Case Study on FFT**
Yuyang Du, Soung Chang Liew, The Chinese University of Hong Kong

12 **Optimizing Energy Efficiency in Large RIS-Aided Multi-User MISO Communication Systems**
Zahra Taheri, M. Reza Soleymani, Concordia University

13 **PPO-Based Energy Efficiency Maximization for RIS-assisted Multi-user MISO Systems**
Amjad Iqbal, Ala'a Al-Habashna, Gabriel Wainer, Carleton University; Gary Boudreau, Ericsson Canada; Faouzi Bouali, Coventry University

14 **Route Planning for Electric Vehicles with Charging Constraints**
Aiman Munir, Ramviyas Parasuraman, Jin Ye, WenZhan Song, University of Georgia

15 **Sub-THz SC-FDE MIMO Systems with Deep Neural Network Equalization for 100 Gbps of 6G**
Liang Zhou, Masafumi Tsutsui, Yasuhiro Nakasha, Shiro Ozaki, Takashi Dateki, Yusuke Kumazaki, Toshihiro Ohki, Fujitsu Limited

16 **Towards Continual Federated Learning of Monocular Depth for Autonomous Vehicles**
Elton Soares, IBM Research; Carlos Alberto Vieira Campos, Federal University of the State of Rio de Janeiro

17 **Towards ISO/SAE 21434 Compliance: Quantifying Ambiguity and Detailing Requirements**
Ryo Kurachi, Nagoya University

18 **Two-way Ranging Evaluation in Realistic V2V Scenarios with SDR-based Experimental Platform**
Zhongju Li, TU Dresden; Ahmad Nimr, Technische Universität Dresden; Philipp Schröter, TU Dresden; Stark Maximilian, Bosch; Guillaume Jornod, Bosch Research Germany; Gerhard Fettweis, TU Dresden

19 **UAV-Assisted Multi-Target Resolvability in Joint Sensing and Communication System**
Hafiza Ammara Khurshid, Nagham Saeed, University of West London

20 **Integrating Visual Geometry and Mask Region CNN for Enhanced UAV Detection and Identification**
Ishtiaq Ahmad, Ramsha Narmeen, Czech Technical University in Prague; Mohamad A Alawad, Yazeed Alkhrijah, Imam Mohammad Ibn Saud Islamic University; Pin-Han Ho, University of Waterloo

21 **Hybrid VLC Systems with Terahertz Communication: A Performance Analysis**
Hanojhan Rajahrajasingh, Dushantha Nalin K. Jayakody, Lusófona University; P Muthuchidambaranathan, National Institute of Technology Trichy; Rui Dinis, Universidade Nova de Lisboa

22 **EcoPredict: Assessing Distributed Machine Learning Methods for Predicting Urban Emissions**
Carnot Braun, Joahannes B. D. da Costa, Leandro Villas, Allan Souza, University of Campinas

23 **IRS Aided MIMO-OTSM Under High Mobility Spatially Correlated Channels for Industrial Applications**
Sapta Girish, Bharat Electronics Limited

24 **LiDAR-OdomNet: LiDAR Odometry Network Using Feature Fusion Based on Attention**
Parvez Alam, Indian Institute of Technology Hyderabad; P. Rajalakshmi, NMICPS TiHAN, Indian Institute of Technology Hyderabad

Thursday 10 October 2024

Thursday, 10 October 2024 11:00 - 12:30 Online

7Va: Satellite Networks, Positioning Technologies, Localization and Navigation

1 **A Robust Routing Algorithm Against Link Failures for LEO Satellite Networks**
Haojian Nie, Feng Yan, Southeast University; Yueyue Zhang, Shanghai Aerospace Electronic Technology Institute; Fei Shen, Chinese Academy of Sciences; Weiwei Xia, Lianfeng Shen, Southeast University; Yi Wu, Fujian Normal University

2 **Boosting Indoor Localization and Identification Speed Using Reflection Map Construction**
Milad Johnny, Shahrokh Valaee, University of Toronto

3 **Evaluation of Distance Estimation Using Phase Information of OFDM Signal**
Jingwei Liu, The University of Electro-Communications; Noriyasu Kikuchi, Kanagawa Institute of Technology; Nobuaki Kubo, Tokyo University of Marine Science and Technology; Suhua Tang, The University of Electro-Communications

4 **Inter-Satellite Link Re-Planning Algorithm under Link Failures of LEO Satellite Constellations**
Kaixin Chen, Yongyi Ran, Shaohua Xia, Jiangtao Luo, Chongqing University of Posts and Telecommunications; Shuangwu Chen, University of Science and Technology of China

5 **A Seamless Indoor-Outdoor Positioning Transition Method Based on HMMBayesian Inference Using GNSS and Bluetooth**
Zhou Xuanxian, Xiangtan University

