

FINAL PROGRAM



***2023 IEEE 98th Vehicular Technology Conference
10 – 13 October 2023***



VTC2023-Fall
HONG KONG
Intelligence on the Move



VTC2024-Fall

WASHINGTON DC
Connecting the Mobile World



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

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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.

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!

Wei-hua Zhuang, *President*
IEEE Vehicular Technology Society

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Sarika Pal	Sekokotoana	Islam Tanash	Lin Wang	Huiqiang Xie	Melda Yuksel	Zhirun Zheng
Michail Palaiologos	Mansoor Shafi	Aimin Tang	Lipeng Wang	Sijing Xie	Ima Zakia	Zhirun Zheng
Praveen Palanisamy	Rozita Shafie	Huaze Tang	Miao Wang	Tingli Xie	Alessio Zappone	Kai Zhon
Chunyu Pan	Babar Shahzaad	Jianhang Tang	Ouya Wang	Xinyue Xie	Hosein Zarini	Chenxi Zhong
Guangjin Pan	Lin SHAN	Ming Tang	Qian Wang	Yuexiu Xing	Mervat Zarour	Fangtian Zhong
Shengli Pan	Yue Shan	Na Tang	Qianli Wang	Zehui Xiong	Li Zeng	Ruikang Zhong
Om Jee Pandey	Keyuang Shang	Shunpu Tang	Qin Wang	Bingrong Xu	Qinghai Zeng	Weifeng Zhong
Shashi Raj Pandey	Chenglong Shao	Xiao Tang	Qipeng Wang	Dongfang Xu	Yihuang Zeng	Xiangyu Zhong
Xiaowei Pang	Hua Shao	Poramate Tarasak	Qiu Wang	Dongyang Xu	Chao Zhai	Xiaoxiong Zhong
Enrico Paolini	Jianfeng Shao	Simon Tarboush	Qubejjian Wang	Fan Xu	Daosen Zhai	Yi Zhong
Maria Papaioannou	Shihai Shao	Bernardo Camajori	Qunshu Wang	Guanjun Xu	Liangsen Zhai	Bingpeng Zhou
Jihun Park	Shuo Shao	Tedeschini	Ruoxu Wang	Jialong Xu	Yufeng Zhan	Bo Zhou
Seok-Hwan Park	Xiaodan Shao	Yinglei Teng	Shangbo Wang	Jingren Xu	Andrew Zhang	Chengyi Zhou
Manuel Patchou	Xiaodan Shao	Tesema Tariku	Shuai Wang	Binlei Xu	Bolei Zhang	Conghao Zhou
João Pedro Pavia	Yulin Shao	Terefe	Shuyi Wang	Qian Xu	Boning Zhang	Gui Zhou
Yanhua Pei	Faez Fawwaz	Tu Lam Thanh	Siming Wang	Xiaoxia Xu	Bowen Zhang	Huan Zhou
Yingying Pei	Shareef	Sapna Thapar	Wei Wang	Xincao Xu	Boyuan Zhang	Jiwei Zhou
Filippos Pelekoudas-	Sachin Sharma	Minh-Thuyen Thi	Weili Wang	Xincao Xu	Changwei Zhang	Kequan Zhou
Oikonomou	Rui SHE	Christo	Wen Wang	Xinmian Xu	Cheng Zhang	Momiao Zhou
Peng	Mohsen Sheikh-	Kurissummoottil	Wenhao Wang	Yifeng Xu	Deyou Zhang	Qihao Zhou
Haoran Peng	Hosseini	Thomas	Xiaoliang Wang	Yiming Xu	Guanglin Zhang	Siyuan Zhou
Qiaoyan Peng	Cong Shen	Chenjing Tian	Xiaoyan Wang	Yongjun Xu	Guangyi Zhang	Ting Zhou
Xiang Peng	Guanxiong Shen	Jiachen Tian	Xijun Wang	Zhuocheng Xu	Hongwei Zhang	Xinyang Zhou
Youkun Peng	Heyin Shen	Takeshi Toda	Xinghan Wang	Na Xue	Hongxu Zhang	Xugui Zhou
Du Pengfei	Li-Hsiang Shen	Li Tong	Xinghan Wang	Qing Xue	Jifa Zhang	Yuan Zhou
Toni Perälä	Pengfei Shen	Luis Torres Figueroa	Xu Wang	Yang Xuelin	Junhong Zhang	Botao Zhu
Md Ferdous Pervej	Shanpu Shen	Azzedine Touazi	Yanxiang Wang	Yasunori Yagi	Junlin Zhang	Hongzi Zhu
Watid Phakphisut	Shu Shen	Mohammad Towliat	Yanyan Wang	Koji Yamamoto	Junqing Zhang	Jing Zhu
Lam V. Phi	Shuaiqi Shen	Trung Duy Tran	Yichen Wang	Ge Yan	Junwei Zhang	Jinping Zhu
Remon Polus	Wenhao Sheng	Khien Tran	Yichen Wang	Hangyu Yan	Kecheng Zhang	Lidong Zhu
Suyash Pradhan	Zhichao Sheng	Lan T. Tran	Yiru Wang	Hua Yan	Li Zhang	Min Zhu
Ganesh Prasad	Paul Shepherd	Sharda Tripathi	Yong Wang	Li Yan	Lu Zhang	Wenrun Zhu
Ajay Pratap	Bei Shi	Shraddha Tripathi	Yuwei Wang	Peishun Yan	Meiying Zhang	Xiaozhen Zhu
Qiaolin Pu	Enyu Shi	Tran Hoa Trung	Yuxuan Wang	Xuezhen Yan	Ming Zhang	Xusheng Zhu
Lorenzo Pucci	Hao Shi	Van-Truong Truong	Zhangnan Wang	Yihe Yan	Mingming Zhang	Yanze Zhu
Jiaju Qi	Tianyi Shi	Ang-Hsun Tsai	Zhe Wang	Chao Yang	Pinchang Zhang	Yongxu Zhu
Nan Qi	Zhong-Ting Tsai	Zhong-Ting Tsai	Zhongkai Wang	Chuhong Yang	Qianqian Zhang	Zhaoyang Zhu
Qifan Qi	Wan-Ting Shih	Po-Hsun Tseng	Zihuan Wang	Dan Yang	Qianqian Zhang	Zhengyu Zhu
Yifei Qi	Shunsuke Shimizu	Eirini-Eleni	Ziqi Wang	Haojun Yang	Ran Zhang	Zeyan Zhuang
Liang Qiao	Qintuya Si	Tsiropoulou	Sahil Waqar	Huiting Yang	Ronghui Zhang	Xiaoxiao Zhuo
Meng Qin	Ljiljana Simić	Haoyu Tu	Haichao Wei	Ke Yang	Runxin Zhang	Yinxiao Zhuo
Chi Qiu	Murat Simsek	Xuezhen Tu	Zhiqiang Wei	Kun Yang	Rusheng Zhang	Deyue Zou
Kaige Qu	Keshav Singh	Nguyen Minh Tuong	Zhuangkun Wei	Liu Yang	Shaohu Zhang	Yixuan Zou
Xinghao Qu	Md Sadman Siraj	Gabriel Avanzi	Ziling Wei	Long Yang	Sheng Zhang	Xingxuan Zuo
Yunbo Qu	Anuj Kumar Sirohi	Ubiali	Chao Wen	Lu Yang	Shiyao Zhang	

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

Ruiqi (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. I have also assisted some professors to help convert their work into standards, and it turned out to be quite fruitful. Thus, I believe that the research outcomes from the academia are solid and ready, while what is missing is enough awareness and knowledge on standardization: what matters, how it works and how to make your work impactful.

