



18th IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM 2017)

Conference Program



June 12-15, 2017

@ Macao Polytechnic Institute



澳門理工學院
Instituto Politécnico de Macau
Macao Polytechnic Institute



Queen Mary
University of London

IEEE
computer
society

MISSOURI
S&T
University of
Science & Technology

Φ TCCC Technical Committee on
Computer Communications

Macao Polytechnic Institute Campus Map



澳門理工學院
Instituto Politécnico de Macau
Macao Polytechnic Institute



- ❶ Auditorium, Chi Un Building
- ❷ Exhibition Gallery, Chi Un Building (ground floor)
- ❸ Lecture Theatres 1 ~ 3, Wui Chi Building (1st floor)
- ❹ Wui Chi Canteen, Wui Chi Building (1st floor)

Message from the General Chairs

2017 IEEE International Symposium on a World of Wireless, Mobile, and Multimedia Networks

Message from the General Chairs

Welcome to Macao — a city with the unique blend of European and Oriental cultures — and welcome to the IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), the intellectual hub and melting pot of ideas from researchers and practitioners interested in all aspects of wireless, mobile, and multimedia pervasive communications. Sponsored by the IEEE Computer Society and its Technical Committee on Computer Communications (TCCC), and co-sponsored by Macao Polytechnic Institute, Queen Mary University of London, Missouri University of Science and Technology, the 18th WoWMoM is held in Macao, at the Macao Polytechnic Institute campus.

Macao is one of Asia's must-see destinations. With a unique blend of Chinese and Portuguese cultures, Macao thrives on its historic legacies, many of which are protected by UNESCO World Heritage status, and many recent contemporary additions. Macao is now poised to become one of the first "smart" cities in Asia and has a booming and sustainable economy.

Macao Polytechnic Institute (MPI) is hosting WoWMoM 2017. MPI is a public institution of higher education with an emphasis on applied knowledge and skills. With its motto being "knowledge, expertise and global vision". MPI has shown that it achieves international standards in teaching, learning and research through being accredited by international organizations including QAA and IET and has several joint research labs with prestigious universities. In computing these include the MPI-QMUL Information Systems Research Centre and the Ubiquitous Computing Research Laboratory (a collaboration between MPI and UCLA Henry Samueli School of Engineering and Applied Science). MPI also hosts the Gaming and Entertainment Technology Research and Development Centre and the Chinese-Portuguese-English Machine Translation Laboratory. The mission of MPI is to cultivate talents and to develop information technology (IT) and other professionals for the needs of Macao and the wider world.

The WoWMoM's track record of excellence continues this year. Thanks to the tireless efforts of the technical program co-chairs — Professor Polychronis Koutsakis of Murdoch University (Australia) and Dr. Dilip Krishnaswamy of IBM

Message from the General Chairs

Research (India) — WoWMoM 2017 is packed with an excellent mix of technical sessions. In addition, the program is supplemented by a PhD forum session, demonstrations, and four exciting pre-conference workshops on Smart Vehicles, Internet-of-Things, Small Cell Networking for 5G, and Emerging Cognitive Radio Applications and Algorithms.

On behalf of the WoWMoM steering committee and on behalf of all attendees, we thank the workshops co-chairs Professor Marco di Felice of the University of Bologna (Italy) and Professor Salil Kanhere of the University of New South Wales (Australia) — and all members of the technical and workshop committees for producing such a wonderful program. We thank Professor Jiannong Cao of Hong Kong Polytechnic University (China) and Professor Wei Zhang of the University of New South Wales (Australia) for efficiently organizing a panel, Professor Andreas Reinhardt of TU Clausthal (Germany) for organizing the PhD forum session, and Professor Wenge Rong of Beihang University (China) and Professor Yan Zhang of the University of Oslo (Norway) for organizing the demonstrations.

On behalf of all attendees, I would like to thank the WoWMoM steering committee, Professor Marco Conti and Professor Sajal K. Das, for their invaluable advisory roles. Thanks are also due to Dr. Rita Tse and Dr. Victoria Manfredi for their hard work as publications chairs, and Dr. Chan Tong Lam and Benjamin Ng for their efforts as local arrangements co-chairs. Thanks to Dr. Georgia Koutsandria, Danda B. Rawat and Sio Tai Cheong for serving as publicity co-chairs, and special thanks to Dr. Xingjian Zhang and Dr. Yapeng Wang for their dedication and tireless efforts as WoWMoM 2017 webmasters as well.

Last but not least, I wish to express my deep appreciation to Professor Yonghe Liu for his service as finance and registration chair, and the many members of IEEE for their logistical help.

In closing, I welcome you to WoWMoM 2017, whether this is your first time or 18th time around. I hope that you will enjoy the program and Macao, that you will make the most out of your participation, and that you will come back to WoWMoM for many years to come!

Marcus Im and Yue Gao
WoWMoM 2017 General Chairs

Message from the TPC Chairs

Dear Colleagues, welcome to IEEE WoWMoM 2017!

The IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks has established itself as a leading forum for the presentation and exchange of ideas and results among researchers and practitioners in the field of wireless, mobile, and multimedia systems.

WoWMoM 2017 has attracted significant interest among the community, with the main conference receiving 104 submissions from 26 countries spanning all continents. The high quality of the received submissions provided an excellent opportunity for a high-quality program, but also called for a demanding paper evaluation process. The 77 members of the Technical Program Committee worked efficiently and responsibly under tight time constraints to produce the reviews that provided the basis for the final paper selection. We have also invited 10 submissions from leading researchers in the field, which were also reviewed by the TPC.

As a result of this process, 21 regular papers were finally selected for presentation as full papers and 7 papers were selected for presentation as short papers at the main conference, an acceptance rate of 27%. A set of 6 work-in-progress papers were also accepted. Given the large number of submitted manuscripts and the tight time and space constraints, many strong submissions could not be accepted.

The main program of WoWMoM 2017 covers three days and includes two streams of parallel sessions. The program is further enriched by two keynote presentations offered by world-leaders in the field, Dr. Chih-Lin I, Chief Scientist of Wireless Technologies at China Mobile, and Professor Petri Mahönen, Head of the Institute for Networked Systems, RWTH Aachen University. The main program is complemented by two Industry Panels, a Posters & Demos session, and a diverse set of high-quality workshops.

We would like to sincerely thank all authors who trusted us with their work. The final result would not have been possible without the dedication and hard work of many colleagues. We would like to thank the members of the Technical Program Committee for their sense of responsibility and responsiveness under very tight deadlines. Special thanks to the General Chairs Professor Yue Gao and Marcus Im, and all the members of the organizing committee.

Polychronis Koutsakis and Dilip Krishnaswamy
IEEE WoWMoM 2017 Technical Program Chairs

WoWMoM 2017 Organizing Committee

General Chairs

Marcus Im, Macao Polytechnic Institute, Macao, China
Yue Gao, Queen Mary University of London, UK

General Vice Chair

Andrea Cavallaro, Queen Mary University of London, UK

TPC Chairs

Polychronis Koutsakis, Murdoch University, Australia
Dilip Krishnaswamy, IBM Research, India

Steering Committee

Marco Conti, IIT-CNR, Italy
Sajal K. Das, Missouri University of Science & Technology, USA

Workshop Chairs

Marco di Felice, University of Bologna, Italy
Salil Kanhere, The University of New South Wales, Australia

Publicity Chairs

Georgia Koutsandria, University of Rome "La Sapienza", Italy
Danda B. Rawat, Howard University, USA
Sio Tai Cheong, Macao Polytechnic Institute, Macao, China

Panel Chairs

Jiannong Cao, Hong Kong Polytechnic University, China
Wei Zhang, The University of New South Wales, Australia

Demonstrations Chairs

Wenge Rong, Beihang University, China
Yan Zhang, University of Oslo, Norway

PhD Forum Chairs

Andreas Reinhardt, TU Clausthal, Germany
Rong Yu, Guangdong University of Technology, China

Publication Chairs

Victoria Manfredi, Raytheon BBN Technologies, USA
Rita Tse, Macao Polytechnic Institute, Macao, China

Local Arrangement Chairs

Chan Tong Lam, Macao Polytechnic Institute, Macao, China
Koon Kei Ng, Macao Polytechnic Institute, Macao, China

Finance & Registration Chair

Yonghe Liu, University of Texas at Arlington, USA

Web Chair

Xingjian Zhang, Queen Mary University of London, UK
Yapeng Wang, MPI-QMUL ISRC, China

WoWMoM 2017 Technical Program Committee

Stefano Avallone, University of Naples, Italy
Albert Banchs, Universidad Carlos III de Madrid, Spain
Nilanjan Banerjee, University of Maryland, USA
Stefano Basagni, Northeastern University, USA
Luca Bedogni, University of Bologna, Italy
Boris Bellalta, Universitat Pompeu Fabra, Spain
Paolo Bellavista, University of Bologna, Italy
Giuseppe Bianchi, University of Rome Tor Vergata, Italy
Fernando Boavida, University of Coimbra, Portugal
Torsten Braun, University of Bern, Switzerland
Raffaele Bruno, IIT-CNR, Italy
Manoj Bs, Indian Institute of Space Science and Technology, India
Carla-Fabiana Chiasserini, Politecnico di Torino, Italy
Sunghyun Choi, Seoul National University, Korea
Claudio Cicconetti, MBI, Italy
Igor Curcio, Nokia, Finland
Debraj De, Missouri University of Science & Technology, USA
Swades De, Indian Institute of Technology, India
Alessandra De Paola, University of Palermo, Italy
Marco Di Felice, University of Bologna, Italy
Mario Di Francesco, Aalto University, Finland
Roberto Di Pietro, Bell Labs, France
Ozgur Ercetin, Sabanci University, Turkey
Serge Fdida, UPMC Sorbonne, France
Marco Fiore, IEIIT-CNR, Italy
Luca Foschini, University of Bologna, Italy
Silvia Giordano, SUPSI, Switzerland
James Gross, KTH, Sweden
Raouf Hamzaoui, De Montfort University, UK
Matthias Hollick, Technical University of Darmstadt, Germany
Pan Hui, Hong Kong University of Science and Technology, China
Salil Kanhere, The University of New South Wales, Australia
Holger Karl, University of Paderborn, Germany
Andreas J. Kassler, Karlstad University, Sweden
Dimitrios Koutsonikolas, University at Buffalo, USA
Huadong Ma, Beijing University of Posts and Telecommunications, China
Vincenzo Mancuso, IMDEA Networks, Spain
Angelos Marnerides, Liverpool John Moores University, UK