6 **GNSS Interference Signal Classification Based on Federated Learning**
Min Deng, Xiangtan University

7 **Image Recognition-Based Indoor Positioning System Using Federated Learning**
Heng-Shao Yu, Yu-Chiao, Jhuang, Jenq-Shiou Leu, National Taiwan University of Science and Technology

8 **Optimizing Prediction Time and Accuracy of Users' Regular/Irregular Grouping Using ML Classification**
Hayyan Ali, Czech Technical University; Robert Bestak, Czech Technical University in Prague

9 **Transfer Learning with Knowledge Distillation for Urban Localization Using LTE Signals**
Disheng Li, Kai Zhao, Jun Lu, Yawei Zhang, Xiangdong An, Wee Peng Tay, Sirajudeen Gulam Razul, Nanyang Technological University

10 **WIFI Indoor Positioning Method Based on Global Search K-means Clustering and Improved WKNN Algorithm**
Lei Wang, Huimin Zhang, Chaoyang Du, Rihan Wu, Yang Liu, Inner Mongolia University

Thursday, 10 October 2024 11:00 - 12:30 Online

7Vb: Spectrum Management, Spectrum Sharing and Green Communications

1 **AoI-Aware Resource Allocation for C-V2X Networks via Multi-Agent Reinforcement Learning with Attention**
Jiaao Chen, Yiming Liu, Qiang Wang, Beijing University of Posts and Telecommunications

2 **Automatic Modulation Recognition Across SNR Variability Via Domain Adversary**
Mohammad Ali, Jielun Zhang, University of North Dakota

3 **Curiosity-Driven Energy-Aware Resource Allocation for Internet of Vehicles**
Baorui Jia, Yujie Tang, Dalhousie University

4 **DeepSpectrum: A Localized Demand Estimation Model for Mobile Spectrum using Deep Learning**
Janaki Parekh, Communications Research Centre; Amir, Ghasemi; Halim Yanikomeroglu, Carleton University

5 **Energy Savings in 5G-Advanced Radio Access Networks: Downlink Signaling Adaptation**
Nazanin Vatanian, Gustavo Wagner Oliveira da Costa, Fraunhofer IIS; Elke Roth-Mandutz, Fraunhofer Institute for Integraded Circuits; Geordie George, Fraunhofer IIS; Norman Franchi, Friedrich-Alexander-University

6 **Non-Primary Channel Access in IEEE 802.11 UHR: Comprehensive Analysis and Evaluation**
Dongyu Wei, Liu Cao, Lyutianyang Zhang, Xiangyu Gao, Hao Yin, University of Washington

7 **Packet Drop Rate Minimization with AoI Constraint in Energy-Harvesting Cognitive Radio Network**
Mohamed F. El-Sherif, EJUST; Sherif I. Rabia, Alexandria University; Ahmed H. Abd El-Malek, W.K. Zahra, Egypt-Japan University of Science and Technology (E-JUST)

8 **Sum-Rate Maximization of Symbiotic Multi-V2X MISO and Multi-RIS BackCom with Imperfections**
Derek Kwaku Pobi Asiedu, IMT-Atlantique; Kofi Ofori-Amanfo, Seoul National University of Science and Technology; Mustapha Benjillali, INPT; Ji-Hoon Yun, Seoul National University of Science and Technology; Samir Saoudi, IMT Atlantique Bretagne-Pays de la Loire

Thursday, 10 October 2024 14:00 - 15:30 Online

8V: Transmission Technologies and Communication Theory

1 **A Game Theory Based Joint Mode Selection and Power Allocation Optimization Algorithm in NOMA-D2D Systems**
Wang Xue, Gu Yan, Meng Shuyu, Qian Zhihong, Jilin University

2 **Active RIS Assisted Integrated Sensing and Communication Systems: Joint Receive-Transmit Beamforming and Reflection Design**
Yuantong Zhang, Junzhe Lin, Yifeng Zhao, Lianfen Huang, Xiamen University; Zhibin Gao, Jimei University; Guozhen Xu, Xiamen University

3 **Age of Information Analysis of Mobile Edge Computer with Layer-coded HARQ**
Xiangdong Jia, Yue Li, Yuxin Guo, Northwest Normal University

4 **AI-Aided Opportunistic Quantization for Channel Aging Mitigation and Fronthaul Overhead Reduction in O-RAN Systems**
Bharath Shamasundar, Shruti Venkatesh, G. D. Surabhi, Samsung R&D Institute, Bangalore; Ashok Kumar Reddy Chavva, Samsung

5 **A Novel PAPR Reduction Method Based on Grid Reservation in Delay-Doppler Domain for OTFS Systems**
Kaiming Liu, Beijing University of Posts and Telecommunications

