



*The 86th IEEE
Vehicular Technology Conference*

Final Programme



24 – 27 September 2017

Toronto, Canada

Welcome from the General Chair

It is a great honour and pleasure to welcome you all to Toronto for the IEEE 86th Vehicular Technology Conference Fall 2017.

VTC2017-Fall will feature technical sessions, workshops, tutorials, as well as world-class keynotes. The program will also feature a conference-long industrial track, during which the attendees will be able to participate in panel about “5G wireless”, “ACE (autonomous, connected, and electric) vehicles”, and “Connected World”. The attendees will have the opportunity to hear some of the world’s most distinguished industry leaders, and world-renowned researchers from industry, government labs, and academia.

I’d like to take this opportunity to thank all the members of the Organizing Committee and the Technical Program Committee. I am also deeply grateful to the countless experts in our research community who have been involved in the paper review process. I’d like to acknowledge the conference patrons, Huawei Technology Co. Ltd. and Telus, as well as the exhibitors. Thanks to the legions of student volunteers. Last, but not least, I extend a special thanks to all paper authors for submitting their works to VTC2017-Fall!

Toronto is one of the loveliest cities in North America. The conference hotel is Hilton Toronto, in the heart of beautiful downtown Toronto, within easy reach of very many attractions. I hope our delegates will have the opportunity to explore this great city.

Toronto is an international center for business, finance, arts, and culture; and is widely recognized as one of the most multicultural and cosmopolitan cities in the world. The Greater Toronto Area, with a population of almost 7 million, is the fifth largest metropolitan area in North America. Moreover, the Toronto-Waterloo Corridor is one of the largest technology superclusters in the world with 15,000 tech companies, 5,200 tech startups, and 200,000 tech workers.

Canada is celebrating its 150th birthday in 2017—yet another reason to make Toronto your destination for VTC2017-Fall!

We have made every effort to have the VTC tradition of excellence continue in VTC2017-Fall as well. We hope our delegates find VTC2017-Fall an exciting experience...

Halim Yanikomeroglu
General Chair, IEEE VTC2017-Fall

Welcome from the TPC Co-chairs

On behalf of the Organizing Committee, we would like to welcome you to the dynamic metropolis, Toronto, and to IEEE VTC2017-Fall!

The committee has put together a strong technical program on the latest R&D fronts for 5G wireless communications and networks, autonomous and connected vehicles, intelligent transportation, and many other exciting and emerging topics. The program is organized into 12 tracks, plus the Recent Results track. We received 841 submissions (including 74 invited papers), the highest number in recent years. Each paper has at least 3 independent reviews. There are a total of 3200 reviews, based on which 475 papers are accepted for presentation at the conference. The papers are organized into 71 sessions for oral presentation and 8 sessions for poster presentation from Monday to Wednesday, September 25 to 27. The accepted papers will also be published in the conference proceedings.

It is our great pleasure to offer you the high quality and comprehensive technical program, and we hope that you will find it inspiring and helpful to your on-going and future works. We would like to thank all the authors who submitted their papers to this conference. We are

deeply indebted to the 35 track co-chairs for their leadership and passion in the paper review process and technical session organization for their track. Further, we would like to express our sincere gratitude to the 630 TPC members and 1400 reviewers for their technical competence and great efforts in reviewing the papers, and to the 79 sessions chairs for ensuring an effective paper presentation and information exchange process.

We hope that engaging in the various activities at the conference will be a wonderful and memorable experience for you. Enjoy your stay in Toronto, and thank you for your participation in the conference!

Weihua Zhuang
TPC Chair, IEEE VTC2017-Fall
Alagan Anpalagan
TPC Co-chair, IEEE VTC2017-Fall

Welcome from the VTS President

On behalf of the IEEE Vehicular Technology Society, it is with great pleasure that I welcome you to the IEEE 86th Vehicular Technology Conference.

Canada celebrates its 150th anniversary in 2017, and VTS did not want to miss the opportunity to celebrate this special occasion with our Canadian colleagues. Congratulations! We are pleased to celebrate the anniversary in Toronto, the most populous city in Canada, and an international technology hub.

VTC2017-Fall will be an excellent occasion to discuss and help define the future of the mobile, wireless and vehicular industries. The conference will provide a unique opportunity for you to share your thoughts and ideas that will help shape what future 5G networks will be, and how they can support the automotive, IoT and smart city industries.

VTS has been fortunate to count with an exceptional group of dedicated volunteers who devote their time to the success of VTC, and VTC2017-Fall is no exception. I would like to thank and recognize the remarkable

work of General Chair Prof Halim Yanikomeroglu and Honorary Chair Changtian Cai, whose leadership has been instrumental to create the conference program that you will enjoy. I would also like to express my most sincere gratitude to the Technical Program co-Chairs Prof Weihua Zhuang and Prof Alagan Anpalagan. Their dedicated work, with the support of the Track Chairs and TPC members, has helped shape an outstanding technical program. My personal gratitude goes also to all the conference team and our VTS conference administrators for their continued support.

VTC is also an excellent occasion for you to meet with our Board of Governors, so don't hesitate to approach us if you would like to provide any feedback on the Society or participate in its management.