WoWMoM 2017 Technical Program Committee

Constandinos Mavromoustakis, University of Nicosia, Cyprus
Enzo Mingozzi, University of Pisa, Italy
Daniele Miorandi, Create-Net, Italy
Edmundo Monteiro, University of Coimbra, Portugal
David Murray, Murdoch University, Australia
Joerg Ott, Technische Universität München, Germany
Elena Pagani, University of Milano, Italy
Andrea Passarella, IIT-CNR, Italy
George Polyzos, Athens University of Economics and Business, Greece
Ioannis Psaras, University College London
Daniele Puccinelli, SUPSI, Switzerland
Daji Qiao, Iowa State University, USA
Andreas Reinhardt, TU Clausthal, Germany
Francesco Restuccia, Missouri University of Science and Technology
Jorge Sa Silva, University of Coimbra, Portugal
Anand Seetharam, SUNY Binghamton, USA
Shamik Sengupta, University of Nevada, USA
Pablo Serrano, Universidad Carlos III de Madrid, Spain
Bo Sheng, University of Massachusetts Boston, USA
Vasilios Siris, Athens University of Economics and Business, Greece
Petros Spachos, University of Guelph, Canada
Ioannis Stavrakakis, National and Kapodistrian University of Athens, Greece
Thorsten Strufe, TU Dresden, Germany
Yu-Chee Tseng, National Chiao-Tung University, Taiwan
Carlo Vallati, University of Pisa, Italy
Honggang Wang, University of Massachusetts Dartmouth, USA
Joerg Widmer, IMDEA Networks, Spain
Andreas Willig, University of Canterbury, New Zealand
Adam Wolisz, Technical University of Berlin, Germany
Hongyi Wu, University of Louisiana at Lafayette, USA
Sherali Zeadally, University of Kentucky, USA
Wensheng Zhang, Iowa State University, USA
Zimu Zhou, ETH Zurich
Cliff Zou, University of Central Florida, USA
Moshe Zukerman, City University of Hong Kong, China

WoWMoM 2017 Overall Schedule

Day Time	Monday, June 12 th Workshops	Tuesday, June 13 th Main Conference	
09:00-09:30	Registration	Registration (09:00-09:15) WoWMoM Opening Remarks (Auditorium, 09:15-09:30)	
09:30-10:30	Workshop keynote 1. SmartVehicles 2017 (Lecture Theatre 1) 2. IoT-SoS 2017 (Lecture Theatre 2)	Keynote I (Auditorium) Chih-Lin I Feeling the Pulse of 5G	
10:30-11:00	Coffee Break (Wui Chi Canteen)	Coffee Break (Exhibition Gallery, Chi Un Bldg.)	
11:00-12:30	Workshops session 1 1. SmartVehicles 2017 (Lecture Theatre 1) 2. IoT-SoS 2017 (Lecture Theatre 2)	Session 1A (Lecture Theatre 1) Energy-Efficient Multimedia Networks	Session 1B (Lecture Theatre 2) Wireless Network Analysis and Optimization
12:30-14:00	Lunch Break (Exhibition Gallery, Chi Un Bldg.)		
14:00-15:30	Workshops session 2 1. SmartVehicles 2017 (Lecture Theatre 1) 2. IoT-SoS 2017 (Lecture Theatre 2) Workshops Keynote & session 1 3. SCN 2017 (Lecture Theatre 3) 4. CORAL 2017 (A113)	Session 2A (Lecture Theatre 1) Next Generation Networks	Session 2B (Lecture Theatre 2) Mobile Data Offloading
15:30-16:00	Coffee Break (Wui Chi Canteen)	Coffee Break (Wui Chi Canteen)	
16:00-17:30	Workshops session 2 3. SCN 2017 (Lecture Theatre 3) 4. CORAL 2017 (A113)	Session 3A (Lecture Theatre 1) PhD Forum	Session 3B (Exhibition Gallery, Chi Un Bldg.) Demo and Poster
18:00-20:00	—	Welcome Reception (Exhibition Gallery, Chi Un Bldg.)	
20:00-21:30	The House of Dancing Water (City of Dreams)		

Day Time	Wednesday, June 14 th Main Conference		Thursday, June 15 th Main Conference			
09:00-09:30	Registration		Registration			
09:30-10:30	<u>Panel I</u> (Lecture Theatre 1) Big Data & IoT		<u>Panel II</u> (Lecture Theatre 2) 5G Wireless			
10:30-11:00						
11:00-11:30	Coffee Break (Wui Chi Canteen)		Coffee Break (Wui Chi Canteen)			
11:30-13:00	<u>Session 4A</u> (Lecture Theatre 1) IoT, Wearables, and Social Networks	<u>Session 4B</u> (Lecture Theatre 2) Analytics and Machine Learning	<u>Session 6A</u> (Lecture Theatre 2) Multimedia Systems Optimization	<u>Session 6B</u> (Lecture Theatre 3) Resource Management and QoS/QoE Provisioning		
13:00-14:30	Lunch Break (Exhibition Gallery, Chi Un Bldg.)					
14:30-15:30	<u>Keynote II</u> (Auditorium) Petri Mähönen Post-5G: Is This The End of Telecommunications?		Macao Sightseeing Tour			
15:30-16:00					Coffee Break (Exhibition Gallery, Chi Un Bldg.)	
16:00-17:30					<u>Session 5A</u> (Lecture Theatre 1) Localisation & Tracking	<u>Session 5B</u> (Lecture Theatre 2) Context-Awareness
18:00-21:30	Conference Banquet (Macao Tower 360 Cafe)		—			

Keynote 1

Feeling the Pulse of 5G

June 13th, 2017 (Tuesday); 9:30 - 10:30

Auditorium (Chi Un Building)

Speaker: Dr. Chih-Lin I

Chief Scientist of Wireless Technologies, China Mobile Research Institute

Abstract

The last several years saw rapid progress of the fifth generation (5G) mobile communication networks R&D and standardization. Anticipated to be soft, green, and super-fast, 5G networks may possibly be deployed in 2020s to satisfy the challenging demands of mobile communication in various scenarios. However, a mixed set of diversified key performance indicators (KPIs) for 5G services, like data rates, latency, mobility, energy efficiency, and traffic density, mandates a fundamental revolution on the end to end (E2E) network architecture and key technologies design. How different is the design of 5G from that of previous generations and why? Is the 5G new radio (NR) standard currently being developed by 3GPP on the right track? Is 5G NR the sole solution to meet all the 5G requirements? And what are the potential directions for 5G NR phase two? What is CMCC's 5G strategy and technical approaches? This talk will help the audience to feel the technical and economic pulse of 5G and provide some answers to the above questions.

Biography

Chih-Lin I received her Ph.D. degree in electrical engineering from Stanford University. She has been working at multiple world-class companies and research institutes leading the R&D, including AT&T Bell Labs; Director of AT&T HQ, Director of ITRI Taiwan, and VPGD of ASTRI Hong Kong. She received the IEEE Trans. COM Stephen Rice Best Paper Award, is a winner of the CCCP National 1000 Talent Program, and has won the 2015 Industrial Innovation Award of IEEE Communication Society for Leadership and Innovation in Next-Generation Cellular Wireless Networks.

In 2011, she joined China Mobile as its Chief Scientist of wireless technologies, established the Green Communications Research Center, and launched the 5G Key Technologies R&D. She is spearheading major initiatives including 5G, C-RAN, high energy efficiency system architectures, technologies and devices; and green energy. She was an Area Editor of IEEE/ACM Trans. NET, an elected Board Member of IEEE ComSoc, Chair of the ComSoc Meetings and Conferences Board, and Founding Chair of the IEEE WCNC Steering Committee.

She was a Professor at NCTU, an Adjunct Professor at NTU, and currently an Adjunct Professor at BUPT. She is the Chair of FuTure 5G SIG, an Executive Board Member of GreenTouch, a Network Operator Council Founding Member of ETSI NFV, a Steering Board Member of WWRF, a Steering Committee member and the Publication Chair of IEEE 5G Initiative, a member of IEEE ComSoc SDB, SPC, and CSCN-SC, and a Scientific Advisory Board Member of Singapore NRF. Her current research interests center around "Green, Soft, and Open".

Keynote 2

Post-5G: Is This the End of Telecommunications?

June 14th, 2017 (Wednesday); 14:30 - 15:30

Auditorium (Chi Un Building)

Speaker: Prof. Petri Mähönen

RWTH Aachen University, Germany

Abstract

In this talk, I will explore the question of the scalability of telecommunications networks. I will particularly ask where we should concentrate our limited research resources to maximize the impact. In this context, I examine also the role of different demand and deployment models play in the engineering of the future networks, and dare to ask if we should consider 5G as a revolutionary or evolutionary step. I argue there is a potentially a great future for post-5G research, if we dare to embrace longer time-scale research questions. I will outline especially the question on how ultra-high density combined with different intelligent methods can have effect on our future network architectures.