In this tutorial, I will introduce the ABCs of standardization for communication industry, with rich and most up-to-dated 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.

Ruiqi (Richie) Liu (S'14-M'20) received the B.S. and M.S. degree (with honors) in electronic engineering from the Department of Electronic Engineering, Tsinghua University in 2016 and 2019 respectively. He is now a master researcher in the wireless 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 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

T5: Holographic Radio: A New Paradigm for Communication and Sensing in 6G

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 RHSbased 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 ISWCS 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 Asia-Pacific 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.

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

T6: Intelligent Synchronization for Networked Systems in the 6G Era: Challenges, Recent Results, and Future Directions

Pengyi Jia, Xianbin Wang, Western University, Canada

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 2016 and 2021, 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 IoT 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.

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

T8: Physical Layer Security 2.0: New Architectures, Enabling Technologies, and Emerging Applications

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 car 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.Sc. 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 WCSP 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 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

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 in IEEE INFOCOM 2017.

Li Sun 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 (2021), the First Prize of the Teaching Achievement Award of Shaanxi Province of China (2018), and the Innovation Pioneer Award at Huawei (2022 and 2023).

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 beyond 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 Comms Best Paper, and the 2008 JCN Best Paper. She received several prizes for her contribution to ITU-R 4G channel model (ITU-RM.2135), 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 (DG) Chairperson of the ITU-R IMT-2020 (5G) channel model and led the drafting of IMT.2412 Channel Model Section. Now, she is the Chairwomen of China IMT-2030 (6G) 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 the 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 Mayagüez, 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 functions, 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 Mayagüez (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, 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 the era of machine learning-empowered NGMA for intelligent multiple access in 6G.

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-COMM, 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 a Fellow 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 Electronic 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 Computing for Communications (SPCC) Technical Early Achievement Award, IEEE Communication Theory Technical Committee (CTTC) 2021 Early Achievement Award. He received IEEE ComSoc Outstanding Nominee for Best Young Professionals 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 ComSoc 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 JSTSP 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 serves as 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.

T1: 6G Wireless Channels: Measurements, Characteristics Analysis, and Modeling Methodologies

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

Celimuge Wu, University of Electro-Communications, Japan; Soufiene Djahel, 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-Jeron 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 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 GlobalSIP 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

Information and Communication Technologies from the Universitat Politècnica de Catalunya, Spain, in 2008. He received a Ph.D. in Electrical and Computer Engineering from the Georgia Institute of Technology, Atlanta, GA, in August 2013. He has co-authored more than 220 peer-reviewed scientific publications in these areas, including one book and five US patents. His work has received over 15,000 citations (h-index of 56 as of August 2023). He is serving as the lead PI on multiple grants from U.S. federal agencies, including the National Science Foundation, the Air Force Office of Scientific Research and the Air Force Research Laboratory, and industry. He is the recipient of multiple awards, including the 2017 IEEE

ComSoc Young Professional Best Innovation Award, the 2017 ACM NanoCom Outstanding Milestone Award, the NSF CAREER Award in 2019, the 2022 IEEE ComSoc RCC Early Achievement Award, and the 2022 IEEE Wireless Communications Technical Committee Outstanding Young Researcher Award, among others, as well as four best paper awards. He is a senior member of the IEEE and an IEEE ComSoc Distinguished Lecturer (Class of 2022-2023). He is also the Editor in Chief of the Elsevier Nano Communication Networks journal and Editor for IEEE Transactions on Communications.

Thursday, 12 October 2023, 9:45–10:30 Ballroom 1

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 Leonard G. Abraham Prize, 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.

Friday, 13 October 2023, 9:00–9:45 Ballroom 1

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.

Friday, 13 October 2023, 9:45–10:30 Ballroom 1

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 throughput 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 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
Linyang Song
Peiying Zhu
Robert W. Heath

Doru Calin's bio appears on Page 17.

Josep Miquel Jornet's bio appears on Page 16.

Linyang Song's bio appears on Page 17.

MediaTek USA
Northeastern University, USA
Peking University, China
Huawei, China
MIMO Wireless Inc., USA

Peiying Zhu's bio appears on Page 16.

Robert W. Heath's bio appears on Page 16.

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

ZTE Corporation, China
Hong Kong Applied Science and Technology Research Institute, China
Southeast University, China
Haige Communication, China

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.

Towards 6G – Lessons from 5G

Justin Chuang, Hong Kong Applied Science and Technology Research Institute, China

Dr Justin Chuang joined ASTRI in December 2011 with nearly three decades of experiences in research, teaching, development and engineering in communications technologies.

He received BSc in Electrical Engineering from National Taiwan University in 1977, and MSc and PhD, also in Electrical Engineering, from Michigan State University in 1980 and 1983, respectively. He was elected an IEEE Fellow in 1997. Dr Chuang has held various positions in several multinational organizations including Broadcom, AT&T, Bellcore, and General Electric. Furthermore, he has also served as a Professor in the Department of Electrical and Electronic Engineering (now ECE Dept.) of the Hong Kong University of Science and Technology (HKUST) from 1993 to 1996. Dr Chuang is

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 Workshop organizer in IEEE ICC 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 | • Thursday 12 October | 0800 – 1730 |
| • Wednesday 11 October | 0700 – 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

Tuesday, 10 October 2023 14:00-15:30 Meeting Room 2

1E: Intelligence-empowered Wireless Communication Systems

Chair: He Fang, Sochoow University,

- 1 Cohort-based Power Scaling and Gradient Recovery for Over-The-Air Federated Learning**
Koudai Terai, Yi-Han Chiang, Hai Lin, Osaka Metropolitan University; Yusheng Ji, National Institute of Informatics
- 2 Deep Learning-Based Progressive Image Transmission in MIMO Channels with Inter-cell Interference**
Minyoung Seo, Seok-Ho Chang, Konkuk University

- 3 Sparse ICA Based Semi-Blind Massive MIMO Channel Estimation without Prior Information of Inter-Cell Interference**

Zhixiang Xu, Xu Zhu, Yanfeng Zhang, Yufei Jiang, Harbin Institute of Technology (Shenzhen); Vincent Lau, The Hong Kong University of Science and Technology, Hong Kong; Sumei Sun, Institute for Infocomm Research

- 4 Spectral Privacy Detection on Black-box Graph Neural Networks**

Yining Yang, Jialiang Lu, Shanghai Jiao Tong University

Tuesday, 10 October 2023 16:00-17:30 Meeting Room 2

2E: Performance Improvement for Wireless Communications

Chair: Xianhao Chen, Hongkong University,

- 1 Efficient Channel Estimation for OFDM Systems with Reduced Pilot Overhead**
Qi Wang, Xiaojing Wu, Yue Xiao, University of Electronic Science and Technology of China
- 2 Enhancing User Detection via SS Burst Repetition in 5G Millimeter Wave Systems**
Neeta Jha, Saptarshi Chaudhuri, International Institute of Information Technology Bangalore; Jyotsna Bapat, International Institute of Information Technology; Amrita Mishra, Debabrata Das, International Institute of Information Technology Bangalore

- 3 Strategically Positioning On-Board PEPs in LEO-based NTN for TCP Throughput Improvement**

Kyeongnam Park, Kyungha Kim, Hyungjoon Shin, Hojeong Lee, Hyogon Kim, Korea University

- 4 Sum Rate Maximization for Regularized Zero-Forcing Precoder in 1-Bit MIMO**

Ferhad Askerbeyli, Huawei Munich Research Center / Technical University of Munich; Wen Xu, Huawei Technologies Duesseldorf GmbH; Josef A. Nossek, Technical University of Munich

