The 3rd Imperial Workshop on Intelligent Communications

Workshop Program

19th and 20th June 2023, London

ITP Lab Intelligent Transmission & Processing Laboratory
Imperial College London

IEEE ComSoc
IEEE Communications Society

1. About the Workshop

The field of machine learning (ML) has a long and extremely successful history. It has shown overwhelming advantages in many areas, where it is normally difficult to find a concrete mathematical model for feature representation. Different from the existing ML applications, the development of traditional communication systems has vastly relied on theories and models, from information theory to channel modelling. These traditional approaches are showing serious limitations, especially in view of the increased complexity of communication networks. Therefore, research on ML applied to communications, especially to wireless communications, is currently experiencing an incredible boost. The objective of this annual workshop is to promote research activities in the area of intelligent communications and to facilitate collaborations among different universities and companies. It consists of a half-day keynote session and several half-day poster sessions. Each poster session will have posters on recent research results in the topics related to intelligent communications, including, but not limited to, the following:

- Machine learning for optimization and compressive sensing
- Deep learning for signal processing and communications
- Deep learning-enabled resource allocation and intelligent networking
- Deep learning enabled security

The workshop is sponsored by IEEE Communications Society and a part of the IEEE ComSoc Excellence Camps Program.

It will be open and free to all researchers, inside and outside Imperial. The speakers for the Keynote Session are by invitation only.

2. Organization Committee

General Chairs: Geoffrey Li and Stefan Vlaski, Imperial College London

Technical Program Chairs:
for Physical Layer Processing,
Wei Dai, Imperial College London
Gaojie Chen, University of Surrey
for Optimization and Networking,
Huiling Zhu, University of Kent
Shenglong Zhou, Beijing Jiaotong University
for Security,
Liqun Chen, University of Surrey

Finance Chair: Vanessa Rodriguez-Gonzalez

3. Access

On-site Venue: Rooms 407 and 408, Electrical & Electronic Engineering, Imperial College London, South Kensington Campus, London SW7 2AZ, London, UK

Online access via Zoom:
https://imperial-ac-uk.zoom.us/j/99644185346?pwd=N3g2Ri92V1pFR1I0RWI1bEN6OFowQT09
Meeting ID: 996 4418 5346
Passcode: @3rdIWIC

4. Overall Schedule

Monday, 19 June 2023	
09:00 – 10:40	*Three Keynote Talks (408 EEE Building)*
10:40 – 11:00	Coffee Break
11:00 – 12:30	*Three Keynote Talks (408 EEE Building)*
12:30 – 14:00	Lunch
14:00 – 16:30	*Poster Session I (407 EEE Building)*
18:00 – 21:00	Banquet (58 PG)
Tuesday, 20 June 2023	
09:00 – 09:30	Snacks and Drinks
09:30 – 12:00	*Poster Session II (407 EEE Building)*
12:00 – 13:30	Lunch

5. Keynote Session (408 EEE Building, 19 June, 2023)

5.1 Keynote schedule

Time (UK)	Speakers	Titles
09:00 – 09:10		**Welcome Remarks**
09:10 – 09:40	Dr. Simon Godsill	*Particles, Points and Positions: Recent Advances in Modelling and Processing of Agile Objects*
09:40 – 10:10	Dr. Biing-Hwang (Fred) Juang	*Accretionary Learning with Deep Neural Networks*
10:10 – 10:40	Dr. Kin K. Leung	*Optimization by Machine Learning for Intelligent Communication Networks*
10:40 – 11:00		**Coffee Break**
11:00 – 11:30	Dr. Vincenzo Matta	*Social Learning: Belief Formation and Diffusion over Graphs*
11:30 – 12:00	Dr. Yuguang "Michael" Fang	*Leverage Vehicles to Build a Multi-dimensional Resource Network for Smart Cities*
12:00 – 12:30	Dr. Zhu Han	*Federated Learning and Analysis with Multi-access Edge Computing*
12:30 – 14:00		**Lunch**

