Join us in celebrating the 100th edition of VTC!

2024 100th IEEE Vehicular Technology Conference
Washington, DC USA
Autumn 2024

https://events.vtsociety.org/vtc2024-fall
Final Program

2023 IEEE 98th Vehicular Technology Conference

10 – 13 October 2023

Hong Kong
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 VTC2023-Fall, which is the preeminent flagship conference of the Vehicular Technology Society. 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 spotlight shines brightly on the realms of AI and next generation networks, as well as their interconnected key technologies. We are sanguine that VTC2023-Fall presents the research community with an intellectually invigorating opportunity to grasp the recent advancements in these fields.

It will undoubtedly be an inspiring experience to meet you in Hong Kong, “The Beautiful Pearl of the Orient”, a city renowned for the combination of modernity and antiquity, the meeting of East and West.

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 Chair, Xianbin Wang. 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 Vehicular Technology Society. We are deeply appreciative of the invaluable contributions from conference administrators Rodney C. Keele and Cerry Leffler, Publication Co-chair James Irvine, and Financial Chair J. R. Cruz.

Greetings and a warm welcome to Hong Kong, the distinguished host city, and to VTC, the flagship conference proudly orchestrated by the Vehicular Technology Society.

Khaled B. Letaief and Song Guo
General Co-chairs, IEEE VTC2023-Fall

Welcome from the TPC Co-chairs

On behalf of the Technical Program Committee, we would like to welcome you to the 98th IEEE Vehicular Technology Conference (VTC2023-Fall) that will be hosted Hong Kong, 10-13 October 2023. This edition of VTC has been able to attract an exciting technical program ranging across the latest areas of research in wireless systems and networks, connected and autonomous vehicles, both manned and unmanned, emerging trends in applications of machine learning and artificial intelligence in wireless communications, as well as many other emerging topics. We received over 607 paper submissions, out of which 374 outstanding papers will be presented in 12 technical tracks and the recent results track that comprise the IEEE VTC2023-Fall technical program. In addition to the regular and recent results sessions, the conference will feature 12 topical workshops, 7 tutorials delivered by the leading experts in the field, a balanced mix from industry and academia of 6 extraordinary keynote speakers discussing 6G, autonomous driving, semantic communications, and integrated sensing and communications, and 2 exceptional industry panels delving into future research and standardization directions for 6G. In addition to the exciting technical program, a total of 10 student travel grant, 1 best student paper award and 1 best paper award have been also selected.

On behalf of the Technical Program Committee, we would like to welcome you to the 98th IEEE Vehicular Technology Conference (VTC2023-Fall) that will be hosted Hong Kong, 10-13 October 2023. This edition of VTC has been able to attract an exciting technical program ranging across the latest areas of research in wireless systems and networks, connected and autonomous vehicles, both manned and unmanned, emerging trends in applications of machine learning and artificial intelligence in wireless communications, as well as many other emerging topics. We received over 607 paper submissions, out of which 374 outstanding papers will be presented in 12 technical tracks and the recent results track that comprise the IEEE VTC2023-Fall technical program. In addition to the regular and recent results sessions, the conference will feature 12 topical workshops, 7 tutorials delivered by the leading experts in the field, a balanced mix from industry and academia of 6 extraordinary keynote speakers discussing 6G, autonomous driving, semantic communications, and integrated sensing and communications, and 2 exceptional industry panels delving into future research and standardization directions for 6G. In addition to the exciting technical program, a total of 10 student travel grant, 1 best student paper award and 1 best paper award have been also selected.

We would like to take this opportunity to thank all co-chairs of the 12 technical tracks for their dedicated support to VTC. They all managed to obtain at least 3 reviews for each paper within an extremely short time frame, and the decision process was completed smoothly. We also sincerely thank the workshop organizers for putting together the set of very timely workshops and organizing the review process in a professional manner. We would like to thank the members of the IEEE VTC2023-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 VTC2023-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 Hong Kong.

Xianbin Wang, Jianping Wang, Dusit Niyato, TPC Co-chairs, IEEE VTC2023-Fall
Welcome from the VTS President

On behalf of the IEEE Vehicular Technology Society (VTS), it is my great honor and pleasure to welcome you to the 98th IEEE Vehicular Technology Conference, VTC 2023-Fall, in Hong Kong, China!

This semi-annual IEEE VTS flagship conference brings together individuals from academia, industry, and government institutes to discuss and exchange ideas in the fields of wireless, mobile, and vehicular technology. Organizing this world-class conference requires a strong team of volunteers who have devoted both their time and their technical expertise. I want to take this opportunity to thank and congratulate the whole conference organization committee led by the VTS Vice President for Conferences, J.R. Cruz, the Conference General Co-Chairs Khaled B. Letaief and Song Guo, Technical Program Chair Xianbin Wang, and the Technical Program Vice Chairs Jianping Wang and Dusit Niyato. The conference organization committee has been working diligently in planning and running this conference with an excellent program, including the keynote presentations and panels, technical program, tutorials, workshops, and industry program. We highly appreciate their great efforts. Furthermore, I would like to thank all the sponsors for their generous support that enriches the conference program and will enhance your experience at this conference.

IEEE VTS has been successful in engaging the global technical community and in contributing to advances in vehicular technology in the areas of mobile radio, motor vehicles, and land transportation. In recent years, it has been promoting R&D activities in the 5G and beyond communication systems, in autonomous, connected, and electric vehicles, and in intelligent ground transport infrastructures. Building on the momentum, the VTS strives to listen to our members for their needs, be creative and work hard on various existing programs and new initiatives towards a stronger Society. In particular, the VTS would like to further engage our members in technical activities via our technical committees. We have nine technical committees in our areas of interest, including AI in Wireless Communications, Propagation, Drones, and Autonomous Vehicles. Please visit the VTS website, to learn more about the technical committees, and to register to the committees of your interest. We encourage your participation and welcome your ideas and suggestions for the technical committees. If you are not a VTS member or student member yet, it is a good idea to consider joining VTS today to benefit from all the services and resources that VTS provides and to contribute to the community!

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

Weihua Zhuang, President
IEEE Vehicular Technology Society

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Masato Saito, University of the Ryukyus
Yukitoshi Sanada, Keio University
Tutorials

A range of tutorials will be held virtually on Tuesday 10 October 2023 given by experts from industry and academia.

**Tuesday, 10 October 2023 14:00-17:30 Virtual**

**T4: From 1 to 100: Standardization in the Communication Industry**

Ruqi (Richie) Liu, ZTE Corporation, China

The motivation of this tutorial is to give the audience a broad overview of standardization. During my experience attending IEEE conferences throughout the years, I notice that many students and professors have strong interests in participating in industrial activities such as standardization, while they lack the basic knowledge to understand why standardization is needed in the communication industry, how it works, and how to participate if desired.

In this tutorial, I will introduce the ABCs of standardization for communication industry, with rich and most up-to-date information as well as detailed case studies. After hearing this tutorial, it is anticipated that the audience will have a basic understanding for them to understand why standardization is needed in the communication industry, how it works, and how to participate if desired.

Ruqi (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 research institute of ZTE Corporation, responsible for long-term research as well as standardization. His main research interests include reconfigurable intelligent surfaces, integrated sensing and communication and wireless positioning. He is the author or co-author of several books and book chapters. He has participated in national key research projects as the researcher or research lead. During his 3-year service at 3GPP from 2019 to 2022, he has authored and submitted more than 500 technical documents with over 100 of them approved, and he served as the co-rapporteur of the work item (WI) on NR RRM enhancement and the feature lead of multiple features. He currently serves as the Feature Lead of the ETSI ISG RIS in the ETSI. He actively participates in organizing panels in IEEE conferences as the chair, organizer, moderator, panelist or invited speaker. He served as the guest editor for Digital Signal Processing and the lead guest editor for the special issue on 6G in IEEE OCOMS. He serves as the Editor of ITU Journal of Future and Evolving Technologies (ITU-J-FET) and the Associate Editor of IET Quantum Communication. He is the Standardization Officer for IEEE ComSoc ETI on reconfigurable intelligent surfaces (ETI-RIS) and the Standards Liaison Officer for IEEE ComSoc Signal Processing and Computing for Communications Technical Committee (SPCC-TC). He received the Outstanding Service Award from the SPCC-TC in 2022.

**Tuesday, 10 October 2023 9:00-12:30 Virtual**


Boya Di, Hongliang Zhang, Lingyang Song, Peking University, China

Holographic radio, which integrates massive antenna elements into a compact space to achieve ultra-massive MIMO for high resolution sensing and high-capacity communications, has been considered as a promising enabling technique for the forthcoming sixth generation (6G) networks. Widely-utilized phased arrays relying on costly components make the implementation of ultra-massive MIMO in practice become prohibitive from both cost and power consumption perspectives. In contrast, the recent developed reconfigurable holographic surfaces (RHSs) composing of densely packing sub-wavelength meta material elements provide a new method to solve the above issue without costly hardware components. By leveraging the holographic principle, the RHS serves as an ultra-thin and lightweight surface antenna integrated with the transceiver, thereby providing a promising alternative to phased arrays for realizing ultra-massive MIMO. In this tutorial, we will first provide a basic introduction of RHSs. We then introduce the unique features of RHSs which enables both communication and sensing, in a comprehensive way. Related design, analysis, optimization, and signal processing techniques will be presented. Typical RHS-based applications for the wireless communications and radio-frequency sensing will be explored. Our implementation of RHSs as well as the developed prototypes of communication and sensing systems will also be reported. Several up-to-date challenges and potential research directions will be discussed as well.

Boya Di (S’17-M’19) is an assistant professor at School of Electronics, Peking University. She obtained her Ph.D. degree from the Department of Electronics, Peking University, China, in 2019. Prior to that, she received the B.S. degree in electronic engineering from Peking University in 2014. She was a postdoc researcher at Imperial College London. Her current research interests include holographic radio, reconfigurable intelligent surfaces, multi-agent systems, and aerial access networks. She has published over 30 journal papers on the topic of reconfigurable holographic surface aided communications and sensing. She is the recipient of 2021 IEEE ComSoc Asia-Pacific Outstanding Paper Award and 2022 IEEE ComSoc Asia-Pacific Outstanding Young Researcher Award. She serves as an associate editor for IEEE Transactions on Vehicular Technology and IEEE Communications Tutorials and Surveys. She has also served as a workshop co-chair for IEEE WCNC 2020, 2021 and IJWCS 2022.

Hongliang Zhang (S’15-M’19) received B.S. and Ph.D. degrees at the School of Electrical Engineering and Computer Science at Peking University, in 2014 and 2019, respectively, where he is currently an assistant professor with School of Electronics. His current research interests include reconfigurable intelligent surfaces, aerial access networks, optimization theory, and game theory. He received the best doctoral thesis award from Chinese Institute of Electronics in 2019. He is also the recipient of 2021 IEEE Comsoc Heinrich Hertz Award for Best Communications Letters and 2021 IEEE Comsoc AsiaPacific Outstanding Paper Award. He has served as a TPC Member and a workshop co-chair for many IEEE conferences. He is the winner of the Outstanding Leadership Award as the publicity chair for IEEE EUC in 2022. He is currently an Editor for IEEE Transactions on Vehicular Technology, IEEE Communications Letters, IET Communications, and Frontiers in Signal Processing. He has also served as a Guest Editor for several journals, such as IEEE Internet of Things Journal and Journal of Communications and Networks. He is an exemplary reviewer for IEEE Transactions on Communications in 2020.

Lingyang Song (S’03-M’06-SM’12-F’19) received his PhD from the University of York, UK, in 2007. He worked as a research fellow at the University of Oslo, Norway until rejoining Philips Research UK in March 2008. In May 2009, he joined the School of Electronics Engineering and Computer Science, Peking University, and is now a Boya Distinguished Professor. His main research interests include wireless communications, mobile computing, and machine learning. Dr. Song is the co-author of many awards, including IEEE Leonard G. Abraham Prize in 2016, IEEE ICC 2014, IEEE ICC 2015, IEEE Globecom 2014, and the best demo award in the ACM MobiHoc 2015. He received National Science Fund for Distinguished Young Scholars in 2017, First Prize in Nature Science Award of Ministry of Education of China in 2017. Dr. Song has served as an IEEE ComSoc Distinguished Lecturer (2015-2018), an Area Editor of IEEE Transactions on Vehicular Technology (2019-), Co-chair of IEEE Communications Society Asia Pacific Board Technical Affairs Committee (2020-). He is a Clarivate Analytics Highly Cited Researcher.
Synchronizing large-scale networked systems lays the foundation for holistic temporal collaboration among distributed devices, machines, and infrastructures, which is essential for achieving tight orchestration of vertical industries in the 6G era. However, the unpredictable accuracy, low efficiency, and situation agnosticism of conventional synchronization methods with routine “observing-and-calibrating” over the Internet will impede the performance of vertical applications with dramatically increased system scale and intrinsic heterogeneity.

This tutorial will first provide an in-depth analysis of the challenges associated with conventional network synchronization schemes in meeting the stringent synchronization requirements of large-scale 6G-enabled vertical applications. A systematic overview of the network synchronization process and theoretical analysis of contributing factors to these performance gaps are given to shed light on potential synchronization design directions. In bridging the gaps, several recent promising synchronization techniques will be presented to achieve more accurate, intelligent, low-overhead, and secure network synchronization. Specifically, we will first introduce digital twin-based network synchronization schemes that can proactively enable low-overhead clock calibration by exploring the inherent characteristics of heterogeneous clocks. Second, we will present customized network synchronization design methods to achieve intelligent and tailored clock calibration for different devices by clustering their distinctive synchronization requirements and device-specific clock attributes. Third, we will elaborate on timestamp-free and timestamp-retaining mechanisms to achieve low-overhead and accurate network synchronization. Furthermore, future research directions on synchronization over networked systems about synchronization process design and integration with vertical applications will be presented to guide researchers and industry practitioners toward effective network synchronization in the 6G era.

Pengyi Jia (Member, IEEE) received his M.Eng. and Ph.D. degrees from the Department of Electrical and Computer Engineering, Western University, London, ON, Canada, in 2006 and 2011, respectively. He is currently a Postdoctoral Associate at Western University. His research interests include intelligent network synchronization, digital twin, and machine learning, as well as their applications in vertical IoT systems and wireless networks. One focus of his recent research is to develop goal-oriented digital twin paradigms for optimized network operation and service provisioning by exploring spatial temporal correlations behind the massive sampling data. He has been involved in organizing IEEE CCECE 2021 and served as a TPC member for many conferences. He is serving as the Vice Chair of ComSoc Chapter in IEEE London Section.

Xianbin Wang (Fellow, IEEE) received his Ph.D. degree in electrical and computer engineering from the National University of Singapore in 2001. He is a Professor and a Tier-1 Canada Research Chair in 5G and Wireless Internet Communications with Western University, Canada. Prior to joining Western University, he was with the Communications Research Centre Canada as a Research Scientist/Senior Research Scientist from 2002 to 2007. From 2001 to 2002, he was a System Designer at STMicroelectronics. His current research interests include 5G/6G technologies, Internet of Things, communications security, machine learning, and intelligent communications. He has over 500 highly cited journals and conference papers, in addition to over 30 granted and pending patents and several standard contributions.

Dr. Wang is a Fellow of the Canadian Academy of Engineering and a Fellow of the Engineering Institute of Canada. He has received many prestigious awards and recognitions, including the IEEE Canada R. A. Fessenden Award, Canada Research Chair, Engineering Research Excellence Award at Western University, Canadian Federal Government Public Service Award, Ontario Early Researcher Award, and nine Best Paper Awards. He was involved in many IEEE conferences, including GLOBECOM, ICC, VTC, PIMRC, WCNC, CCECE, and CWIT, in different roles, such as General Chair, TPC Chair, Symposium Chair, Tutorial Instructor, Track Chair, Session Chair, and Keynote Speaker. He serves has served as the Editor-in-Chief, Associate Editor-in-Chief, and editor/associate editor for over ten journals. He was the Chair of the IEEE ComSoc Signal Processing and Computing for Communications (SPCC) Technical Committee and is currently serving as the Central Area Chair for IEEE Canada.

Wei Xu, Southeast University, China; Du, Xi’an Jiaotong University, China; Li Sun, Huawei Technologies, China

In this tutorial, we would like to introduce a new concept called PLS 2.0. Compared to the existing PLS research paradigm, referred to as PLS 1.0, the PLS 2.0 has three new features. First, a new theory is established to connect the error floor of eavesdropper’s decoding process to the security level of the desired signal transmission, which provides a rigorous theoretical framework to evaluate PLS performance. Guided by this theory, an innovative secure transmission architecture is developed, which combines PLS techniques and cryptographic primitives. Second, a series of novel PLS techniques will be presented in this tutorial. Different from the mainstream PLS solutions which rely on “physical advantage”, we will introduce new techniques that exploit the “physical difference”, which is much easier to obtain. The specific technical solutions include fountain-coding aided methods, the noise aggregation approach, and the statistical security guaranteeing schemes. Finally, we will highlight the application perspective of PLS. In particular, four scenarios will be introduced where higher-layer encryption techniques do not work. The scenarios include: Fast device identification and authentication, security issues in initial random access, secure ranging for contactless card entry, and privacy protection for wireless sensing. For each scenario, we will show how PLS techniques can be utilized to realize low-complexity authentication, secure access control, integrity protection, and privacy enhancement.

Wei Xu received his B.S. degree in electrical engineering and his M.S. and Ph.D. degrees in communication and information engineering from Southeast University, Nanjing, China in 2003, 2006, and 2009, respectively. Between 2009 and 2010, he was a Post-Doctoral Research Fellow at the University of Victoria, Canada. He was an Adjunct Professor of the University of Victoria in Canada from 2017 to 2020, and a Distinguished Visiting Fellow of the Royal Academy of Engineering, U.K. in 2019. He is currently a Professor at Southeast University. His research interests include information theory, signal processing, physical-layer security, and machine learning for wireless communications. Dr. Xu received the Youth Science and Technology Award of China Institute of Communications in 2018, the Science and Technology Award of the Chinese Institute of Electronics (Second Prize) in 2019, the National Natural Science Foundation of China for Outstanding Young Scholars in 2020, the IEEE Communications Society Heinrich Hertz Award in 2023, and the Best Paper Awards at IEEE Globecom 2014, IEEE ICC 2014, ISWCS 2018, and WCN 2017, 2021. He served as an Editor of IEEE Communications Letters from 2012 to 2017, and an Editor of IEEE Transactions on Communications from 2018 to 2023. He is a Senior Editor of IEEE Communications Letters. He is a Fellow of IET.

Qinghe Du received the B.S. and M.S. degrees from Xi’an Jiaotong University, China, and the Ph.D. degree from Texas A&M University, USA. He is currently a Professor with School of Information and Communications Engineering Department, Director of Institute of Wireless Communications and Technologies, Xi’an Jiaotong University. His research interests widely cover the area of wireless communications and networking with emphases on 5G/6G evolution technologies, physical-layer technologies, information security, statistical QoS provisioning, IoT, and big data over wireless networks. He has published over 100 technical papers. He received the Best Paper Awards of IEEE GLOBECOM 2007, China Communications 2017 and 2020, IEEE COMCOMAP 2019, and IEEE/CIC ICC 2021, respectively. He serves and has served as an Associate Editor of IEEE Communications Letters, an Area Editor of KSII Transactions on Internet and Information Security.
Tuesday, 10 October 2023 9:00-12:30 Virtual

T9: Recent progress on channel measurement and modeling for 6G
Jianhua Zhang, Pan Tang, Yuxiang Zhang, Beijing University of Posts and Telecommunications, China

This tutorial will mainly introduce the recent progress in channel measurement and modeling for 6G, including four aspects:

1. Channel measurements and modeling of multi-bands from centimeter to millimeter wave: The propagation mechanisms vary along the frequency domain. We will give a review of the channel measurement, the propagation mechanism modeling, and the channel modeling approach in sub-6GHz, new mid-band, mmWave, and THz bands.

2. Massive MIMO channel measurements and modeling: The spatial non-stationary near-field channel model for massive MIMO is reviewed. As a multi-antenna technology, reconfigurable intelligent surface (RIS) is discussed and the RIS-assisted channel model is reviewed.

3. ISAC channel measurements and modeling research: We will present a channel measurement campaign for the JCAS channel and introduce a stochastic JCAS channel model that can jointly generate communication and sensing channels.

4. Intelligent channel modeling and channel prediction research: Improving the accuracy and reducing the complexity is of critical importance for channel modeling. Various AI methods can be utilized to improve training efficiency and reduce prediction errors. The tutorial will give an introduction to the AI-based channel model and prediction method.

In addition, background and challenges, channel sounding methodologies, and future research directions on channel measurement and modeling for 6G are introduced successively in detail.