Biography

Petri Mähönen is a professor and head of the institute for networked systems at RWTH Aachen University. He joined RWTH Aachen as the holder of Ericsson endowed chair of wireless networks in 2002. He has studied and worked in the United States, the United Kingdom and Scandinavia. He is a recipient of Telenor Research prize, and has given invited talks in a number of different conferences, universities, and industry.

Apart of academic publishing, he has been a part of teams who have invented and successfully technology transferred several patent families for industrial use. He has served also as an advisor for different international companies and his students have successfully launched several start-ups. He has been and is serving as editor in various IEEE publications and he served as co-TPC chair for IEEE DySPAN 2010 and as general chair for IEEE DySPAN 2011.

He was also a principal investigator and research area coordinator in the Ultra High Speed Mobile Information and Communications (UMIC) research Centre at RWTH Aachen. He is one of the German research excellence clusters funded by German Federal and State Government. His group has been in forefront on developing machine learning based cognitive radio technologies, dynamic spectrum access techniques, and earlier he was a project lead for development and implementation for one of the first 40 GHz cellular broadband systems. Generally and foremost he likes to tinker with cool technology and interesting problems.

Panel 1

Big Data & IoT

June 14th, 2017 (Wednesday); 9:30 - 11:00

Lecture Theatre 1 (Wui Chi Building, 1st floor)

Moderator

Jiannong Cao, Hong Kong Polytechnic University, China

Biography: Jiannong Cao is a chair professor and the head of the Department of Computing at The Hong Kong Polytechnic University. He is also the director of the Internet and Mobile Computing Lab in the department. Before joined The Hong Kong Polytechnic University in 1997, he has been on faculty of computer science in James Cook University and The University of Adelaide in Australia, and the City University of Hong Kong. Professor Cao is currently an adjunct professor of Sun Yat-Sen University. He also held several adjunct and visiting positions, including an adjunct chair professor of Central South University; an adjunct professor of National University of Defense Technology, Northeastern University, Shanghai Jiao Tong University, Northwestern Polytechnical University, and Beijing Jiaotong University; a guest professor of Shenzhen University; a visiting research professor in the National Key Lab for Novel Software Technology, Nanjing University of China; a visiting fellow in the School of Computer Science and Engineering, Nanyang Technological University of Singapore; a visiting scholar of the Institute of Software at Chinese Academy of Science, and Peking University Overseas Scholar Lecture Program.

Panellists

Prof. Xiaohua Jia, City University of Hong Kong

Biography: Xiaohua Jia received his BSc (1984) and MEng (1987) from University of Science and Technology of China, and his DSc (1991) from Tokyo University. His research interests include wireless networking, sensor networks, distributed systems and Cloud computing, Internet and web technologies. He is on the editorial board of IEEE Trans. On Parallel and Distributed Systems (2006-2009), Wireless Networks, Journal of World Wide Web, Journal of Combinatorial Optimization, etc. He is the General Chair of ACM MobiHoc 2008, TPC Co-Chair of IEEE MASS 2009, International Vice-Chair of INFOCOM 2005, TPC Area-Chair of INFOCOM 2010 and TPC Co-Chair of GLOBECOM 2010 - Ad-hoc and Sensor Networking Symposium.

Prof. Neeraj Suri, Technische Universität Darmstadt, Germany

Biography: Neeraj Suri is a Chair Professor of “Dependable Systems and Software” at TU Darmstadt, Germany and is affiliated with the Univ. of Texas at Austin and Microsoft Research. Following his PhD at the Univ. of Massachusetts at Amherst, he has held both industry and academic positions at Allied-Signal/Honeywell Research, Boston Univ., the Saab Endowed Chair at Chalmers in Sweden, receiving trans-national funding from the EC, German DFG, NSF/DARPA/ONR/AFOSR, NASA, Microsoft, IBM, Hitachi, GM and others. He is a recipient of the NSF CAREER award, as well as Microsoft and IBM Faculty Awards. Suri’s professional services span

associate Editor-in-Chief for the IEEE Trans. on Dependable and Secure Computing, editorial boards for IEEE Trans. on SW Engg., IEEE TPDS, ACM Computing Surveys, IEEE Security & Privacy and many others. He serves on advisory boards for Microsoft (Trustworthy Computing Academic Advisory Board, Strategy Advisor for MSR-ATL's) and multiple other US/EU/Asia industry and university advisory boards. Suri chaired the IEEE Technical Committee on Dependability and Fault Tolerance, and it's Steering Committee.

[Prof. Xiong Zhang](#), Beihang University, China

Biography: Xiong Zhang is a Professor in School of Computer Science of Engineering of Beihang University and director of the Advanced Computer Application Research Engineering Center of National Educational Ministry. During his academic career in Beihang University for more than 20 years, he has supervised over 30 PhD students and won a National Science and Technology Progress Award. He is the chief scientist of "smart city" project supported by the National High Technology Research and Development Program of China. Prof. Xiong serves as members of several national committees, e.g., the National Computer Science and Technology Teaching Steering Committee of Ministry of Education, the State Leading Group Office of Golden Card Project, the National GFMIS Expert Consultative Committee and etc. He has made significant contribution to the R&D of a large number of large-scale computer information system applications including Electronic voting system, CCTV System of Shanghai Pudong International Airport, Perimeter security System of Guangzhou Baiyun International Airport and etc. His research interests and publications span from computer vision, wireless sensor networks and information security.

[Prof. Mario Gerla](#), University of California, Los Angeles, USA

Biography: Mario Gerla holds the Engineering degree from the Politecnico di Milano, Italy and the Ph.D. degree from UCLA. He became IEEE Fellow in 2002. As a Graduate Student at UCLA, he was part of the team that worked on the early ARPA Network system and protocols under the guidance of Prof. Leonard Kleinrock. After four years at Network Analysis Corporation in NY, he joined the UCLA Faculty in 1976. At UCLA he has designed network protocols including ad hoc wireless clustering, multicast (ODMRP and CODECast) and Internet transport (TCP Westwood). He has lead the ONR MINUTEMAN project, designing the next generation scalable airborne Internet for tactical and homeland defense scenarios. He is now leading several advanced wireless network projects under Industry and Government funding. His team is developing a Vehicular Testbed for safe navigation, content distribution, urban sensing and intelligent transport. Parallel research activities are wireless medical monitoring using smart phones and cognitive radios in urban environments. He has served on several Conference Program Committees including MobiCom, MobiHoc, MedHocNet and WONS. He is on the IEEE TON Scientific Advisory Board.

Panel 2

5G Wireless

June 15th, 2017 (Thursday); 9:30 - 11:00

Lecture Theatre 1 (Wui Chi Building, 1st floor)

Moderator

Prof. Wei Zhang, The University of New South Wales, Australia

Biography: Wei Zhang received his PhD degree in Electronic Engineering from the Chinese University of Hong Kong in 2005. In May 2008, he joined the School of Electrical Engineering and Telecommunications, The University of New South Wales, Sydney, Australia, where he is currently an Associate Professor. He was Research Fellow at the Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology in 2006-2007. His current research interests include cognitive radio, energy harvesting communications, and massive MIMO. Currently, he serves as Vice Chair of IEEE Communications Society Wireless Communications Technical Committee. He is Vice Director of IEEE Communications Society Asia Pacific Board. He is also an Elected Member of IEEE Signal Processing Society SPCOM Technical Committee. He is a Distinguished Lecturer of IEEE Communications Society. He is a Fellow of the IEEE and a Fellow of the IET.

Panellists

Prof. Shi Jin, Southeast University, China

Biography: Shi Jin received the Ph.D. degree in information and communications engineering from the Southeast University, Nanjing, in 2007. From June 2007 to October 2009, he was a Research Fellow with the Adastral Park Research Campus, University College London, London, U.K. He is currently with the faculty of the National Mobile Communications Research Laboratory, Southeast University. His research interests include space time wireless communications, random matrix theory, and information theory. He serves as an Associate Editor for the IEEE Transactions on Wireless Communications, and IEEE Communications Letters, and IET Communications. Dr. Jin and his co-authors have been awarded the 2011 IEEE Communications Society Stephen O. Rice Prize Paper Award in the field of communication theory and a 2010 Young Author Best Paper Award by the IEEE Signal Processing Society.

Prof. Vincent Lau, Hong Kong University of Science and Technology, China

Biography: Vincent obtained B.Eng (Distinction 1st Hons – ranked 2nd) from the department of EEE, University of Hong Kong in 1992. He joined the Hong Kong Telecom (PCCW) after graduation for 3 years as system engineer. He obtained the Sir Edward Youde Memorial Fellowship, Rotaract Scholarship and the Croucher Foundation Scholarship in 1995 and studied for Ph.D. at the University of Cambridge. He completed the Ph.D. degree in 2 years and joined the Bell Labs -

Lucent Technologies, New Jersey in 1997 as Member of Technical Staff. He has worked on various advanced wireless technologies such as IS95, 3G1X, UMTS as well as wideband CDMA base station ASIC Design and Post 3G Technologies such as MIMO and HSDPA. He joined the department of ECE, HKUST in August 2004 and is currently a Chair Professor. He has been the technology advisor and consultant for a number of companies such as ZTE, TCL, Huawei, ASTRI, leading several R&D projects on next generation WiFi and 5G wireless communications. He is also the founder and director of Huawei-HKUST Innovation Lab.