- 5 On the channel estimation of low-PAPR waveform for 5G Evolution and 6G**

Lijun Yang, Lilin Dan, Yuanjie Hu, University of Electronic Science and Technology of China; Saviour Zammit, University of Malta

Wednesday 11 October 2023

Wednesday, 11 October 2023 11:00-12:30 Ballroom 2

3B: Advanced Transmission Techniques

Chair: Celimuge Wu, The University of Electro-Communications

- 1 Rate-Splitting and Sum-DoF for the K-User MISO Broadcast Channel with Mixed CSIT and Order-(K-1) Messages**
Shuo Zheng, Southern University of Science and Technology; Tong Zhang, Jinan University; Jingfu Li, Surrey University; Shuai Wang, Shenzhen Institute of Advanced Technology; Weijie Yuan, Southern University of Science and Technology; Gaojie Chen, University of Surrey; Rui Wang, Southern University of Science and Technology
- 2 Semantic Communication for Efficient Image Transmission Tasks based on Masked Autoencoders**
WU JIALE, The University of Electro-Communications; Celimuge Wu, The University of Electro-Communications, Japan; Yangfei Lin, University of Electro-Communications; Jingjing Bao, Zhaoyang Du, The University of Electro-Communications; Lei Zhong, Toyota Motor Corporation; Xianfu Chen, VTT Technical Research Centre of Finland; Yusheng Ji, National Institute of Informatics
- 3 Waveform Design of Spectrum Sharing Radar in a Multi-path Scenario**
Haoyu Zhang, Li Chen, Guo Wei, University of Science and Technology of China
- 4 Neural Adjusted Min-Sum Decoding for LDPC Codes**
Haochen Yu, Ming-Min Zhao, Ming Lei, Minjian Zhao, Zhejiang University
- 5 Coarse Initial Time Synchronization for OTFS**
Min-Zhi Xu, Char-Dir Chung, National Taiwan University; Wei-Chang Chen, National Taipei University of Technology

Wednesday, 11 October 2023 11:00-12:30 Ballroom 3

3C: AI and Machine Learning

Chair: Nan Cheng, XiDian University

- 1 DQN based Anti-blocking Routing Algorithm for IRS-assisted MANET**
Wenkai Cai, Ming-Min Zhao, Ming Lei, Zijian Chen, Minjian Zhao, Zhejiang University
- 2 Knowledge-Driven Multi-Agent Reinforcement Learning for Computation Offloading in Cybertwin-Enabled Internet of Vehicles**
Ruijin Sun, Xiao Yang, Nan Cheng, Xiucheng Wang, Changle Li, Xidian University
- 3 P-DRR: PPO-Based Efficient Dynamic Resource Reallocation Scheme in Industrial Internet of Things**
Tao Jing, Zha Liu, Minghao Zhu, Xuehan Li, Bo Gao, Qinghe Gao, Beijing JiaoTong University; Yan Huo, Beijing Jiaotong University
- 4 Robust Meta Soft Actor-Critic Based Sequential Power Control in Vehicular Networks**
Zhihua Liu, Chongtao Guo, Shenzhen University; Cheng Guo, Pengcheng Laboratory; Zhaoyang Liu, Xijun Wang, Sun Yat-sen University
- 5 A Multi-Agent Reinforcement Learning Approach for Dynamic Offloading with Partial Information-Sharing in IoT Networks**
Jing Zhang, Shanghai Institute of Microsystem and Information Technology; Fei Shen, Chinese Academy of Sciences; Liang Tang, Shanghai Institute of Microsystem and Information Technology; Feng Yan, Southeast University; Fei Qin, Chinese Academy of Sciences; Chao Wang, Shanghai Huace Navigation Technology Ltd

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

3D: Vehicular Security

Chair: Deepak Panda, Cranfield University

- 1 can-train-and-test: A New CAN Intrusion Detection Dataset**
Brooke Lampe, Weizhi Meng, Technical University of Denmark
- 2 Distributed Misbehavior Detection based on Vehicle Perception Model and CPM Data Collection**
Shabbir Ali, Institut Vedecom; 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; Yiliang Liu, Xi'an Jiaotong University
- 4 FedVAE: Trajectory privacy preserving based on Federated Variational AutoEncoder**
Yuchen Jiang, Ying Wu, Shiyao 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, Yugang 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, Zenan Zhang, Harbin Institute of Technology, Shenzhen; Tingting Zhang, Harbin Institute of Technology (Shenzhen)

4 Gesture Recognition Using Multiple mmWave FMCW Radars

Yanhua 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**
M^a Carmen Lucas Estañ, Universidad Miguel Hernandez de Elche (UMH); Ana Larrañaga, Ikerlan Technology Research Centre; Javier Gozávez, Universidad Miguel Hernandez de Elche (UMH); Imanol Martínez, Ikerlan Technology Research Centre
- 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: UAV1

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 Wafae 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, Ahadzi 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: TBC

- 1 Blind Self-Interference Canceller with Adaptive Differential Delay for IBFD in the Presence of Fractional Delay Path**
Koichi Nishikawa, Shinsuke 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 Merlano 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

Soonwoo 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, Xiaonan Chen, Qihang Peng, Wei Huang, University of Electronic Science and Technology of China

Wednesday, 11 October 2023 14:00-15:30 Ballroom 3

4C: Energy Efficiency and Low Latency

Chair: George Efthymoglou, University of Piraeus

1 Beacon-Assisted Wireless Powered 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 Khalili, Friedrich-Alexander-University Erlangen-Nurnberg; Rafael Berkvens, University of Antwerp - imec, IDLab - Faculty of Applied Engineering; Jeroen Famaey, IDLab, University of Antwerp - imec

4 Time-Sensitive IIoT System based on BLE Physical Layer

Hao Huang, Shiann-Tsong Sheu, National Central University

5 On the Information Freshness of A Two-Sensor Status Update System

Tianqing 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

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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, Zhenxin Cao, Southeast University

3 Deep Reinforcement Learning-Based Train-Ground Beamforming Management for Multi-MRs Mm-wave Communication

Yuanyuan Qiao, Yong Niu, Xiangfei Zhang, Beijing Jiaotong University; Ning Wang, Zhengzhou University; Zhangdui Zhong, Bo Ai, Beijing Jiaotong 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-HKBK 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; Yijian Chen, Yu Hongkang, ZTE Corporation; Yijin Pan, Southeast University

2 Optimizing Real-Time Responsiveness in IIoT: 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

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5A: UAV2

Chair: Henry Hong-Ning Dai, Hong Kong Baptist University

- 1 Integrated Communication and Control for Formation Management of UAV Swarms**
Yizhe Zhao, Jiangting 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 Assignemnt 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 (Shengzhen) & The University of York; Sumei 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**
Hyeon-Seong 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 Transmission

Chair: Lu Lv, 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, Ming-Min Zhao, Min Li, Ming Lei, Minjian Zhao, Zhejiang University
- 4 DOA Estimation of High Mobility Target in RIS Aided Sensing System**
Yangying Zhao, Peng Chen, Zhenxin Cao, Southeast University
- 5 Outage Performance of Active RIS in NOMA Networks over Nakagami-SmS Fading Channels**
Meiqi Song, Xinwei Yue, Beijing Information Science and Technology University; Chongjun Ouyang, 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

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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 Köpsell, Barkhausen 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 Takanashi, Katsushi Sanda, Toyota Central R&D Labs., Inc.
- 2 Dr. MTL: Driver Recommendation using Federated Multi-Task Learning**
Jayant Vyas, Bhumiika, 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**
Zaiwang Lu, 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, Cailian Chen, Fengkun Gao, Bo Yang, Xinping Guan, Shanghai Jiao Tong University