5.2 Keynote talks

Accretionary Learning with Deep Neural Networks

Abstract: One of the fundamental limitations of Deep Neural Networks (DNN) is their inability to acquire and accumulate new cognitive capabilities. When data from new object classes appear, a conventional DNN would not be able to recognize them due to its formulation of the recognition problem, which is predicated by the prescribed number of classes. The current solution is typically to re-design and re-learn the entire network, perhaps with a new configuration, from a newly expanded dataset to accommodate new knowledge. This process is quite different from that of a human learner. For example, when a child learns to recognize

the 10 digits, the child is not foretold to prepare to learn exactly 10 digits; almost without exception, children learn one digit a time in an accretionary manner. In this talk, we describe a new learning method named Accretionary Learning (AL) to emulate human learning, in that the set of objects to be recognized may not be pre-specified. The corresponding learning structure is modularized, which can dynamically expand to register and use new knowledge. During accretionary learning, the learning process does not require the system to be totally re-designed and re-trained as the set of object classes grows. The proposed DNN structure does not forget previous knowledge when learning to recognize new data classes. We show that the new structure and the design methodology led to a system that can grow to cope with increased cognitive complexity while providing stable and superior overall performance.

Biing-Hwang (Fred) Juang is the Motorola Foundation Chair Professor and a Georgia Research Alliance Eminent Scholar at Georgia Institute of Technology. He is also enlisted as Honorary Chair Professor at several renowned universities. He received a Ph.D. degree from University of California, Santa Barbara. He conducted research work at Speech Communications Research Laboratory (SCRL) and Signal Technology, Inc. (STI) in late 1970s on several Government-sponsored research projects and at Bell Labs during the 80s and 90s until he joined Georgia Tech in 2002. Prof. Juang's notable accomplishments include development of vector quantization for voice applications, voice coders at extremely low bit rates (800 bps and ~300 bps), robust vocoders for satellite communications, fundamental algorithms in signal modeling for automatic speech recognition, mixture hidden Markov models, discriminative methods in pattern recognition and machine learning, stereo- and multi-phonic teleconferencing, and a number of voice-enabled interactive communication services. He was Director of Acoustics and Speech Research at Bell Labs (1996-2001).

Prof. Juang is well known for his work in data and signal modeling for compression, recognition, verification, enhancement, physical and statistical analyses, secure communication, and synthesis. He is accredited with the original concept of signal modeling for discrimination which serves as an important guiding principle in deep learning.

Prof. Juang has published extensively, including the book "Fundamentals of Speech Recognition", co-authored with L.R. Rabiner, and holds about two dozen patents. He received the Technical Achievement Award from the IEEE Signal Processing Society in 1998 for contributions to the field of speech processing and communications and the Third Millennium Medal from the IEEE in 2000. He also received two Best Senior Paper Awards, in 1993 and 1994 respectively, and a Best Paper Awards in 1994, from the IEEE Signal Processing Society.

He served as the Editor-in-Chief of the IEEE Transactions on Speech and Audio Processing from 1996 to 2002. He was elected an IEEE Fellow (1991), a Bell Labs Fellow (1999), a member of the US National Academy of Engineering (2004), and an Academician of the Academia Sinica (2006). He was named recipient of the IEEE Field Award in Audio, Speech and Acoustics, the J.L. Flanagan Medal, and a Charter Fellow of the National Academy of Inventors (NAI), in 2014. He is also a co-recipient of the 2022 Fred W. Ellersick Prize of the IEEE Communications Society.

Optimization by Machine Learning for Intelligent Communication Networks

Abstract: Optimization techniques are widely used to allocate and share limited resources to competing demands in communication networks. The speaker will start by showing the well-known Transport Control Protocol (TCP) as a distributed solution to achieve the optimal allocation of network bandwidth. Unfortunately, factors such as multiple grades of service quality, variable transmission power, and tradeoffs between communication and computation often make the optimization problem for resource allocation non-convex. New distributed solution techniques are needed to solve these problems.

As an illustrative example, the speaker will consider in-network data processing in sensor networks where data are aggregated (fused) along the way they are transferred toward the end user. Finding the optimal solution for the distributed processing problem is NP-hard, but for specific settings, the problem can lead to a distributed framework for achieving the optimal tradeoff between communications and computation costs.