[Mr. Jianmin Lu](#), Huawei Technologies, China

Biography: Jianmin Lu received the B.S. and M.S degrees in electrical engineering from SouthEast University, Nanjing, China, in 1996 and 1999, respectively. Since graduation, he joined the Huawei Technologies and conducted various researches on digital wireless communications, including UMTS, CDMA2000, EVDO, WiMAX, WiFi, LTE and 5G. He received more than 50 patents and chaired multiple physical and MAC layer sessions in standard, and is now leading the research team in wireless department of wireless product line. His current research interest is in the area of wireless signal processing, protocol and networking.

[Prof. Petri Mähönen](#), RWTH Aachen University, Germany

Biography: Petri Mähönen is a professor and head of the institute for networked systems at RWTH Aachen University. He joined RWTH Aachen as the holder of Ericsson endowed chair of wireless networks in 2002. He has studied and worked in the United States, the United Kingdom and Scandinavia. He is a recipient of Telenor Research prize, and has given invited talks in a number of different conferences, universities, and industry. Apart of academic publishing, he has been a part of teams who have invented and successfully technology transferred several patent families for industrial use. He has served also as an advisor for different international companies and his students have successfully launched several start-ups. He has been and is serving as editor in various IEEE publications and he served as co-TPC chair for IEEE DySPAN 2010 and as general chair for IEEE DySPAN 2011. He was also a principal investigator and research area coordinator in the Ultra High Speed Mobile Information and Communications (UMIC) research Centre at RWTH Aachen. He is one of the German research excellence clusters funded by German Federal and State Government. His group has been in forefront on developing machine learning based cognitive radio technologies, dynamic spectrum access techniques, and earlier he was a project lead for development and implementation for one of the first 40 GHz cellular broadband systems. Generally and foremost he likes to tinker with cool technology and interesting problems.

Technical Sessions June 13th, 2017 (Tuesday)

09:00-09:15 Registration

09:15-09:30 WoWMoM Opening Remarks

09:30-10:30 **Keynote 1 – Feeling the Pulse of 5G (Auditorium)**

Chih-Lin I, Chief Scientist of Wireless Technologies, China Mobile Research Institute

10:30-11:00 Coffee Break (Exhibition Gallery, ground floor, Chi Un Building)

11:00-12:30 **Session 1A: Energy-Efficient Multimedia Networks**

Chair: You-Chiun Wang [Lecture Theatre 1, 1st floor, Wui Chi Building]

[1] [A Detailed Look into Power Consumption of Commodity 60 GHz Devices](#)

Swetank Kumar Saha, Tariq Siddiqui and Dimitrios Koutsonikolas (University at Buffalo, SUNY, USA); Adrian Loch and Joerg Widmer (IMDEA Networks Institute, Spain); Ramalingam Sridhar (University at Buffalo, SUNY)

[2] [Energy Efficiency Impact of Transient Node Failures when using RPL](#)

Ulf Kulau, Silas Müller, Sebastian Schildt, Arthur Martens, Felix Büsching, and Lars Wolf (Technical University – Braunschweig, Germany)

[3] [Wireless Power Transfer under the Spotlight: Charging Terminals amid Dense Cellular Networks](#)

Leonardo Bonati, Ángel Fernández Gambín and Michele Rossi (University of Padova, Italy)

[4] [Dynamic Base Station Repositioning to Improve Spectral Efficiency of Drone Small Cells](#)

Azade Fotouhi (University of New South Wales, Australia); Ming Ding (Data 61-CSIRO, Australia); Mahbub Hassan (University of New South Wales, Australia)

11:00-12:30 **Session 1B: Wireless Network Analysis and Optimization**

Chair: Laurie Cuthbert [Lecture Theatre 2, 1st floor, Wui Chi Building]

[1] [Fine-grained LTE Radio Link Estimation for Mobile Phones](#)

Nicola Bui, Foivos Michelinakis and Joerg Widmer (IMDEA Networks Institute, Spain)

[2] [Measurement Study of IEEE 802.11ac Wi-Fi Performance in High Density Indoor Deployments: Are Wider Channels Always Better?](#)

Ljiljana Simić, Janne Riihijärvi and Petri Mähönen (RWTH Aachen University, Germany)

[3] [Multi-Path D2D Leads to Satisfaction](#)

Edgar Arribas (IMDEA Networks Institute & University Carlos III of Madrid, Spain); Vincenzo Mancuso (IMDEA Networks Institute, Spain)

[4] [Implementation of Wrap Around Mechanism for System Level Simulation of LTE Cellular Networks in NS3](#)

Rajendra Singh Panwar and Krishna M. Sivalingam (Indian Institute of Technology Madras, India)

WoWMoM 2017 Technical Sessions – June 13th

12:30-14:00 Lunch Break (Exhibition Gallery, ground floor, Chi Un Building)

14:00-15:30 Session 2A: Next Generation Networks

Chair: Ana Aguiar [Lecture Theatre 1, 1st floor, Wui Chi Building]

- [1] [Design and Experimental Evaluation of a 2.4 GHz-AoA-Enhanced Beamsteering Algorithm for IEEE 802.11ad mm-Wave WLANs](#)
Avishek Patra, Ljiljana Simić and Marina Petrova (RWTH Aachen University, Germany)
- [2] [60 GHz Range Boost: Exploiting Frequency Selectivity in Millimeter-Wave Networks](#)
Guillermo Bielsa (IMDEA Networks Institute & Universidad Carlos III de Madrid, Spain); Adrian Loch and Joerg Widmer (IMDEA Networks Institute, Spain)
- [3] [Queue-aware Opportunistic Scheduling in Multi-channel Dynamic Spectrum Access Networks](#)
Enas F. Khairullah and Mainak Chatterjee (University of Central Florida, USA); Swades De (Indian Institute of Technology Delhi, India)
- [4] [Solar-Enabled Green Base Stations: Cost versus Utility](#)
Suraj Suman and Swades De (Indian Institute of Technology Delhi, India)

14:00-15:30 Session 2B: Mobile Data Offloading

Chair: James Colley [Lecture Theatre 2, 1st floor, Wui Chi Building]

- [1] [Understanding the Present and Future of Cellular Networks through Crowdsourced Traces](#)
Francesco Malandrino and Carla-Fabiana Chiasserini (Politecnico di Torino, Italy); Scott Kirkpatrick (Hebrew University Jerusalem, Israel)
- [2] [On the Feasibility of a User-Operated Mobile Content Distribution Network](#)
Ioannis Psaras, Vasilis Sourlas and Denis Shtefan (University College London, United Kingdom); Sergi Rene (University College of London, United Kingdom); Mayutan Arumaithurai (University of Goettingen, Germany); Dirk Kutscher (Huawei German Research Center, Germany); George Pavlou (University College London, United Kingdom)
- [3] [Why Your Smartphone Doesn't Work in Very Crowded Environments](#)
Paolo Castagno (University of Turin, Italy); Vincenzo Mancuso (IMDEA Networks Institute, Spain); Matteo Sereno (University of Torino, Italy); Marco Ajmone Marsan (Politecnico di Torino, Italy & IMDEA Networks Institute, Spain)
- [4] [Efficient Feedback Mechanism and Rate Adaptation for LTE-based D2D Communication](#)
Hoyoung Yoon, Seungil Park and Sunghyun Choi (Seoul National University, Korea)

15:30-16:00 Coffee Break (Wui Chi Canteen, 1st floor, Wui Chi Building)

WoWMoM 2017 Technical Sessions – June 13th

16:00-17:30 Session 3A: PhD Forum

Chair: Andreas Reinhardt [Lecture Theatre 1, 1st floor, Wui Chi Building]

[1] [An Experimental Study of Secret Key Generation for Passive Wi-Fi Wearable Devices](#)

Mohammad Hossein Chinaei and Vijay Sivaraman (University of New South Wales, Australia);
Diethelm Ostry (CSIRO, Australia)

[2] [Friendly-Jamming: An Anti-Eavesdropping Scheme in Wireless Networks](#)

Xuran Li and Hong-Ning Dai (Macau University of Science and Technology, Macao, P.R. China)

[3] [Mathematical Model of LoRaWAN Channel Access](#)

Dmitry Bankov (Institute for Information Transmission Problems (IITP RAS), Russia); Evgeny Khorov (Skolkovo Institute of Science and Technology & IITP RAS, Russia); Andrey Lyakhov (IITP RAS, Russia)

[4] [On Modeling of Eavesdropping Behavior in Underwater Acoustic Sensor Networks](#)

Qiu Wang and Hong-Ning Dai (Macau University of Science and Technology, Macao, P.R. China)

[5] [Towards Intelligent Flying Base Stations in Future Wireless Network](#)

Azade Fotouhi (University of New South Wales, Australia)

16:00-17:30 Session 3B: Demo and Poster

Chair: Cheong Sio Tai [Exhibition Gallery, ground floor, Chi Un Building]

18:00-21:30 Welcome Reception (Exhibition Gallery, ground floor, Chi Un Building)

Technical Sessions

June 14th, 2017 (Wednesday)

09:00-09:30 Registration

09:30-11:00 **Panel 1 – Big Data & IoT** (Lecture Theatre 1, 1st floor, Wui Chi Building)

11:00-11:30 Coffee Break (Wui Chi Canteen, 1st floor, Wui Chi Building)

11:30-13:00 **Session 4A: IoT, Wearables, and Social Networks**

Chair: Rui Zhou [Lecture Theatre 1, 1st floor, Wui Chi Building]