Wednesday, 11 October 2023 16:00-17:30 Meeting Room 2

5E: Protocol Design and Performance Evaluation

Chair: Lukas Prause, 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 Lu, 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 Prause, Mark Akselrod, Leibniz Universität Hannover
- 4 5GTQ: QoS-Aware 5G-TSN Simulation Framework**
Rubi 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, Shaanxi 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

- 4 Cost-Effective Deployment for Fully-Decoupled Radio Access Networks: A Techno-economic Approach**
Jiwei Zhao, Nanjing University; Jiacheng Chen, Peng Cheng Laboratory; Bo Qian, Bo Cheng, Yunting 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

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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; Xiaoyan 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 Electronic 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 Fu, Pengcheng Zhu, Southeast University; Bo Ai, Beijing Jiaotong University; Jiangzhou Wang, University of Kent; Xiaohu You, Southeast University
- 5 Scalable Network-Assisted Full-Duplex Cell-Free Massive MIMO With Limited Fronthaul Capacity**
Koushi 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 LV

Chair: Florian Schiegg, Robert Bosch GmbH

- 1 A Fair and Efficient Federated Learning Algorithm for Autonomous Driving**
Xinlong Tang, Jiayi 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**
Chunyu Liu, Guoyu Ma, Ruisi He, Bo Ai, Ruifeng Chen, Beijing Jiaotong University; Haoxiang Zhang, Ministry of Industry and Information Technology; Bingcheng 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 Kitahara, Tomohiro Otani, 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; Jen-Ming Wu, Hon Hai Research Institute; Bingyi Liu, Wuhan University of Technology

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6D: Wireless Sensing and Radar Detection

Chair: Aimin Tang, Shanghai Jiao Tong University

- 1 An Innovative Environment Sensing Method Exploiting the Oversampled OFDM Cyclic Prefixes**
Hao Zhang, Zhaoyang Zhang, Zhejiang University; Shunqi Huang, Japan Advanced Institute of Science and Technology; Xin Tong, Lei Liu, Zhejiang University
- 2 Joint Transmit and Receive Beamforming for Integrated Bistatic Radar Sensing and MU-MIMO Communications**
Qimin Zhao, Aimin Tang, Xudong Wang, Shanghai Jiao Tong University; Jianguo Liu, Nokia Shanghai Bell; Yanni Zhou, Fei Gao, Nokia Bell Labs China
- 3 Flexible SDR-based Experimental Platform for Realistic Ranging Evaluation in 5G and Beyond**
Zhongju Li, Ahmad Nimr, Philipp Schröter, TU Dresden; Stark Maximilian, Bosch; Gerhard Fettweis, TU Dresden
- 4 Spatio-Temporal Dense Network for Vital Signs Detection Using FMCW Radar**
Qian Zhao, Hongchun Li, Jun Tian, Lili Xie, Fujitsu Research and Development Center Co., Ltd; Takahiro Yoshioka, Kenta Ide, Masahiro Shiraishi, Takeshi Konno, Fujitsu
- 5 Sidelobe-Enhanced Beam Sweeping for Wireless Sensing in Vehicular Communication**
Kang Guo, Zhaoyang Zhang, Xin Tong, Zhaohui Yang, Zhejiang University

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

6E: Physical Layer Security

Chair: Hongliang He, China University of Geosciences

- 1 Differentially Pre-coded Polar Codes for Physical Layer Security**
Qingyun Chen, Qinghe Du, Xi'an Jiaotong University
- 2 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
- 3 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
- 4 Self-Interference Assisted Cooperative Jamming for Secure Communications**
Hongliang He, Xingmei Li, China University of Geosciences, Wuhan

5 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

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; Zihao 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 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 Yamada, 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, Shanghai Dianji University; Mengjiang Sun, Tao Luo, Yangying Zhao, Southeast University; Zhimin Chen, Shanghai Dianji 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**
Edmir Xhoxhi, Vincent Albert Wolff, Alexey Orychshenko, Leibniz University Hannover
- 3 Random Access Protocol Design and Analysis for Neural Interfaces Under Non-Saturated Regime**
Hongbo Wu, Yukuan 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

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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**
Longfei Ma, Nan Cheng, , 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; Guangjin Pan, Shunqing 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 IIoT 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, Huanrong Zhang, Southwest Jiaotong University

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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, Ozyegin University; Anshul Pandey, Martin Andreoni, Technology Innovation Institute; Sami Muhaidat, University of Surrey
- 3 Heterogeneous Secure Coded Matrix Multiplication: Straggler Problem versus Information Leakage**
Hongtao 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

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7F: Designs of High-Speed Mobile Communications

Chair: He Fang, Sochoow University

- 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; Caili Guo, bupt; Tiankui Zhang, Beijing University of Posts and Telecommunications

4 Is 30 MHz Enough for C-V2X?

Dhruba Sunuwar, Seungmo Kim, Zachary Reyes, Georgia Southern University

5 Speed-Aware V2X Congestion Control

Kyeongnam Park, Hojeong Lee, Hyogon Kim, Korea University

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8B: Maching Learning and Performance Optimization

Chair: Min Li, Zhejiang University

1 A QUIC-Enabled Reliable Video Transmission Scheme in Ultra-Dense LEO Satellite Networks

Mengyu 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, Tarek 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; Celimuge 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; Yueyue 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, Kechao 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; Shen 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; Celimuge Wu, The University of Electro-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, Arianth 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, Yuanwei 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, Yichen 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, Haixin 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 Lavrenko, 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 Groshev, Universidad Carlos III de Madrid; Alejandro Blanco, The University of Edinburgh; Claudio Fiandrino, IMDEA Networks Institute; Antonio de la Oliva, University Carlos III of Madrid; Joerg Widmer, IMDEA Networks

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

3 Hidden Node-Aware Dynamic Spectrum Access using Deep Learning for Coexisting Aeronautical Communication Systems

Leonard Schulz, David Kopyto, Daniel Stolpmann, Sebastian Lindner, Gerhard Bauch, Andreas Timm-Giel, Hamburg University of Technology

4 A Novel 3D Beamforming Based Initial Access Procedure Design for Satellite IoT

Hua-Min Chen, Beijing University of Technology; Sijia Li, The University of Hong Kong; Peng Wang, Beijing Institute of Remote Sensing Equipment; Chao Fang, Shaofu Lin, Beijing University of Technology; Fan Li, Network Optimization Center

5 Prototype Development of Same frequency Interference 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

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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

Takeo Ogawara, Kenichi Okonogi, Akito Suzuki, Masayuki Kurata, Sohei Itahara, KDDI Research, Inc.; Tomoyuki Nagano, KDDI, Corp.; Masaki Suzuki, KDDI Research, Inc.