Jianhua Zhang is a professor of information and engineering college, Beijing University of Posts and Telecommunications (BUPT). She received a B.S. degree from the North China University of Technology in 1994 and a Ph.D. degree from the in 2003. Her research interests include 5G and 6G; artificial intelligence; data mining, especially in massive MIMO and terahertz channel modeling; channel emulator. She has published more than 300 articles and authorized 50 patents. She received several paper awards, including the 2019 SCIENCE China Information Hot Paper, the 2016 China Comm Best Paper, and the 2008 JCN Best Paper. She received several prizes for her contribution to the ITU-R 4G channel model (ITU-RM.1235), the 3GPP Relay channel model (3GPP 36.814), and the 3GPP 3D channel model (3GPP 36.873). She was a member of 3GPP “5G channel model for bands up to 100 GHz”. From 2016 to 2017, she was the Drafting Group Chairwoman of the ITU-R MT-1201 (5G) channel model and led the drafting of the ITU-R M.2142 (5G) channel model section. Now, she is the Chairwomen of ITU-R-T 5G Tech Group—Channel Measurement And Modeling Subgroup and IEEE ComSoc Channel Modeling Subgroup.

Pan Tang is an associate researcher in the State Key Laboratory of Networking and Switching Technology, BUPT, China. He received a B.S. degree in Electrical Information Engineering from the South China University of Technology, Guangzhou, China, in 2013 and a Ph.D. degree in Information and Communication Engineering from BUPT in 2019. From 2017 to 2018, he was a Visiting Scholar at the University of Southern California. From 2019 to 2021, he was a Postdoctoral Research Associate at BUPT, China. He has authored and co-authored more than 50 papers in refereed journals and conference proceedings. His current research interests include millimeter wave, terahertz, and visible light channel measurements and modeling.

Yuxiang Zhang is a Post-doctoral researcher at BUPT, China. He received a B.S. degree in electronic information engineering from the Dalian University of Technology in 2014 and a Ph.D. degree from BUPT in 2020. From 2018 to 2019, he was a Visiting Scholar at the University of Waterloo. He has authored and co-authored more than 30 papers in refereed journals and conference proceedings. His current research interests include massive/holographic MIMO, joint communication and sensing, and reconfigurable intelligent surface channel measurement and modeling.

Tuesday, 10 October 2023 14:00-17:30 Virtual

T10: Unleashing the Power of Airborne Computing in UAV Systems
Kejie Lu, University of Puerto Rico at Mayaguez, Puerto Rico; Yan Wan, University of Texas at Arlington, USA; Shengli Fu, University of North Texas, USA; Junfei Xie, San Diego State University, USA

In the ever-evolving realm of technology, Unmanned Aerial Vehicles (UAVs) stand out as a beacon of innovation, captivating industries, federal entities, and the academic community. Our endeavors in this domain have been significantly supported by the National Science Foundation (NSF). Initially backed by a major NSF project spanning from 2017 to 2022, our research has now entered its second phase, with a new award commencing this year. As we delve into the multifaceted functionalities of UAVs—including control, communications, networking, and computing—a unified approach to fully harness airborne computing remains a challenge. This tutorial is poised to bridge this divide, heralding a new age of UAV-centric airborne computing.

In this tutorial, we will: (1) illuminate the present and imminent UAV applications, delving into their complexities, (2) highlight real-world case studies, demonstrating the transformative power of airborne computing in reshaping UAV functionalities, (3) reveal essential design strategies, meticulously crafted for the upcoming generation of UAV systems enriched with airborne computing capabilities, (4) present our cutting-edge UAV-based airborne computing platform, along with our most recent prototype, and (5) explore pioneering UAV functionalities, encompassing reinforcement-learning guided antenna positioning, coding-driven distributed computing and federated learning, software-defined radio-powered cellular base stations, and deep learning-enhanced object detection. As we draw to a close, we will pave the way for an interactive discussion on the lingering challenges and the expansive future prospects in UAV-based airborne computing. Embark on this enlightening odyssey with us, as we chart the course for the next frontier in UAV systems.

Dr. Kejie Lu is a professor in the Department of Computer Science and Engineering, at the University of Puerto Rico at Mayaguez (UPRM). He received his Ph.D. degree in Electrical Engineering from the University of Texas at Dallas in 2003. Since July 2005, he has been a faculty member at UPRM. His research interests include architecture and protocol design for computer and communication networks, cyber-physical systems, network-based computing, and network testbed development.

Dr. Yan Wan is currently a Distinguished University Professor in the Electrical Engineering Department at the University of Texas at Arlington. She received her Ph.D. degree in Electrical Engineering from Washington State University in 2009. Her research interests lie in developing fundamental theories and tools for the modeling, evaluation, and control tasks in large scale dynamic networks and cyber-physical systems, an Editor of Electronics. He has served in Executive committees and as TPC members for numerous international conferences, and he was recognized as the Distinguished Member of Technical Program Committee at IEEE INFOCOM 2017.

Li San received the B.S. and Ph.D. degrees in Information and Communications Engineering from Xi’an Jiaotong University, China, in 2006 and 2011, respectively. He is currently a Senior Expert in Wireless Technology Lab, 2012 Labs, Huawei Technologies, where he is leading the physical layer security research. Prior to joining Huawei, he has been with Xi’an Jiaotong University as a professor and the Deputy Director of Wireless Communications Institute. His research interests include physical layer security and wireless AI. He has published over 150 papers and has more than 60 granted patents. He received the IEEE Communications Letters Exemplary Reviewers Certificate from IEEE Communications Society (2013 and 2016), the Best Paper Awards of China Communications (2017 and 2020), the Best Paper Award of the IEEE ICCCS (2023), the Outstanding Scientific Paper Award of Shaanxi Province of China (2016), the Outstanding Master Thesis Supervisor Award of Chinese Institute of Electronics (2023), the First Prize of the Teaching Achievement Award of Shaanxi Province of China (2018), and the Innovation Pioneer Award at Huawei (2022 and 2023).

In the ever-evolving realm of technology, Unmanned Aerial Vehicles (UAVs) stand out as a beacon of innovation, captivating industries, federal entities, and the academic community. Our endeavors in this domain have been significantly supported by the National Science Foundation (NSF). Initially backed by a major NSF project spanning from 2017 to 2022, our research has now entered its second phase, with a new award commencing this year. As we delve into the multifaceted functionalities of UAVs—including control, communications, networking, and computing—a unified approach to fully harness airborne computing remains a challenge. This tutorial is poised to bridge this divide, heralding a new age of UAV-centric airborne computing.

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Dr. Kejie Lu is a professor in the Department of Computer Science and Engineering, at the University of Puerto Rico at Mayaguez (UPRM). He received his Ph.D. degree in Electrical Engineering from the University of Texas at Dallas in 2003. Since July 2005, he has been a faculty member at UPRM. His research interests include architecture and protocol design for computer and communication networks, cyber-physical systems, network-based computing, and network testbed development.

Dr. Yan Wan is currently a Distinguished University Professor in the Electrical Engineering Department at the University of Texas at Arlington. She received her Ph.D. degree in Electrical Engineering from Washington State University in 2009. Her research interests lie in developing fundamental theories and tools for the modeling, evaluation, and control tasks in large scale dynamic networks and cyber-physical systems.
systems, and their applications to urban aerial mobility, autonomous driving, robot networking, and air traffic management.

Dr. Shengli Fu is currently a professor and the Chair in the Department of Electrical Engineering, University of North Texas (UNT), Denton, TX. He received his Ph.D. degree in Electrical Engineering from the University of Delaware, Newark, DE, in 2005, before he joined UNT. His research interests include coding and information theory, wireless communications and sensor networks, aerial networks, and drone systems design.

Dr. Junfei Xie is an Associate Professor in the Electrical and Computer Engineering Department at the San Diego State University. She received her Ph.D. degree in Computer Science and Engineering in 2016 from the University of North Texas. Her current research interests include distributed computing, airborne networks, unmanned systems, spatiotemporal data mining, dynamical system modeling and control, and complex information systems.

Tuesday, 10 October 2023 14:00-17:30 Virtual

T12: What Next Generation Multiple Access Will Be?

Zhiguo Ding, University of Manchester, UK; Yuanwei Liu, Queen Mary University of London, UK

Due to the explosive growth in the number of wireless devices and diverse wireless services, such as virtual/augmented reality and Internet-of-Everything, next-generation wireless networks face unprecedented challenges caused by heterogeneous data traffic, massive connectivity, ultra-high bandwidth efficiency and ultra-low latency requirements. To address these challenges, advanced multiple access schemes are expected to be developed, namely next-generation multiple access (NGMA), which are capable of supporting massive numbers of users and network functions, e.g., communication, computation, and sensing, in a more resource- and complexity-efficient manner than existing multiple access schemes. Although the research on NGMA is in a very early stage, the trend of NGMA primarily aims to transition from orthogonality to non-orthogonality. This tutorial introduces the “One Basic Principle plus Four New” concept for designing NGMA, which begins with the basic principle by exploring possible multiple access techniques in a non-orthogonal manner. The tutorial then delves into the application of NGMA to meet the new requirements of 6G, particularly for massive connectivity in Internet-of-things networks. Next, it presents the interplay between NGMA and emerging new techniques, e.g., near-field communications, integrated sensing and communications, THz networks, age of information, and simultaneously transmitting and reflecting surfaces. Furthermore, the tutorial discusses new applications of NGMA designs, e.g., semantic communications and mobile edge computing. Finally, it investigates the use of new tools, i.e., machine learning approaches, in NGMA networks, ushering in high-dimensional computing. Finally, it investigates the use of new tools, i.e., machine learning approaches, in NGMA networks, ushering in smart computing.

Zhiguo Ding received his Ph.D degree in Electrical Engineering from Imperial College London in 2005. Since Apr. 2018, he has been with the University of Manchester as a Professor in Communications. From Sept. 2012 to Sept. 2020, he has also been an academic visitor in Princeton University. Dr. Ding’s research interests are machine learning, B5G networks, cooperative and energy harvesting networks, and statistical signal processing. He is serving as an Area Editor for the IEEE OJ-COMS, an Editor for IEEE TVT and OJ-SP, and was an Editor for IEEE TCOM, IEEE WCL, IEEE CL and WCMC. He was the TPC Co-Chair for the 6th IET ICWMMN2015, Symposium Chair for ICNC 2016, and the 25th WOCC, and Co-Chair of WCNC-2013 Workshop on New Advances for Physical Layer Network Coding. He received the best paper award in IET Comm. Conf. on Wireless, Mobile and Computing 2009 and the International Conference on WCSP 2015; the EU Marie Curie Fellowship 2012-2014, IEEE TVT Top Editor 2017, 2018 IEEE Communication Society Heinrich Hertz Award, 2018 IEEE Vehicular Technology Society Jack Neubauer Memorial Award, and 2018 IEEE Signal Processing Society Best Signal Processing Letter Award. He is a Web of Science Highly Cited Researcher and member of the IEEE. Yuanwei Liu received the PhD degree in electrical engineering from the Queen Mary University of London, U.K., in 2016. He was with the Department of Informatics, King’s College London, from 2016 to 2017, where he was a Post-Doctoral Research Fellow. He has been a Senior Lecturer (Associate Professor) with the School of Electronics Engineering and Computer Science, Queen Mary University of London, since Aug. 2021, where he was a Lecturer (Assistant Professor) from 2017 to 2021. His research interests include non-orthogonal multiple access, reconﬁgurable intelligent surface, integrated sensing and communications, and machine learning. Yuanwei Liu is a Web of Science Highly Cited Researcher since 2021, an IEEE Communication Society Distinguished Lecturer, an IEEE Vehicular Technology Society Distinguished Lecturer, and the academic Chair for the Next Generation Multiple Access Emerging Technology Initiative. He was listed as one of 35 Innovators Under 35 China in 2022 by MIT Technology Review. He received IEEE ComSoc Outstanding Young Researcher Award for EMEA in 2020. He received the 2020 IEEE Signal Processing and Communications (SPCC) Technical Early Achievement Award, IEEE Communication Theory Technical Committee (CTC) 2021 Early Achievement Award. He received IEEE ComSoc Outstanding Young Researcher Showcase Award in 2021. He is the co-recipient of the Best Student Paper Award in IEEE VTC2022-Fall, the Best Paper Award in ISWCS 2022, and the 2022 IEEE SPCC-TC Best Paper Award. He serves as the Co-Editor-in-Chief of IEEE Comssec TC Newsletter, an Area Editor of IEEE Communications Letters, an Editor of the IEEE Transactions on Wireless Communications and the IEEE Transactions on Communications. He serves as the Guest Editor for IEEE JSAC on Next Generation Multiple Access, IEEE ISTSP on Intelligent Signal Processing and Learning for Next Generation Multiple Access, and IEEE Network on Next Generation Multiple Access for 6G. He serves as the Publicity Co-Chair for IEEE VTC 2019-Fall, Symposium Co-Chair for Cognitive Radio & AI-Enabled Networks for IEEE GLOBECOM 2022 and Communication Theory for IEEE GLOBECOM 2023. He was the chair of Special Interest Group (SIG) in SPCC Technical Committee on signal processing Techniques for next generation multiple access, the vice-chair of SIG WTC on Reconfigurable Intelligent Surfaces for Smart Radio Environments.

The following tutorials have been cancelled.


Cheng-Xiang Wang, Jie Huang, Southeast University, China; Chen Huang, Purple Mountain Laboratories, China; Harald Haas, University of Strathclyde, UK

T2: Aerial and Ground Autonomous Vehicles for Smarter and More Sustainable Cities: Opportunities and Challenges

Celmi Wu, University of Electro-Communications, Japan; Soufiene Djaehel, University of Huddersfield, United Kingdom

T3: Delay-Doppler Domain Multi-Carrier Waveform for NextG

Hai Lin, Osaka Metropolitan University, Japan; Jinhong Yuan, University of New South Wales, Australia

T7: Multi-Tier Computing in Decentralized 6G Communication Networks

Aydin Sezgin, Ruhr University Bochum, Germany; Hayssam Dahrouj, University of Sharjah, UAE; Robert-Jerom Reifert, Ruhr University Bochum, Germany

T11: Vehicle-to-Vehicle (V2V) Communication Using Visible Light

Anand Srivastava, IIIT Delhi, India
**Keynotes**

**Wednesday, 11 October 2023, 9:00–9:45 Ballroom 1**

**Visualizing the Environment with the Aid of Integrated Sensing and Communication (ISAC) as well as AI**

Peiying Zhu, Senior Vice President of Wireless Research, Huawei

6G will integrate sensing with communication in a single system. Radio waves can be exploited to “see” the physical world, open the door to create digital twins in the cyber world. The concept of integrated sensing and communication (ISAC) has now been evolving for a while, which has attracted wide-ranging research activities in the investigation of use cases, requirements, joint radio waveform and/or beamforming design, channel modelling, detection and estimation algorithms, system architecture design etc. In June 2023, ISAC has formally been agreed as one of the new usage scenarios in the ITU-R Framework Recommendation for IMT-2030. In this talk, we will discuss the new possibilities brought about by ISAC in the context of future 6G networks, emphasizing the new use case of reconstructing the environment in both indoor and outdoor scenarios with collaboration between base stations or between base station and user devices. We will explore how ISAC, combined with AI, can further enhance the feasibility of understanding the surrounding environment. Challenges in ISAC system evaluation including the need for a hybrid channel model will also be discussed. Last but not least, a sensing data set open to researchers for evaluations will also be included at the end of the talk.

Dr. Peiying Zhu, Senior Vice President of Wireless Research, is a Huawei Fellow, IEEE Fellow and Fellow of Canadian Academy of Engineering. She is currently leading 6G wireless research and standardization in Huawei. The focus of her research is advanced radio access technologies. She is actively involved in 3GPP and IEEE 802 standards development. Prior to joining Huawei in 2009, Peiying was a Nortel Fellow and Director of Advanced Wireless Access Technology in the Nortel Wireless Technology Lab.

**Wednesday, 11 October 2023, 9:45–10:30 Ballroom 1**

**Configuring MIMO Links Using Machine Learning**

Robert W. Heath, President and CEO, MIMO Wireless Inc

Robert W. Heath, Jr. is a Cullen Trust for Higher Education Endowed Professor in the Department of Electrical and Computer Engineering at The University of Texas at Austin and a Member of the Wireless Networking and Communications Group. He is also the President and CEO of MIMO Wireless Inc and Chief Innovation Officer at Kuma Signals LLC. His research interests include several aspects of wireless communication and signal processing: limited feedback techniques, multihop networking, multiuser and multicell MIMO, interference alignment, adaptive video transmission, manifold signal processing, and millimeter wave communication techniques. He is the a former Chair of the IEEE COMSOC Communications Technical Theory Committee. He was a technical co-chair for the 2007 Fall Vehicular Technology Conference, general chair of the 2008 Communication Theory Workshop, general co-chair, technical co-chair and co-organizer of the 2009 IEEE Signal Processing for Wireless Communications Workshop, local co-organizer for the 2009 IEEE CAMSAP Conference, technical co-chair for the 2010 IEEE International Symposium on Information Theory, the technical chair for the 2011 Asilomar Conference on Signals, Systems, and Computers, general chair for the 2013 Asilomar Conference on Signals, Systems, and Computers, founding general co-chair for the 2013 IEEE Globecom conference, and was technical co-chair for the 2014 IEEE Globecom conference. He has been involved in various IEEE service activities including being the lead guest editor for an IEEE Journal on Selected Topics in Signal Processing special issue on Millimeter Wave communication. Prof. Heath is a recipient of the 2012 Signal Processing Magazine Best Paper award, a 2013 Signal Processing Society best paper award, the 2014 EURASIP Journal on Advances in Signal Processing best paper award, and the 2014 Journal of Communications and Networks best paper award. He is a licensed Amateur Radio Operator, a registered Professional Engineer in Texas, and a Fellow of the IEEE.

**Thursday, 12 October 2023, 9:00–9:45 Ballroom 1**

**Terahertz Communications: From the Near Field to Satellite Networks**

Josep Miquel Jornet, Professor, Northeastern University

The need for ever-increasing bandwidth is driving the research community to explore new spectrum frontiers. The sub-terahertz and terahertz bands (0.1–10 THz) offer a vast swath of untapped spectrum that could be used for many innovative communication and sensing applications. Over the last decade, remarkable progress in electronic, photonic, and plasmonic technologies has significantly narrowed the terahertz technology gap. Moreover, in-depth studies on terahertz signal propagation, combining physics-based and data-driven approaches, have dispelled misconceptions surrounding the terahertz channel. However, several communication roadblocks must be overcome to unleash the spectrum above 100 GHz. This talk will follow a bottom-up approach to highlight innovative solutions and open challenges for terahertz communications and sensing systems on the ground, in the air, and in space. Topics to be covered include revolutionary graphene-based plasmonic device technologies, ultra-broadband waveform designs that exploit molecular absorption, near-field wavefront engineering techniques akin to optical systems, and early insights into designing a full protocol stack for ultrabroadband ultradirectional networks, always with an eye toward experimental demonstrations with state-of-the-art testbeds.

Josep Miquel Jornet is a Professor in the Department of Electrical and Computer Engineering, the director of the Ultrabroadband Nanonetworking (UN) Laboratory, and the Associate Director of the Institute for the Wireless Internet of Things at Northeastern University (NU). He received a Degree in Telecommunication Engineering and a Master of Science in
Reconfigurable Holographic Surfaces: A New Paradigm to Ultra-Massive MIMO for 6G
Lingyang Song, Boya Distinguished Professor, Peking University

To enable a ubiquitous intelligent information network, the forthcoming 6G wireless communications are expected to provide revolutionary mobile connectivity and high-throughput data services through ultra-massive MIMO. Widely-utilized phased arrays relying on costly components make the implementation of ultra-massive MIMO in practice become prohibitive from both cost and power consumption perspectives. To address this issue, we propose reconfigurable holographic surfaces (RHSs), which compose of densely packing sub-wavelength metamaterial elements. The RHS can achieve holographic beamforming without costly hardware components. By leveraging the holographic principle, the RHS serves as an ultra-thin and lightweight surface antenna integrated with the transceiver, thereby providing a promising alternative to phased arrays. In this keynote talk, we will first introduce the unique features of RHSs which enable ultra-massive MIMO for both communication and sensing, in a comprehensive way. Typical RHS-based applications for both wireless communications and radio-frequency sensing will be explored. Formalized analysis of several up-to-date challenges and technical details on system design will be provided for different applications.

Lingyang Song is a Boya Distinguished Professor at Peking University, where he directs the Institute of Information and Communication Technology. He received his PhD from the University of York, UK. He worked as a research fellow at the University of Oslo, Norway, and then rejoined Philips Research in UK as a senior research scientist. He has published extensively in peer-reviewed journals and conferences and received many Best Paper Awards, including IEEE Communications Society Heinrich Hertz Award, IEEE Communications Society Asia Pacific Outstanding Paper Award, IEEE ICC, IEEE GlobeCom 2014, ACM MobiHoc, etc. His h-index is 81, with a total citation exceeding 22,000 according to Google Scholar. He is a Fellow of IEEE.

He has been elected to serve the IEEE Vehicular Technology Society Board of Governors. He has served as a Distinguished Lecturer of IEEE Communications Society, Area Editor of IEEE Transactions on Vehicular Technology, Chair of IEEE Communications Society Cognitive Network Technical Committee, and Vice Director of IEEE Communications Society Asia Pacific Board.