[1] [Multi-Periodic Contact Patterns in Predicting Future Contacts Over Mobile Networks](#)

Sima Das and Sajal K. Das (Missouri University of Science and Technology, USA)

[2] [Wi-Friend: Identifying Potential Real Life Friends Nearby](#)

Jia Wang, Xuefeng Liu and Jiannong Cao (Hong Kong Polytechnic University, Hong Kong)

[3] [WearIA: Wearable Device Implicit Authentication based on Activity Information](#)

Yunze Zeng, Amit Pande, Jindan Zhu and Prasant Mohapatra (University of California, Davis, USA)

[4] [Analyzing Students' Attention in Class Using Wearable Devices](#)

Xin Zhang and Cheng-Wei Wu (National Chiao Tung University, Taiwan); Philippe Fournier-Viger (Harbin Institute of Technology, P.R. China); Lan-Da Van (National Chiao Tung University, Taiwan); Yu-Chee Tseng (National Chiao Tung University, Taiwan)

11:30-13:00 **Session 4B: Analytics and Machine Learning**

Chair: Swades De [Lecture Theatre 2, 1st floor, Wui Chi Building]

[1] [A Load Balancing Scheme for Sensing and Analytics on a Mobile Edge Computing Network](#)

Chen-Khong Tham and Rajarshi Chattopadhyay (National University of Singapore, Singapore)

[2] [Estimate Air Quality Based on Mobile Crowd Sensing and Big Data](#)

Cheng Feng, Wendong Wang and Ye Tian (Beijing University of Posts and Telecommunications, P.R. China); Xirong Que (Institute of Networking Technology, P.R. China); Xiangyang Gong (Beijing University of Posts and Telecommunications, P.R. China)

[3] [Millimetric Diagnosis: Machine Learning Based Network Analysis for mm-Wave Communication](#)

Maria Scalabrin and Michele Rossi (University of Padova, Italy); Guillermo Bielsa (IMDEA Networks Institute & Universidad Carlos III de Madrid, Spain); Adrian Loch and Joerg Widmer (IMDEA Networks Institute, Spain)

[4] [Optimal trade-off between accuracy and network cost of distributed learning in Mobile Edge Computing: An analytical approach](#)

Lorenzo Valerio, Andrea Passarella and Marco Conti (IIT-CNR, Italy)

WoWMoM 2017 Technical Sessions – June 14th

13:00-14:30 Lunch Break (Exhibition Gallery, ground floor, Chi Un Building)

14:30-15:30 **Keynote 2 – Post-5G: Is This the End of Telecommunications?** (Auditorium)
Petri Mähönen, RWTH Aachen University, Germany

15:30-16:00 Coffee Break (Exhibition Gallery, ground floor, Chi Un Building)

16:00-17:30 Session 5A: Localisation & Tracking

Chair: Andreas Reinhardt [Lecture Theatre 1, 1st floor, Wui Chi Building]

[1] Self-Improving Indoor Localization by Profiling Outdoor Movement on Smartphones

Chen Qiu and Matt W. Mutka (Michigan State University, USA)

[2] Silent Whistle: Effective Indoor Positioning with Assistance from Acoustic Sensing on Smartphones

Chen Qiu and Matt W. Mutka (Michigan State University, USA)

[3] CSI Fingerprinting with SVM Regression to Achieve Device-free Passive Localization

Rui Zhou, Jiesong Chen, Xiang Lu and Jia Wu (University of Electronic Science and Technology of China, P.R. China)

[4] A Novel Accurate Synthetic Aperture RFID Localization Method with High Radial Accuracy

Run Zhao, Qian Zhang, Dong Li, Haonan Chen and Dong Wang (Shanghai Jiao Tong University, P.R. China)

16:00-17:30 Session 5B: Context-Awareness

Chair: Raffaele Bruno [Lecture Theatre 2, 1st floor, Wui Chi Building]

[1] Wi-Chase: A WiFi based Human Activity Recognition System for Sensorless Environments

Sheheryar Arshad, Chunhai Feng and Yonghe Liu (The University of Texas at Arlington, USA); Yupeng Hu (Hunan University, P.R. China); Ruiyun Yu (Northeastern University, P.R. China); Siwang Zhou and Heng Li (Hunan University, P.R. China)

[2] On the usage of smart devices to augment the user interaction with multimedia applications

Alan Ferrari, Vanni Galli, Daniele Puccinelli and Silvia Giordano (University of Applied Sciences and Arts of Southern Switzerland (SUPSI), Switzerland)

[3] Beacon-based Proximity Detection using Compressive Sensing for Sparse Deployment

Pai Chet Ng (Hong Kong University of Science and Technology, Hong Kong); Li Zhu (Ajou University, Korea); James She (Hong Kong University of Science and Technology, Hong Kong); Rong Ran (Ajou University, Korea); Soochang Park (Hong Kong University of Science and Technology & NIE Social Media Lab, Hong Kong);

[4] VehicleSense: A Reliable Sound-based Transportation Mode Recognition System for Smartphones

Sungyong Lee (Ulsan National Institute of Science and Technology, Korea); Jinsung Lee (Samsung Electronics, Korea); Kyunghan Lee (Ulsan National Institute of Science and Technology, Korea)

18:00-21:30 Conference Banquet (Macao Tower 360 Cafe)

Technical Sessions

June 15th, 2017 (Thursday)

09:00-09:30 Registration

09:30-11:00 Panel 2 – 5G Wireless (Lecture Theatre 1, 1st floor, Wui Chi Building)

11:00-11:30 Coffee Break (Wui Chi Canteen, 1st floor, Wui Chi Building)

11:30-13:00 Session 6A: Multimedia Systems Optimization

Chair: Dimitrios Koutsonikolas [Lecture Theatre 2, 1st floor, Wui Chi Building]

[1] [VoDCAST: Efficient SDN-based Multicast for Video on Demand](#)

Christian Koch, Stefan Hacker and David Hausheer (Technical University – Darmstadt, Germany)

[2] [e-DASH: Modelling An Energy-Aware DASH Player](#)

Benoy Varghese (Data61-CSIRO & University of New South Wales, Australia); Guillaume Jourjon (Data61-CSIRO, Australia); Kanchana Thilakarathna (Data61-CSIRO, Sydney, Australia); Aruna Seneviratne (University of New South Wales, Australia)

11:30-13:00 Session 6B: Resource Management and QoS/QoE Provisioning

Chair: Wei Zhang [Lecture Theatre 3, 1st floor, Wui Chi Building]

[1] [Adaptive Configuration of Time-domain eCIC to Support Multimedia Communications in LTE-A Heterogeneous Networks](#)

You-Chiun Wang and Shih-Ting Chen (National Sun Yat-Sen University, Taiwan)

[2] [Cross-Layer Approach for HTTP-Based Low-Delay Adaptive Streaming in Mobile Networks](#)

Hieu Le (Technical University – Berlin, Germany); Konstantin Miller (Technical University – Berlin, Germany); Arash Behboodi (RWTH Aachen University, Germany); Adam Wolisz (Technical University – Berlin, Germany)

[3] [Subjective QoE Assessment on Video Service: Laboratory Controllable Approach](#)

Petros Spachos (University of Guelph, Canada); Thomas Lin, Weiwei Li, Mark Chignell and Alberto Leon-Garcia (University of Toronto, Canada); Jie Jiang (TELUS, Canada); Leon Zucherman (University of Toronto, Canada)

13:00-14:30 Lunch Break (Exhibition Gallery, ground floor, Chi Un Building)

14:30-17:30 Macao Sightseeing Tour

Work-In-Progress Papers & Demos

Work-In-Progress Papers

- [1] [A Simulative Study of Network Association Delays in IEEE 802.15.4e TSCH Networks](#)
Lu Wang and Andreas Reinhardt (Technical University – Clausthal, Germany)
- [2] [Asymmetry in Energy-Harvesting Wireless Sensor Network Operation Modeled via Bayesian Games](#)
Elvina Gindullina and Leonardo Badia (University of Padova, Italy)
- [3] [Biased Constrain Hybrid Kalman Filter for Wireless Indoor Localization](#)
Yubin Zhao (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China); Xiaofan Li (The State Radio Monitoring Center and Testing Center, P.R. China); Xiaopeng Fan (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China); Cheng-Zhong Xu (Wayne State University, USA)
- [4] [Locomotive: Optimizing Mobile Web Traffic Using Selective Compression](#)
Themis Melissaris (Princeton University, USA); Kelly Shaw (University of Richmond, USA); Margaret Martonosi (Princeton University, USA)
- [5] [Mirror: A Computation-offloading Framework for Sophisticated Mobile Games](#)
M.H. Jiang (None, P.R. China); O. W. Visser (Delft University of Technology, The Netherlands); I.S.W.B. Prasetya (Utrecht University, The Netherlands); A. Iosup (Delft University of Technology, The Netherlands)
- [6] [Self-configuration Mechanisms for SDN Deployment in Wireless Mesh Networks](#)
Mohamed Labraoui (CEA, LIST, France); Mathias Boc (CEA, LIST, Communicating Systems Laboratory, France); Anne Fladenmuller (UPMC Sorbonne Universités, France)