2 Digital Twin based Packet Reception Prediction for C-V2X Networks

Yun Hou, 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, Zhisheng Niu, Tsinghua University

4 Negotiation Patterns for V2X Cooperative Driving: How complex Maneuver Coordination can be?

Daniel Maksimovski, Christian Facchi, Technische Hochschule Ingolstadt

5 Rethinking Transmit Power Control for SAE J3161/1 Congestion Control Algorithm

Hojeong Lee, Hyogon 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 Time Frequency Space Modulation

Yuta Kanazawa, Yokohama National University; Chandan Pradhan, Hiroki Iimori, 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, Xiaojiang 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

Friday, 13 October 2023 11:00-12:30 Ballroom 3

9C: Channel Modeling, Prediction, and Feedback

Chair: Jiajia Guo

1 Deep Learning Based Cross Frequency Channel Reconstruction and Modeling

Yuxin Zhang, Ruisi He, Mi Yang, Chenlong Wang, Bo Ai, Ruifeng 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, Zhengyang Hu, Yiqing Zhang, Jiang Xue, Xi'an Jiaotong University

3 Automatic Neural Network Design of Scene-customization for Massive MIMO CSI Feedback

Xiangyi Li, Jiajia 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 Shinohara, 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; Viet Quoc Pham, University of Dublin; Qianqian Yang, Zhaoyang Zhang, 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

Zhipeng Xie, Yiping Duan, Qiyuan Du, Xiaoming Tao, Tsinghua University; Jiazhong 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, Macao 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; Jiayin 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, Zhajiang 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 Otsuki, 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 Fang, Soochow University

1 Self-Sustainable Key Generation: Strategies and Performance Bounds under DoS Attacks

Rusni Kima Mangang, Harshan Jagadeesh, IIT Delhi

2 Multi-Dimensional Security Indicator Design and Optimization for DDoS Detection in Edge Computing

Zhuocheng 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

4 Artificial Noise Assisted Space-Time Block Coded Receive Spatial Modulation for Physical Layer Security

Qianzhen Zhang, Shuaixin Yang, Chaowu Wu, Yue Xiao, University of Electronic Science and Technology of China

5 Covert Communications enabled by Space-time-modulation IRS: Joint Phase and Frequency Optimization for 3D Beam Focusing

Yao Yao, Manlin Wang, Bin Xia, Shanghai Jiao Tong University

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

9G: Innovative Structure, Service and Transmission Techniques

Chair: Yafei Hou, Okayama University

1 6G Hyper Reliable and Low-latency Communication Requirement Analysis and Proof of Concept

Tao Tao, Yang Wang, Li Dong, Yan Wan, Nokia Bell Labs China; Paolo Baracca, Nokia; Ailing Wang, China Mobile Research Institute

2 A Full-Duplex Transceiver Architecture and a Self-Interference Channel Estimation Method to Suppress the Phase Noise

Hao Tian Liang, Xin Quan, Pingzhi Fan, Xiaoxu Zhang, Southwest Jiaotong University

3 Analysis of RRU Association Performance in Uplink Scalable Cell-free RAN Systems

Ziyang Zhang, Dongming Wang, Yunxiang Guo, Yanfeng Hu, Yang Cao, Jie ling, Baiping Xiong, Xiaohu You, Southeast University

4 A New Design of RIS-Aided Hybrid NOMA Offloading in Wireless Powered MEC Networks

Lu Lv, Hao Luo, Long Yang, Xidian University; Zhiguo Ding, Lancaster University; Arumugam Nallanathan, QMUL; Naofal Al-Dhahir, University of Texas at Dallas; Jian Chen, Xidian University

5 Spatial Modulation Proposal for 2-by-2 MIMO System Using Single Leaky Coaxial Cable

Yafei Hou, Dake Soichiro, Kawai Yusuke, Satoshi Denno, Okayama 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?

Lukasz Skomra, Wroclaw University of Science and Technology; Björn Jelonck, Nokia; Kamil Staniec, Wroclaw 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, DCOMO Beijing Communications Lab; Takahiro Asai, NTT DCOMO, 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, Kazuhiko 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,

1 Collision-Aware Data Delivery Framework for Connected Vehicles via Edges

SVSLN Surya Suhas Vaddhiparthy, 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 Suhas Vaddhiparthy, 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, Kaijia Wang, Quan Chen, Lianglun 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

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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; Xiaolei 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, Yong 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; Dongcai 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 RSMA in Satellite-based IoT

Yan Qingqing, Harbin Institute of Technology; Jian Jiao, Harbin Institute of Technology (Shenzhen); Yasong Wang, Phytium Technology Company Limited; Lirong An, Harbin Institute of Technology (Shenzhen); Rongxing LU, University of New Brunswick; Zhang Qinyu, Harbin Institute of Tech.

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

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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

Baiping 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; Qingqing Wu, Shanghai Jiao Tong University; Zhiguo 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, Xi'an University of Science and Technology; Yang Zhang, Xidian University; Xianxian Liu, Xi'an University of Science and Technology; Yijian Chen, ZTE Corporation, Shenzhen, China; Anyi Wang, Xi'an 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 Ichige, 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 Hagiwara, Koichi Ichige, Yokohama National University; Tatsuya Nagao, Takahiro Hayashi, KDDI Research Inc.

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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 Orthogonal STBC-MIMO Index Coded PSK Modulation for Prioritized Receivers

Arindam Paul, B. Sundar Rajan, Indian Institute of Science, Bangalore

5 Code-aided Synchronization for DVB-RCS2

Qingsheng Xue, Jie Wang, Chen Ming, Xiangyuan Tang, Jingwen Zhu, Southeast University

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11C: Intelligent Transportation II

Chair: M.Carmen Lucas-Estan, 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 llc

2 Dangerously Driven Cars Need to Go First

Zachary Reyes, Seungmo Kim, Dhruba Sunuwar, 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 Jiahang, Cailian Chen, Xiping Guan, Shanghai Jiao Tong University

5 Support of Teleoperated Driving with 5G Networks

M^a Carmen Lucas Estañ, Baldomero Coll-Perales, Universidad Miguel Hernandez de Elche; Mohammad Irfan Khan, Sergei S. Avedisov, Toyota North America R&D - InfoTech Labs; Onur Altintas, Toyota Motor North America R&D; Javier Gozávez, Miguel Sepulcre, Universidad Miguel Hernandez de Elche (UMH)

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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, Kirill Andreev, Alexey Frolov, Skolkovo Institute of Science and Technology

3 Unified Deep Neural Demodulation Network Design for QAM Signal Recovery

Bowen Xiao, Southwest Jiaotong University; Shilian 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, Xi'an Jiaotong University; Zeyu Lin, Yunhua Li, Dongfang Ning, Zuofeng Zhang, ZTE Corporation

5 Deep Learning Based Coded 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: UAV 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, Nanning Power Supply Bureau.; Zihao 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; Wanmei 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; Zhutian Yang, Harbin Institute of Technology; Nan Zhao, Dalian

University of Technology; Dusit 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

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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

Zhigang Chen, Lei Wang, Xi'an Jiaotong University

3 Average Sum Rate Optimization in Coordinated Multi-Beam Transmission for Reliable Millimeter-Wave Communication

Yanping Liu, Kunkun Zhang, Guizhou University of Finance and Economics; Xuming Fang, Southwest Jiaotong University; Chunju Tang, Guizhou University of Finance and Economics

4 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

5 Connectivity of Wireless Networks Assisted by Transmissive Reconfigurable Intelligent Surfaces

Zengjie Zhu, Xiaoxia Huang, Sun Yat-sen University

Friday, 13 October 2023 16:00-17:30 Function Room

11G: Estimation, Localization, and Perception

Chair: Jalal Jalali, University of Antwerp - imec,

1 A Study on Collective Perception with Realistic Perception Modeling

Shule Li, Leibniz University Hannover

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; Toshiro Nakahira, Daisuke Murayama, Takuto Arai, Daisei Uchida, Naoki Kita, NTT Access Network Service Systems Laboratories

5 Ranging Estimation and Implementation with Cellular signals for UAV Navigation

Zhiqiang Yao, XiangTan University; Xiaona Guo, Kang Chen, Wenwen Zhang, Deyi Peng, Xiangtan University