Mobile Technology Evolution Towards 6G
Doru Calin, AVP, Head of the U.S. 6G Wireless Research Center, MediaTek USA

Dr. Doru Calin is AVP, Head of the U.S. 6G Wireless Research Center and the Lead Research Scientist, 6G at MediaTek USA. In this role, he leads MediaTek’s advanced research for next generation cellular technologies.

He started his career as a Senior Research Engineer with Motorola Research Labs, Paris, France, before joining Bell Labs in New Jersey. He led the creation and incubation of novel technologies from inception stage to field trials in customer networks and market adoption, and became a Bell Labs Fellow, being recognized “for bridging the gap between theory and practice with key innovations at the foundation of the first metro cell products, commercial wireless capacity planning services and network protocols optimization solutions”. He was a Sr. Director and the Edge Cloud Innovation Domain Leader at Nokia Mobile Networks’ CTO, with responsibilities for accelerating innovations in 5G, mobile network virtualization, mobile cloud computing, IoT, and verticals for adding business value to networks. He also spearheaded one of the fastest growing businesses with Nokia Enterprise, as the Head of private wireless networks for digital industries in North America.

Doru holds 37 independent patents awarded in multiple countries and over 100 peer-reviewed publications/tutorials/keynotes. He is the recipient of several awards, including two Bell Labs President’s Gold Awards, four Bell Labs Teamwork Awards, IEEE WCNC 2015 Best Paper Award, and Motorola 3GPP Standard Award. Dr. Calin is an Editorial Board Member of the IEEE Wireless Communications and served as an Associate Editor of IEEE Communications Letters and as an Editorial Board Member of Springer’s Wireless Personal Communications Journal. For the past fourteen years, he has been also serving as an Adjunct Professor of Electrical Engineering at Columbia University in New York City.

Task-oriented Communications
Angela Yingjun Zhang, Professor, The Chinese University of Hong Kong

Task oriented communications, which extracts only task-relevant information for transmission, is envisioned to be a key enabler to alleviate the communication burden in next-generation wireless networks. Thanks to the recent advances in AI, deep neural networks (DNNs) has been introduced for task-relevant information extraction. Nonetheless, most existing work either overly simplifies the wireless channel as bit pipes or design the learning and communication modules separately with distinct objectives. Conventionally, the learning module targets accurate execution of specific tasks, while
the communication module aims at throughputs maximization, delay minimization, or bit error rate minimization. The inconsistency between the design objectives hinders the exploitation of the full benefits of task-oriented communications. In this talk, we advocate a unified task-oriented communication design, in which learning and communication share a common objective, i.e., the successful completion of the task. In particular, we base our design on a recently emerged concept of maximum coding rate reduction (MCR2), a white-box deep neural network structure.

Angela Yingjun Zhang received her Ph.D. degree from the Department of Electrical and Electronic Engineering, The Hong Kong University of Science and Technology. She joined the Department of Information Engineering, The Chinese University of Hong Kong in 2005, where she is now a professor. Prof. Zhang is now a Member-at-Large of IEEE ComSoc Board of Governors, a member of the Steering Committees of IEEE Transactions on Mobile Computing, IEEE Wireless Communication Letters, and IEEE SmartgridComm Conference. Previously, she served as a member of IEEE ComSoc Fellow Evaluation Standing Committee, the Editor-in-Chief of IEEE Open Journal of the Communications Society, the Chair of the Executive Editor Committee of IEEE Transactions on Wireless Communications and many years on the editorial boards of IEEE Transactions on Wireless Communications, IEEE Transactions on Communications, IEEE JSAC special issues, IEEE IoT Journal special issues, and IEEE Communications Magazine special issues. Prof. Zhang has served on the Organizing Committees of many top conferences, such as IEEE GLOBECOM, ICC, VTC, SmartgridComm, etc. She was the Founding Chair of IEEE ComSoc Technical Committee of Smart Grid Communications. Prof. Zhang is a co-recipient of 2021 and 2014 IEEE ComSoc Asia Pacific Outstanding Paper Awards, 2013 IEEE SmartgridComm Best Paper Award, and 2011 IEEE Marconi Prize Paper Award on Wireless Communications. As the only winner from engineering science, Prof. Zhang won the Hong Kong Young Scientist Award 2006, conferred by the Hong Kong Institute of Science.

Industry Panels

Wednesday, 11 October 2023, 11:00-12:30  Ballroom 1
Keynote Speakers Panel
Panelists: Doru Calin
Josep Miquel Jornet
Lingyang Song
Peiying Zhu
Robert W. Heath

Doru Calin’s bio appears on Page 17.
Josep Miquel Jornet’s bio appears on Page 16.
Lingyang Song’s bio appears on Page 17.

Thursday, 12 October 2023, 11:00-12:30  Ballroom 1
Future Research and Standardization Directions for 6G
Moderator: Ruiqi (Richie) Liu
Panelists: Justin Chuang
Cunhua Pan
Chaowei Duan

Ruiqi (Richie) Liu 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 research institute of ZTE Corporation, responsible for long-term research as well as standardization. His main research interests include reconfigurable intelligent surfaces, integrated sensing and communication and wireless positioning. He is the author or co-author of several books and book chapters. He has participated in national key research projects as the researcher or research lead. During his 3-year service at 3GPP from 2019 to 2022, he has authored and submitted more than 500 technical documents with over 100 of them approved, and he served as the co-rapporteur of the work item (WI) on NR RRM enhancement and the feature lead of multiple features. He currently serves as the Vice Chair of ISG RIS in the ETSI. He actively participates in organizing committees, technical sessions, workshops, symposia and industry panels in IEEE conferences as the chair, organizer, moderator, panelist or invited speaker. He served as the guest editor for Digital Signal Processing and the lead guest editor for the special issue on 6G in IEEE OJCOMS. He serves as the Editor of ITU Journal of Future and Evolving Technologies (ITU J-FET) and the Associate Editor of IET...
experienced in taking research through engineering to commercialization for communications technologies, from algorithms, chipsets, platforms to applications.

Over the decade since joining ASTRI, Dr Chuang and his team are leveraging the collaborative efforts among government, industry, university and research organizations to drive the advancement and commercialization of enabling technologies for 4G, 5G and beyond. Specifically, his team currently provides open platforms to enable affordable and customizable solutions, such as end-to-end 5G and smart mobility technologies for current and future applications.

Some thoughts on Several Key Potential Techniques in 6G Systems

Cunhua Pan, Southeast University, China

Cunhua Pan received the B.S. and Ph.D. degrees from the School of Information Science and Engineering, Southeast University, Nanjing, China, in 2010 and 2015, respectively. From 2015 to 2016, he was a Research Associate at the University of Kent, U.K. He held a post-doctoral position at Queen Mary University of London, U.K., from 2016 and 2019. From 2019 to 2021, he was a Lecturer in the same university. From 2021, he is a full professor in Southeast University.

His research interests mainly include reconfigurable intelligent surfaces (RIS), intelligent reflection surface (IRS), ultra-reliable low latency communication (URLLC), machine learning, UAV, Internet of Things, and mobile edge computing. He has published over 120 IEEE journal papers. He is currently an Editor of IEEE Transactions on Vehicular Technology, IEEE Wireless Communication Letters, IEEE Communications Letters and IEEE ACCESS. He serves as the guest editor for IEEE Journal on Selected Areas in Communications on the special issue on xURLLC in 6G: Next Generation Ultra-Reliable and Low-Latency Communications. He also serves as a leading guest editor of IEEE Journal of Selected Topics in Signal Processing (JSTSP) Special Issue on Advanced Signal Processing for Reconfigurable Intelligent Surface-aided 6G Networks, leading guest editor of IEEE Vehicular Technology Magazine on the special issue on Backscatter and Reconfigurable Intelligent Surface Empowered Wireless Communications in 6G, leading guest editor of IEEE Open Journal of Vehicular Technology on the special issue of Reconfigurable Intelligent Surface Empowered Wireless Communications in 6G and Beyond, and leading guest editor of IEEE ACCESS Special Issue on Reconfigurable Intelligent Surface Aided Communications for 6G and Beyond. He is a Workshop organizer in IEEE ICCC 2021 on the topic of Reconfigurable Intelligent Surfaces for Next Generation Wireless Communications (RIS for 6G Networks), and workshop organizer in IEEE Globecom 2021 on the topic of Reconfigurable Intelligent Surfaces for future wireless communications. He is currently the Workshops and Symposia officer for Reconfigurable Intelligent Surfaces Emerging Technology Initiative. He received the IEEE ComSoc Leonard G. Abraham Prize in 2022, IEEE ComSoc Asia-Pacific Outstanding Young Researcher Award, 2022.

AI based physical layer for future wireless communications

Chaowei Duan, Haige Communication, China

Chaowei Duan received the B.S. from the Department of Communication Engineering, Xidian University, Xian, China in 2013 and Ph.D degree from the Department of Aerospace Engineering, Tsinghua University, Beijing, China, in 2019. He is currently a communication engineer and leads the AI communication lab in Guangzhou Haige Communication Group Incorporated Company. His current research interests include signal processing, deep space communications and deep learning based communications. He holds several patents and publications in wireless communications. He has participated in national key research projects as project lead.

He has been selected into the Young Talent Support Project of Guangzhou Association for Science and Technology and Elite Talents of Guangzhou Hi-Tech Development Zone in 2022.

Registration

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

- Tuesday 10 October 0700 – 1730
- Wednesday 11 October 0700 – 1730
- Thursday 12 October 0800 – 1730
- Friday 13 October 0800 – 1730

Social Events

Coffee breaks and lunches will take place in the Ballroom Foyer. Lunches and the banquet are included in the full registration. The lunches will be in Ballroom 1 and the banquet in Ballroom 2 & 3. You will need your ticket to gain entry. Do not forget these as they cannot be replaced. The reception on Tuesday evening, which is Ballroom 1, is open to all attendees, including student and life registrations.
## VTC2023-Fall Technical Program

### Tuesday 10 October 2023

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<th>Title</th>
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<tr>
<td>1E: Intelligence-empowered Wireless</td>
<td>Meeting Room 2</td>
<td>1 Cohort-based Power Scaling and Gradient Recovery for</td>
<td>Kooadai Terai; Yi-Han Chiang, Hai Lin, Osaka Metropolitan University;</td>
<td>Minyoung Seo; Seok-Ho Chang, Konkuk University</td>
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<td>Over-The-Air Federated Learning</td>
<td>Yusheng Ji, National Institute of Informatics</td>
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<td>2 Efficient Channel Estimation for OFDM Systems with Reduced Pilot</td>
<td>Qi Wang; Xiaojing Wu, Yue Xiao, University of Electronic Science</td>
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<td>Overhead</td>
<td>and Technology of China</td>
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<td>2 Enhancing User Detection via SS Burst Repetition in 5G</td>
<td>Neeta Jha; Saptarshi Chaudhuri, International Institute of Information</td>
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<td>Millimeter Wave Systems</td>
<td>Technology Bangalore; Jyotina Bapat, International Institute of</td>
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<td>Information Technology; Amrita Mishra, Debabrata Das,</td>
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<td>International Institute of Information Technology Bangalore</td>
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<td>3 Strategic Positioning On-Board PEPs in LEO-based NTN for TCP</td>
<td>Kyeongnam Park; Kyungha Kim, Hyunjuon Shin, Hojeong Lee;</td>
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<td>Throughput Improvement</td>
<td>Hyogyun Kim, Korea University</td>
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<td>4 Sum Rate Maximization for Regularized Zero-Forcing Precoder in</td>
<td>Ferhad Askerbeyli, Huawei Munich Research Center / Technical University</td>
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<td>1-Bit MIMO</td>
<td>of Munich; Wen Xu, Huawei Technologies Duesseldorf GmbH;</td>
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<td>Josef A. Nossek, Technical University of Munich</td>
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<td>5 On the channel estimation of low-PAPR waveform for 5G Evolution</td>
<td>Lijun Yang; Lifin Dan, Yuanjie Hu, University of Electronic Science</td>
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<td>and 6G</td>
<td>and Technology of China; Saviour Zammit, University of Malta</td>
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<tr>
<td>2E: Performance Improvement for Wireless</td>
<td>Meeting Room 2</td>
<td>1 Rate-Splitting and Sum-DoF for the K-User MISO Broadcast Channel</td>
<td>Shuo Zheng; Southern University of Science and Technology; Tong</td>
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<td></td>
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<td>with Mixed CSIT and Order-(K-1) Messages</td>
<td>Zhang; Jian University; Jingfu Li, Surrey University; Shuai Wang;</td>
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<td>Shenzhen Institute of Advanced Technology; Weijie Yuan, Southern</td>
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<td>University of Science and Technology; Gaoguo Chen, University of</td>
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<td>Surrey; Rui Wang, Southern University of Science and Technology;</td>
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<td>2 Semantic Communication for Efficient Image Transmission Tasks</td>
<td>Lei Zhong, Toyota Motor Corporation; Xianfu Chen, VTT Technical</td>
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<td>based on Masked Autoencoders</td>
<td>Research Centre of Finland; Yusheng Ji, National Institute of Informatics</td>
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<td>WU JALE, The University of Electro-Communications; Celimuge Wu;</td>
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<td>University of Electro-Communications; Japan; Yangfei Lin,</td>
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<td>3 Waveform Design of Spectrum Sharing Radar in a Multi-path Scenario</td>
<td>Haoaya Zhang; Li Chen, Guo Wei, University of Science and</td>
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<td>4 Neural Adjusted Min-Sum Decoding for LDPC Codes</td>
<td>Haochen Yu; Ming-Min Zhao, Ming Lei; Minjian Zhao, Zhejiang University</td>
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<td>5 Coarse Initial Time Synchronization for OTFS</td>
<td>Min-Zhi Xu; Char-Dir Chung, National Taiwan University; Wei-Chang</td>
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<td>Chen, National Taipei University of Technology</td>
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### Wednesday 11 October 2023

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<tr>
<td>3B: Advanced Transmission Techniques</td>
<td>Ballroom 2</td>
<td>1 Rate-Splitting and Sum-DoF for the K-User MISO Broadcast Channel</td>
<td>Nan Cheng, XiDian University</td>
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<td>WU JALE, The University of Electro-Communications; Celimuge Wu;</td>
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### Wednesday, 11 October 2023 11:00-12:30 Ballroom 3

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<tbody>
<tr>
<td>3C: AI and Machine Learning</td>
<td>Ballroom 3</td>
<td>1 Knowledge-Driven Multi-Agent Reinforcement Learning for</td>
<td>Yangfei Lin, Shenzhen University; Cheng Guo, Pengcheng Laboratory;</td>
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<td>Computation Offloading in Cybertwin-Enabled Internet of Vehicles</td>
<td>Zhaoyang Liu, Xijun Wang, Sun Yat-sen University</td>
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<td>2 P-DRR: PPO-Based Efficient Dynamic Resource Reallocation Scheme</td>
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<td>in Industrial Internet of Things</td>
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<td>3 Robust Meta Soft Actor-Critic Based Sequential Power Control in</td>
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<td>Vehicular Networks</td>
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<td>4 A Multi-Agent Reinforcement Learning Approach for Dynamic</td>
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<td>Offloading with Partial Information-Sharing in IoT Networks</td>
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<td>5 On the channel estimation of low-PAPR waveform for 5G Evolution</td>
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### Wednesday, 11 October 2023 11:00-12:30 Meeting Room 1

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<tbody>
<tr>
<td>3D: Vehicular Security</td>
<td>Meeting Room 1</td>
<td>1 can-train-and-test: A New CAN Intrusion Detection Dataset</td>
<td>Deepak Panda, Cranfield University</td>
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### Conference Details

**Event:** VTC2023-Fall

**Dates:** 9-12 October 2023

**Location:** The University of Electro-Communications, Japan

**Topics:** Vehicular Technology, Communication Systems, Wireless Communications, Machine Learning, and many more.

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**Chair:** Celimuge Wu, The University of Electro-Communications, Japan

**Contact:** VTC2023-Fall Conference Office

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**Abstracts:** For more detailed information, visit the official VTC2023-Fall Conference website.
2 Distributed Misbehavior Detection based on Vehicle Perception Model and CPM Data Collection
Shabbir Ali, Institut Vedecon; Pierre Merdrignac, VEDECOM Institute

3 Federated Learning based Vehicular Threat Sharing: A Multi-Dimensional Contract Incentive Approach
Chao He, Xidian university; Tom H. Luan, Nan Cheng, , Xidian University; Guiyi Wei, Zhejiang Gongshang University; Zhou Su, Shanghai University, China; Yilang Liu, Xi’an Jiaotong University

4 FedVAE: Trajectory privacy preserving based on Federated Variational AutoEncoder
Yuchen Jiang, Ying Wu, Shiyou Zhang, James J. Q. Yu, Southern University of Science and Technology

5 Fragility Impact of RL Based Advanced Air Mobility under Gradient Attacks and Packet Drop Constraints
Deepak Kumar Panda, Weisi Guo, Cranfield University

Wednesday, 11 October 2023 11:00-12:30 Meeting Room 2

3E: Joint Designs of Wireless Communications and Radar
Chair: Xianhao Chen, Hongkong University

1 Bistatic Joint Radar and Communication with 5G Signal for Range Speed Angle Detections
Xiaojuan Zhang, Yuguang Ma, Yonghong Zeng, Sumei Sun, Yuhong Wang, Institute for Infocomm Research

2 Energy-Efficient, Turbulence-Regime based Adaptive FSO Broadcast Systems
Neha Tiwari, Swades De, Dharmaraja Selvamuthu, Indian Institute of Technology Delhi

3 Fundamental Limits on Joint Delay and Doppler Characterization in UWB ISAC Systems
Xunze Wang, Fan Liu, Zeren Zhang, Harbin Institute of Technology, Shenzhen; Tingting Zhang, Harbin Institute of Technology (Shenzhen)

4 Gesture Recognition Using Multiple mmWave FMCW Radars
Yanhuai Zhao, IHP, Germany and HU, Berlin; Vladica Sark, Leibniz-Institut für innovative Mikroelektronik; Milos Krstic, IHP - Leibniz-Institut für innovative Mikroelektronik; Eckhard Grass, IHP, Germany and HU, Berlin

5 Joint Hybrid Precoder and RIS Design for RIS-Aided MIMO-OFDM Systems
Shao-Xuan Yu, Ming-Chun Lee, Po-Chun Kang, Ta-Sung Lee, National Yang Ming Chiao Tung University

Wednesday, 11 October 2023 11:00-12:30 Function Room

3G: Coexistence of Multiple Radio Access Techniques
Chair: Changsheng You, Southern University of Science and Technology

1 Basestation Choose and Power Allocation Aiming at Maximizing Energy-efficiency for Data Offloading LEO Satellite-ground Network
Shihan Jin, Southeast University; Tianyang Cao, Yaoming Huang, Likun Zhu, China Mobile Group Design Institute Co; Jiangtao Liu, Haoyu Du, Chen Ming, Southeast University

2 Integrated Robotics Networks with Co-optimization of Drone Placement and Air-Ground Communications
Menghao Hu, Tong Zhang, Jinan University; Shuai Wang, Guoliang Li, Shenzhen Institute of Advanced Technology, Yingyang Chen, Qiang Li, Jinan University; Gaojie Chen, University of Surrey

3 Unified Multi-User Multiplexing Scheme With Enhanced NOMA (eNOMA) for HAPS
Wenjia Liu, DOCOMO Beijing Labs; Xiaolin Hou, DOCOMO Beijing Communications Laboratories Co., Ltd; Chen Lan, DOCOMO Beijing Communications Lab; Takahiro Asai, NTT DOCOMO, INC.

4 Configured Grant Scheduling for the Support of TSN Traffic in 5G and Beyond Industrial Networks
Mª Carmen Lucas Estañ, Universidad Miguel Hernandez de Elche (UMH); Ana Larraga, Koichi Nishikawa, Shinsuke Ibi, Doshisha University; Takumi Haoyu Du, Chen Ming, Southeast University; Tianyang Cao, Yaoming Huang, Likun Zhu, China Mobile Group Design Institute Co; Jiangtao Liu, Haoyu Du, Chen Ming, Southeast University; Gaojie Chen, University of Surrey

5 User-centric Virtualized CPU Deployment and AP Clustering for Scalable Cell-free Massive MIMO
Akio Ikami, Yu Tsukamoto, Naoki Aihara, Takahide Murakami, Hiroyuki Shinbo, Yoshiaki Amano, KDDI Research, Inc.