Demos

- [1] [Hotspot Slicer: Slicing virtualized Home Wi-Fi Networks for Air-Time Guarantee and Traffic Isolation](#)
Sven Zehl (Technische Universität Berlin, Germany); Anatolij Zubow (Technische Universität Berlin, Germany); Adam Wolisz (Technische Universität Berlin, Germany)
- [2] [mm-View: Obtaining Real-Time Lower Layer Information of Commercial Off-The-Shelf 60 GHz Hardware](#)
Adrian Loch (IMDEA Networks Institute, Spain); Guillermo Bielsa (IMDEA Networks Institute & Universidad Carlos III de Madrid, Spain); Roberto Santos (IMDEA Networks Institute, Universidad Carlos III, Spain); Joerg Widmer (IMDEA Networks Institute, Spain)
- [3] [Practical Distributed Channel Assignment in Home Wi-Fi Networks](#)
Sven Zehl (Technische Universität Berlin, Germany); Anatolij Zubow (Technische Universität Berlin, Germany); Adam Wolisz (Technische Universität Berlin, Germany)
- [4] [City-Eyes: A Multi-source Data Integration Based Smart City Analysis System](#)
Zijian Ma (Beihang University, China); Dan Lu (Beihang University, China); Qian Liu (Beihang University, China); Jingyuan Wang (Beihang University, China); Zhang Xiong (Beihang University, China)
- [5] [Mitigation of inadvertent roaming in the Macao SAR](#)
Sio Tai Cheong (Macao Polytechnic Institute, Macao, China); Yapeng Wang (MPI-QMUL Information Systems Research Centre, Macao, China)
- [6] [RealSense: Real-time Compressive Spectrum Sensing Testbed over TV White Space](#)
Xingjian Zhang (Queen Mary University of London, London, UK); Yuran Zhang (Queen Mary University of London, London, UK); Yuan Ma (Queen Mary University of London, London, UK); Yue Gao (Queen Mary University of London, London, UK);

WoWMoM 2017 Workshop Program

June 12th, 2017 (Monday)

1. Smart Vehicles: Connectivity Technologies and ITS Applications (SmartVehicles 2017)

- a. Program
- b. Committee
- c. Message from the Chairs

Time & Location: 9:30 – 15:30pm, Lecture Theatre 1 (1st floor, Wui Chi Building)

2. Internet of Things: Smart Objects and Services (IoT-SoS 2017)

- a. Program
- b. Committee
- c. Message from the Chairs

Time & Location: 9:30 – 15:30pm, Lecture Theatre 2 (1st floor, Wui Chi Building)

3. Small Cell Networking for 5G (SCN 2017)

- a. Program
- b. Committee
- c. Message from the Chairs

Time & Location: 14:00 – 17:30pm, Lecture Theatre 3 (1st floor, Wui Chi Building)

4. COgnitive Radio Applications and aLgorithms (CORAL 2017)

- a. Program
- b. Committee
- c. Message from the Chairs

Time & Location: 14:00 – 17:30pm, A113 (ground floor, Chi Un Building)

The Fourth IEEE Workshop on Smart Vehicles: Connectivity Technologies and ITS Applications

IEEE SmartVehicles 2017

Workshop Program

Lecture Theatre 1 (Wui Chi Building, 1st floor)

09:00-09:30 Registration

09:30-09:35 Opening Remarks

09:35-10:30 Keynote Presentation

Joy and safety on the road: Sharing live pictures on the road and securing autonomous platooning vehicles

Susumu Ishihara (Department of Mathematical and Systems Engineering, Shizuoka University, Japan)

10:30-11:00 Coffee Break (Wui Chi Canteen, 1st floor, Wui Chi Building)

11:00-12:40 Session 1: Intelligent and Cooperative Transportation Systems

[1] [Platooning as a Service of Autonomous Vehicles](#)

Duo Lu (Arizona State University, USA); Zhichao Li (University of California, San Diego, USA); Dijiang Huang (Arizona State University, USA)

[2] [Toward a Social Sensor Based Framework for Intelligent Transportation](#)

Raymon Y.K. Lau (City University of Hong Kong, Hong Kong)

[3] [5G Enabled Cooperative Collision Avoidance: System Design and Field Test](#)

Mohamed Gharba, Hanwen Cao and Sandip Gangakhedkar (Huawei German Research Center, Germany); Joseph Eichinger (Huawei Technologies & ERC, Germany); Ali Ramadan Ali (Huawei German Research Center, Germany); Karthikeyan Ganesan (Huawei Technologies, Germany); Varun Jain and Stephan Lapoehn (German Aerospace Center, Germany); Tobias Frankiewicz (German Aerospace Center, Germany); Tobias Hesse (German Aerospace Center, Germany); Yao Zou (Huawei Technologies, P.R. China); Chen Tang (Huawei Technologies, P.R. China); Liang Gu (Huawei Technologies, P.R. China)

[4] [A Consistent Heuristic for Efficient Path Planning on Mobility Maps](#)

Wanmai Yuan (Harbin Institute of Technology, P.R. China); Nuwan Ganganath (Hong Kong Applied Science and Technology Research Institute, Hong Kong); Chi-Tsun Cheng (The Hong Kong Polytechnic University, Hong Kong); Guo Qing (Harbin Institute of Technology, P.R. China); Francis C.M. Lau (The Hong Kong Polytechnic University, Hong Kong)

12:40-14:00 Lunch Break (Exhibition Gallery, ground floor, Chi Un Building)

14:00-15:15 Session 2: Communication Networks and Services

[1] [A fog-based distributed look-up service for intelligent transportation systems](#)

G. Tanganelli (University of Pisa, Italy); C. Vallati (University of Pisa, Italy); E. Mingozzi (University of Pisa, Italy)

[2] [Can IEEE 802.11p and Wi-Fi Coexist in the 5.9GHz ITS band?](#)

Irfan Khan (EURECOM, France); Jérôme Härri (EURECOM, France)

[3] [Sidelink-Assisted Handover for Cellular Networks](#)

Konstantinos Manolakis (Huawei Technologies, Germany); Wen Xu (Huawei Technologies & ERC, Germany)

15:15-15:30 Closing Remarks

Committees

Workshop Co-Chairs

Raffaele Bruno, Institute of Informatics and Telematics of CNR, Italy

Gaurav Bansal, Toyota InfoTechnology Center, USA

Mate Boban, Huawei European Research Center, Germany

Andreas Festag, Fraunhofer Institute for Transportation and Infrastructure Systems IVI, Germany

Publicity Chair

Elisabetta Biondi, Institute of Informatics and Telematics of CNR, Italy

Web Chair

João Vilela, University of Coimbra, Portugal

Technical Program Committee

Taimoor Abbas, Volvo Cars, Sweden

Onur Altintas, Toyota InfoTechnology Center, USA

Jose M. Barcelo-Ordinas, UPC, Spain

Teodor Buburuzan, Volkswagen, Germany

David Eckhoff, University of Erlangen, Germany

Esteban Egea-Lopez, UPCT, Spain

Michel Ferreira, University of Porto, Portugal

Marco Fiore, IEIIT-CNR, Italy

Arturo Gonzalez, TU Dresden, Germany

Javier Gozalvez, Miguel Hernandez University of Elche, Spain

Marco Gramaglia, Universidad Carlos III de Madrid, Spain

Jerome Härri, EURECOM, France

Tim Leinmueller, Denso Automotive, Germany

Kate Ching-Ju Lin, NCTU, Taiwan

Tomasz Mach, Samsung Electronics Research, UK

Konstantinos Manolakis, Huawei Technologies, Germany

Preben Mogensen, Aalborg University, Denmark

Panagiotis Papadimitratos, KTH, Sweden

Tim Ruß, IFAK, Germany

Yi Shi, Huawei Technologies, P.R.China

Peter Steenkiste, Carnegie Mellon University, USA

Andrea Tomatis, Hitachi Europe, France

Hsin-Mu Tsai, NTU, Taiwan

Fredrik Tufvesson, Lund University, Sweden

Alexey Vinel, Halmstad University, Sweden

Xin Zhang, Technical University Dresden, Germany

Message from the Chairs

It is indeed our great pleasure to welcome you to the 4th IEEE Workshop on Smart Vehicles: Connectivity Technologies and ITS Applications (SmartVehicles 2017), which is held in conjunction with the 14th IEEE International Symposium on a World of Wireless Mobile and Multimedia Networks (WoWMoM 2017).

A new wave of urbanization, more stringent emission standards, and high pressure on improving efficiency of private and public transport have made the development of more sustainable transportation systems one of the fundamental societal challenges of the next decade. Connected vehicles are seen as one of the key enabling technologies for more efficient and sustainable transportation systems. Key technologies are of paramount importance to enable connected vehicles, including (i) innovative cooperative systems enabling users, vehicles and road infrastructures to exchange information in real time and in an autonomous manner, (ii) pervasive sensing systems to monitor the status of vehicles and the surroundings, (iii) big data analytics for the processing of sheer amount of data coming from the transportation infrastructure, (iv) middleware platforms for information management and sharing, and (v) appropriate interaction interfaces between drivers and vehicles. The aim of this workshop is to bring together researchers, professionals and application developers to presents recent developments, current research challenges, and future directions in the use of networking, communications, traffic engineering, and data management to realise vehicular mobility systems that are more connected, sustainable and safe.

This year we received 15 submissions from which the members of the Technical Program Committee identified seven high quality papers for presentation in the workshop's technical sessions. The workshop program includes an exciting and thought-provoking Keynote talk on securing autonomous platooning vehicles given by Prof. Susumu Ishihara of Shizuoka University, Japan, who is highly recognized for his work on multimedia vehicular networks and platooning.

The organization of this workshop has been possible due to the hard work and dedication of many colleagues. Special thanks go to the members of the Technical Program Committee and to all external referees for their invaluable contributions in completing the review process. We are also very grateful to all the authors for submitting their excellent work to the workshop.

We truly hope that you will find the workshop program interesting and stimulating.