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

Yusuke 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 Ohto, Hiromi Matsuno, Takahiro Hayashi, KDDI Research Inc.; Mitsutaka Okita, Daiichi Suzuki, Kazuki Matsunaga, Japan Display Inc; Shinichiro Oka, 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; Guiqi Sun, Hang Mi, Beijing Jiaotong University; Gaofeng Luo, Shaoyang University

6 TOA-Based Positioning Scheme for IRS-Assisted 5G Networks

Tomofumi Kanno, Takuya Ohto, 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 A LiDAR Semantic Segmentation Framework for the Cooperative Vehicle-Infrastructure System

Hongwei Liu, Zihao 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 Gambigliani 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

Ajmery 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

Chao-Wei Lu, Ching-Ming Lai, National Chung Hsing 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

Zhangyun Wang, Henan University; Nianwen Ning, Shihan Tian, the School of Artificial Intelligence, Henan University; Ning Lu, Queen's University; Nan Cheng, Xidian University; Yi Zhou, Henan University

Wednesday, 11 October 2023 16:00-17:30 Virtual

3V: Emerging Technologies, 5G and Beyond Virtual Papers

1 Joint Beamforming and Phase Shift Design for IRS-Aided Vehicular Networks

Yaping Cui, Gongxun Wang, Peng He, Dapeng Wu, Ruyan Wang, Chongqing University of Posts and Telecommunications

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, Mikael Skoglund, KTH Royal Institute of Technology

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 Kandelusy, 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

Yuming 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, Guoqiang 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 Hung, 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 14:00-15:30 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, Qilie Liu, Chongqing University of Posts and Telecommunications

2 Deep Reinforcement Learning-Based Resource Allocation for Secure RIS-aided UAV Communication

Amjad 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

Dongkun 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

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 Kassin, Imed Hadj-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 Hasan, Tennessee Tech University; Elmahedi Mahalal, Tennessee Technological University; Muhammad Ismail, TnTech, USA; Zi-Yang Wu, Northeastern University; Mostafa M. Fouda, Idaho State University; Tiago Koketsu Rodrigues, Nei Kato, Tohoku University

Thursday, 12 October 2023 16:00-17:30 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 Parchekani, Shahrokh Valaee, University of Toronto

4 Spoofing Detection Performance of Snapshot OSNMA Under Time and Symbol Errors

Husnain Shahid, Universitat Autònoma de Barcelona; Luca Canzian, Carlo Sarto, Oscar Pozzobon, Qascom SrL, Bassano del Grappa, Italy; Joaquín 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

Zhanwei Yu, Yi Zhao, Di Yuan, Uppsala University

8 A High-throughput Cooperative Network Coding HARQ Transmission Scheme for Integrated Satellite-Terrestrial Networks

Chenbo Hu, Hongjuan 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 Kokkonen-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 Tao, Tsinghua University

3 STAR-RIS Empowered Full Duplex Cooperative Rate Splitting

Kangchun 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 14:00-15:30 Virtual

8V: Signal Transmission and Reception Virtual Papers

1 Channel Estimation for IRS Aided MIMO System with Neural Network Solution

Zhijian Gu, Chunlong He, Ming Xiao, Zanhai Huang, Shenzhen University

2 Enhancement of spatial-wideband channel estimation based on beam split pattern detection

Jiatong Gou, Shan Shan, Yong Li, Beijing University of Posts and Telecommunications

3 Fast Precoding Scheme for Reconfigurable Intelligent Surfaces

Liangang Chi, Beijing Xiaomi Mobile Software Co., Ltd; Duan Gaoming, Xiaomi Communication Technology Co., Ltd; Boyuan Zhang, Beijing Xiaomi Mobile Software Co., Ltd

4 Joint Active and Passive Beamforming Optimization in Self-sustainable RIS-aided NOMA Networks

Li Yiding, Pan Zhenni, Shigeru Shimamoto, Waseda University

5 Low-complexity Beam Selection for Intelligent Reflecting Surface-aided Millimeter-wave Systems with Lens Antenna Array

David Alimo, Masanori Hamamura, Kochi University of Technology

6 OTFS-IM with Decode and Forward Relaying

Vighnesh S Bhat, A Chockalingam, Indian Institute of Science, Bangalore

7 Performance Analysis of MIMO-OTFS with Decode and Forward Relaying

Vighnesh S Bhat, A Chockalingam, Indian Institute of Science, Bangalore

8 Simultaneous Channel Estimation in MIMO OFDM Systems Using Constant-Amplitude Sequences

Shih-Hao Lu, Char-Dir Chung, National Taiwan University; Wei-Chang Chen, National Taipei University of Technology

9 A Unified Channel Model for Both Communication and Sensing in Integrated Sensing and Communication Systems

Junpeng Lou, Ruiqi Liu, Chuangxin Jiang, Xianghui Han, Zhiqiang Han, Qi Yang, Zhongbin Wang, ZTE Corporation

10 Cross Modulation for Hybrid Carrier Signals based on WFRFT, WFRNFT and Alamouti STBC

Xiaokuan Tian, Lin Mei, Harbin Institute of Technology; Jiayin Xue, Shenzhen Peng Cheng Laboratory

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 IoMT Networks**
Georgios Zachos, Filippas Pelekoudas-Oikonomou, George Mantas, Instituto de Telecomunicações; Kyriakos Porfyraakis, 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, Zanhai 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**
Jinxiang 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**
Zanhai 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, Qilie 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

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; Le Zhao, Beijing Institute of Technology; Chen Sun, Sony R&D Center China; Ce Zheng, Sony; Haojin Li, Research & Development Center Sony (China) Limited, Beijing, China
- 3 Cauchyian Motion: A Spatio-Temporal Scale Invariant Mobile Trajectory Model**
I-Fei Tsai, Hon 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, Ziyang 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 Zhuo, Zhejiang University; Zhanya, 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**
Bingyan Wang, Qinyuan Wang, Ningyu Yang, Rong Chai, Chongqing University of Posts and Telecommunications
- 8 Near-Optimal Speed Control in UAV-Enabled Wireless Rechargeable Sensor Networks**
Quanlong Niu, Riheng 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**
Chetna 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, Shuo 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**
Saurab Rauniyar, 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 Málaga
- 2 A Quantum Safe Authentication Protocol for Remote Keyless Entry Systems in Cars**
Rohini Poolat Parameswarath, National University of Singapore; Nalam Venkata Abhishek, Singapore Institute of Technology, Singapore; Biplab Sikdar, National University of Singapore
- 3 Deep Reinforcement Learning-based Sensing and Communication Scheduling Algorithm for UAV-Assisted Target Detection Systems**
Rouzhi 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, Jingwen 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, CentraleSupélec; Patrick Brown, Meriem Mhedhbi, Orange Labs

8 Quality-of-Trust in 6G: Combining Emotional and Physical Trust through Explainable AI
Chen Li, Cranfield University; Weijie 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; Jongwoo 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 Vehicles

Fan Jiani, Xu Minrui, Ziyao Liu, Huanyi Ye, Nanyang Technological University; Chaojie Gu, Zhejiang University; Dusit Niyato, Kwok-Yan Lam, Nanyang Technological University

3 A Real-time Vehicle-Pedestrian Collision Avoidance System Exploiting Lightweight Smartphone App

Moinul Islam Sayed, 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

5 Automatic Modulation Classification in RIS-Assisted Wireless Communication Systems using Ensemble Learning Techniques

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

6 Low-Complexity Digital Predistortion of RF Power Amplifiers Based on FastGRNN

Taishi Watanabe, Takeo Ohseki, Issei Kanno, Yoshiaki Amano, KDDI Research, Inc.