Wednesday, 11 October 2023 14:00-15:30 Ballroom 1

4A: UAV
Chair: Tiago Koketsu Rodrigues, Tohoku University

1 Impact of UAV Failure and Severe Weather Conditions in mmWave and Terahertz Signals for Aerial Edge Computing
Reham Wafaee Ibrahim, Tiago Koketsu Rodrigues, Nei Kato, Tohoku University

2 3D State Transition Modeling and Power Allocation for UAV-aided ISAC System
Hyunwoo Kim, Minyoung Hwang, Jeongju Jee, Korea Advanced Institute of Science and Technology; Jihong Park, Deakin University; Hyuncheol Park, Korea Advanced Institute of Science and Technology (KAIST)

3 A Bandwidth Allocation Algorithm Mitigating Unfairness Issues in a UAV-Aided Flying Base Station Used for Disaster Recovery
Shu Mitsui, Hiroki Nishiyama, Tohoku University

4 Collaborative Caching and Power Allocation for Multiple UAV-assisted Emergency Communication Network with Parameterized Reinforcement Learning
JinSen Tan, Jiangtao Luo, Chongqing University of posts and telecommunications; Yongyi Ran, Adhizi Delali Yao, Chongqing University of Posts and Telecommunications

5 Ensemble DNN for Age-of-Information Minimization in UAV-assisted Networks
Mouhamed Naby Ndiaye, ElHoucine Bergou, Mohammed VI Polytechnic University; Hajar El Hammouti, UM6P

Wednesday, 11 October 2023 14:00-15:30 Ballroom 2

4B: Coding and Implementation
Chair: Xinwei Yue, Beijing Information Science and Technology University

1 Blind Self-Interference Canceller with Adaptive Differential Delay for IBFD in the Presence of Fractional Delay Path
Koichi Nishikawa, Shinshuke Ibi, Doshisha University; Takumi Takahashi, Osaka University; Hisato Iwai, Doshisha University

2 FPGA Implementation of Efficient 2D-FFT Beamforming for On-Board Processing in Satellites
Rakesh Palisetty, University of Luxembourg; Geoffrey Eappen, Vibhum Singh, SnT, University of Luxembourg; Luis Manuel Garces-Socarras, University of Luxembourg; Vu Nguyen Ha, SnT, University of Luxembourg; Juan A. Vázquez-Peralvo, University of Luxembourg; Jorge Luis Gonzalez, Juan Merlando Duncan, SnT, University of Luxembourg; Wallace A. Martins, ISAE-SUPAERO, Université de Toulouse; Symeon Chatzinotas, SnT, University of Luxembourg; Bjorn Ottersten, University of Luxembourg; Adem Coskun, Stephen King, Salvatore D’Addio, Piero Angeletti, European Space Agency

3 Efficient Hardware Implementation of Soft Demapper for WiFi7 4096-QAM
Sooonwoon Choi, Minki Ahn, Junyoung Jeong, Samsung Electronics

4 Blind Source Separation for Parameters Estimation Under Mixed Gaussian-Impulsive Noise: An U-net++ Based Method
Tianfu Qi, Jun Wang, Xiaonan Chen, Wei Huang, Qihang Peng, University of Electronic Science and Technology of China
5 Capacity of the Mixed Gaussian-Impulsive Noise Channel
Tianfu Qi, Jun Wang, Xiaonian Chen, Qihang Peng, Wei Huang, University of Electronic Science and Technology of China

Wednesday, 11 October 2023 14:00-15:30 Meeting Room 3
4C: Energy Efficiency and Low Latency
Chair: George Efthymoglou, University of Piraeus

1 Beacon-Assisted Wireless Power Communications in Nakagami-m Fading with Multiple Interferers
Valentine Aalo, Florida Atlantic University; Petros Bithas, National and Kapodistrian University of Athens; George Efthymoglou, University of Piraeus

2 Energy-Limited UAV Visiting Planning for Age-Aware Wireless-Powered Sensor Networks
Hanbin Hong, Yi Zhang, Yajing Xie, Xiamen University

3 Joint Offloading Policy and Resource Allocation in IRS-aided MEC for IoT Users with Short Packet Transmission
Jalal Jalali, University of Antwerp - imec, IDLab - Faculty of Applied Engineering; Ata Khullil, Friedrich-Alexander-University Erlangen-Nurnberg; Rafael Berkvens, University of Antwerp - imec, IDLab - Faculty of Applied Engineering; Jeroom Famaey, IDLab, University of Antwerp - imec

4 Time-Sensitive IoT System based on BLE Physical Layer
Hao Huang, Shann-Tsong Sheu, National Central University

5 On the Information Freshness of A Two-Sensor Status Update System
Tianqiang Yang, Zhengchuan Chen, Chongqing University; Howard H. Yang, Zhejiang University; Nikolaos Pappas, Linköping University; Min Wang, Chongqing University of Posts and Telecommunications; Yunjian Jia, Chongqing University; Tony Q.S. Quek, Singapore University of Technology and Design

Wednesday, 11 October 2023 14:00-15:30 Meeting Room 1
4D: Vehicular Communications
Chair: Mingming Zhen, Huazhong University of Science and Technology

1 Multi-Source Low Redundancy Data-Aided Beam Prediction for V2I Communication
Xiaojian Niu, Yuchuan Fu, Mengyuan Dong, Nan Cheng, Changle Li, Xidian University

2 BFP-Net:A Deep Learning Solution for Beamforming Prediction in Extended Vehicular Scenario based ISAC System
Ting Zhou, Peng Chen, Zhengxin Cao, Southeast University

3 Deep Reinforcement Learning-Based Train-Ground Beamforming Management for Multi-MR Mm-wave Communication
Yuanjuan Qiao, Yong Niu, Xiangfei Zhang, Beijing Joint Traction University; Ning Wang, Zhengzhou University; Zhonghui Zhong, Bo Ai, Beijing Joint Traction University

4 Embedded CR assisted NOMA: Resource Allocation in Cellular Vehicle-to-Everything
Mingming Zheng, Huazhong University of Science and Technology; Jianlong Zhou, Shenzhen Xinghai IoT Technology Co., Ltd.; Guiyang Pu, China Mobile (Hangzhou) Information Technology Co., Ltd.; Ruoxu Wang, University of Waterloo; Wei Peng, Huazhong University of Science and Technology

5 Fault Detection and Exclusion for Cooperative Vehicles Navigation under High-Precision Positioning
Xiaopeng Hou, Kun Fang, Beihang University; Jichao Dong, Aviation Data Communication Corporation; Zhipeng Wang, Beihang University

Wednesday, 11 October 2023 14:00-15:30 Meeting Room 2
4E: Green Communications
Chair: Manlin Wang, Shanghai Jiao Tong University

1 GreenEdge: Neural-enhanced Green Workload Coordination for Ubiquitous Edge Intelligence
Tina Ziting Xu, Adolf K.Y. Ng, BNU-HKBU United International College

2 Green Resource Allocation with DDPG for Knowledge Learning in Digital Twin-enabled Edges
Xiaoming He, SUTD; Ying Chi Mao, Hohai University; Yinqiu Liu, NTU; Yan Hong, Soochow University

3 Energy-Efficient Frequency Block-Dependent Base Station Sleep Control Based on a Decentralized Probabilistic Approach
Hiroya Kuwahara, Takanori Hara, Tokyo University of Science; Yuto Muroki, Satoshi Nagata, NTT DOCOMO INC.; Kenichi Higuchi, Tokyo University of Science

4 Resource Scheduling Algorithm for Delay Sensitive Service in IoT Scenarios
Hua-Min Chen, Xinqi Zhao, Meihui Li, Beijing University of Technology; Tao Chen, MediaTek Inc.; Prof. Chao Fang, Beijing University of Technology; ShaoFeng Wang, AsiaInfo Technologies (China), Inc.; Shaofu Lin, Beijing University of Technology; Fan Li, Network Optimization Center, China Unicom Beijing Branch

5 Joint Bitrate Transcoding and Parallel Cooperative Transmission Optimization for Adaptive Video Streaming in Edge Assisted Cellular Networks
Yanzan Sun, Wenkai Chen, Guangjin Pan, Shunqing Zhang, Xiaojing Chen, Yating Wu, Shanghai University

Wednesday, 11 October 2023 14:00-15:30 Function Room
4G: Radio Resource Management in Heterogeneous Networks
Chair: Zhaohui Yang, Zhejiang University

1 Joint Rendering Offloading and Resource Allocation Scheme for MEC-Assisted RS VR Systems
Na Su, Junbo Wang, Southeast University; Yijun Pan, Southeast University

2 Optimizing Real-Time Responsiveness in IoT: A Dynamic Approach for WiFi OFDMA Uplink Transmissions
Qiaohan Zhang, Philipp Schulz, Gerhard Fettweis, Technische Universität Dresden

3 Adaptive Transceiver Design for Wireless Hierarchical Federated Learning
Fangtong Zhou, ShanghaiTech University; Xu Chen, Sun Yat-Sen University; Hangguan Shan, Zhejiang University; Yong Zhou, ShanghaiTech University

4 AoI-Aware Dynamic User Scheduling in Vehicular Networks Based on Soft Reinforcement Learning
Zhisen Huang, Chongtao Guo, Jiayi Chen, Bin Liao, Shenzhen University

5 LTE Base Station Synchronous Signal Based RF Fingerprints Identification Scheme
Wenwen Yin, Xuan Yang, Southeast University

Wednesday, 11 October 2023 16:00-17:30 Ballroom 1
5A: UAV2
Chair: Henry Hong-Ning Dai, Hong Kong Baptist University

1 Integrated Communication and Control for Formation Management of UAV Swarms
Yizhe Zhao, Jiuting Wei, University of Electronic Science and Technology of China; Kun Yang, University of Essex

2 Neural-Network-based Dynamic Area Optimization Algorithm for High-Altitude Platform Station
Wataru Takabatake, Yohei Shibata, Kenji Hoshino, SoftBank Corp.

3 One-Step Bandwidth Assignment and Power Allocation for UAV-Enabled UL Heavy NOMA Systems
Haiyong Zeng, Rui Zhang, Guangxi Normal University; Xu Zhu, Yufei Jiang, Harbin Institute of Technology (Shenzhen); Zhongxiang Wei, Tongji University; Fu-Chun Zheng, Harbin Institute of Technology
Technology (Shenzhen) & The University of York; Sunmi Sun, Institute for Infocomm Research

4 Spectrum Sharing Between High-Altitude Platforms and Terrestrial Networks Using Interference Coordination by Null Sweeping
Tsutomu Ishikawa, Koji Tashiro, Kenji Hoshino, Atsushi Nagate, SoftBank Corp.

5 Trajectory Optimization for Cellular-Enabled UAV with Connectivity and Battery Constraints
Hyun-Seung Im, Kyu-Yeong Kim, Si-Hyeon Lee, Korea Advanced Institute of Science and Technology

Wednesday, 11 October 2023 16:00-17:30 Ballroom 2
5B: Intelligent Surface Aided Transmissions
Chair: Lu Xu, Xidian University
1 Achievable Rate in RIS-Aided MU-MIMO System Using Location Information for Phase Shift Design
Jinye Huang, Bin Li, Beijing Institute of Technology

2 Active STAR-RIS Assisted Wireless Information and Power Transfer Systems
Jie Jiang, Bin Lyu, Pengcheng Chen, Zhen Yang, Nanjing University of Posts and Telecommunications

3 IRS-Aided JSDM for mmWave Multiuser MISO Systems: A Low Overhead Scheme
Zijian Chen, Meng-Min Zhao, Min Li, Ming Lei, Minjian Zhao, Zhejiang University

4 DOA Estimation of High Mobility Target in RIS Aided Sensing System
Yangyang Zhao, Peng Chen, Zhenxin Cao, Southeast University

5 Outage Performance of Active RIS in NOMA Networks over Nakagami-Sm Fading Channels
Meiqi Song, Xinwei Yue, Beijing Information Science and Technology University; Chongjun Zhao, Beijing University of Posts and Telecommunications; Yuanwei Liu, Queen Mary University of London; Tian Li, the 54th Research Institute of China Electronics; Tianwei Hou, Beijing Jiaotong University

Wednesday, 11 October 2023 16:00-17:30 Ballroom 3
5C: Security, Privacy, and Efficiency
Chair: Deyi Peng Xiangtan University
1 Incentivizing Private Data Sharing in Vehicular Networks: A Game-Theoretic Approach
Yousef Alsaqabi, University of Southern California; Bhaskar Krishnamachari, USC

2 On Adaptive Client/Miner Selection for Efficient Blockchain-Based Decentralized Federated Learning
Yuta Tomimasu, Koya Sato, The University of Electro-Communications

3 Packet Aggregation Utilizing Multi-Antenna Beamforming in IRDT Protocol
Keigo Saito, Takeo Fujii, Koji Ishibashi, The University of Electro-Communications; Yu Shibata, Soma Toki, Hideki Endo, Tokyo Gas Co. Ltd.

4 Reliable and Low-Latency Intrusion Detection System for Lightweight Internet of Things Environment
Seo-Yi Kim, Na-Eun Park, Il-Gu Lee, Sungshin University

5 Secure and Dynamic Publish/Subscribe: LCMsec
Moritz Jasper, Stefan Köppl, Barhausen Institut

Wednesday, 11 October 2023 16:00-17:30 Meeting Room 1
5D: Vehicular Electronics
Chair: Jayant Vyas, Indian Institute of Technology Jodhpur
1 A proposal for a remote vehicle control emulator coordinated with CARLA, OMNeT++, and SUMO
Kengo Sasaki, Masaki Takamatsu, Katsuaki Senda, Toyota Central R&D Labs., Inc.

2 Dr. MTL: Driver Recommendation using Federated Multi-Task Learning
Jayant Vyas, Bhumiaka, Debasis Das, Santanu Chaudhury, Indian Institute of Technology Jodhpur

3 Interference-robust Waveform for LiDAR
Daniel Bastos, Instituto de Telecomunicações and Universidade de Aveiro; Bruno Faria, Bosch Car Multimedia Braga; Paulo Monteiro, UA, PT; Arnaldo S. R. Oliveira, Instituto de Telecomunicações and Universidade de Aveiro; Miguel V. Drummond, Instituto de Telecomunicações

4 Multi-Robot Task Allocation in Agriculture Scenarios Based on the Improved NSGA-II Algorithm
Ziawwu Wang, Zhao Zixu, Li Lei, University of Chinese Academy of Sciences; Long Long, Institute of Computing Technology, Chinese Academy of Sciences; Zichen Liu, Institute of Computing Technology; Dai Feng, Ma Yike, Jintao Li, Zhang Yucheng, Institute of Computing Technology, Chinese Academy of Sciences

5 V2X Based Cooperative Motion Control and Energy Management for Electronic Vehicles
Li Jiahang, Caikian Chen, Fengkuan Guo, Bo Yang, Xining Guan, Shanghai Jiao Tong University

Wednesday, 11 October 2023 16:00-17:30 Meeting Room 2
5E: Protocol Design and Performance Evaluation
Chair: Lukas Pruse, Leibniz Universität Hannover
1 A Low-Complexity Estimation Scheme for Separated Reflecting Channels of RIS-Assisted MIMO Systems towards Extended Coverage
Likang Zhang, Qinghe Du, Lei Li, Shijiao Zhang, Xi'an Jiaotong University

2 Analytical Framework for Examining Bistability of CSMA/CA-Based Wireless Local Area Networks
Shigeo Shioda, Chiba University

3 TCP Congestion Control Performance Issues in Non-Standalone 5G NR Networks
Lukas Pruse, Mark Ackelrod, Leibniz Universität Hannover

4 5G'TQ: QoS-Aware 5G-TSN Simulation Framework
Rabi Debnath, Mustafa Selman Akinci, Devika Ajith, Sebastian Steinhorst, Technical University of Munich

5 UAV-Enabled Cell-Free Networks: Joint Optimization for User Fairness
Zhaoyang Ding, Xiaofang Sun, Beijing Jiaotong University; Ruihong Jiang, Beijing University of Posts and Telecommunications; Xiaotong Lu, China State Railway Group Co., Ltd.; Zhangdui Zhong, Beijing Jiaotong University; Derrick Wing Kwan Ng, University of New South Wales

Wednesday, 11 October 2023 16:00-17:30 Function Room
5G: RIS Assisted Radio Access Technology
Chair: Guangxu Zhu, Shenzhen Research Institute of Big Data

1 Joint Trajectory and Beamforming Design in UAV-IRS Assisted Covert Communication Systems
Miao Yang, Xuan Xue, Xidian University; Tianqi Yu, Soochow University; Yongchao Wang, University of Xidian

2 Joint Transmission and Deployment Optimization for Active STAR-RISs Assisted Networks
Zhen Wang, Nanjing University of Posts and Telecommunications; Yijin Pan, Southeast University; Ming Cheng, Nanjing University of Posts and Telecommunications; Junbo Wang, Southeast University

3 Robust Resource Allocation for RIS-aided V2X Communications with Imperfect CSI
Weihua Wu, Shuangxi Normal University; Peng Wang, Yue Fan, Xidian University, Xidian University; Runzi Liu, Xi'an University of Architecture and Technology; Wenchao Xia, Nanjing University of Posts and Telecommunications

Jiwei Zhao, Nanjing University; Jiacheng Chen, Peng Cheng Laboratory; Bo Qian, Bo Cheng, Yunxing Xu, Haibo Zhou, Nanjing University

5 Optimized Transmission Strategy for UAV-RIS 2.0 Assisted Communications Using Rate Splitting Multiple Access
Aamer Mohamed Huroon, Yu-Chih Huang, Li-Chun Wang, National Yang Ming Chiao Tung University
Thursday 12 October 2023

**6B: Massive MIMO**
Chair: Lu Lv, Xidian University

1. Improved Expectation Propagation Assisted Grouped Generalized Composition Spatial Modulation for Massive MIMO Systems
   Jing Zhu, Pengyu Gao, Gaojie Chen, Qu Luo, Pei Xiao, University of Surrey; Xiyuan Wang, Kunming University

2. Low-Complexity User-Centric AP Clustering Method in Downlink Cell-Free MIMO with Regularized ZF-Based Beamforming
   Hiroki Kato, Takanori Hara, Tokyo University of Science; Satoshi Suyama, Satoshi Nagata, NTT DOCOMO INC.; Kenichi Higuchi, Tokyo University of Science

3. Hybrid Beamforming Design for ITS-Aided THz Wideband Massive MIMO Non-terrestrial Communication
   Yezeng Wu, Lixia Xiao, Huazhong University of Science and Technology; Jing Zhang, China Electric Technology Group Corporation No.38 Research Institute; Pei Xiao, University of Surrey; Tao Jiang, Huazhong University of Science and Technology

4. Resource Allocation in Cell-Free MU-MIMO Multicarrier System with Finite Blocklength
   Jiafei Pu, Pengcheng Zhu, Southeast University; Bo Ai, Beijing Jiaotong University; Jiangzhou Wang, University of Kent; Xiaohu Yue, Southeast University

5. Scalable Network-Assisted Full-Duplex Cell-Free Massive MIMO With Limited Fronthaul Capacity
   Kosuke Okui, The University of Electro-Communications; Kengo Ando, Giuseppe Abreu, Constructor University; Koji Ishibashi, The University of Electro-Communications

**Thursday, 12 October 2023 11:00-12:30 Ballroom 3**

6C: IoT and IoV
Chair: Florian Schiegg, Robert Bosch GmbH

1. A Fair and Efficient Federated Learning Algorithm for Autonomous Driving
   Xinlong Tang, Juyi Zhang, Yuchuan Fu, Changle Li, Nan Cheng, Xidian University; Xiaoming Yuan, Northeastern University

2. A First Study on the Spectrum Needs for Release 2 V2X Services
   Edmir Xhoxhi, Leibniz University Hannover; Florian Alexander Schiegg, Robert Bosch GmbH

3. An improved NPRACH preamble frequency hopping pattern for reducing preamble collision
   Chanyu Liu, Guoyu Ma, Ruisi He, Bo Ai, Ruifeng Chen, Beijing Jiaotong University; Haoyong Zhang, Ministry of Industry and Information Technology; Bingchong Liu, Aerospace Information Research Institute, Chinese Academy of Sciences

4. Data Rate Control for C-V2X Services in a Single PDU Session based on Expected Maximum Bitrate
   Tetsu Joh, KDDI Research, Inc; Masaki Suzuki, KDDI Research, Inc.; Takeshi Kihara, Tomohiro Ohtani, KDDI Corporation

5. Empirical Study and Signal Intensity Prediction for Cellular Vehicle-to-Everything (C-V2X)
   Yang Lu, Wuhan University of Technology; Yifan Zhang, Tuo Shi, City University of Hong Kong; Jianping Wang, City University of Hong Kong; Hong Kong, Hong Kong; Jen-Ming Wu, Hon Hai Research Institute; Bingyi Liu, Wuhan University of Technology

**Thursday, 12 October 2023 14:00-15:30 Ballroom 2**

7B: Millimeter Communication
Chair: Yezeng Wu, Huazhong University of Science and Technology

1. Fast Codeword Design for Asymmetric Millimeter-Wave MIMO Systems under Mutual Coupling
   Qi Li, Harbin Institute of Technology, Shenzhen; Fu-Chun Zheng, Harbin Institute of Technology (Shenzhen) & The University of York; Ke Xu, Harbin Institute of Technology (Shenzhen), Pengcheng Laboratory; Zhao Chen, Harbin Institute of Technology, Shenzhen

2. HOSVD-Based Beamspace Unitary Tensor ESPRIT for Millimeter-Wave Channel Estimation in 3D MIMO-OFDM Systems
   Takuma Yamazaki, Tetsushi Ikegami, Meiji University

3. Flexible SDR-based Experimental Platform for Realistic Ranging Evaluation in 5G and Beyond
   Hong Kong, Hong Kong; Kai-Kit Wong, University College London; Kun The Chinese University of Geosciences, Wuhan

4. Joint Design of Quantizer and Phase Shift Matrix in RIS-Assisted Physical Layer Key Generation
   Yufan Song, Liquan Chen, Wanting Ma, Tianyu Lu, Peng Zhang, Southeast University

5. Joint Secure and Covert Communication Study in Two-hop Relaying Systems
   Ranran Sun, Xidian University; Bin Yang, Chuzhou University; Jingsen Jiao, Yanchun Zuo, Yulong Shen, Xidian University; Xiaohong Jiang, Future University-Hakodate; Weidong Yang, Xidian University

6. Self-Interference Assisted Cooperative Jamming for Secure Communications
   Hongliang He, Xingmei Li, China University of Geosciences, Wuhan

7. STAR-RIS-Assisted Joint Physical Layer Security and Covert Communications
   Han Xiao, Xiaoyan Hu, Ang Li, Wenjie Wang, Zhou Su, Xi'an Jiaotong University; Kai-Kit Wong, University College London; Kun Yang, University of Essex
3 Self-Calibration for Channel Estimation in Hybrid Millimeter-Wave MIMO Systems
Kabuto Arai, Koji Ishibashi, The University of Electro-Communications

4 Experimental Trials with Combination of Multiple Transmissive Metasurfaces and Beamforming for mmW Coverage Enhancement
Kenta Goto, Satoshi Suyama, Takayuki Yarada, NTT DOCOMO, INC; Keisuke Arai, AGC Inc.; Osamu Kagaya, AGC INC.