6 **A Robust Adaptive DOA Estimation Technique for Non-Gaussian Interferences based on Blake-Zisserman Function**
Krishna Kumar, Hari Krishna Boddapati, Samsung R&D Institute India-Bangalore; Ashok Kumar Reddy Chavva, Samsung

7 **A Sparsity-Exploiting Design for Joint Channel Estimation and Data Recovery in Millimeter Massive MIMO Systems**
Shusen Cai, Li Chen, Huarui Yin, Weidong Wang, University of Science and Technology of China

8 **Bilinear Vector Approximate Message Passing-Based Off-Grid Channel Estimation for OTFS Systems**
Ke Shi, Xiaojie Fang, Harbin Institute of Technology; Xuejun Sha, Communication Research Center, Harbin Institute of Technology

9 **Coverage and Rate Performance for Distributed Multi-RIS-Assisted mmWave Communications**
Yuwen Cao, Xiaowen Wu, Donghua University; Jiguang He, TII; Tomoaki Ohtsuki, Keio University

10 **Covert Transmission in Power Line Communication Networks**
Jianqiang Chen, Rui Chen, China Three Gorges University; Xiaojun Liu, Liping Fan, Dong Yu, State Grid Yichang Electric Power Supply Company

11 **Decentralization of Tomlinson-Harashima Precoding for MU-MIMO System**
Jun Zhu, Yin Xu, Shanghai Jiao Tong University; Guanli Yi, No.722 Research Institute of CSSC, Wuhan; Dazhi He, Haoyang Li, XiaoWu Ou, Yunfeng Guan, Wenjun Zhang, Shanghai Jiao Tong University

12 **Field Experiments on Highly Robust Mobile Reception for Advanced ISDB-T**
Hiroaki Miyasaka, Japan Broadcasting Corporation

13 **Overloaded MIMO Spatial Multiplexing Independent of Antenna Settings**
Satoshi Denno, Takumi Sugimoto, Koki Matoba, Yafei Hou, Okayama University

14 **Reconfigurable Intelligent Surface Aided Wireless Imaging with Ring-Type Codebook**
Fan Wang, Xiaolin Hou, Xiang Li, Chen Lan, DOCOMO Beijing Communications

15 **Reconfigurable Intelligent Surface for High-Speed Railway mmWave Communication System: A Deep Reinforcement Learning Approach**
Talla Nana Yannick Abel, Southwest Jiaotong University

16 **Simultaneous Channel Estimation in Multicell Multiuser MIMO OFDM Systems**
Yen-Chia Tseng, Po-Jen Chen, Shih-Hao Lu, National Taiwan University; Wei-Chang Chen, National Taipei University of Technology; Char-Dir Chung, National Taiwan University

17 **Sparse Representation-Based Robust Channel Estimation in XL-RIS-Assisted Systems**
Xuechun Bian, Wenbo Xu, Beijing University of Posts and Telecommunications; Yue Wang, Georgia State University

18 **Specific Emitter Identification Based on Joint Variational Mode Decomposition**
Xiaofang Chen, Wenbo Xu, Beijing University of Posts and Telecommunications; Yue Wang, Georgia State University

Thursday, 10 October 2024 16:00 - 17:30 Online

9V: Vehicular Communications, Unmanned Vehicle Communications, Vehicular Networks and Telematics

1 **A Cooperative UAV-EV Rescue Framework for Post-Disaster Multi-Service Provision**
Nan Chen, Tennessee Tech University; Miao Wang, University of North Carolina at Charlotte

2 **Channel State Information Prediction for Underwater Acoustic Multiple-Input Multiple-Output Communications**
Zhaoyang Lin, Jintao Wang, Zhi Sun, Tsinghua University

3 **Connectivity Maximization in UAV Networks using RIS Placement and SDP Optimization**
Mohammed Saif, Shahrokh Valaee, University of Toronto

4 **Cooperative Jamming and Trajectory Optimization for UAV-Enabled Reliable and Secure Communications**
Helin Yang, Kailong Lin, Can Wang, Weicheng Xia, Chuxuan Wang, Xiamen University

5 **Enhancing Routing Protocol Resilience for Dynamic UAV Networks in Frequency-Sweeping Jamming Environments**
Jinyao SUN, Chao Dong, Xiaojun Zhu, Lei Zhang, Nanjing University of Aeronautics and Astronautics; Zhengrui Qin, Northwest Missouri State University

6 **Equivalent Linear Framework of RIS-Assisted Downlink Communication System**
ShuaijunLi, Jie Tang, South China University of Technology; Guixin Pan, China Unicom Guangdong Branch, Guangzhou; Guangguang Yang, Foshan University; Kai Kit Wong, University College London; Maksim V. Davydov, Belarusian State University of Informatics and Radioelectronics