I hope that you will enjoy the conference and the city of Toronto.

Javier Gozalvez, *President*
IEEE Vehicular Technology Society

Organizing Committee

Honorary Chair	<i>Changtian Cai</i>	Huawei Canada Research Centre, Canada
General Chair	<i>Halim Yanikomeroglu</i>	Carleton University
Technical Program Chair	<i>Weihua Zhuang</i>	University of Waterloo, Canada
Technical Program Vice-chair	<i>Alagan Anpalagan</i>	Ryerson University, Canada
Panels & Keynotes Co-chairs	<i>Mohamed-Slim Alouini</i>	KAUST, Saudi Arabia
	<i>Abbas Jamalipour</i>	University of Sydney, Australia
	<i>Wei Yu</i>	University of Toronto, Canada
Industrial Program Co-chairs	<i>Onur Altintas</i>	Toyota InfoTechnology Centre Fellow, USA
	<i>Haris Gacanin</i>	Nokia Bell Labs, Belgium
	<i>Barrie Kirk</i>	CAVCOE, Canada
	<i>Ivo Maljevic</i>	Telus, Canada
	<i>Jeffrey Stanier</i>	Ericsson, Canada
	<i>Zoran Zvonar</i>	Analog Devices, USA
Workshops Co-chairs	<i>Melike Erol-Kantarci</i>	University of Ottawa, Canada
	<i>Xianbin Wang</i>	Western University, Canada
Tutorials Chair	<i>Elvino Sousa</i>	University of Toronto, Canada
Publicity Co-chairs	<i>Xiang Cheng</i>	Peking University, China
	<i>Lutfiye Durak</i>	Istanbul Technical University, Turkey
	<i>Lingjia Liu</i>	University of Kansas, USA
Visa Chair	<i>Jean-Charles Grégoire</i>	INRS-EMT, Canada
Local Arrangements Chair	<i>Eman Hammad</i>	IEEE Toronto, Canada
	<i>Lian Zhao</i>	Ryerson University, Canada
Patronage & Exhibits Chair	<i>Jim Budwey</i>	ICTS Group, USA
Finance Chair	<i>J.R. Cruz</i>	University of Oklahoma, USA
Publications Chair	<i>James Irvine</i>	University of Strathclyde, UK
Conference Administrators	<i>Jim Budwey</i>	ICTS Group, USA
	<i>R. Clint Keele</i>	IEEE VTS, USA

Logistics

IEEE eXpress Conference Publishing:	<i>Sherri Young</i>	IEEE, USA
IEEE Conference Services:	<i>Rebecca Kastrenakes</i>	IEEE, USA
Webmaster:	<i>Laura Hyslop</i>	EPSC, UK

Technical Program Committee

Co-chairs	<i>Weihua Zhuang</i> <i>Alagan Anpalagan</i>	University of Waterloo, Canada Ryerson University, Canada
Vice-Chairs, Antenna and Propagation and RF Design	<i>David Matolak</i> <i>Daniel B. da Costa</i> <i>Xin Wang</i>	University of Carolina, USA Federal University of Cear, Brazil Fudan University, China
Vice-Chairs, Signal Transmission and Reception	<i>Yahong Rosa Zheng</i> <i>Xiaodai Dong</i> <i>Rui Dinis</i>	Missouri University of Science and Technology, USA University of Victoria, Canada Instituto de Telecomunicacoes da Universidade Nova de Lisboa, Portugal
Vice-Chairs, Cognitive Radio and Spectrum Management	<i>Hai Lin</i> <i>Richard Yu</i> <i>Lin Chen</i>	Osaka Prefecture University, Japan Carleton University, Canada Universit Paris-Sud, France
Vice-Chairs, Multiple Antenna Systems and Cooperative Communications	<i>Chintha Tellambura</i> <i>Edward Au</i> <i>Qihui Wu</i>	University of Alberta, Canada Huawei Technologies, Canada Nanjing University of Aeronautics and Astronautics, China
Vice-Chairs, Radio Access Technology, LTE, 5G, and Wireless Heterogeneous Networks	<i>Wan Choi</i> <i>Zhiyong Feng</i> <i>Xu Li</i>	KAIST, Korea BUPT, China Huawei Technologies, Canada
Vice-Chairs, Green Communications and Networks	<i>Yi Qian</i> <i>Jinsong Wu</i> <i>Yuan Wu</i>	University of Nebraska-Lincoln, USA Universidad De Chile, Chile Zhejiang University of Technology, China
Vice-Chairs, Ad-Hoc, M2M and Sensor Networks	<i>Phone Lin</i> <i>Muhammad Ismail</i> <i>Haojin Zhu</i>	National Taiwan University, Taiwan Texas A&M University at Qatar Shanghai Jiaotong University, China
Vice-Chairs, Wireless Networks: Protocols, Security and Services	<i>Ekram Hossain</i> <i>Zouheir Rezki</i> <i>Yusheng Ji</i>	University of Manitoba, Canada University of Idaho, USA National Institute of Informatics, Japan
Vice-Chairs, Mobile Satellite Systems, Positioning and Navigation	<i>Quan Yu</i> <i>Humphrey Rutagemwa</i> <i>Jelena Mistic</i>	Shanghai Jiaotong University, China Communications Research Centre, Canada Ryerson University, Canada
Vice-Chairs, Vehicular Communication Networks and Telematics	<i>Wei Song</i> <i>Ju Ren</i> <i>Bilal Akin</i>	University of New Brunswick, Canada Central South University, China University of Texas Dallas, USA
Vice-Chairs, Electric Vehicles, Vehicular Electronics and Intelligent Transportation	<i>Mithat Kisacikoglu</i> <i>Bo Ai</i> <i>Hangguan Shan</i>	University of Alabama, USA Beijing Jiaotong University, China Zhejiang University, China
Vice-Chairs, Future Trends and Emerging Technologies	<i>Hong Wen</i> <i>Lingjie Duan</i>	University of Electronic Science and Technology, China SUTD, Singapore