5 On The Limitation of mmWave Beamforming Using Phase-Instability Array
Peng Chen, Southeast University; Feiqiao Yu, Shanghui Tian University; Mengjiang Sun, Tao Luo, Yangying Zhao, Southeast University; Zhimin Chen, Shanghui Tian University

Thursday, 12 October 2023 14:00-15:30 Ballroom 3
7C: Radio Resource Management
Chair: Xiaoming Yuan, NorthEastern University

1 Joint Optimization Scheme for User Association and Resource Allocation in Internet of Vehicles
Junyi Yang, Yuchuan Fu, Changle Li, Xidian University; Xiaoming Yuan, Northeastern University

2 LiDaSim: A Lightweight Dataset-Based Simulation Framework for Vehicular Ad Hoc Networks
Edmund Xhoxhi, Vincent Albert Wolff, Alexey Orychshenko, Leibniz Universität Hannover

3 Random Access Protocol Design and Analysis for Neural Interfaces Under Non-Saturated Regime
Hongbo Wu, Yukuans Jia, Sheng Zhou, Zhisheng Niu, Tsinghua University

4 Resource Allocation for UAV-Assisted Industrial IoT User with Finite Blocklength
Atefeh Rezaei, TU Berlin; Ata Khalili, Friedrich-Alexander-University Erlangen-Nurnberg; Falko Dressler, TU Berlin

5 Index Modulation Scheme Using Sparse Perfect Gaussian Integer Sequences on Multicarrier System
Kenji Yamazaki, Yukitoshi Sanada, Keio University

Thursday, 12 October 2023 14:00-15:30 Meeting Room 1
7D: Machine Learning Techniques for Resource Management & Optimization
Chair: Ying He

1 Distilling Knowledge from Resource Management Algorithms to Neural Networks: A Unified Training Assistance Approach
Longf6 Ma, Nai Chen, Xiucheng Wang, Zhisheng Yin, Xidian University; Haibo Zhou, Nanjing University; Wei Quan, Beijing Jiaotong University

2 End-to-End Delay Minimization based on Joint Optimization of DNN Partitioning and Resource Allocation for Cooperative Edge Inference
Xinrui Ye, Yanzan Sun, Shanghai University; Dingzhu Wen, Shanghai Tech University; Guojian Pan, Shunqiang Zhang, Shanghai University

3 Large Language Models (LLMs) Inference Offloading and Resource Allocation in Cloud-Edge Networks: An Active Inference Approach
Jingcheng Fang, Ying He, Shenzhen University; F. Richard Yu, Carleton University; Jianqiang Li, Victor C. Leung, Shenzhen University

4 Blockchain-based Dependable Task Offloading and Resource Allocation for IoT via Multi-Agent Deep Reinforcement Learning
Peifeng Zhang, Shenyang Institute of Automation Chinese Academy of Sciences; Chi Xu, Shenyang Institution of Automation, Chinese Academy of Science

5 Deep Reinforcement Learning-based Joint Frame Length and Rate Adaption for WLAN Network
Lihong Zhou, Xuming Fang, Rong He, Huannrong Zhang, Southwest Jiaotong University

Thursday, 12 October 2023 14:00-15:30 Meeting Room 2
7E: Emerging Networking Technologies
Chair: Zixiao Zhao, Xian Jiaotong University

1 A Two-Dimensional Deep Network for RF-based Drone Detection and Identification Towards Secure Coverage Extension
Zixiao Zhao, Qinghe Du, Xiang Yao, Lei Lu, Shijiao Zhang, Xi'an Jiaotong University

2 Exploiting Engineered IQ Samples for Physical Layer Authentication
Hossien B. Eldeeb, Ozysgin University; Anshul Pandey, Martin Andreamo, Technology Innovation Institute; Sami Muhaidat, University of Surrey

3 Heterogeneous Secure Coded Matrix Multiplication: Straggler Problem versus Information Leakage
Hongyang Zhu, Li Chen, Xiaohui Chen, Weidong Wang, University of Science and Technology of China

4 Luby Transform Coded Computation with Error Detection in Wireless Networks
Borui Fang, Li Chen, Xiaohui Chen, Weidong Wang, University of Science and Technology of China

5 Smart Healthcare with Hybrid Mobile Edge-Quantum Computing: Dynamic Computation Offloading for Latency Improvement
Ziqiang Ye, University of Electronic Science and Technology of China; Yulan Gao, Nanyang Technological University; Yue Xiao, University of Electronic Science and Technology of China; Minrui Xu, Han Yu, Dusit Niyato, Nanyang Technological University

Thursday, 12 October 2023 14:00-15:30 Meeting Room 3
7F: Designs of High-Speed Mobile Communications
Chair: Junjie Tan, vivo Communications Research Institute (vCRI)

1 A Fast-Converging UAV-TBS Stereoscopic CoMP-NOMA System: Resource Allocation and 3D Trajectory Design
Haiyong Zeng, Rui Zhang, Guangxi Normal University; Xu Zhu, Yufei Jiang, Harbin Institute of Technology (Shenzhen); Zhongxiang Wei, Tongji University; Fu-Chun Zheng, Harbin Institute of Technology (Shenzhen) & The University of York; Sumei Sun, Institute for Infocomm Research

2 An Open Source Simulation Framework for Moving-Network-Convoy Based Cellular V2X Communication in Intelligent Traffic Systems
Venkatnarayanan Lakshminarasimhan, Alois Knoll, Technische Universität München

3 Dynamic Coded Caching in Cellular Networks with User Mobility: A Reinforcement Learning Method
Guangyu Zhu, Beijing University of Posts and Telecommunications; Cali Gao, bupt, Tiankai Zhang, Beijing University of Posts and Telecommunications

4 Is 30 MHz Enough for C-V2X?
Dhruva Sunawar, Seungmo Kim, Zachary Reyes, Georgia Southern University

5 Speed-Aware V2X Congestion Control
Kyeongnam Park, Hojeong Lee, Hyogon Kim, Korea University
Thursday, 12 October 2023 16:00-17:50 Ballroom 2
8B: Machining and Learning and Performance Optimization
Chair: Min Li, Zhejiang University
1 A QUIC-Enabled Reliable Video Transmission Scheme in Ultra-Dense LEO Satellite Networks
Mengy Zhang, Ting Ma, Nanjing University; Zitian Zhang, Zhejiang Gongshang University; Haibo Zhou, Nanjing University; Lian Zhao, Toronto Metropolitan University
2 Repercussion of Image Compression on Satellite Image Classification using Deep Learning Models
Md Junayed Hossain, Mohammad Barkatullah, Independent University Bangladesh; Md Fahad Monir, Tarem Ahmed, Independent University, Bangladesh
3 Blockage-Based Cooperative Jamming for Secure Terahertz Transmissions in Indoor Networks
Suheng Tian, Ying Ju, Mingjie Yang, Lei Liu, Jie Feng, Qingqi Pei, Xidian University; Main Ahmad Jan, University of Technology Sydney; Celiumge Wu, The university of electro-communications
4 DDPG-based Multi-AP Cooperative Access Control in Dense Wi-Fi Networks
Huanrong Zhang, Rong He, Xuming Fang, Lihong Zhou, Southwest Jiaotong University
5 Efficient Resource Allocation and Semantic Extraction for Federated Learning Empowered Vehicular Semantic Communication
Jiajia Liu, Yunlong Lu, Hao Wu, Beijing Jiaotong University; Yuexue Dai, Huazhong University of Science and Technology
6 Exploiting the Overheard Information of Coded Caching for Heterogeneous Lossy Channels
Hong Li, Kai Huang, Jinbei Zhang, Keechoo Cai, Xiaoxia Huang, Sun Yat-sen University
Thursday, 12 October 2023 16:00-17:50 Ballroom 3
8C: Intelligent Transportation I
Chair: Jiaying Guo, University College, Dublin
1 AVARS - Alleviating Unexpected Urban Road Traffic Congestion using UAVs
Jiaying Guo, University College Dublin; Michael R. Jones, Manchester Metropolitan University; Soufiene Djahel, University of Huddersfield; Shan Wang, University College Dublin
2 COALITION: CAVs-enabled Probabilistic Offloading of Congested Lanes for Reduced Urban Traffic Congestion
Soufiene Djahel, University of Huddersfield; Yassine Hadjadj Aoul, University of Rennes; Renan Pincemin, Telecom Physique Strasbourg, France; Celiumge Wu, The University of Electronics Communications
3 Dynamic Route Guidance System Based on Real-time Vehicle-Road collaborations with Deep Reinforcement Learning
Zhongqing Su, Sun Yat-Sen University; Congduan Li, Sun Yat-sen University
4 OpCNet: Endowing vehicles with perspective vision: Clairvoyance of occluded Pedestrian crossing in complex driving scenes
Yi Zhao, Jinping Zhai, Xiaohui Li, Chang'An University
5 Time-Series based Fall Detection in Two-Wheelers
Usha Goparaju, Keerthi Pothalraju, Shriya Dullur, Arihant Jain, Deepak Gangadharan, International Institute of Information Technology, Hyderabad
6 A Coupling Approach to Demand Prediction and Repositioning in SAV Systems
Yang Jin, City University of Hong Kong; Dongyao Jia, Xi'an Jiaotong-Liverpool University; Yechao She, Meng Xu, City University of Hong Kong; Shangbo Wang, Xi'an Jiaotong-Liverpool University; Jianping Wang, City University of Hong Kong
Thursday, 12 October 2023 16:00-17:30 Meeting Room 1
8D: Massive Antennas
Chair: Boya Di
1 Machine Learning Empowered Large RIS-assisted Near-field Communications
Ruikang Zhong, Xidong Mu, Yuansui Liu, Queen Mary University of London
2 Large-scale Fading Coefficients Mining-Based Interference Identification and SINR Prediction for Cell-Free Massive MIMO
Yue Chen, Tao Peng, Yicheng Guo, Chunmeng Fan, Wenbo Wang, Beijing University of Posts and Telecommunications
3 IRS-Assisted mmWave Massive MIMO Systems Beam Training with Hybrid CNN Encoder-based Transformer Deep Learning Model
Taisei Urakami, Haohui Jia, Na Chen, Minoru Okada, Nara Institute of Science and Technology
4 Transfer Learning assisted Beam Training via Large-Scale Intelligent Omni-surface in Dynamic Environments
Zhihan Chen, Shuhang Zhang, Shuhao Zeng, Boya Di, Peking University
5 Deep Spatio-temporal Beam Training for mmWave Communications with Human Self-blockage
Wenxing Shan, Yiming Ma, Zicun Wang, University of Electronic Science and Technology of China; Lin Zhang, UESTC, China; Ming Xiao, KTH
Thursday, 12 October 2023 16:00-17:50 Meeting Room 2
8E: Advanced Localization
Chair: Jinlei Xu, Dalian University of Technology
1 An Underdetermined Two-Dimensional DOA Estimation Algorithm for Sparse Circular Arrays
Wu Xian, Ye Kun, Shaohua Hong, Haixun Sun, Xiamen University
2 Crowdsourcing-based high-precision Bluetooth indoor location method for adapting to environmental dynamics
Xiaowei Hu, Lingyu Chen, Xiaoxian Lian, Tiange Wang, Jingyi Cai, Xiamen University
3 Enabling High Accuracy Ranging with the Phase-Difference-based Single-Tone Estimation for FMCW System
Yujie Xian, Kai Gao, Shang Ma, Kaijiang Li, Bowen Li, University of Electronic Science and Technology of China
4 Evaluation of GNSS-based Time Synchronisation for ToF Localisation with Software-Defined Radio
Matthijs Aanen, Anastasia Lavenenko, University of Twente; Graeme Woodward, University of Canterbury
5 MUSIC Algorithm for IRS-Assisted AOA Estimation
Qipeng Wang, Liang Liu, Shuowen Zhang, The Hong Kong Polytechnic University
6 waveSLAM: Empowering Accurate Indoor Mapping Using Off-the-Shelf Millimeter-wave Self-sensing
Pablo Picazo, Milan Gросhev, Universidad Carlos III de Madrid; Alejandro Blanco, The University of Edinburgh; Claudio Fieradino, IMDEA Networks Institute; Antonio de la Oliva, IMDEA Networks Institute; Yiming Ma, Zicun Wang, University of Electronic Science and Technology of China; Lin Zhang, UESTC, China; Ming Xiao, KTH
Thursday, 12 October 2023 16:00-17:50 Meeting Room 3
8F: Spectrum Management under Comprehensive Scenario
Chair: Jingcai Guo, The Hong Kong Polytechnic University
1 Low-Latency Perception Sharing Services for Connected Autonomous Vehicles
Fahao Chen, Peng Li, The University of Aizu; Lei Zhong, Toyota Motor Corporation; Dongxiao Yu, Xiuzhen Cheng, Shangdong University
2 Mesh-Grid-Free Spectrum Cartography via Non-negative Matrix Factorization Assisted Localization
Xiaonan Chen, Jun Wang, University of Electronic Science and Technology of China
Friday, 13 October 2023

9A: Vehicular Networks
Chair: Wanting Yang, Singapore University of Technology Design,

1 Always-Connected Enablement Base Station to eliminate the effects of RRC transitions delay

2 Digital Twin based Packet Reception Prediction for C-V2X Networks
Yun Hua, Zhi Zhang, Weizong Li, Man Ho Fan, Calvin Lam, Hang Seng University of Hong Kong

3 MoRFF: Multi-View Object Detection for Connected Autonomous Driving under Communication and Localization Limitations
Ruiqing Mao, Jingyu Guo, Yukuan Jia, Jialin Dong, Tsinghua University; Yuxuan Sun, Beijing Jiaotong University; Sheng Zhou, Zhiheng Niu, Tsinghua University

4 Negotiation Patterns for V2X Cooperative Driving: How complex Maneuver Coordination can be?
Daneil Maksimovski, Christian Facchi, Technische Hochschule Ingolstadt

5 Rethinking Transmit Power Control for SAE J3161/1 Congestion Control Algorithm
Hojeong Lee, Hyoogun Kim, Korea University

Friday, 13 October 2023 11:00-12:30 Ballroom 2

9B: Modulation and Estimation
Chair: Zijian Chen, Zhejiang University

1 Quasi-Orthogonal Space-Time Block Coded Spatial Modulation with Reduced Decoding Complexity
Xin Zeng, Shuaixin Yang, Chaowu Wu, Yue Xiao, University of Electronic Science and Technology of China

2 Multiple Superimposed Pilots for Accurate Channel Estimation in Orthogonal Frequency Time Division Modulation
Yuta Kanazawa, Yokohama National University; Chandan Pradhan, Hiroki Ikemoto, Szabolcs Malomsoky, Ericsson Research; Naoki Ishikawa, Yokohama National University

3 A Robust and Low-Complexity Estimation Scheme for Clock Skew Without Timestamp Exchange in Wireless Sensor Networks
Min Li, Fangshi Wang, Xiaojian Liu, Heng Wang, Chongqing University of Posts and Telecommunications

4 Viterbi Demodulation of MSK Signal under both Impulsive Noise and Gaussian White Noise
Tianfu Qi, Jun Wang, Wei Huang, Qihang Peng, University of Electronic Science and Technology of China

5 Phase Noise Estimation and Compensation Using FDM Pilot for High-Order QAM Transmission in DFT-Spread OFDM Backhaul Links
Ryota Kuribayashi, Mamoru Sawahashi, Tokyo City University

Sensing Equipment; Chao Fang, Shaofu Lin, Beijing University of Technology; Fan Li, Network Optimization Center

5 Prototype Development of Same frequency Interference C canceller from 5G Base Stations to Satellite Ground Stations
Takafumi Fujii, Teruya Fujii, Softbank Corp.

6 STAR-RIS for Symbiotic Radios: Joint Phase Shifts and Receiver Design
Qianqian Zhang, Hu Zhou, Ying-Chang Liang, University of Electronic Science and Technology of China

Friday, 13 October 2023

9C: Channel Modeling, Prediction, and Feedback
Chair: Jiagia Guo

1 Deep Learning Based Cross Frequency Channel Reconstruction and Modeling
Yuxin Zhang, Ruisi He, Mi Yang, Chenlong Wang, Bo Ai, Ruiying Chen, Beijing Jiaotong University; Tong Wu, National Institute of Metrology of China

2 A Hyper-Network-Aided Approach for ISTA-based CSI Feedback in Massive MIMO systems
Yafei Zou, Zengyang Hu, Yuqing Zhang, Jiang Xue, Xi'an Jiaotong University

3 Automatic Neural Network Design for Scene-customization of Massive MIMO CSI Feedback
Xiangyi Li, Jiagia Guo, Southeast University; Chao-Kai Wen, National Sun Yat-Sen University; Wenqiang Tian, OPPO; Shi Jin, Southern University

4 Real-time Traffic Classification for 5G NSA Encrypted Data Flows With Physical Channel Records
Xiao Fei, Shanghai Jiao Tong University; Philippe Martins, Telecom Paris; Jialiang Lu, Shanghai Jiao Tong University

Friday, 13 October 2023 11:00-12:30 Meeting Room 1

9D: Joint Optimization for Communications
Chair: Zhenguo Zhang

1 An End-to-End Communication System with Environmental Adaptability
Chengjie Zhao, Jun Wang, Wei Huang, Xiaonan Chen, Qihang Peng, University of Electronic Science and Technology of China

2 Implementation of Deep Joint Source-Channel Coding on 5G Systems for Image Transmission
Keigo Matsumoto, Yoshiaki Inoue, Osaka University; Yuko Hara-Azumi, Tokyo Institute of Technology; Kazuki Maruta, Tokyo University of Science; Yu Nakayama, Tokyo University of Agriculture and Technology; Yoshinori Shimohara, Hiroki Ikeda, ABIT Corporation; Daisuke Hisano, Osaka University

3 Semantic Communication with Probability Graph: A Joint Communication and Computation Design
Zhouxiang Zhao, Zhaohui Yang, Zhejiang University; Shibo He, Jiming Chen, Zhejiang University

4 Deep Learning Enabled Semantic Communication Systems for Video Transmission
Zhenguo Zhang, Qianqian Yang, Shibo He, Jiming Chen, Zhejiang University

5 Video Reconstruction with Multimodal information
Zhenguo Xie, Yiping Duan, Qiyuan Du, Xiaoming Tao, Tsinghua University; Jiachong Yu, China Tower Corporation Limited

Friday, 13 October 2023 11:00-12:30 Meeting Room 2

9E: Localization and Sensing
Chair: Tingting Zhang, Harbin Institute of Technology (Shenzhen)

1 How Long Can RIS Work Effectively: An Electronic Reliability Perspective
Ke Wang, Chan-Tong Lam, Benjamin K. Ng, Macau Polytechnic University
2 Differential Decoupling Strategies for UWB Integrated Sensing and Communication Systems
Jingwen Chen, Xunze Wang, Fan Liu, Zenan Zhang, Harbin Institute of Technology, Shenzhen; Juayin Xue, Shenzhen Peng Cheng Laboratory; Tingting Zhang, Harbin Institute of Technology (Shenzhen)

3 Energy Consumption Minimization for Secure UAV-enabled MEC Networks Against Active Eavesdropping
Yu Ding, Zhaijiang University of Technology; Weidang Lu, Yu Zhang, Yunqi Feng, Zhejiang University of Technology; Bo Li, Harbin Institute of Technology (Weihai); Yuan Gao, Tsinghua University

4 Experimental Evaluation of MIMO-WLAN-based Object Detection with Reflectors
Shunsuke Shimizu, Osamu Muta, Kazuki Noguchi, Kyushu University; Junsuke Izumi, Kyushu University Graduate School; Tomoki Murakami, Shinya Osuki, NTT Corporation

5 Design and Optimization of Cooperative Sensing With Limited Backhaul Capacity
Wenrui Li, Min Li, An Liu, Zhejiang University; Tony Xiao Han, Huawei Technologies Co., Ltd.