7 **Fresnel Non-Line-of-Sight Probability Models for mmWave V2V Communications in Mixed Traffic Scenarios**
Xiaohan Shi, Fuxi Wen, Tsinghua University

8 **Hybrid Distance-Based Redundancy Mitigation Mechanisms for Collective Perception in Connected and Automated Driving**
Ahmed Hamdi Sakr, Arjit Malik, University of Windsor

9 **Measurement-based Vegetation Penetration Loss Model for UAV-to-Ground Communications**
Hangang Li, Kai Mao, Qiuming Zhu, Xuchao Ye, Xiaomin Chen, Hanpeng Li, Nanjing University of Aeronautics and Astronautics; Cesar Briso, Universidad Politecnica de Madrid; Weizhi Zhong, Nanjing University of Aeronautics and Astronautics

10 **Mobility-Aware Power Control and User Scheduling for Downlink V2I Networks**
Yujie Wang, Momiao Zhou, Yanshi Sun, Hefei University of Technology; Kan Wang, Xi'an University of Technology

11 **Optimizing Quality-of-Service (QoS) using Semantic Sensing and Digital-Twin in Pro-dynamic Internet of Vehicles (IoV)**
Oshin Rawlley, BITS Pilani; Shashank Gupta, Birla Institute of Technology and Science Pilani, India; Tanisha Bhattacharyya, Shikhar Singh, BITS Pilani

12 **Performance Analysis of Intelligent Reflecting Surface-aided NR-V2X Sidelink Communications**
Abdul Rehman, Piergiuseppe Di Marco, Roberto Valentini, Fortunato Santucci, University of L'Aquila

13 **Physical Layer Security Age of Information Optimization for UAV-Jammer Assisted Relay Cooperation System**
Gongziyu Chen, Xiangdong Jia, Yangyang Sun, Northwest Normal University

14 **Rate-Splitting Multiple Access Interplaying with Active Reconfigurable Intelligent Surfaces for Railway Communications With Imperfect CSIT**
Yongbo Li, Gang Liu, Jiewen Hu, Zheng Ma,Southwest Jiaotong University

15 **Secure wireless communication Aided by RIS-UAV**
Yuxin Guo, Xiangdong Jia, Yue Li, Northwest Normal University

16 **Sensing Window Adaptation in Partial Sensing-based (SWAP) Resource Allocation for Vulnerable Road Users in 5G-V2X**
Nazanin Vatanian, Fraunhofer IIS

17 **Simulation-Based Performance Analysis of UAV-to-UAV Communications in a Realistic Urban Landscape Considering 3D Blockage Effects**
Ashkan Negahban, The Pennsylvania State University; Takeshi Hirai, Osaka University

18 **Smart Verification of Unmanned Aerial Vehicle GPS Geolocation via Received Signal Strength Indicators**
Arupa Sarkar, University of Wollongong; Fendy Santoso, Charles Sturt University; Akbar Telikani, Jun Shen, University of Wollongong; Bo Du, Griffith University; Jun Yan, University of Wollongong

19 **Trajectory Optimization for UAV-based Communication Systems Powered by Energy Harvesting**
Mohammad Abou Arkoub, Hamad Bin Khalifa University; Rami Hamdi, AFG College with the University of Aberdeen; Marwa Qaraqe, Hamad Bin Khalifa University

20 **Trust-IVN : Proposal for Achieving a Trustworthy In-vehicle Network**
Ryo Kurachi, Nagoya University

21 **Coverage and Ergodic Capacity Analysis in Downlink Dense Aerial Networks With Frequency Reuse**
Badaraiah Guntapalli, Debarati Sen, Indian Institute of Technology Kharagpur

22 **Efficient Scheduling of Real-Time Messages over Heterogeneous in-Vehicle Network Domains**
Ram Mohan Chowdary Kota, Jaishree Mayank, IIITDM Kancheepuram; Arnab Sarkar, Indian Institute of Technology Kharagpur

23 **Unified Aerial and Terrestrial 5G NR Sidelink Multi-hop Transmission for Enhanced V2X Communication**
Anwesha Kar, Bheemarjuna Reddy Tamma, Indian Institute of Technology Hyderabad; Siva Ram Murthy Chebiyyam, Indian Institute of Technology Madras

24 **Weather Recognition Algorithms for Autonomous Driving and Navigation and Positioning**
Xiaobo Song, Licheng Tang, Hong Zhao, Zhiqiang Yao, Xiangtan University

25 **Flight to Efficiency: Trajectory Optimization in SWIPT-Enabled UAV-Assisted NOMA for Future Wireless Networks**
Dinith Primal P. Rathu Baduge, Lusofona University; Tharindu D. Ponnimbaduge Perera, The University of Melbourne; Dushantha Nalin K. Jayakody, Lusófona University