As for the aforementioned problems, gradient-based iterative algorithms are commonly used to solve the optimization problems. Much research focuses on improving the iteration convergence. However, when the system parameters change, it requires a new solution from the iterative methods. The speaker will present a new machine-learning method by using two Coupled Long Short-Term Memory (CLSTM) networks to quickly and robustly produce the optimal or near-optimal solutions to constrained optimization problems over a range of system parameters. Numerical examples for allocation of network resources will be presented to confirm the validity of the proposed method.

Kin K. Leung received his B.S. degree from the Chinese University of Hong Kong, and his M.S. and Ph.D. degrees from University of California, Los Angeles. He joined AT&T Bell Labs in New Jersey in 1986 and worked at its successor companies until 2004. Since then, he has been the Tanaka Chair Professor in the Electrical and Electronic Engineering (EEE), and Computing Departments at Imperial College in London. He serves as the Head of Communications and Signal Processing Group in the EEE Department at Imperial. His current research focuses on optimization and machine-learning techniques for system design and control of large-scale communications, computer and sensor networks. He also works on multi-antenna and cross-layer designs for wireless networks.

He is a Fellow of the Royal Academy of Engineering (2022), IEEE Fellow (2001), IET Fellow (2022), and member of Academia Europaea (2012). He received the Distinguished Member of Technical Staff Award from AT&T Bell Labs (1994) and the Royal Society Wolfson Research Merits Award (2004-09). Jointly with his collaborators, he received the IEEE Communications Society (ComSoc) Leonard G. Abraham Prize (2021), the IEEE ComSoc Best Survey Paper Award (2022), the U.S. - UK Science and Technology Stocktake Award (2021), the Lanchester Prize Honorable Mention Award (1997), and several best conference paper awards. He currently serves as the IEEE ComSoc Distinguished Lecturer (2022-23). He was a member (2009-11) and the chairman (2012-15) of the IEEE Fellow Evaluation Committee for the ComSoc. He has served as guest editor and editor for 10 IEEE and ACM journals, and chaired the Steering Committee for the IEEE Transactions on Mobile Computing. Currently, he is an editor for the ACM Computing Survey and International Journal on Sensor Networks.

Particles, Points and Positions: Recent Advances in Modelling and Processing of Agile Objects

Abstract: In this talk, the speaker will describe state-space models based on point process theory and Lévy processes, allowing very flexible modelling of continuous time non-Gaussian behaviours. In contrast with most of the classical models which use Brownian motion assumptions, the proposed approach is based on pure jump-driven Lévy processes driving stochastic differential equations, leading to powerful models based on, for example, α-stable or Generalised hyperbolic processes (including Student-t, variance-gamma and normal-inverse Gaussian). We are able to construct a full state-space model (The 'Lévy state-space model')

driven by such continuous time processes, observed at discrete time, as well as deriving central limit style theorems that prove Gaussianity of certain series residual terms, and inference for these models can be carried out using highly efficient Rao-Blackwellised versions of particle filters and sequential Markov chain Monte Carlo. The models can find application in non-Gaussian channel modelling, tracking of agile objects such as birds or drones, in financial prediction and in analysis of vibrational data under non-Gaussian perturbation. We will also describe recent advances in extending standard Gaussian process regression into non-Gaussian regimes through use of an underlying Lévy process of jump type, allowing more flexible and realistic modelling of non-Gaussian process regressions.