Friday, 13 October 2023 11:00-12:30 Meeting Room 3
9F: Services and Security
Chair: He Feng, Soochow University
1 Self-Sustainable Key Generation: Strategies and Performance Bounds under DoS Attacks
Russni Kima Mangang, Harshan Jagadeesh, IIT Delhi

2 Multi-Dimensional Security Indicator Design and Optimization for DDoS Detection in Edge Computing
Zhaoceng Xu, Ziang Yang, Boya Di, Lingyang Song, Peking University

3 Lightweight Authentication in Edge Collaborations Utilizing Multi-Dimensional Historical Information: Design and Implementation
Wenrun Zhu, He Fang, Soochow University; Xianbin Wang, Western University

Friday, 13 October 2023 14:00-15:30 Ballroom 1
10A: Vehicular Communication and MIMO
Chair: Sudhan Majhi, Indian Institute of Science (IISc)

1 Analyzing Dynamic V2X Scenarios through Channel Correlation Metrics
Lennart Thielecke, Mahboubeh Ansari, Thomas Kürner, Technische Universität Braunschweig

2 Evaluating Ray-Tracing versus Channel-Sounder Measurements in Vehicular Communications
Mahboubeh Ansari, Lennart Thielecke, Thomas Kürner, Technische Universität Braunschweig

3 Is Antenna Reservation Superior to Increasing Input Back-off in 5G Massive MIMO Base Stations?
Luksaz Skonra, Wrocław University of Science and Technology; Björn Jenelmek, Nokia; Kamil Staniec, Wrocław University of Technology

4 Perturbation-Based Adaptive Beamforming for MU-mMIMO
Yuanzhe Gong, Arish Yaseen, Robert Morawski, Tho Le-Ngoc, McGill University

5 Reconfigurable Intelligent Surface Aided Joint Communication And Positioning
Fan Wang, Xiaolin Hou, Xin Wang, Xiang Li, Chen Lan, DOCOMO Beijing Communications Lab; Takahiro Asai, NTT DOCOMO, INC.

Friday, 13 October 2023 14:00-15:30 Ballroom 2
10B: Multi-antenna Transmission
Chair: Mingmin Zhao, Zhejiang University

1 A Dynamic Array-of-Subarrays Architecture With Quantized Phase Shifters and DACs
Zahraalsadat Alavizadeh, Benoit Champagne, McGill University

2 A Lattice Reduction Aided Overloaded Multi-user MIMO
Kazuki Miyata, Satoshi Denno, Yafei Hou, Okayama University

3 An Effective Hybrid Beamforming for MIMO-OFDM with Beam Squint
Yoonsung Kim, Hyunwoo Nam, Hyunsoo Son, Hyuncheol Park, Korea Advanced Institute of Science and Technology (KAIST)

4 Cross-Subcarrier Precoder Design for Massive MIMO-OFDM Downlink
Yuxuan Zhang, Anan Lu, Bingyan Liu, Xiqi Gao, Southeast University; Xiang-Gen Xia, University of Delaware

5 A Slotted Polar Random Spreading Scheme for Massive MIMO Unsourced Random Access
Zijie Liang, Tokyo Institute of Technology; Yiwei Su, Xidian University; Huiying Song, Kanzhihiko Fukawa, Yuyuan Chang, Tokyo Institute of Technology

Friday, 13 October 2023 14:00-15:30 Ballroom 3
10C: Vehicular Edge Computing
Chair: Deepak Gangadharan, International Institute of Information Technology, Hyderabad

1 Collision-Aware Data Delivery Framework for Connected Vehicles via Edges
SVSLN Surya Sahu Vaddaphiry, International Institute of Information Technology Hyderabad; Joseph John Cherukara, Deepak Gangadharan, International Institute of Information Technology, Hyderabad; BaekGyu Kim, DGIST

2 Dynamic Data Delivery Framework for Connected Vehicles via Edge Nodes with Variable Routes
Joseph John Cherukara, International Institute of Information Technology Hyderabad; SVSLN Surya Sahu Vaddaphiry, International Institute of Information Technology Hyderabad; Deepak Gangadharan, International Institute of Information Technology, Hyderabad; BaekGyu Kim, DGIST
3 Optimal Non-Order NFV Enabled Multicasting in Mobile Edge Clouds
Jungeng Xia, Yuhang Wu, Kajiai Wang, Quan Chen, Liangliu Cheng, Guangdong University of Technology

4 Distributed access and offloading scheme for multiple UAVs assisted MEC networks
Saifei He, Ming Cheng, Nanjing University of Posts and Telecommunications; Yijin Pan, Southeast University; Lin Min, Nanjing University of Posts and Telecommunications; Wei-Ping Zhu, Concordia University

Friday, 13 October 2023 14:00-15:30 Meeting Room 1

10D: Intelligent Techniques for Optimizing Next-Gen Networks
Chair: Ruikang Zhang

1 An Online Caching Scheme for 360-Degree Videos at the Edge
Zhongyuan Liu, Kechao Cai, Jinbei Zhang, Sun Yat-sen University; Ning Xin, China Academy of Space Technology

2 DCDN: Estimating Handover Parameter Adjusting Effect with Causal Inference
YueMeng Zhang, Qi Li, Beijing University of Posts and Telecommunications; Xiaolai Hua, Renkai Yu, China Mobile Research Institute; Zhenyu zhang, Beijing University of Posts and Telecommunications; Xinwen Fan, Lin Zhu, China Mobile Research Institute; Tianmu Sha, Yang Zhang, Beijing University of Posts and Telecommunications

3 MIM-GAN-based Anomaly Detection for Multivariate Time Series Data
Shan Lu, Zhicheng Dong, Tibet University; Donghong Cai, Jinan University; Fang Fang, Western University; Dongcui Zhao, Tibet University

4 A Rotating Server Scheme for Secure Federated Learning in Networked Autonomous Driving
TianyuChang, Yuchuan Fu, Pincan Zhao, Lingling Zhou, Changle Li, Nan Cheng, Xidian University

5 An Enhancing Semi-Supervised Federated Learning Framework for Internet of Vehicles
Xiangqing Su, Yan Huo, Beijing Jiaotong University; Xiaoxuan Wang, Tao Jing, Beijing Jiaotong University

Friday, 13 October 2023 14:00-15:30 Meeting Room 2

10E: Satellite Communication and Resilience
Chair: Deyue Zou, Dalian University of Technology

1 Age of Information Minimization for Short-Packet Communications RSMIA in Satellite-based IoT
Yan Qingjiao, Harbin Institute of Technology; Jian Jiao, Harbin Institute of Technology (Shenzhen); Yasong Wang, Phytium Technology Company Limited; Lirong Lu, Beijing Jiaotong University; Ke Wang, Chan-Tong Lam; Guijun Cheng, Shenzhen Polytechnic University

2 An Accelerate Strategy for Full-bit Acquisition Circuit for GPS Signal
pei wen, Deyue Zou, Feilong Wang, Dalian University of Technology

3 Dynamic Mapping Service Function Chains in a Logical Segmented LEO Constellation
Chang Yuan, Tao Peng, Kexin Zhang, Hongyuan Shu, Wenbo Wang, Beijing University of Posts and Telecommunications

4 Intelligent Estimation of Frequency Domain Parameters for Satellite Communication Interference with Alpha-Stable Noise
Mingqian Liu, Zhaoxi Wen, Lei Jin, Xidian University; Ming Li, Guilin Changhai Development Co.

5 Mega Constellation Networks are Reliable against Geographical Failure
Qiaolin Ouyang, Ye Neng, Sirui Miao, Bichen Kang, Wang Aihua, Beijing Institute of Technology; Lian Zhao, Toronto Metropolitan University

Friday, 13 October 2023 14:00-15:30 Meeting Room 3

10F: Channel and Signal Design in Heterogeneous Networks
Chair: Sijie Ji, The University of Hong Kong

1 Belief Propagation Overloaded MIMO Detection using MRC Reception and MMSE Pre-cancellation
Yuto Suzuki, Yukitoshi Sanada, Keio University

2 Channel Modeling for Heterogeneous Vehicular ISAC System with Shared Clusters
Baiqing Xiong, Zaichen Zhang, Yingmeng Ge, Haibo Wang, Southeast University; Hao Jiang, Nanjing University of Information Science & Technology; Liang Wu, Ziyang Zhang, Southeast University

3 Scalable Synchronous User Activity Detection for 6G Massive Access
Haiyou Guo, Tao Tao, Nokia Bell Labs; Liyu Cai, Nokia

4 Spatially Correlated Cell-Free Massive MIMO Network with Centralized Operation and Low-Resolution ADCs
Ning Li, Pingzhi Fan, Southwest Jiaotong University

5 BER Analysis for Lattice-Partition-Based Downlink Non-Orthogonal Multiple Access Systems
Chin-Liang Wang, Xin-Yuan Wang, National Tsing Hua University

Friday, 13 October 2023 14:00-15:30 Function Room

10G: Intelligent Reflecting Surface and Applications
Chair: Yueyue Dai, Huazhong University of Science and Technology

1 Self-Sustainable Intelligent Omni-Surface Aided Multi-User Wireless Networks
Hao Luo, Lu Lv, Long Yang, Xidian University; Qingjiao Wu, Shanghai Jiao Tong University; Zhiqiu Ding, Lancaster University; Naofal Al-Dhahir, University of Texas at Dallas; Jian Chen, Xidian University

2 Deployment Locations and Beamforming Optimization for Multi-RIS in Multi-BS Networks
Lihua Pang, Jiarong Liu, X'ian University of Science and Technology; Yang Zhang, Xidian University; Xianxian Liu, X Yan University of Science and Technology; Jian Chen, ZTE Corporation, Shenzhen, China; Anyi Wang, X'ian University of Science and Technology

3 How Long Can RIS Work Effectively: An Electronic Reliability Perspective
Ke Wang, Chan-Tong Lam, Benjamin K. Ng, Macao Polytechnic University

4 Intelligent Reflecting Surfaces aided Task Offloading in Digital Twin Edge Networks
Yueyue Dai, Jian Wu, Jintang Zhao, Baichuan Gong, Huazhong University of Science and Technology; Yunlong Lu, Beijing Jiaotong University

5 Irregularly Activated Spatial Modulation Schemes with RIS as a Modulator
Anirban Bhowal, NIT Rourkela, India; Sonia Aissa, INRS Montreal, Canada; Soumya Prakash Dash, Indian Institute of Technology Bhubaneswar
Friday, 13 October 2023 16:00-17:30 Ballroom 1
11A: Channel measurement and modeling
Chair: Koichi Ichiige, Yokohama National University
1 Measuring the Effects of AoA on Vehicle Penetration Loss in Cellular Networks
Sonja Tripkovic, Philipp Svoboda, Markus Rupp, TU Wien
2 Flexible Density-based Multipath Component Clustering Utilizing Ground Truth Pose
Russ Whiton, Volvo Cars; Junshi Chen, Fredrik Tufvesson, Lund University
3 Measurement-based Evaluation of Path loss and Propagation Mechanisms in the 300 GHz band
Satoshi Ito, Kazuki Takezawa, Takahiro Hayashi, KDDI Research Inc.
4 Millimeter Wave Path Loss Modeling using Multi-Resolution Map Based on ResNet
Tatsuya Nagao, Takahiro Hayashi, KDDI Research, Inc.
5 Feature Extraction Using Hough Transform in Radio Propagation Estimation
Rento Hagawara, Koichi Ichiige, Yokohama National University; Tatsuya Nagao, Takahiro Hayashi, KDDI Research Inc.

Friday, 13 October 2023 16:00-17:30 Ballroom 2
11B: Signal Processing and Waveform Design
Chair: Leixin Han, Southeast University
1 Digital Self-Interference Cancellation With Robust Multi-layered Total Least Mean Squares Adaptive Filters
Shiyu Song, Yanqun Tang, Xizhang Wei, Yu Zhou, Xianjie Lu, Zhengpeng Wang, Sun Yat-sen University; Songhu Ge, Naval University of Engineering
2 Joint Design of Fast Frequency Hopping and Time Hopping under Pulse Full-band Interference
Dongpo Song, Shilian Wang, Hao Wang, Xinjin Lu, National University of Defense Technology
3 Low PAPR Waveform Design with EVM and OOB Constraints in OFDM Systems
Leixin Han, Jiaheng Wang, Xiqi Gao, Southeast University
4 Code-aided Synchronization for DVB-RCS2
Qingsheng Xue, Jie Wang, Chen Ming, Xiangyuan Tang, Jingwen Zhu, Southeast University

Friday, 13 October 2023 16:00-17:30 Ballroom 3
11C: Intelligent Transportation II
Chair: M Carmen Lucas-Estun, Universidad Miguel Hernandez de Elche (UMH)
1 A Novel Visual SLAM System for Autonomous Vehicles in Dynamic Environments
Xinyu Zeng, Ying He, Shenzhen University; F. Richard Yu, Carleton University, Canada; Guang Zhou, deeproute AI IIC
2 Dangerously Driven Cars Need to Go First
Zachary Reyes, Seungmo Kim, Dhruba Sanuwar, Georgia Southern University
3 Deep Reinforcement Learning for Image-Based Multi-Agent Coverage Path Planning
Meng Xu, Yechao She, Yang Jin, Jianping Wang, City University of Hong Kong
4 Edge-assisted Prediction and Predictive Control for Flexible Platooning under Mixed Traffic Flow
Fengkun Gao, Bo Yang, Li Jiuhang, Caillian Chen, Xinping Guan, Shanghai Jiao Tong University
5 Support of Teleoperated Driving with 5G Networks
M Carmen Lucas Estañ, Baldomero Coll-Perales, Universidad Miguel Hernandez de Elche; Mohammad Irfan Khan, Sergei S. Avestide, Toyota North America R&D - InfoTech Labs; Onur Ahtias, Toyota Motor North America R&D; Javier Gozalvez, Miguel Sepulcre, Universidad Miguel Hernandez de Elche (UMH)

Friday, 13 October 2023 16:00-17:30 Meeting Room 1
11D: Deep Learning Techniques for Communications
Chair: TBC
1 Recognition of Punctured Convolutional Codes Based on Multi-scale CNN
Jie Yang, Changyi Yan, Ying Ma, Yixin He, Jie Yang, Beijing Institute of Technology
2 On a Unified Deep Neural Network Decoding Architecture
Dmitry Artemasov, Kiriill Andreev, Alexey Frolov, Skolkovo Institute of Science and Technology
3 Unified Deep Neural Demodulation Network Design for QAM Signal Recovery
Bowen Xian, Southwest Jiaotong University; Shilin Zheng, Jiawei Zhu, No. 11 Research Center; Ziyi Zhang, Yan Long, Honghao Ju, Southwest Jiaotong University
4 A Basis Function Generation Based Digital Predistortion Fully Connected Neural Network Model of RF Power Amplifier
Jianfeng Shao, Xi Hong, Wenjie Wang, Xinran Jiaotong University; Zeyu Lin, YunHua Li, Dongfang Ning, ZuoFeng Zhang, ZTE Corporation
5 Deep Learning Based Coder Over-the-Air Computation for Personalized Federated Learning
Danni Chen, Ming Lei, Ming-Min Zhao, An Liu, Sikai Sheng, University of Zhejiang

Friday, 13 October 2023 16:00-17:30 Meeting Room 2
11E: AE communication and ISAC
Chair: Jie Tang, South China University of Technology
1 A Deep Reinforcement Learning Based UAV Trajectory Planning Method For Integrated Sensing And Communications Networks
Heyun Lin, Zhihai Zhang, Guangxi Power Grid Dispatching Control Center; Longkun Wei, Naming Power Supply Bureau.; Zhihao Zhou, Tian Zheng, South China University of Technology
2 A Distributed and Adaptive Routing Protocol for UAV-Aided Emergency Networks
Jie Tang, Zihao Zhou, South China University of Technology; Wannfei Feng, South China Agricultural University; Kai Kit Wong, University College London
3 Aerial IRS Aided Anti-Jamming Scheme for ISAC
Jinlei Xu, Dalian University of Technology; Dongdong Li, Harbin Institute of Technology; Zhengyu Zhu, Zhengzhou University; Zhuyang Yang, Harbin Institute of Technology; Nan Zhao, Dalian University of Technology; Dustin Niyato, Nanyang Technological University
4 A Reliable and Resilient Framework for Multi-UAV Mutual Localization
Zexin Fang, Bin Han, Hans D. Schotten, RPTU Kaiserslautern-Landau
5 UAV-Assisted Search of Emitter with Dynamic Beam: A Reinforcement Learning-Based Method
Haoyu Cui, Yang Huang, Nanjing University of Aeronautics and Astronautics; Caiyong Hao, Shenzhen Station of State Radio Monitoring Center

Friday, 13 October 2023 16:00-17:30 Meeting Room 3
11F: mmWave Beamforming and MIMO Communications
Chair: Xiaoxia Huang, Sun Yat-sen University
1 Low-Dimension Angular-Domain Representation for Near-Field Extra-Large MIMO Channel
Anzheng Tang, Junbo Wang, Southeast University; Yijian Chen, ZTE Corporation, Shenzhen, China; Yu Hongkang, ZTE Corporation; Yijin Pan, Southeast University; Wence Zhang, Jiangsu University; Rodrigo C. de Lamare, CETUC, PUC-Rio, Brazil
2 Reconfigurable Intelligent Surface-Assisted Rectangular Differential Spatial Modulation
Zhilang Chen, Lei Wang, Xi'an Jiaotong University

3 Multi-User Interference Suppression in Phased Arrays with Quantized Control in Millimeter Wave Communication Networks
Zhenbei Su, Sun Yat-Sen University; Xiaoxia Huang, Sun Yat-sen University

4 Connectivity of Wireless Networks Assisted by Transmissive Reconfigurable Intelligent Surfaces
Zengjie Zhu, Xiaoxia Huang, Sun Yat-sen University

A Study on Collective Perception with Realistic Perception Modeling
Shale Li, Leibniz University Hannover

Virtual Sessions

Wednesday, 11 October 2023 11:00-12:30 Virtual
1V: Antenna Systems, Propagation, and RF Design Virtual Papers
1 105 GHz Multipath Propagation Measurements and Path Loss Model for Sub-THz Indoor Short-Range Communications
Yasuke Koda, Norichika Ohmi, Hiroaki Endo, Hiroshi Harada, Kyoto University

2 A DRL-based Reflection Enhancement Method for RIS-assisted Multi-receiver Communications
Wei Wang, University of Bristol; Peizheng Li, Toshiba Research Europe Ltd; Angela Doufexi, Mark Beach, University of Bristol

3 Element Failure Correction for Reconfigurable Meta-surface Reflectors
Takuya Ohno, Hiromi Matsuno, Takahiro Hayashi, KDDI Research Inc.; Mitsutaka Okita, Naoki Kita, Japan Display Inc.

4 Estimation Method for Human Blockage Loss in the 300 GHz Band
Satoshi Ito, Kazuki Takezawa, Takahiro Hayashi, KDDI Research Inc.

5 Outage Analysis of Aerial IRS Aided MIMO Systems Under 3D Geometrical MIMO Channels
Zhangfeng Ma, Shaoyang University; Bo Ai, Ruisi He, Beijing Jiaotong University; Liang Yang, Hunan University; Shuangyuan Ma, Shaoyang University; Guoqi Sun, Hang Mi, Beijing Jiaotong University; Gaofeng Luo, Shaoyang University

6 TOA-Based Positioning Scheme for IRS-Assisted 5G Networks
Tomofumi Kanno, Takuya Ohno, Hiromi Matsuno, Takahiro Hayashi, Tatsuya Nagao, KDDI Research Inc.