7 Optimal Multi-Level Amplitude-Shift Keying for Partially-coherent SIMO Wireless Communication System in Rician Fading Environment

Badri Ramanjaneya Reddy, Soumya Prakash Dash, Indian Institute of Technology Bhubaneswar; Debasish Ghose, Kristiania University College Norway

8 STAR-RIS-Assisted Radar-Communication Co-Existence System

Jianxin Dai, Tuobin Han, Nanjing 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

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

Faouzi 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

Tuesday, 10 October 2023 17:00-17:55 Virtual

Technical Session 1

1 On Provisioning Link Margin for High Bit Rate Q/V Band LEO Communication for Autonomous Vehicles

Shilajeet 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

Guanhong 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

Wenjing Wang, Tongzhou 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

Tuesday, 10 October 2023 18:50-19:45 Virtual

Technical Session 3

1 Gravitational Wave Communications: A Survey

Tayyab Jawed, Shuping Dang, University of Bristol; Shuaishuai Guo, Shandong University

2 Ethical V2X: Cooperative Driving as the Only Ethical Path to Multi-Vehicle Safety

Galina 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

Faouzi 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, Enmin 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**
Lijun 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 Boulila, 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**
Hassan Ali, HITEC University Taxila; Muhammad Shahbaz Khan, Edinburgh Napier University; Maha Driss, Prince Sultan University; Jawad Ahmad, William J. Buchanan, Nikolaos Pitropakis, 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**
Zhihao 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 Muppaneni, 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; Muhammet 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

Tuesday, 10 October 2023 9:00-17:30 Ballroom 3

W5: Emerging physical-layer security technologies and applications for BG5 and 6G

Keynote: Reinforcement Learning Based Maritime Communications Against Jamming and Interference

Liang Xiao, Xiamen University

Keynote: Secret key Generation over Wireless Channel from a Non-quantization Perspective

Hongbo Liu, University of Electronic Science and Technology

1 Analysis and Optimization of Spatially-Correlated RIS-Aided Secure Massive MIMO Systems With Low-Resolution DACs

Dan Yang, Wei Xu, Bin Sheng, Xiaohu You, Southeast University; Derrick Wing Kwan Ng, University of New South Wales; Yijian Chen, ZTE Corporation

2 Angular-domain Secret Key Generation for RIS-aided mmWave MIMO systems

Hongyuan Li, Liquan Chen, Tianyu Lu, Aiqun Hu, Southeast University

3 Covert Wireless Communication Against Surveillance With Detection and Localization

Menghan Lin, Xi'an Jiaotong University; Chaowen Liu, Xi'an University of Posts and Telecommunications; Tongxing Zheng, Xi'an Jiaotong University; Yi He, National University of Defense Technology; Wenjie Wang, Xi'an Jiaotong University

4 On Converged Secrecy Outage Performance for RIS-Aided Communications

Junming Li, Guangxi University; Shuping Dang, University of Bristol; Zhenrong Zhang, Lie Wang, Guangxi University

5 RIS-Assisted Physical-Layer Key Generation with Discrete Phase Shift Optimization

Haoyu Li, Guyue Li, Lei Hu, Aiqun Hu, Southeast University; Derrick Wing Kwan Ng, University of New South Wales

6 Secure and Timely Status Updates in the IoT using Short-Packet Permutation-Based Transmissions

Yuli Yang, University of Essex

7 Secure Uplink Spatial Modulation Enabled by IRS

Fei Yu, Zhengmin Shi, Chaowen Liu, Xi'an University of Posts and Telecommunications; Menghan Lin, Tongxing Zheng, Xi'an Jiaotong University; Boyang Liu, Guangyue Lu, Xi'an University of Posts and Telecommunications

8 Securing Double-RIS Aided Multi-User Communication Against Multiple Eavesdroppers

Qiangqiang Yang, Yufeng Chen, H. Yu, Zhichao Sheng, Yong Fang, Shanghai University

9 Time Slot Allocation for RIS-Assisted Physical Layer Key Generation in OTP

Yufan Song, Liquan Chen, Wanting Ma, Tianyu Lu, Peng Zhang, Southeast University

10 Implementation and Evaluation of Physical Layer Key Generation on SDR based LoRa Platform

Yingying Hu, Dongyang Xu, Tiantian Zhang, Xi'an Jiaotong University

11 STAR-RIS Assisted Secret Key Generation: Joint Active and Passive Precoding Design

Zheng Wan, Information Engineering University; Yajun Chen, National Digital Switching System Engineering & Technological R&D Center; Xiaoyan Hu, Information Engineering University;

Tuesday, 10 October 2023 14:00-17:30 Meeting Room 3

W6: First IEEE Workshop on Task-Oriented Communications and Networking for 6G

- 1 A Fano Decoding for Polar Codes Based on Node Acceleration**
Yupeng Jiang, Lijun Zhang, Beijing Jiaotong University
- 2 Joint Computing Resource and Bandwidth Allocation for Semantic Communication Networks**
Fangzhou Zhao, University of Glasgow; Gaurav Bagwe, Ezedin Mohammed, Michigan Technological University; Lei Feng, Beijing University of Posts and Telecommunications; Lan Zhang, Michigan Technological University; Yao Sun, University of Glasgow
- 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; Diptendu 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; Chaojin Qing, Xihua University
- 3 Transmit Power Minimization for STAR-RIS aided Bistatic Backscatter Networks**
Minxin Peng, Nanjing University of Posts and Telecommunications; Yiyang Ni, Jiangsu Second Normal University; Zhuoran 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**
Shuyi 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 José García 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 14 Gbit/s Visible Light Communications Transmission System based on InGaN/GaN Blue Light Laser Diodes**
Xiaoqian Wang, Chuan Yang, Maoyun Chen, Hongjun He, Liang Xia, China Mobile Research Institute; Chao Shen, Fudan University
- 7 Beam Structured Signal Detection for HF Skywave Massive MIMO Communications**
Ding Shi, Linfeng Song, Xiqi Gao, Jiaheng Wang, Southeast University; Mats Bengtsson, Royal Institute of Technology, Stockholm; Geoffrey Ye Li, Imperial College
- 8 Channel Estimation for Massive MIMO-OFDM: Simplified Information Geometry Approach**
Jiyuan Yang, Yan Chen, Anan Lu, Wen Zhong, Xiqi Gao, Xiaohu You, Southeast University; Xiang-Gen Xia, University of Delaware; Dirk T.M. Slock, EURECOM
- 9 Transmission Design and Component Allocation for STAR-RIS Assisted NOMA Systems with Direct Link**
Yuan Ren, Wenzhe Cai, Xuewei Zhang, Suihu Yang, Xi'an University of Posts and Telecommunications
- 10 Blockchain-based Robust SDN Framework for Digital Twin-Enabled IoT Networks**
Aditya Bhardwaj, Rajat Chaudhary, Anjum Mohd Aslam, Ishan Budhiraja, Bennett University
- 11 Improving the Transmission Power of UAVs with Intelligent Reflecting Surfaces in V2X**
Shivam Chaudhary, Rajat Chaudhary, Ishan Budhiraja, Aditya Bhardwaj, Bennett University; Anushka Nehra, Thapar Institute of Engineering and Technology; Sheshikala Martha, SR University

Tuesday, 10 October 2023 Virtual

W9: Integrated Communication and Computing for Next-generation Mobile Networks

- 1 Keynote**
Jun Zhang, Hong Kong University of Science and Technology
- 2 Keynote**
Nan Li, China Mobile
- 3 Keynote**
Chong Lou, Huawei Technology Co
- 4 Efficient Split Learning for Collaborative Intelligence in Next-generation Mobile Networks**
Zheqi Zhu, Wenjie Cheng, Yu Zeng, Huawei Technologies, China; Kuikui Li, Huawei Technology; Chong Lou, Shanghai Huawei Technology Co Ltd; Qinghai Zeng, Zhifang Gu, Huawei Technologies, China