Simon Godsill is Professor of Statistical Signal Processing in the Engineering Department at Cambridge University. He is also a Professorial Fellow and tutor at Corpus Christi College Cambridge. He coordinates an active research group in Signal Inference and its Applications and is Head of the Information Engineering Division at Cambridge. His group specialises in Bayesian computational methodology, multiple object tracking, audio and music processing, and financial time series modeling. A particular methodological theme over recent years has been the development of novel techniques for optimal Bayesian filtering and smoothing, using Sequential Monte Carlo (Particle Filtering) and Markov chain Monte Carlo methods. Prof. Godsill has published extensively in journals, books and international conference proceedings, and has given a number of invited and plenary addresses at conferences such as the Valencia conference on Bayesian Statistics (twice), the IEEE Statistical Signal Processing Workshop, the Conference on Bayesian Inference for Stochastic Processes (BISP), the IEEE Workshop on Machine Learning in Signal Processing (2013), FUSION (2016) and SSPD (2022). He co-authored the Springer text Digital Audio Restoration with Prof. Peter Rayner in 1998. He was technical chair of the IEEE NSSPW workshop in 2006 on sequential and nonlinear filtering methods, and has been on the conference panel for numerous other conferences/workshops. Prof. Godsill has served as Associate Editor for IEEE Tr. Signal Processing and the journal Bayesian Analysis. He was Theme Leader in Tracking and Reasoning over Time for the UK's Data and Information Fusion Defence Technology Centre (DIF-DTC) and Principal Investigator on many grants funded by the EU, EPSRC, QinetiQ, General Dynamics, dstl/MOD, ARL, Microsoft UK, Citibank, Mastercard, Google, DSO Singapore, Huawei and Jaguar Landrover. In 2009-10 he was co-organiser of an 18 month research program in Sequential Monte Carlo Methods at the SAMSI Institute in North Carolina and in 2014 he co-organised a research programme at the Isaac Newton Institute on Sequential Monte Carlo methods. In 2018

he was General Chair of the FUSION Conference in Cambridge. Two of his journal papers have received Best Paper awards from the IEEE and IET. He continues to be a Director of CEDAR Audio Ltd. (which has received numerous accolades over the years, including a technical Oscar), and for which he was a founding staff member in 1988.

Social Learning: Belief Formation and Diffusion over Graphs

Abstract: By "social learning", in this talk we refer to a network of cognitive agents that cooperate to assign probability scores (the beliefs) to some hypotheses of interest, such as the occurrence of a weather condition or the winner of a soccer match. Each agent observes a private sequence of streaming data related to the hypothesis of interest. Neighboring agents, i.e., agents connected according to a communication graph, are allowed to exchange their beliefs, leading to a diffusion mechanism through which opinions, information, or even fake news propagate across the network.

This learning model applies to a wide range of cognitive systems. For example, humans form their opinions via repeated interactions with other individuals, whether through physical contact or virtually over a social network. Nature itself provides beautiful examples of social learning in the form of biological networks. Social learning arises also over man-engineered systems in the form of distributed decision-making strategies. One example is a robotic swarm deployed for a rescue operation, where some robots operating under limited visibility can make critical decisions by leveraging cooperation from other robots that have better access to relevant information.

The talk starts by reviewing the pillar of belief formation: Bayes' rule, which solves optimally the single-agent learning problem. Then we introduce non-Bayesian pooling policies that combine the agents' opinions and activate a belief diffusion mechanism over the network graph. Interesting and diversified phenomena emerge, depending on the network structure. For example, we will see how strongly connected graphs enable agreement across the agents, whereas weakly connected graphs split the network into influencers and influenced agents.

We will discuss the most recent trends in social learning, including: adaptive social learning, where continual learning must be guaranteed in the midst of non-stationary drifts; partial information sharing, where the agents can exchange only part of their beliefs; and social machine learning, where the statistical models used to construct the beliefs are unknown, and must be learned from some clues available during a training phase.

Vincenzo Matta is currently a Full Professor at the Department of Information and Electrical Engineering and Applied Mathematics, University of Salerno, Italy. He is the author of more than 130 articles published on international journals and proceedings of international conferences. His research interests include adaptation and learning over networks, social learning, statistical inference on graphs, and security in communication networks.

Dr. Matta serves as an Associate Editor for the IEEE Open Journal of Signal Processing. He served as a Senior Area Editor for the IEEE Signal Processing Letters, and an Associate Editor for the IEEE Transactions on Signal and Information Processing over Networks, the IEEE Signal Processing Letters, and the IEEE Transactions on Aerospace and Electronic Systems. He was a member of the Sensor Array and Multichannel Technical Committee of the Signal Processing Society (SPS), and served as an IEEE SPS Steering Committee Representative on the IEEE Transactions on Signal and Information Processing over Networks.