Workshop Co-Chairs

[Raffaele Bruno](#), IIT-CNR, Italy

[Gaurav Bansal](#), Toyota InfoTechnology Center, USA

[Mate Boban](#), Huawei European Research Center, Germany

[Andreas Festag](#), Fraunhofer Institute for Transportation and Infrastructure Systems IVI, Germany

The Sixth IEEE Workshop on the Internet of Things: Smart Objects and Services

IEEE IoT-SoS 2017

Workshop Program

Lecture Theatre 2 (Wui Chi Building, 1st floor)

09:00-09:30 **Registration**

09:30-09:40 **Opening Remarks**

09:35-10:30 **Keynote Presentation**

Towards Smart Internet-of-Things

Dr. Jiannong Cao (Hong Kong Polytechnic University, HK)

10:30-11:00 **Coffee Break** (Wui Chi Canteen, 1st floor, Wui Chi Building)

11:00-12:30 **Session 1: Enabling Technologies for IoT**

[1] [Accountable Internet of Things? Outline of the IoT Databox Model](#)

Andy Crabtree, Tom Lodge, James Colley and Chris Greenhalgh (University of Nottingham, United Kingdom); Richard Mortier (University of Cambridge, United Kingdom)

[2] [Understanding Autonomous Drone Maneuverability for Internet of Things Applications](#)

Azade Fotouhi (University of New South Wales, Australia); Ming Ding (Data 61, Australia); Mahbub Hassan (University of New South Wales, Australia)

[3] [A Lightweight Privacy-Preserving Scheme for Metering Data Collection in Smart Grid](#)

XiaoLi Zeng (Harbin Institute of Technology Shenzhen Graduate School, P.R. China); Qin Liu (School of Computer, Wuhan University, P.R. China); Hejiao Huang (Harbin Institute of Technology, P.R. China); Xiaohua Jia (City University of Hong Kong, Hong Kong)

[4] [Distributed Sensor Data Computing in Smart City Applications](#)

Wei Wang (Xi'an Jiaotong Liverpool University, P.R. China); Suparna De and Yuchao Zhou (University of Surrey, United Kingdom); Xin Huang (Xi'an Jiaotong-Liverpool University, P.R. China); Klaus Moessner (University of Surrey, United Kingdom)

12:30-14:00 **Lunch Break** (Exhibition Gallery, ground floor, Chi Un Building)

14:00-15:20 **Session 2: Middleware and Platforms for IoT**

[1] [Benchmarking IoT Middleware Platforms](#)

João Cardoso and Carlos Pereira (Instituto de Telecomunicações & University of Porto, Portugal); Ana Aguiar (University of Porto & Instituto de Telecomunicações, Portugal); Ricardo Morla (INESC Porto and Faculty of Engineering, University of Porto, Portugal)

[2] [Middleware for Internet of Things: A Quantitative Evaluation in Small Scale](#)

Andrei Palade (Distributed Systems Group, School of Computer Science and Statistics, Trinity College Dublin, Ireland); Christian Cabrera (Trinity College Dublin, Ireland); Gary White (Distributed Systems Group, SCSS, Trinity College Dublin, Ireland); M.A. Razzaque (Trinity College, Ireland); Siobhán Clarke (Trinity College Dublin, Ireland)

[3] [Implementing Heterogeneous, Autonomous, and Resilient Services in IoT: An Experience Report](#)

Christian Cabrera, Fan Li and Vivek Nallur (Trinity College Dublin, Ireland); Andrei Palade (Distributed Systems Group, School of Computer Science and Statistics, Trinity College Dublin, Ireland); M.A. Razzaque (Trinity College, Ireland); Gary White (Distributed Systems Group, SCSS, Trinity College Dublin, Ireland); Siobhán Clarke (Trinity College Dublin, Ireland)

15:20-15:30 Closing Remarks

Committees

Workshop Co-Chairs

Xiaohua Jia, City University of Hong Kong

Carlo Vallati, University of Pisa, Italy

Steering Committee

Claudio Cicconetti, MBI, Italy

Enzo Mingozzi, University of Pisa, Italy

Jaudelice Cavalcante de Oliveira, Drexel University, PA, USA

Xiaohua Jia, City University of Hong Kong

Technical Program Committee

Nicola Accettura, LAAS-CNRS, France

Ana Aguiar, Instituto de Telecomunicações, Portugal

Vangelis Angelakis, Linköping University, Sweden

Rafael Cepeda, InterDigital Europe Ltd., United Kingdom

Gianpaolo Cugola, Politecnico di Milano, Italy

Hongwei Du, Harbin Institute of Technology Shenzhen Graduate School, P.R. China

Andrzej Duda, Grenoble Institute of Technology, France

Burhan Gulbahar, Ozyegin University, Turkey

Yuan Guo, Wilson, Ham & Holman, USA

Chuanhe Huang, Wuhan University, P.R. China

Antonio Iera, University Mediterranea of Reggio Calabria, Italy

Joarder Kamruzzaman, Monash University, Australia

Jussi Kangasharju, University of Helsinki, Finland

Olaf Landsiedel, Chalmers University of Technology, Sweden

Gyu Myoung Lee, Liverpool John Moores University, United Kingdom

Zhenjiang Li, City University of Hong Kong, Hong Kong

Hai Liu, Hang Seng Management College, Hong Kong

Benjamin Mandler, IBM Haifa Research Lab, Israel

Rasmus Nielsen, Cisco Systems, USA

Mirko Presser, Aarhus University, Denmark

Andreas Reinhardt, TU Clausthal, Germany

Christian Renner, Hamburg University of Technology, Germany

Nirmalya Roy, University of Maryland Baltimore County, USA

Fernando Solano, Warsaw University of Technology, Poland

Elias Tragou, FORTH, ICS, Greece

Muhammad Younas, Oxford Brookes University, United Kingdom

Message from the Chairs

It is a great pleasure to welcome you to the sixth edition of the IEEE Workshop on the Internet of Things: Smart Objects and Services (IoT-SoS), which is organized this year in conjunction with WoWMoM 2017 in Macao, China.

The Internet of Things (IoT) is a novel paradigm which is shaping the evolution of the future Internet. According to the vision underlying the IoT, by providing objects with embedded communication capabilities and a common addressing scheme, a highly distributed and ubiquitous network of seamlessly connected heterogeneous devices is formed, which can be fully integrated into the current Internet and mobile networks, thus allowing for the development of new intelligent services available anytime, anywhere, by anyone and anything. Many applications with a huge social and business impact are envisaged to be enabled by IoT, including personal healthcare, smart grid, surveillance, home automation, intelligent transportation, and many new ones will emerge once enabling technologies will reach a stable state.

Among the many challenges to be faced for making the IoT vision a reality, two of the most important ones which are still open are in our view:

- (i) the definition of architectures, protocols and algorithms for an efficient interconnection of smart objects, both between themselves to implement Machine-to-Machine (M2M) interactions and with the (Future) Internet;
- (ii) the creation of open and interoperable value-added services enabled by the interconnection of things/machines/smart objects, in such a way that they can be easily integrated into business and development processes.

The aim of this workshop is to bring together practitioners and researchers from both academia and industry in order to have a forum for discussion and technical presentations on the recent advances in theory, application and implementation of the Internet of Things concepts: technologies, protocols, algorithms, platforms and services.

The answer to the call for papers was encouraging for this sixth edition of the workshop. As a result of a rigorous review process and a careful evaluation by the workshop chairs, 7 high-quality papers were finally selected. We are also delighted to announce that the technical program will be complemented by a keynote speech delivered by Dr. Jiannong Cao, chair professor and head of the Department of Computing at Hong Kong Polytechnic University.

We wish to thank all the authors who honoured IoT-SoS 2017 by submitting papers to the workshop. Special thanks also to the Program Committee members for their invaluable work and responsiveness under tight deadlines. Finally, we would like to thank the IEEE WoWMoM 2017 Workshop Co-Chairs Marco Di Felice and Salil Kanhere for giving us the opportunity to organize the workshop, and the whole IEEE WoWMoM 2017 Organizing Committee for the given support.

We sincerely hope that you will enjoy the program.

Workshop Co-Chairs

[Xiaohua Jia](#), City University of Hong Kong
[Carlo Vallati](#), University of Pisa, Italy

The First International Workshop on Small Cell Networking for 5G

IEEE SCN 2017

Workshop Program

Lecture Theatre 3 (Wui Chi Building, 1st floor)

14:00-14:15 Opening Remarks

14:15-15:00 Keynote Presentation

Paving the Way to the Realization of 5G Cellular Networks based on mmWave Small Cell Networking

Dr. Gia Khanh Tran (Tokyo Institute of Technology, Japan)

15:00-15:30 Session 1: SCN for 5G

[1] [User Association in 5G Heterogeneous Networks with Mesh Millimeter Wave Backhaul Links](#)

Agapi Mesodiakaki (Karlstad University, Sweden), Enrica Zola (UPC, Spain), Andreas Kassler (Karlstad University, Sweden)

15:30-16:00 Coffee Break (Wui Chi Canteen, 1st floor, Wui Chi Building)

16:00-17:30 Session 2: Enabling SCN

[1] [Interference Coordination for Small Cell Networks with Full-Duplex Base Stations](#)

Zihan Zhang (Zhejiang University, China), Guanding Yu (Zhejiang University, China)

[2] [Exploiting Distance Information for Transparent Access Point Driven Wi-Fi Handovers](#)

Ensar Zeljković (University of Antwerp – imec & IDLab, Belgium), Roberto Riggio (FBK CREATE-NET, Italy), Steven Latré (University of Antwerp – iMinds, Belgium)