Wednesday, 11 October 2023 14:00-15:30 Virtual
2V: Electric Vehicles, Vehicular Electronics and Intelligent Transportation Virtual Papers
1 A Hybrid Model for Driving Behavior Recognition: Integration of CNN and Transformer-Encoder with EEG data
Yunlong Wang, Tianqi Liu, Yanjun Qin, Tsinghua University; Siyuan Shen, East China Normal University; Xiaoming Tao, Tsinghua University

2 Camera-Selecting Device-Edge Co-Inference for Real-Time Multi-Camera 3D Pose Estimation
Zhuohang Du, University of Macau; Xumin Huang, Guangdong University of Technology; Yuan Wu, Pengcheng Tan, Peichun Li, University of Macau; Liping Qian, Zhejiang University of Technology; Haibo Zhou, Nanjing University

3 Joint Optimization of Deployment and Parameters for Roadside Radars in Road Environments
Jian-Kai Chen, Ming-Chun Lee, Po-Chun Kang, Ta-Sung Lee, National Yang Ming Chiao Tung University

4 Localization Accuracy and Communication Performance of IRS-Assisted ISAC Systems
Mihiro Hashimoto, Koji Yamamoto, Itsuki Yonemura, Kyoto University; Toshiki Nakahira, Daishuke Murayama, Takuto Arii, Daishi Uchida, Naoki Kita, NTT Access Network Service Systems Laboratories

5 Range Estimation and Implementation with Cellular signals for UAV Navigation
Zhiqiang Yao, XiangTang University; Xiaona Guo, Kang Chen, Wenwen Zhang, Deyi Peng, Xiangtan University

2 A LiDAR Semantic Segmentation Framework for the Cooperative Vehicle-Infrastructure System
Hongwei Liu, Zhiao Gu, Chao Wang, Ping Wang, Tongji University; Dejan Vukobratovic, University of Novi Sad

3 Are VANETs pseudonyms effective? An experimental evaluation of pseudonym tracking in adversarial scenario
Giovanni Gambigiani Zoccoli, Università di Modena e Reggio Emilia; Dario Stabili, Department of Computer Science and Engineering - University of Bologna; Mirco Marchetti, Università di Modena e Reggio Emilia

4 Blockchain Revolution: Empowering the Electric Vehicle Industry through Integration and Case Study Analysis
Ajmyr Sultana, Algoma University; Md Moniruzzaman, Lakehead University; Lian Zhao, Toronto Metropolitan University

5 Cache Placement and Power Allocation in Offshore Maritime Wireless Networks
Shixuan Sun, Dalian Maritime University; Yanpeng Dai, Dalian Maritime University; Ling Lyu, Dalian Maritime University

6 Enhancing Public Road Transport at Hong Kong International Airport SkyCity through an Autonomous System Considering V2V Communications
Kaiting Meng, Yilong Hui, Ruijin Sun, Nan Cheng, Xidian University; Zhou Su, Hao Luan, Xi'an Jiaotong University

7 Environment-aware Dynamic Resource Allocation for VR Video Services in Vehicle Metaverse
Kaiting Meng, Yilong Hui, Ruijin Sun, Nan Cheng, Xidian University; Zhou Su, Hao Luan, Xi'an Jiaotong University

8 Vehicular Multimodal Motion Forecasting via Conditional Score-based Modeling
Zhangyu Wang, Huanan University; Nianwen Zheng, Shihan Tian, the School of Artificial Intelligence, Huanan University; Yuan Wu, Pengcheng Tan, Peichun Li, National University; Nan Cheng, Xidian University; Yi Zhou, Huanan University
2 Joint Beamforming Design for Cooperative Double-RIS Aided mmWave Multi-User MIMO Communications
Renlong Wei, Qing Xue, Yongjun Xu, Chongqing University of Posts and Telecommunications; Li Yan, Southwest Jiaotong University; Shaodan Ma, University of Macau

3 Optimization of Retransmission for Short Packet in MTC Devices
Qiaoshou Liu, Heping Gu, Yaping Cui, Peng He, Dapeng Wu, Ruyan Wang, Chongqing University of Posts and Telecommunications

4 Ray Tracing Assisted Radar Detection in 6G
Ilkka Moilanen, Timo Lintonen, Markku Kiviranta, VTT Technical Research Centre of Finland Ltd; Pekka Sangi, Juha Pyhtilä, Pekka Pirinen, Markku Juntti, University of Oulu

5 Over-the-Air Computation Empowered Federated Learning: A Joint Uplink-Downlink Design
Deyou Zhang, Ming Xiao, Mikaël Skoglund, KTH Royal Institute of Technology

6 Average Sum Rate Optimization in Coordinated Multi-Beam Transmission for Reliable Millimeter-Wave Communication
Yaping Liu, Kunkun Zhang, Guizhou University of Finance and Economics; Xuming Fang, Southwest Jiaotong University; Chunju Tang, Guizhou University of Finance and Economics

Thursday, 12 October 2023 11:00-12:30 Virtual

4V: IoV, IoT, M2M, Sensor Networks, and Ad-Hoc Networking Virtual Papers

1 Distributed Quantized Transmission and Fusion for Federated Machine Learning
Omid Moghimi Kandelousy, University of Kansas; Christopher Brinton, Purdue University; Taejoon Kim, University of Kansas

2 Enhancing Task Efficiency in Vehicular Fog Computing: Leveraging Mobility Prediction and Min-Max Optimization for Reduced Latency
Indranil Sarkar, Amir Taherkordi, University of Oslo

3 Long Term Energy Consumption Minimization-based Data Collection for UAV-Assisted WSNs
Peixin Li, Chai, Rouzhi Tang, Renyan Pu, Chongqing University of Posts and Telecommunications

4 Online Directed Graph Estimation for Dynamic Network Topology Inference
Yunqie Hu, Zhenlong Xiao, Xiamen University

5 SensingBay: an Affordable Roadside Sensing System for Student Vehicle Competitions
Andrew Ealovega, Zheng Song, University of Michigan at Dearborn

6 Vehicle Digital Twins in Space-Air-Ground Integrated Networks: A Game-based Migration Scheme
Yushen Yang, Yilong Hui, Nan Cheng, Ruijin Sun, Mengqiu Tian, Changle Li, Xidian University

7 Roadside IoT Sensor-Based Crack Detection for Smart Roads
Fendi Ma, Gang Wang, Yilong Hui, Ruijin Sun, Changle Li, Guosiqiang Mao, Xidian University

8 Serial or Parallel: Reverse Offloading based MEC-assisted Joint Computing
Jie Zhang, Lei Ding, Lina Zhu, Nan Cheng, Tom H. Luan, Xidian University

9 Improving Fairness and Performance in Resource Usage for Vehicular Edge Computing
Joahannes B. D. da Costa, Allan Souza, Wellington Viana Lobato Junior, University of Campinas; Denis Rosario, Federal University of Pará (UFPA); Christoph Sommer, TU Dresden; Leandro Villas, Institute of Computing - University of Campinas

10 Coded Distributed Computing for Vehicular Edge Computing With Dual-Function Radar Communication
Nguyen Thi Hoai Linh, Hoang Le Hang, Hanoi University of Science and Technology; Nguyen Cong Luong, Phenikaa University; Tien Hoa Nguyen, Hanoi university of Science and Technology; Sa Xiao, University of Electronic Science and Technology of China; Junjie Tan, Western University; Dusit Niyato, Nanyang Technological University

Thursday, 12 October 2023 16:00-17:30 Virtual

5V: Machine Learning and AI for Communications Virtual Papers

1 Adaptive MARL-based Joint Cooperative Caching and Resource Allocation for Deep Edge Networks
Qian Liu, Guangbin Xiao, Qile Liu, Chongqing University of Posts and Telecommunications

2 Deep Reinforcement Learning-Based Resource Allocation for Secure RIS-aided UAV Communication
Anjadar Iqbal, Ala'a Al-Habashna, Gabriel Wainer, Carleton University; Faouzi Bouali, Coventry University; Gary Boudreau, Ericsson Canada; Khan Wali, Wageningen University

3 Dual-Transformer: A General Model for Traffic Accident Prediction
Dongkung Wang, Jieyang Peng, Tsinghua University; Junkai Zhao, The Chinese University of Hong Kong; Yunfei Teng, Wenjing Xue, Tongji University; Xiaoming Tao, Tsinghua University

4 Evaluating Differential Privacy in Federated Continual Learning
Junyan Ouyang, Han Rui, Chi Harold Liu, Beijing Institute of Technology

5 From Empirical Measurements to Augmented Data Rates: A Machine Learning Approach for MCS Adaptation in Sidelink Communication
Asif Abdullah Rokoni, Daniel Schäufele, Martin Kasparick, Slawomir Stanczak, Fraunhofer Heinrich Hertz Institute

6 Gradient based Information Aggregation of GNN for Precoder Learning
Shiyong Chen, Shengqian Han, Yang Li, Beihang University

7 Learning the long-term Memory Effect of Power Amplifiers Using Temporal Convolutional Network
Iqra Akram, Yi Ma, University of Surrey; Ziming He, Fei Tong, Samsung Cambridge Solution Centre Ltd

8 Portability of Hybrid machine learning based model for anomaly forecasting in mobile networks
Sara Kassan, Ined Hadi-Kacem, Orange; Sana Ben Jemaa, Sylvain Allio, Orange Labs

9 Smart-CSI: Deep Learning Based Low Complexity CSI Prediction for Beyond-5G Systems
Sripada Kadambar, Samsung Research; Ashok Kumar Reddy Chavva, Samsung; Chaiman Lim, Ankur Goyal, Divpreet Singh, Ashwini Kumar, Samar Ranjan Bal, Samsung Research

10 Robust Deep Learning-based Indoor mmWave Channel Prediction Under Concept Drift
Eslam Hasen, Tennessee Tech University; Elmehdi Mahalal, Tennessee Technological University; Muhammad Ismail, TsTech, USA; Zi-Yang Wu, Northeastern University; Mostafa M. Fouda, Idaho State University; Tiago Koketsu Rodrigues, Nei Kato, Tohoku University

Thursday, 12 October 2023 18:00-19:30 Virtual

6V: Positioning, Navigation, and Mobile Satellite Systems Virtual Papers

1 Indoor 3D Adaptive Visible Light Positioning Framework with Resistance to Shadows and Reflections
Linchao Li, Pan Tang, Tong Yu, Shuo Liu, Yue Yin, Jianhua Zhang, Beijing University of Posts and Telecommunications
2 On OTFS and OFDM Radar Signal Design Based on the Ambiguity Function Analysis
Bowen Wang, China Telecom Research Institute; Wenqi Luo, Beijing University of Posts and Telecommunications; Jianchi Zhu, Xiaoming She, Peng Chen, China Telecom Research Institute

3 Reconfigurable Intelligent Surface Assisted Sensing and Localization using the Swendsen-Wang and Evolutionary Algorithms
Ali Parachekani, Shahrokh Valaei, University of Toronto

4 Spoofing Detection Performance of Snapshot OSNMA Under Time and Symbol Errors
Husnain Shahid, Universitat Autonoma de Barcelona; Luca Canzian, Carlo Sarto, Oscar Pozobon, Qascm srl, Bassano del Grappa, Italy; Joaquin Reyes-Gonzalez, European Union Agency for the Space Programme; Gonzalo Seco-Granados, José A. López Salcedo, Universitat Autònoma de Barcelona

5 Traffic Demand Matching-based Dynamic Resource Allocation Algorithm for Multi-Beam Satellite Systems
Lei Liu, Rong Chai, Guorong Yang, Chongqing University of Posts and Telecommunications

6 Hybrid TOA/AOA Indoor Positioning Based on Sparse Reconstruction and Map Matching
Yajun Zhang, Chaoyang Du, Yi Luo, Yang Liu, Guochen Yu, Inner Mongolia University; Tianshuang Qiu, Dalian University of Technology

7 Robust Divergence Angle for Inter-satellite Laser Communications under Target Deviation Uncertainty
Zhaweii Yu, Yi Zhao, Di Yuan, Uppsala University

8 A High-throughput Cooperative Network Coding HARQ Transmission Scheme for Integrated Satellite-Terrestrial Networks
Chenbo Hu, Hongqiang Yang, Bo Li, Xuyu Yang, Tao Xie, Harbin Institute of Technology at Weihai

9 Research on Passive Localization Method with High Detection Rate
Dongpo Zhang, No.36 Research Institute of CETC; Xuan Hou, Lei Ding, Lina Zhu, Nan Cheng, Tom H. Luan, Xidian University

Friday, 13 October 2023 11:00-12:30 Virtual
7V: Radio Access Technology and Heterogeneous Networks Virtual Papers
1 Improving 5G Performance in Critical Environments through MPTCP
Andrea Gentili, Seppo Horsmanheimo, Lotta Tuomimäki, VTT Technical Research Centre of Finland; Petri Hyvarinen, SATEL; Heli Kokkoniemi-Tarkkanen, Ijaz Ahmad, VTT Technical Research Center of Finland

2 Task-Oriented Semantic Communications for Speech Transmission
Zhenzi Weng, Queen Mary University of London; Zhijin Qin, Xiaoming Hao, Tsinghua University

3 STAR-RIS Empowered Full Duplex Cooperative Rate Splitting
Kangchen Zhao, Yijie Mao, Yuanming SHI, ShanghaiTech University

4 Joint Power Optimization of BS and UE in Wireless Networks
Dongpo Zhang, No.36 Research Institute of CETC; Ye Tao, xidian university; Lei Ding, Lina Zhu, Tom H. Luan, Xidian University

Friday, 13 October 2023 16:00-17:30 Virtual
9V: Spectrum Management, Green Communications, Services and Security Virtual Papers
1 Adaptive Weighted Tensor Completion: A Solution to Joint Denoising and Periodic Prediction of Spectrum
Wanyu An, Zhuo Sun, Gang Yue, Beijing University of Posts and Telecommunications

2 Design of a Blockchain-based Anomaly-based Intrusion Detection System (AIDS) for IoT Networks
Georgios Zachos, Filippos Pelekoudas-Oikonomou, George Mantas, Instituto de Telecomunicaciones; Kyriakos Porfyrikas, Georgia Sakellari, University of Greenwich; Jonathan Rodriguez, University of South Wales

3 Double-RIS Aided The Robust Design of Secure Wireless Communication System
Ming Xiao, Chunlong He, Zhijian Gu, Zhanhai Huang, Shenzhen University

4 Joint Communication and Sensing for MIMO Systems with Overlapped OFDM and FMCW
Hari Krishna Boddapati, Krishna Kumar, Samsung R&D Institute India-Bangalore; Ashok Kumar Reddy Chavva, Samsung; Mohammed Saquib Khan, Samsung R&D Institute Bangalore

5 Joint Estimation of Transmitter IQ Imbalance and Nonlinearity with Multipath in OFDM Systems
Yi Huang, Aiqun Hu, Southeast University; Jiayi Fan, Huifeng Tian, Jiangsu University of Science and Technology
6 Learning-Based RF Fingerprinting for Device Identification using Amplitude-Phase Spectrograms
Abdullahi Mohammad, Bo Tan, Mateen Ashraf, Mikko Valkama, Tampere University

7 Opponent Modeling Based Dynamic Resource Trading for UAV-Assisted Edge Computing
Jinxian Bai, Zhe Wang, Nanjing University of Science and Technology; Jun Li, Nanjing University of Science and Technology, China; Long Shi, Nanjing University of Science and Technology; Jie Zhang, Kang Wei, The Hong Kong Polytechnic University; Hengtao He, Hong Kong University of Science and Technology

8 Physical Layer Security for IRS-Assisted Cognitive Radio Networks
Zhanhai Huang, Chunlong He, Zhijian Gu, Ming Xiao, Shenzhen University

9 Research on Vehicular External Network Intrusion Detection System Based on Ensemble Learning
Qian Liu, Weijie Bao, Qiile Liu, Chongqing University of Posts and Telecommunications

10 Task Partition-Based Caching Optimization for Delay-Sensitive Content Distribution in Cloud-Edge Cooperation Environments
Xiaolin Qin, Beijing University of Technology

Wednesday, 11 October 2023 11:00-12:30 Virtual Papers

10V: Unmanned Aerial Vehicle Communications, Vehicular Networks, and Telematics Virtual Papers

1 Adaptive Traffic Signal Control using CV2X
Mahbubul Alam Palash, Duminda Wijesekera, George Mason University

2 An Iterative Joint Tx-Rx Hybrid Beamforming Method for Vehicular Networks
Yunda Li, University of Science and Technology of China; Pe Zhao, Beijing Institute of Technology; Chen Sun, Sony R&D Center China; Ce Zheng, Sony; Haojun Li, Research & Development Center Sony (China) Limited, Beijing, China

3 Cauhyian Motion: A Spatio-Temporal Scale Invariant Mobile Trajectory Model
I-Fei Tsai, Hong Hai Research Institute

4 Deep Reinforcement Learning for UAV-Assisted Spectrum Sharing Under Partial Observability
Sigen Zhang, Zhe Wang, Guanyu Gao, Nanjing University of Science and Technology; Jun Li, Nanjing University of Science and Technology, China; Jie Zhang, Ziyan Yin, Nanjing University of Science and Technology

5 Exploring the Feasibility of Configured Grant for Vehicular Scenario
veerendra kumar gautam, Indian Institute of Technology Hyderabad; Venkatarami Reddy Chintapalli, National Institute of Technology Calicut, Calicut, India; Bheemarjuna Reddy Tamma, Indian Institute of Technology Hyderabad; Siva Ram Murthy Chebiyyam, Indian Institute of Technology Madras

6 Imaging Based on Communication-Assisted Sensing for UAV-Enabled ISAC
Yunbo Hu, Liang Tang, Shanghai Institute of Microsystem and Information Technology; Xiaoxiao Zhao, Zhejiang University; Zhanyi Li, Wen Wu, Peng Cheng Laboratory; Yu Zhao, Shanghai Institute of Microsystem and Information Technology, CAS; Zhiyong Bu, Shanghai Institute of Microsystem and Information Technology CAS

7 Long-Term Optimization-Based Data Scheduling and Trajectory Planning for UAV-Assisted Systems
Bingyang Wang, Qinyuan Wang, Ningyu Yang, Rong Chai, Beijing University of Technology

8 Near-Optimal Speed Control in UAV-Enabled Wireless Rechargeable Sensor Networks
Quanlong Niu, Ribeng Jia, Meng Liu, Feilong Lin, Zhonglong Zheng, Minglu Li, Zhejiang Normal University

9 Real-time Live-Video Streaming in Delay-Critical Application: Remote-Controlled Moving Platform
Chetha Singhal, IIT Kharagpur; Shirin Rafiei, Mid Sweden University; Kjell Brunnström, RISE Research Institutes of Sweden

10 Reliable NR-V2X Broadcast Transmission by Relay
Suhua Tang, Sadao Obana, The University of Electro-Communications

11 Time Allocation and Trajectory Design in NOMA-based UAV-Enabled Radio Frequency Energy Harvesting Network
Yuchen Li, Shao Shi, Chenyu Wu, Harbin Institute of Technology; Zhenyu Xu, Huizhou Engineering Vocational College

12 Mobile Connectivity Beyond the Coast-Line: A Case Study for Next Generation Shipping
Saurabh Rauniar, University of Oslo; Pål Orten, University of Oslo, Norway; Stig Petersen, SINTEF Digital

Wednesday, 11 October 2023 14:00-15:30 Virtual 11V: Wireless Networks: Protocols, Security and Services Virtual Papers

1 An empirical evaluation of BLE for ITS scenarios
Elena Molina, Ruben Rios, University of Malaga; Isaac Agudo, Universidad de Malaga

2 A Quantum Safe Authentication Protocol for Remote Keyless Entry Systems in Cars
Rohini Pooapat Parasravath, National University of Singapore; Nalum Venkata Abhishek, Singapore Institute of Technology, Singapore; Biplab Srikar, National University of Singapore

3 Deep Reinforcement Learning-based Sensing and Communication Scheduling Algorithm for UAV-Assisted Target Detection Systems
Rouzi Tang, Rong Chai, Peixin Li, Chongqing University of Posts and Telecommunications

4 Fast tracing method for Sybil attack in VANEts
Zhaoyi Zhang, Yingxu Lai, Ye Chen, Jingshen Wei, Yuan Feng, Beijing University of Technology

5 Finding Node-disjoint Paths Resilient to Channel Failures in Multi-channel Wireless Networks
Guangyu Li, Nanjing University of Science and Technology; Lin Chen, Sun Yat-sen University

6 Maximizing Ranking-Aware Recommendation Quality for Low-Complexity Network-Friendly Recommendation
Jiayin Hou, Jiawei Lin, Shuoyao Wang, Shenzhen University

7 Optimal random packet replication policies for IIoT in 5G and Beyond considering different feedback regimes
Salah Eddine Elayoubi, CentralineSapce; Patrick Brown, Mertem Mhdhihi, Orange Labs

8 Quality-of-Trust in 6G: Combining Emotional and Physical Trust through Explainable AI
Chen Li, Cranfield University; Weiije Qi, RANPLAN Wireless; Bailu Jin, Cranfield University; Panagiotis Demestichas, Kostas Tsagkaris, Yiouli Kritikou, WINGS ICT; Weisi Guo, Cranfield University

Wednesday, 11 October 2023 16:00-17:30 Virtual 12V: Recent Results Virtual Papers

1 A Collaborative Energy Management Strategy based on Multi-agent Reinforcement Learning for Fuel Cell Hybrid Electric Vehicles
Yao Xiao, Shenzhen Institutes of Advanced Technology/Chinese Academy of Sciences; Shengxiang Fu, Shenzhen Institute of Advanced Technology/Chinese Academy of Sciences; Jongwook Choi, Electronics and Telecommunications Research Institute; Chunhua Zheng, Shenzhen Institutes of Advanced Technology/Chinese Academy of Sciences
2 A Learning-based Incentive Mechanism for Mobile AIGC Service in Decentralized Internet of Things
Fan Jiani, Xu Minrui, Ziyao Liu, Huanyi Ye, Nanyang Technological University; Chaorong Gu, Zhejiang University; Dusit Niyato, Kwok-Yan Lam, Nanyang Technological University

3 A Real-time Vehicle-Pedestrian Collision Avoidance System Exploiting Lightweight Smartphone App
Mohsin Saeed, Western University; Anwar Haque, University of Western Ontario

4 A Size-Generalizable GNN for Learning Precoding
Jia Guo, BeiHang University; Chenyang Yang, BeiHang University, Beijing

Subramanyam Raghu Vamsidhar, Soumya Prakash Dash, Renuka Acharya, Indian Institute of Technology Bhubaneshwar; Debasish Ghose, Yuan Lin, Kristiania University College Norway

6 Low-Complexity Digital Predistortion of RF Power Amplifiers Based on FastGRNN
Tatsh Watanabe, Takeshi Ohseki, Issie Kanno, Yoshiaki Amano, KDDI Research, Inc.