Leverage Vehicles to Build a Multi-dimensional Resource Network for Smart Cities

Abstract: Observing that the most popular and omnipresent things in any city are vehicles. If each vehicle is equipped with powerful capability in sensing, communications, computing, storage, and intelligence (SCCSI capability), such vehicles roaming around a city will automatically form a network of multi-dimensional resources for sensing, computing, communications, and/or edge intelligence, potentially offering an economically sound and sustainable alternative solution to realizing the vision of smart cities.

In this talk, the speaker will discuss how to leverage connected SCCSI-empowered vehicles to take full advantage of both vehicular mobility and spectrum/computing opportunity to beef up the edge for various kinds of smart city operations and services.

Dr. Yuguang "Michael" Fang received an MS degree in Mathematics from Qufu Normal University, Shandong, China in 1987, a PhD degree in Systems, Control and Industrial Engineering from Case Western Reserve University in 1994, and a PhD degree in Electrical and Computer Systems from Boston University in 1997. He joined the Department of Electrical and Computer Engineering at New Jersey Institute of Technology in 1998 as an assistant professor and then moved to the Department of Electrical and Computer Engineering at University of Florida in 2000 as an assistant professor, then was promoted to associate professor in 2003, full professor in 2005, and distinguished professor in 2019, respectively. Since August 2022, he has been the Chair Professor of Internet of Things with the Department of Computer Science at City University of Hong Kong.

Dr. Fang received many awards, including the US NSF CAREER Award (2001), US ONR Young Investigator Award (2002), 2018 IEEE Vehicular Technology Outstanding Service Award, 2019 IEEE Communications Society AHSN Technical Achievement Award, 2015 IEEE Communications Society CISTC Technical Recognition Award, 2014 IEEE Communications Society WTC Recognition Award, the Best Paper Award from IEEE ICNP (2006), 2010-2011 UF Doctoral Dissertation Advisor/Mentoring Award, and 2009 UF College of Engineering Faculty Mentoring Award. He held multiple professorships, including the Changjiang Scholar Chair Professorship (2008-2011), Tsinghua University Guest Chair Professorship (2009-2012), NSC Visiting Researcher of National Taiwan University (2007-2008), Invitational Fellowship of Japan Society for the Promotion of Science (2009), University of Florida Foundation Preeminence Term Professorship (2019-2022), University of Florida Research Foundation Professorship (2017-2020, 2006-2009), and University of Florida Term Professorship (2017-2021). He served as the Editor-in-Chief of IEEE Transactions on Vehicular Technology (2013-2017) and IEEE Wireless Communications (2009-2012) and serves/served on several editorial boards of journals, including Proceedings of the IEEE (2018-present), ACM Computing Surveys (2017-present), ACM Transactions on Cyber-Physical Systems (2020-present), IEEE Transactions on Mobile Computing (2003-2008, 2011-2016, 2019-present), IEEE Transactions on Communications (2000-2011), and IEEE Transactions on Wireless Communications (2002-2009). He served as the Technical Program Co-Chair of IEEE INFOCOM'2014 and the Technical Program Vice-Chair of IEEE INFOCOM'2005. He has actively engaged with his professional community, serving as a Member-at-Large of the Board of Governors of IEEE Communications Society (2022-2024) and the Director of Magazines of IEEE Communications Society (2018-2019). He is a fellow of ACM, IEEE, and AAAS.

Federated Learning and Analysis with

Multi-access Edge Computing

Abstract: In recent years, mobile devices are equipped with increasingly advanced computing capabilities, which opens up countless possibilities for meaningful applications. Traditional cloud-based Machine Learning (ML) approaches require the data to be centralized in a cloud server or data center. However, this results in critical issues related to unacceptable latency and communication inefficiency. To this end, multi-access edge computing (MEC) has been proposed to bring intelligence closer to the edge, where data is originally generated. However, conventional edge ML technologies still require personal data to be shared with edge servers. Recently, in light of increasing privacy concerns, the concept of Federated Learning (FL) has been introduced. In FL, end devices use their local data to train a local ML model required by the server. The end devices then send the local model updates instead of raw data to the server for aggregation. FL can serve as enabling technology in MEC since it enables the collaborative training of an ML model and also enables ML for mobile edge network optimization. However, in a large-scale and complex mobile edge network, FL still faces implementation challenges with regard to communication costs and resource allocation. In this talk, we begin with an introduction to the background and fundamentals of FL. Then, we discuss several potential challenges for FL implementation such as unsupervised FL and matching game based multi-task FL. In addition, we study the extension to Federated Analysis (FA) with potential applications such as federated skewness analytics and federated anomaly detection.