[3] [Millimeter-Wave Wireless Backhauling for 5G Small Cells: Scalability of Mesh over Star Topologies](#)

Ahmed I. Nasr (Cairo University & Fingerprint Consultancy, Egypt), Yasmine Fahmy (Cairo University, Egypt)

[4] [Performance Analysis of Distance-based Inter-cell Interference Coordination in Small Cell Networks](#)

Jonghun Yoon (KAIST, Korea), Ganguk Hwang (KAIST, Korea)

17:30-17:40 Closing Remarks

Committees

General Co-Chairs

Andreas Kassler, Karlstad University, Sweden
Niu Zhisheng, Tsinghua University, Beijing, China

Technical Program Committee Co-Chairs

Tao Cai, Huawei, Sweden
Akihiro Nakao, University of Tokyo, Japan

Panel Chair

Henrik Lundqvist, Huawei, Sweden

Web Chair

Maria Wahl, Karlstad University, Sweden

Technical Program Committee

Afef Feki, Huawei, France
Agapi Mesodiakaki, Karlstad University, Sweden
Ali Sadri, Intel, USA
Alister Burr, York University, UK
Boris Bellalta, UPF, Spain
Christos Verikoukis, CTTC, Spain
David Lopez-Perez, Bell-Labs, Ireland
Eirini Eleni Tsiropoulou, University of Maryland, USA
Enrica Zola, UPC, Spain
Fabio Cavaliere, Ericsson Research, Italy
Haijun Zhang, University of Science and Technology Beijing, China
Jad Nasreddine, Rafik Harir University, Lebanon
Jakob Hoydis, Spread, Germany
James Gross, KTH, Sweden
Joerg Widmer, University Carlos III Madrid, Spain
Josep Mangles-Bafalluy, CTTC, Spain
Khanh Tran Gia, Tokyo Tech, Japan
Kurt Tutschku, BTH Sweden
Marios Kountouris, Huawei Technologies, France
Mehdi Bennis, University of Oulu, Finland
Omar Al Fandi, Zayed University, United Arab Emirates
Peter Legg, Blue wireless Technology Ltd, UK
Rossitza Goleva, TU Sofia, Bulgaria
Soumaya Hamouda, École Supérieure des Communications de Tunis, Tunisia
Symeon Papavassiliou, National Technical University of Athens, Greece
Tommy Svensson, Chalmers University, Sweden
Tony Quek, Singapore University of Tech and Design
Walid Saad, Virginia Tech, USA
Yevgeni Koucheryavy, Tampere University of Technology, Finland
Yinggang Du, Huawei Technologies Co. Ltd, China

Message from the Chairs

The 1st edition of the International Workshop on Small Cell Networking for 5G – IEEE SCN2017 will be held in Macao, China on June 12th, 2017.

This year, we received 8 high-quality papers. The manuscripts covered different areas of small cell networking for 5G including new approaches, technologies, architectures and applications, as well as topics related to their performance, configuration, scalability, resilience and survivability. The selection process was extensive and thorough. After an initial screening by the TPC chairs, most papers received three or even more reviews. Because of the good quality of the submissions, the final selection was not an easy one to make as we could not accept several valuable contributions.

After the submission deadline passed, the review process started. Three TPC members were assigned to each paper. Each review was cross-checked at the end by the program chairs. At the end of this process, we identified 4 papers that were selected for presentation at SCN 2017. When preparing the final manuscript, authors were requested to consider reviewer feedback to be included in the conference proceedings. Finally, the papers have been organized into 2 sessions covering both enabling technologies for small cell networking as well as how SCN helps to realize 5G. In addition, we have an excellent keynote talk by Dr. Gia Khanh Tran from Tokyo Institute of Technology (Japan).

The success of any conference rests on an efficient Program Committee, including TPC members and additional reviewers. The SCN 2017 is no exception. We want to thank everyone on the organizing committee for their hard work. We would especially like to thank the reviewers and program committee members for their efforts in providing excellent reviews in due time. Most importantly, we thank the SCN peer community for entrusting their research results to us. We hope that you will be as pleased with the program as we are.

We hope you will enjoy your stay in Macao, as well as the exciting technical program that we put together for you for the SCN 2017.

General Chairs

Andreas Kassler, Karlstad University, Sweden

Niu Zhisheng, Tsinghua University, Beijing, China

TPC Chairs

Tao Cai, Huawei, Sweden

Akihiro Nakao, University of Tokyo, Japan

Fifth IEEE Workshop on Emerging COgnitive Radio Applications and aLgorithms

IEEE CORAL 2017

Workshop Program

A113 (Chi Un Building, ground floor)

14:00-14:15 Opening Remarks

14:15-15:30 Session 1: Spectrum Sharing

[1] [Cognitive Radio using Spectrum-Sharing and Power Minimisation](#)

Yue Liu and Xu Yang (Macao Polytechnic Institute, Macao), Ka Seng Chou (Information Systems Research Centre MPI, Macao), Laurie Cuthbert (Information Systems Research Centre MPI, Macao)

[2] [Optimal Power Allocations for Multichannel Energy Harvesting Cognitive Radio](#)

Hui Liang and Xiaohui Zhao (Jilin University & College of Communication Engineering, P.R. China); Wei Zhang (The University of New South Wales, Australia)

[3] [Joint Link-Channel Selection and Power Allocation in Multi-Radio Wireless Mesh Networks](#)

Maheen Islam (University of Dhaka & East West University, Bangladesh); Md. Abdur Razzaque (University of Dhaka & Bangladesh, Bangladesh); Md. Mamun-Or-Rashid (University of Dhaka, Bangladesh)

15:30-16:00 Coffee Break (Wui Chi Canteen, 1st floor, Wui Chi Building)

16:00-17:00 Session 2: Spectrum Sensing

[1] [Fast Spectrum Sensing Using a Large Number of Receive Antennas](#)

Benjamin K. Ng and Chan Tong Lam (Macao Polytechnic Institute, Macao)

[2] [Efficient Mode Decision with Enhanced Sampling Algorithm for HEVC](#)

Sio-Kei Im and Ka-Hou Chan (Macao Polytechnic Institute, Macao)

17:00-17:15 Closing Remarks

Committees

Workshop Co-Chairs

Luca Bedogni, University of Bologna, Italy

Sio Tai Cheong, Macao Polytechnic Institute, Macao, China

Zhijin Qin, Imperial College London

Technical Program Committee

Ozgur Akan, Koc University

Onur Altintas, Toyota InfoTechnology Center

Edward Au, Huawei Technologies

Suzan Bayhan, Technische Universitat Berlin

Danijela Cabric, UCLA

Marcos Fagundes Caetano, University of Brasilia

Berk Canberk, Istanbul Technical University
Dave Cavalcanti, Intel Corporation
Rajarathnam Chandramouli, Stevens Institute of Technology
Kelvin Dias, Federal University of Pernambuco
Marco Fiore, Italian National Research Council
Dirk Grunwald, University of Colorado
Yezekael Hayel, LIA, University of Avignon
Aravind Kailas, Volvo Group North America
Yuanwei Liu, King's College London
Jad Nasreddine, Rafik Hariri University
Benjamin Ng, Macao Polytechnic Institute
Vinay Ribeiro, Indian Institute of Technology Delhi
Peyman Setoodeh, McMaster University
Angelo Trotta, University of Bologna
Anna Vizziello, University of Pavia
Mehmet Vuran, University of Nebraska-Lincoln
Nan Wang, China Telecom Technology Innovation Center
Xing Zhang, Beijing University of Posts and Telecommunications

Message from the Chairs

It is our great pleasure to welcome you to the Fifth IEEE International Workshop on Emerging COgnitive Radio Applications and aLgorithms (CORAL 2017), held in Macao on June 12, 2017, in conjunction with the IEEE WoWMoM 2017 Conference.

We have a great technical program lined up on this fast emerging and potentially disruptive field of Cognitive Radio, bringing together researchers, practitioners, and students from both industry and academia. We are excited to have a forum facilitating the cross-pollination of ideas from both theoretical and practical perspective, and look forward to have your participation and feedback. A highly selective review process has allowed us to include 5 accepted papers, realizing a high technical quality of the workshop program. The program includes two technical paper presentation sessions.

We believe that the workshop program will be an excellent opportunity to exchange ideas, and these opportunities will be provided as well in additional interaction forums for the attendees. We certainly hope that new directions will emerge from this year's workshop discussions, that will continue to define and re-shape the scope of the CORAL workshop moving forward to the future editions.

The organization of CORAL is a team effort. We really want to thank all the people who helped us in this organization, including all the WoWMoM Chairs and specifically the WoWMoM Workshops Chairs and the WoWMoM publicity, publication, local arrangements and registration chairs. Last but not least, we really want to thank all the colleagues who accepted to join the CORAL Technical Program Committee and the reviewers, for their excellent work and dedication, and all the authors who submitted their papers.

Program Co-Chairs

Luca Bedogni, University of Bologna, Italy
Sio Tai Cheong, Macao Polytechnic Institute, Macao, China
Zhijin Qin, Imperial College London

Map of Macao Peninsula & Taipa





We look forward to welcoming you to

WoWMoM 2017

12-15 June, Macao, China



澳門理工學院
Instituto Politécnico de Macau
Macao Polytechnic Institute



Queen Mary
University of London



TCCC Technical Committee on
Computer Communications



Sponsored by Macao Polytechnic Institute (MPI), Queen Mary University of London (QMUL), IEEE Technical Committee on Computer Communications (TCCC), IEEE Computer Society, and Missouri University of Science and Technology