Workshops

W1: 2nd IEEE Workshop on B5G/6G support for space/air/ground/marine/submarine cooperative, connected, and autonomous vehicles (CCAVs)
**Tuesday, 10 October 2023 16:00-16:50 Virtual**
**Opening Keynotes**
1 Welcome note and workshop overview
Faozi Bouali, Coventry University

2 6G Subnetworks for Vertical Industries: Opportunities and Challenges
Gilberto Berardinelli, Aalborg University

3 6G Non-Terrestrial Networks: Vision and Challenges
Alessandro Vanelli Coralli, Università di Bologna

**Technical Session 1**
1 On Provisioning Link Margin for High Bit Rate Q/V Band LEO Communication for Autonomous Vehicles
Shilajit Banerjee, Sairaj Yeshwant Desai, Krishna Madan
Yelamarty, Harivignesh A, Indian Institute of Technology Madras; M L Narayana, TCS TS&S Business Group; K Giridhar, Indian Institute of Technology Madras

2 Vision-Based Target Localization with Cooperative UAVs towards Indoor Surveillance
Guanchong Niu, Qi Cao, Guangzhou Institute of Technology, Xidian University; Chung Shue Chen, Bell Labs, Nokia

3 Last-Hop Scheduling Strategy for Large-Scale LEO Constellation Data Download Based on Bidirectional Dynamic Domains
Gaosai Liu, Xinglong Jiang, Innovation Academy for Microsatellites of Chinese Academy of Sciences; Huawang Li, University of Chinese Academy of Sciences; Zhenhua Zhang, Innovation Academy for Microsatellites of Chinese Academy of Sciences; Sun Siyue, Guang Liang, Shanghai Engineering Center for Microsatellites

**Tuesday, 10 October 2023 18:05-18:40 Virtual**
**Technical Session 2**
1 A Simple Phase Rotation Based PAPR Reduction Method for Multicarrier Faster-than- Nyquist Signaling
Weijing Wang, Tongzhuo Yu, Xidian University; Shuangyang Li, Technische Universität Berlin; B. Bai, Xidian University

4 MmWave Multi-beam V2X with Fountain Code for Joint Ultra-Broadband, Reliable, and Low Latency Communication
Shintaro Habu, Kei Sakaguchi, Khanh Tran gia, Tokyo Institute of Technology

5 3 Peak Energy Curve Based Arm Motion Recognition Using IR-UWB Radar
GuiPing Lin, Jing Men, Ennin Lin, Zhihao Zhuang, Tingting Zhang, Harbin Institute of Technology (Shenzhen)

6 Optimal Multi-Level Amplitude-Shift Keying for Partially-coherent SIMO Wireless Communication System in Rician Fading Environment
Badri Ramanjaney Reddy, Soumya Prakash Dash, Indian Institute of Technology Bhubaneshwar; Debasish Ghose, Kristiania University College Norway

8 STAR-RIS-Assisted Radar-Communication Co-Existence System
Jianxin Dai, Tuobin Han, Nanning University of Posts and Telecommunications; Cunhua Pan, Southeast University; Kezhi Wang, Brunel University London; Hong Ren, Southeast University

9 The Effect of Deep Fading Avoidance in Mediumband Radio Frequency Channels
Dushyantha A. Basnayaka, Dublin City University; Peter Smith, Victoria University of Wellington

10 Timely Random Access: Packet-based or Connection-based?
Jian Feng, Haoyuan Pan, Shenzhen University; Tse-Tin Chan, The Education University of Hong Kong

11 Meta-DAMS: Delay-Aware Multipath Scheduler using Hybrid Meta Reinforcement Learning
Amir Sepahi, Lin Cai, Wenjun Yang, Jianping Pan, University of Victoria

Technical Session 3

1 Gravitational Wave Communications: A Survey
Tayyab Jawed, Shaping Deng, University of Bristol; Shuaishuai Guo, Shandong University

2 Ethical V2X: Cooperative Driving as the Only Ethical Path to Multi-Vehicle Safety
Galinia Sidorenko, Johan Thunberg, Alexey Vinel, Halmstad University

3 Frequency Reuse Planning in 3D Space for UAV Swarm Communications
Kasun Prabhath, Sudharman K. Jayaweera, University of New Mexico

4 Closing Note
Faozi Bouali, Coventry University

**Tuesday, 10 October 2023 14:00-17:30 Function Room**
**W2: 2nd International Workshop on Sensing Advances in Wireless Networks (SAWN)**

1 CRB Analysis for Mod-ADC with Known Folding-Count
Yuanbo Cheng, University of Science and Technology of China; Johan Karlsson, Royal Institute of Technology KTH; Jian Li, University of Florida

2 Interference Management in Mobile Joint Communication and Radar Networks
Husheng Li, Purdue University; Jeffrey Sun, The West Lafayette High School

3 Peak Energy Curve Based Arm Motion Recognition Using IR-UWB Radar
GuiPing Lin, Jing Men, Ennin Lin, Zhihao Zhuang, Tingting Zhang, Harbin Institute of Technology (Shenzhen)

4 Simultaneous Localization and Tracking for UAV-Enhanced Positioning Network
Tianhao Liang, Tingting Zhang, Harbin Institute of Technology (Shenzhen)
5 Time-varying Characteristics of mmWave Channel based on the Clustered Sparsity Model
Lijian Yang, Nanjing University of Posts and Telecommunications; Haitao Lu, ZTE Corporation; Xinchao Ge, Zhixin Sun, Nanjing University of Posts and Telecommunications; Pan Cao, University of Hertfordshire
6 Incentive Based Federated Learning Data Dissemination for Vehicular Edge Computing Networks
Muhammad Saleh Bute, Southwest Jiaotong University

Tuesday, 10 October 2023 Virtual
W3: 7th Workshop on Connected Intelligence for IoT and Industrial IoT Applications- C3IA
1 ABDNN-IDS: Attention-Based Deep Neural Networks for Intrusion Detection in Industrial IoT
Safi Ullah, Wadii Boulla, Anis Koubaa, Zahid Khan, Prince Sultan University; Jawad Ahmad, Edinburgh Napier University
2 CellSecure: Securing Image Data in Industrial Internet-of-Things via Cellular Automata and Chaos-Based Encryption
Hasan Ali, HITEC University Taxila; Muhammad Shahbaz Khan, Edinburgh Napier University; Maha Driss, Prince Sultan University; Jawad Ahmad, William J. Buchanan, Nikolaos Pitsopakis, Edinburgh Napier University
3 Enhancing Congestion Control to Improve User Experience in IoT Using LSTM Network
Atta Ur Rahman, University of Science and Technology Bannu

Tuesday, 10 October 2023 9:00-12:30 Meeting Room 3
W4: Delay-Doppler Communications and Sensing for Vehicular networks
1 Delay-wise Superimposed Pilot based Compressed Sensing Channel Estimation for OTFS Systems
Zhizhao Chen, Xinhua Zheng, Xiang Chen, Sun Yat-sen University
2 Interference Self-Cancellation Based Low-Complexity OTFS for High-Mobility Coverage
Chenglin Zhong, Qinghe Du, Xi’an Jiaotong University; Xia Lei, Yue Xiao, University of Electronic Science and Technology of China
3 Performance Analysis of a Low-Complexity OTFS Integrated Sensing and Communication System
Tommaso Bacchielli, Lorenzo Pucci, Enrico Paolini, University of Bologna; Andrea Giorgetti, DEI, University of Bologna
4 Data-Aided Fractional Delay-Doppler Channel Estimation with Embedded Pilot Frames in DZT-Based OTFS
Sai Pradeep Muppapani, Indian Institute of Science, Bangalore; Sandesh Rao Mattu, A Chockalingam, Indian Institute of Science
5 Mission-Critical Internet of Things on the 6G Network: Services and Apps with Networking Architecture
A. F. M. Shahen Shah, Yildiz Technical University; Muhmmet Ali Karabulut, Kafkas University; Khaled Rabie, Manchester Met University
6 Performance Analysis of MIMO-OTFS with Selective Decode and Forward Relaying
Vighnesh S Bhat, A Chockalingam, Indian Institute of Science, Bangalore
3 Latency Minimization for Split Federated Learning
Jie Guo, Guangdong Power Grid Co., Ltd.; Ce Xu, South China University of Technology; Yushi Ling, Guangdong Power Grid Co., Ltd.; Yuan Liu, South China University of Technology; Qi Yu, Guangdong Power Grid Co., Ltd.

4 Self-aware Collaborative Edge Inference with Embedded Devices for Task-oriented IIoT
Yifan Chen, Zhuoquan Yu, Christine Mwase, Yi Jin, Xin Hu, Fudan university; LiRong Zheng, Zhuo Zou, Fudan University

5 Task Importance-Oriented Probabilistic Constellation Shaping for 5G Uplink transmission
Kuangda Tian, Hao Wang, Huawei Technologies

Tuesday, 10 October 2023 Virtual

W7: IEEE VTC 2023-Fall International Workshop on 4th Network Softwarization Techniques for IoT Application
1 Deep Reinforcement Learning-Based Resource Management for 5G Networks: Optimizing eMBB Throughput and URLLC Latency
Chandrasen Pandey, Vaibhav Tiwari, National Institute of Technology Meghalaya; Agbotiname Imoize, University of Lagos; Dipendu Sinha Roy, National Institute of Technology Meghalaya

2 NOMA-based Dual-UAV Data Collection in Wireless Powered IoT Networks
Du Pengfei, Shijia Chen, Xihua University; Qi Zeng, Sichuan University; Chaoqin Qing, Xihua University

3 Transmit Power Minimization for STAR-RIS aided Bistatic Backscatter Networks
Minxin Peng, Nanjing University of Posts and Telecommunications; Yiyang Ni, Jiaxing Second Normal University; Zhaoran Xu, Haitao Zhao, Wei Xun, Bangning Xu, Nanjing University of Posts and Telecommunications

4 A Flow Table Overflow Mitigation Strategy Based on Network Flow Path Optimization
Hongbo Sun, Lixing Yan, Hao She, Xiao Zhang, Yongan Guo, Nanjing University of Posts and Telecommunications

5 A Survey of Service Function Chain Orchestration Based on Neural Network
Shuai Wang, Nanhang Jincheng College; Longxiang Yang, Nanjing University of Posts and Telecommunications

6 Joint Active and Passive Beamforming Design in RIS-Aided Cell-Free Massive MIMO Systems for Aerial Networks
Xiaozhen Zhu, Longxiang Yang, Nanjing University of Posts and Telecommunications

7 Semantic map construction based on LIDAR and vision fusion
Siyuang Liang, Wenxi Li, Xi’an University of Posts and Telecommunications; Guodong Duan, Hunan Vanguard Group Co. Ltd

Tuesday, 10 October 2023 9:00-17:30 Ballroom 2

W8: IEEE VTC2023 NexGenRAN Workshop on 6G Technologies
1 Adaptive Defense Mechanisms Against Phishing Threats in 6G Wireless Environments
Akshat Gaurav, Ronin Institute; Brij B. Gupta, Varsha Arya, Asia University; Kwok Tai Chui, Hong Kong Metropolitan University; Francisco Jose Garcia Peñalvo, University of Salamanca

2 A Low-PAPR Hybrid NOMA based on Constant Envelope OFDM
Sisi Gong, Lilin Dan, University of Electronic Science and Technology of China

3 Deep Learning Based Cyber Attack Detection in 6G Wireless Networks
Brij B. Gupta, Asia University; Kwok Tai Chui, Hong Kong Metropolitan University; Akshat Gaurav, Ronin Institute; Varsha Arya, Asia University

4 E2E-QoE based 6G Sustainability: Challenges and Designing Aspects
Lei Ji, Jing Qian, Hao Wang, Huawei Technologies

5 Field Trial of AR-based Radio Signal Visualization for Better Deployment of mmWave 5G and Beyond
Naoya Okubo, Jin Nakazato, Kei Sakaguchi, Tokyo Institute of Technology

6 A Survey of Service Function Chain Orchestration Based on Neural Network
Chandrasen Pandey, Vaibhav Tiwari, National Institute of Technology Meghalaya; Agbotiname Imoize, University of Lagos; Dipendu Sinha Roy, National Institute of Technology Meghalaya

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**Tuesday, 10 October 2023 Virtual**  
**W10: SPIN: Smart Spectrum Sharing and In-Band Coexistence for NTN**  
1. Secure and Reliable Space Communication Systems  
   Gunes Karabulut-Kurt, Polytechnique Montreal  
2. Privacy Preserving Security Protocols for the Internet of Vehicles  
   Biplab Sikdar, National University of Singapore  
3. 3D Placement and User Association for Load Balancing Among Aerial Base Stations: Nature-Inspired Approaches  
   Ying Loong Lee, Universiti Tunku Abdul Rahman  
4. Multi-agent Reinforcement Learning for Random Access  
   Joo Hyun Lee, Hanyang University  
5. Performance Study for Handoff Strategies in Low-Earth-Orbit Satellite Network  
   Xizhe Qu, Chieh-Tang Chen, Phone Lin, National Taiwan University; Chai-Hien Gan, Information and Communications Research Laboratories, ITRI; Shun-Ren Yang, National Tsing Hua University; En-Hau Yeh, National Taiwan University

**Keynote**  
- Zhenjiang Li, City University of Hong Kong
- Xiaoyan Zhu, Xidian University
- Haotian Chi, Shanxi University

1. Distributed Physical Layer Key Generation Algorithm Based on Deep Learning  
   Wanting Geng, Li Sun, Qinghe Du, Xi'an Jiaotong University  
   Zhonglin Hou, Yongle Fu, East China Normal University; Shouwei Wang, China Automotive Innovation Corporation; Dong Liu, China Industrial Control System Cyber Emergency Response Team; Hong Liu, East China Normal University; Yanzhao Yang, China Automotive Innovation Corporation  
3. Integrating Datasets with Discrete and Natural Language Annotations for Person Retrieval  
   Harsh Tripathi, BITS Pilani; K K Birla Goa Campus; Jay Chaudhari, Ahmedabad University; Hiren Galiyawala, RyDOT Infotech Pvt Ltd; Pawan Sharma, Pandit Deendayal Energy University; Mehul S Raval, Ahmedabad University  
   Lang Lin, Changqing Song, Hongzhi Zhao, Shihai Shao, Youxi Tang, University of Electronic Science and Technology of China  
5. Two-Layer Game Based Covert Communication Strategy Against Jamming Attack Oriented Warden  
   Zhangnan Wang, Yichen Wang, Shuai Sun, Xi'an Jiaotong University  
   Anirudh Paranjothi, Oklahoma State University; Mohammad S. Khan, East Tennessee State University

**Tuesday, 10 October 2023 14:00-17:30 Meeting Room 1**  
**W12: Workshop on Integrated Sensing, Communication, and Computation towards 6G**  
1. A Two-Layer Preceding Approach for the Integrated Sensing and Communication in Downlink MIMO Systems  
   Chunyang Xiao, Beijing University of Posts and Telecommunications; Jichong Guo, Suzhou University of Science and Technology; Zhaopi Wang, Xiqing Liu, Beijing University of Posts and Telecommunications; Qiu Yang, Zhihua College of Science and Technology  
2. Energy Minimization in RIS-Assisted MEC Systems with Imperfect CSI  
   Wen He, Yin Xu, Da Zhi He, Yunfeng Guan, Shanghai Jiao Tong University  
3. Joint Communication and Computation Optimization for Wireless Networked Control with URLLC  
   Yiyang Li, Xinxiang Song, The Chinese University of Hong Kong, Shenzhen; Zhiqing Wei, Feng Zhiyong, Beijing University of Posts and Telecommunications; Jie Xu, The Chinese University of Hong Kong, Shenzhen  
4. Joint Information Freshness and Service Latency Optimization in Multi-hop Edge Caching Systems  
   Yi Lu, Jie Gong, Xu Chen, Sun Yat-Sen University  
5. Performance of WLAN-based Object Detection with Distributed Antenna and Spatially Concatenated CSI  
   Shunsuke Shimizu, Osamu Muta, Kazuki Noguchi, Kyushu University; Tomoki Murakami, Shinya Otsuki, NTT Corporation  
6. Joint Communication, Sensing and Computing for V2I Networks  
   Yu Lin, Feng Ke, Meiling Chen, Mengjiao Qin, South China University of Technology; Ying Loong Lee, Universiti Tunku Abdul Rahman; Dong Li, Macau University of Science and Technology  
7. Joint Design for Co-existence of MIMO Radar and MISO Communication Systems  
   Hao Mao, Yinghui He, Guanding Yu, Zhejiang University; Rui Yin, Zhejiang University City College
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<thead>
<tr>
<th>Time</th>
<th>Ballroom 1 (A)</th>
<th>Ballroom 2 (B)</th>
<th>Ballroom 3 (C)</th>
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<td>7:00–17:30</td>
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<td>11:00–12:30</td>
<td>W8 Continued</td>
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<td>12:30–14:00</td>
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<td>16:00–17:30</td>
<td>(2) W8 Continued</td>
<td>W5 Continued</td>
<td>W12 Continued</td>
<td>Performance Improvement for Wireless Communications</td>
<td>W6 Continued</td>
<td>W2 Continued</td>
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<td>18:00–20:00</td>
<td>Welcome Reception (Ballroom 1)</td>
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<td>8:00–9:00</td>
<td>Welcome and opening (Khaled B. Letaief and Song Guo, VTC2023-Fall Co-chair; Weihua Zhuang, VTS President) (Ballroom 1)</td>
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<td>9:00–9:45</td>
<td>Visualizing the Environment with the Aid of Integrated Sensing and Communication (ISAC) as well as AI (Peiying Zhu, Huawei)</td>
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<td>14:00–15:30</td>
<td>(4) UAV1</td>
<td>Coding and Implementation</td>
<td>Energy Efficiency and Low Latency</td>
<td>Vehicular Communications</td>
<td>Green Communications</td>
<td>Radio Resource Management in Heterogeneous Networks</td>
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<td>9:00–9:45</td>
<td>Keynote: Terahertz Communications: From the Near Field to Satellite Networks (Josep Miquel Jornet, Northeastern University)</td>
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<td>11:00–12:30</td>
<td>(6) Panel: Future Research and Standardization Directions for 6G</td>
<td>Massive MIMO</td>
<td>IoT and IoT</td>
<td>Wireless Sensing and Radar Detection</td>
<td>Physical Layer Security</td>
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<td>(8) Machining Learning and Performance Optimization</td>
<td>Intelligent Transportation I</td>
<td>Massive Antennas</td>
<td>Advanced Localization</td>
<td>Spectrum Management under Comprehensive Scenario</td>
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<td>18:00–21:30</td>
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<td>9:00–9:45</td>
<td>Keynote: Mobile Technology Evolution Towards 6G (Doru Calin, MediaTek USA) (Ballroom 1)</td>
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<td>9:45–10:30</td>
<td>Keynote: Task-orientated Communications (Angela Yingjun Zhang, The Chinese University of Hong Kong) (Ballroom 1)</td>
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<td>11:00–12:30</td>
<td>(9) Vehicular Networks</td>
<td>Modulation and Estimation</td>
<td>Channel Modeling, Prediction, and Feedback</td>
<td>Joint Optimization for Communications</td>
<td>Localization and Sensing</td>
<td>Services and Security</td>
<td>Innovative Structure, Service and Transmission Techniques</td>
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<td>14:00–15:30</td>
<td>(10) Vehicular Communication and MIMO</td>
<td>Multi-antenna Transmission</td>
<td>Vehicular Edge Computing</td>
<td>Intelligent Techniques for Optimizing Next-Gen Networks</td>
<td>Satellite Communication and Resilience</td>
<td>Channel and Signal Design in Heterogeneous Networks</td>
<td>Intelligent Reflecting Surface and Applications</td>
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<td>16:00–17:30</td>
<td>(11) Channel measurement and modeling</td>
<td>Signal Processing and Waveform Design</td>
<td>Intelligent Transportation II</td>
<td>Deep Learning Techniques for Communications</td>
<td>UAV communication and ISAC</td>
<td>mmWave Beamforming and MIMO Communications</td>
<td>Estimation, Localization, and Perception</td>
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