Zhu Han received the B.S. degree in electronic engineering from Tsinghua University, in 1997, and the M.S. and Ph.D. degrees in electrical and computer engineering from the University of Maryland, College Park, in 1999 and 2003, respectively. From 2000 to 2002, he was an R&D Engineer of JDSU, Germantown, Maryland. From 2003 to 2006, he was a Research Associate at the University of Maryland. From 2006 to 2008, he was an assistant professor at Boise State University, Idaho. Currently, he is a John and Rebecca Moores Professor in the Electrical and Computer Engineering Department as well as the Computer Science Department at the University of Houston, Texas. Dr. Han is an NSF CAREER award recipient of 2010, and the winner of the 2021 IEEE Kiyo Tomiyasu Award. He has been an IEEE fellow since 2014, an AAAS fellow since 2020, an IEEE Distinguished Lecturer from 2015 to 2018, and an ACM Distinguished Speaker from 2022-2025. Dr. Han is also a 1% highly cited researcher since 2017.

6. Poster Session I (407 EEE Building, 19 June, 2023)

6.1 Deep learning for signal processing and communications

No.	Presenters	Affiliation	Titles
1	Mr. Haochen Li	QMUL	*Near-Field Beamforming for STAR-RIS Aided Wireless Communications*
2	Mr. Le Xia	University of Glasgow	*WiserVR: Semantic Communication Enabled Wireless Virtual Reality Delivery*
3	Dr. Mahdi Boloursaz Mashhadi	University of Surrey	*Learning and Communication Co-design: 6G Artificial Intelligence of Things (AIoT)*
4	Dr. Mahdi Boloursaz Mashhadi	University of Surrey	*Neural Beam Selection: Integrated Sensing and Communications for 6G*
5	Mr. Mahdi Eskandari	University of Kent	*Two-Timescale Design for RIS-aided Cell-free Massive MIMO Systems with Imperfect CSI*
6	Dr. Mohammad Al-Jarrah	University of Manchester	*Multi-modal Fusion Machine Leaning Model based RF Signal Recognition and Classification*
7	Dr. Pu Miao	University of Surrey	*Volterra Model-driven Neural Network for Nonlinear Impairments Compensation in Visible Light Communication*
8	Mr. Qu Luo	University of Surrey	*A Novel Multitask Learning Empowered Codebook Design for Downlink SCMA Networks*
8	Dr. Ruikang Zhong	QMUL	*DRL-based Hybrid Beamforming Design for STAR-RISs*
10	Dr. Yuanwei Liu	QMUL	*Simultaneously Transmitting And Reflecting Surfaces (STARS) Assisted 6G*
11	Mr. Zhaolin Wang	QMUL	*Beamfocusing Optimization for Near-Field Wideband Multi-User Communications*
12	Mr. Ziang Liu	Imperial College	*Joint Transmit and Receive Beamforming Design in Full-Duplex Integrated Sensing and Communications*

6.2 Deep learning-enabled resource allocation and intelligent networking

No.	Presenters	Affiliation	Titles
13	Mr. Abdullah Alajmi	QMUL	*Semi-centralized Framework for EE NOMA-IoT Networks*
14	Mr. Runze Cheng	University of Glasgow	*Intelligent Resource Management in Symbiotic Radio under a Trusted Coevolution*
15	Dr. Xidong Mu	QMUL	*Exploiting Semantic Communication in NOMA*
16	Mr. Yilun Zhang	University of Kent	*Resource management for MEC assisted multi-layer federated learning framework*
17	Mr. Zelin Ji	QMUL	*Energy-Efficient Task Offloading for Semantic-Aware Systems*
18	Mr. Zhongling Zhao	University of Surrey	*Matching-aided-Learning Resource Allocation for Dynamic Offloading in MmWave MEC System*