5 Joint Communication and Computing Resource Optimization for Collaborative AI Inference in Mobile Networks

Nan Li, China Mobile Research Institute; Xiang Li, China Mobile Research Ins.; Yiwei Yan, Qi Sun, China Mobile Research Institute; Yantao Han, China Mobile Communication Group Co.; Kun Cheng, Beijing University of Posts and Telecommunications

6 UAV-Assisted Edge computing with 3D Trajectory Design and Resource Allocation

Pengle Wen, Xiaoyan Hu, Xi'an Jiaotong University; Kai-Kit Wong, University College London

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

Joohyun Lee, Hanyang University

5 Performance Study for Handoff Strategies in Low-Earth-Orbit Satellite Network

Xizhe Qiu, 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

Tuesday, 10 October 2023 9:00-12:30 Meeting Room 1

W11: The Tenth IEEE International Workshop on Security and Privacy for Internet of Things and Cyber-Physical Systems (IoT/CPS-Security 2023)

Keynote

Zhenjiang Li, City University of Hong Kong

Keynote

Xiaoyan Zhu, Xidian University

Keynote

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

2 Driver-TRN: An Approach to Driver Behaviors Detection Enhanced SOTIF in Automated Vehicles

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; Paawan Sharma, Pandit Deendayal Energy University; Mehul S Raval, Ahmedabad University

4 Self-Noise Based Physical-Layer Secure Communication: Transceiver Design and Performance Analysis

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

6 Enhancing Security in VANETs with Sybil Attack Detection using Fog Computing

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 Precoding 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; Zhaoqi Wang, Xiqing Liu, Beijing University of Posts and Telecommunications; Qiu Yang, Zhuhai College of Science and Technology

2 Energy Minimization in RIS-Assisted MEC Systems with Imperfect CSI

Wen He, Yin Xu, Dazhi He, Yunfeng Guan, Shanghai Jiao Tong University

3 Joint Communication and Computation Optimization for Wireless Networked Control with URLLC

Yiyang Li, Xianxin 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

Notes

Notes

		Ballroom 1 (A)	Ballroom 2 (B)	Ballroom 3 (C)	Meeting Room 1 (D)	Meeting Room 2 (E)	Meeting Room 3 (F)	Function Room (G)
TUESDAY 10 October								
7:00–17:30		Registration (Ballroom Foyer)						
9:00–10:30			W8: NexGenRAN Workshop on 6G	W5: Emerging PHY layer security	W11: IoT/CPS- Security 2023		W4: Delay-Doppler Communications	
10:30–11:00		Refreshments (Ballroom Foyer)						
11:00–12:30			W8 Continued	W5 Continued	W11 Continued		W4 Continued	
12:30–14:00		Lunch (On your own)						
14:00–15:30	(1)		W8 Continued	W5 Continued	W12: Integrated Sensing, Communication, and Computation	Intelligence- empowered Wireless Comms Systems	W6: Task-Oriented Communications and Networking for 6G	W2: SWAN
15:30–16:00		Refreshments (Ballroom Foyer)						
16:00–17:30	(2)		W8 Continued	W5 Continued	W12 Continued	Performance Improvement for Wireless Communications	W6 Continued	W2 Continued
18:00–20:00		Welcome Reception (Ballroom 1)						
WEDNESDAY 11 October								
7:00–17:30		Registration (Ballroom Foyer)						
8:30–9:00		Welcome and opening (Khaled B. Letaief and Song Guo, VTC2023-Fall Co-chair; Weihua Zhuang, VTS President) (Ballroom 1)						
9:00–9:45		Visualizing the Environment with the Aid of Integrated Sensing and Communication (ISAC) as well as AI (Peiying Zhu, Huawei)						
9:45–10:30		Keynote: VConfiguring MIMO Links Using Machine Learning (Robert W. Heath, MIMO Wireless Ltd)						
10:30–11:00		Refreshments (Ballroom Foyer)						
11:00–12:30	(3)	Keynote Speakers Panel	Advanced Transmission Techniques	AI and Machine Learning	Vehicular Security	Joint Designs of Wireless Communications and Radar		Coexistence of Multiple Radio Access Techniques
12:30–14:00		Lunch (Ballroom 1)						
14:00–15:30	(4)	UAV1	Coding and Implementation	Energy Efficiency and Low Latency	Vehicular Communications	Green Communications		Radio Resource Management in Heterogeneous Networks
15:30–16:00		Refreshments (Ballroom Foyer)						
16:00–17:30	(5)	UAV2	Intelligent Surface Aided Transmission	Security, Privacy, and Efficiency	Vehicular Electronics	Protocol Design and Performance Evaluation		RIS Assisted Radio Access Technology
THURSDAY 12 October								
8:00–17:30		Registration (Ballroom Foyer)						
9:00–9:45		Keynote: Terahertz Communications: From the Near Field to Satellite Networks (Josep Miquel Jornet, Northeastern University)						
9:45–10:30		Keynote: Reconfigurable Holographic Surfaces: A New Paradigm to Ultra-Massive MIMO for 6G (Linyang Song, Peking University)						
10:30–11:00		Refreshments (Ballroom Foyer)						
11:00–12:30	(6)	Panel: Future Research and Standardization Directions for 6G	Massive MIMO	IoT and IoV	Wireless Sensing and Radar Detection	Physical Layer Security		
12:30–14:00		Lunch (Ballroom 1)						
14:00–15:30	(7)		Millimeter Communication	Radio Resource Management	Machine Learning Techniques for Resource Management & Optimization	Emerging Networking Technologies	Designs of High- Speed Mobile Communications	
15:30–16:00		Refreshments (Ballroom Foyer)						
16:00–17:30	(8)		Maching Learning and Performance Optimization	Intelligent Transportation I	Massive Antennas	Advanced Localization	Spectrum Management under Comprehensive Scenario	
18:00–21:30		VTC2023-Fall Banquet (Ballroom 2 & 3)						
FRIDAY 13 October								
8:00–17:30		Registration (Ballroom Foyer)						
9:00–9:45		Keynote: Mobile Technology Evolution Towards 6G (Doru Calin, MediaTek USA) (Ballroom 1)						
9:45–10:30		Keynote: Communications Perspective in Vehicular Cooperation (Onur Altintas, InfoLabs Fellow, Toyota Info Tech Labs, USA)						
10:30–11:00		Refreshments (Ballroom Foyer)						
11:00–12:30	(9)	Vehicular Networks	Modulation and Estimation	Channel Modeling, Prediction, and Feedback	Joint Optimization for Communications	Localization and Sensing	Services and Security	Innovative Structure, Service and Transmission Techniques
12:30–14:00		Lunch (Ballroom 1)						
14:00–15:30	(10)	Vehicular Communication and MIMO	Multi-antenna Transmission	Vehicular Edge Computing	Intelligent Techniques for Optimizing Next- Gen Networks	Satellite Communication and Resilience	Channel and Signal Design in Heterogeneous Networks	Intelligent Reflecting Surface and Applications
15:30–16:00		Refreshments (Ballroom Foyer)						
16:00–17:30	(11)	Channel measurement and modeling	Signal Processing and Waveform Design	Intelligent Transportation II	Deep Learning Techniques for Communications	UAV communication and ISAC	mmWave Beamforming and MIMO Communications	Estimation, Localization, and Perception