7. Poster Session II (407 EEE Building, 20 June, 2023)

7.1 Deep learning enabled security

No.	Presenters	Affiliation	Titles
1	Mr. Guanxiong Shen	University of Liverpool	*Towards Scalable and Channel-Robust Radio Frequency Fingerprint Identification*
2	Miss Jie Ma	University of Liverpool	*White-Box Adversarial Attacks on Deep Learning-Based Radio Frequency Fingerprint Identification*
3	Mr. Liang Qiao	University of Bristol	*Decentralized Asynchronous Federated Learning Based on Blockchain*
4	Mr. Marios Aristodemou	Loughborough University	*Adversarial Poisoning Attacks against Distributed Learning*
5	Mr. Sami Alsaadi	University of Warwick	*Convolutional Neural Network (CNN) Model For Anomaly Detection Systems In Software Defined Network (SDN)*
6	Mr. Yiyu Guo	QMUL	*Federated Learning for Multi-view Synthesizing in Wireless Virtual Reality*

7.2 Machine learning for optimization and compressive sensing

No.	Presenters	Affiliation	Titles
7	Ms. Dyah Agustika	University of Warwick	*Optimisation of Feedforward Neural Network Parameter for Pepper Yellow Leaf Curl Virus Detection*
8	Mr. I N. K. Wardana	University of Warwick	*Optimising Tiny Machine Learning with Binary Weight Network for a Low-cost Air Quality Monitoring Device*
9	Dr. Penghe Zhang	Beijing Jiaotong University	*A Newton Augmented Lagrangian Method for Zero-One Composite Optimization*
10	Dr. Shixiong Wang	Imperial College	*Distributional Robustness Bounds Generalization Errors*
11	Mr. Tertsegha Anande	University of Warwick	*Enhanced Modelling for Improved Learning Performance*
12	Dr. Xingchi Liu	University of Sheffield	*Risk-Aware Contextual Learning and Decision-Making*
13	Mr. Yingxiao Wang	Beijing Jiaotong University	*A Lagrange-Newton Algorithm for Long-only Cardinality Constrained Portfolio Selection*

7.3 Other selected topics

No.	Presenters	Affiliation	Titles
14	Mr. Fuhu Che	*University of Warwick*	*Fine-Tuned Attribute Weighted Naïve Bayes NLoS Classifier for UWB Positioning*
15	Mr. Guolin Yin	*University of Liverpool*	*FewSense, Towards a Scalable and Cross-Domain Wi-Fi Sensing System Using Few-Shot Learning*
16	Dr. Hua Yan	*University of Warwick*	*Energy Modeling for UAV Intelligent Communications*
17	Dr. Huynh Nguyen	*Edinburgh Napier University*	*Deep Learning based Joint Loss and Compression for CSI Feedback in End-to-End MIMO Communication Systems*
18	Mr. Jiteng Ma	*University of Bristol*	*Unlock New Possibilities for Microwave Component Design*
19	Mr. Kaidi Xu	*Imperial College*	*DTE HetNet Power Control based on Multi-Agent Reinforcement Learning*
20	Mr. Ouya Wang	*Imperial College*	*Learn to Adapt to New Environments from Experience and Few Pilots*
21	Mr. Samuel Leitch	*University of Huddersfield*	*Improving Bluetooth Low Energy Distance Estimation by using Naive Bayesian Classification*
22	Dr. Shuping Dang	*University of Bristol*	*Covert Communications by Motion States of Drones*
23	Mr. Xinze Lyu	*Imperial College*	*A Prototype of Rate-Splitting Multiple Access*
24	Mr. Yanzhen Liu	*Imperial College*	*Energy Efficiency Distributed Wireless Spiking Neural Network for Internet of Things*
25	Mr. Yuanli Yue	*University of Kent*	*Reservoir Computing Assisted Ultrafast User Localization in Beam Steering Optical Wireless System*