Members

<i>Mojtaba Aajami</i> , Yonsei University	<i>Ahmad Abu Al Haija</i> , McGill University
<i>Valentine Aalo</i> , Florida Atlantic University	<i>George C. Alexandropoulos</i> , Huawei Technologies France
<i>Qammer H Abbasi</i> , Queen Mary University of London	<i>Fawaz AL-Hazemi</i> , University of Prince Mugrin
<i>Khadige Abboud</i> , University of Waterloo	<i>Syed Huzaiif Ali</i> , University of Texas at Dallas
<i>Javad Abdoli</i> , Huawei Technologies Canada Co.	<i>M Zulfiker Ali</i> , Ryerson University
<i>Ali Abedi</i> , University of Maine	<i>Ali Alnoman</i> , Ryerson University
<i>Hassan Aboubakr Omar</i> , University of Waterloo	<i>Mohammad AlOtaibi</i> , Imam University
<i>Koichi Adachi</i> , The University of Electro-Communications	<i>Fawaz Al-Qahtani</i> , Texas A & M University at Qatar
<i>Raviraj Adve</i> , University of Toronto	<i>Slawomir Jerzy Ambroziak</i> , Gdansk University of Technology
<i>Rizwan Ahmad</i> , SEECS - NUST	<i>Alagan Anpalagan</i> , Ryerson University
<i>Niaz Ahmed</i> , Missouri University of Science and Technology	<i>Imran Shafique Ansari</i> , Texas A&M University at Qatar
<i>Qasim Ahmed</i> , University of Huddersfield	<i>Khoirul Anwar</i> , Telkom University
<i>Bo Ai</i> , Beijing Jiaotong University	<i>Gayan Lasantha Amarasuriya Aruma Baduge</i> , University of Alberta
<i>Ozgur Akan</i> , Koc University	<i>Erdem Asa</i> , GE Aviation
<i>Bilal Akin</i> , University of Texas at Dallas	

Arash Asadi, Seemoo
Edward Au, Huawei Technologies Co.
Bo Bai, Huawei Technologies Co.
Lin Bai, Beihang University
Tianyang Bai, Qualcomm
Ertugrul Basar, Istanbul Technical University
Albert Bel, Universitat Pompeu Fabra
Faouzi Bellili, University of Toronto
Daniel Benevides da Costa, Federal University of Ceara
Anass Benjebbour, NTT DOCOMO
Mustapha Benjillali, INPT
Marion Berbineau, IFSTTAR
Carlos J. Bernardos, Universidad Carlos III de Madrid
Yuanguo Bi, Northeastern University
Kaigui Bian, Peking University
Petros Bithas, National Observatory of Athens
Mate Boban, Huawei European Research Center
Carsten Bockelmann, University of Bremen
Gennaro Boggia, Politecnico di Bari
Jean-Marie Bonnin, IRISA, IMT Atlantique
Glauber Brante, UTFPR
Cesar Briso, Universidad Politecnica de Madrid
Shengrong Bu, University of Glasgow
Berna Bulut, University of Bristol
Eyuphan Bulut, Virginia Commonwealth University
Jun Cai, University of Manitoba
Lin Cai, University of Victoria
Lin Cai, Illinois Institute of Technology
Yunlong Cai, Zhejiang University
Daniel Calabuig, Universitat Politècnica de València
Claudia Campolo, Università Mediterranea di Reggio Calabria
Zhenfu Cao, East China Normal University
Glaucio Carvalho, Ryerson University
Marcelo Carvalho, University of Brasilia
Paulo Carvalho, FCT- Universidade Nova de Lisboa
Vicente Casares-Giner, Universitat Politècnica de València
Paolo Casari, Institute IMDEA Networks
Seong Ho Chae, Agency for Defense Development
Benoit Champagne, McGill University
Seok-Ho Chang, Dankook University
Shan Chang, Donghua University
Wenson Chang, National Cheng Kung University
Ioannis Chatzigeorgiou, Lancaster University
Mohammad Asad Rehman Chaudhry, Soptimizer
Cailian Chen, Shanghai Jiao Tong University
Hongbin Chen, Guilin University of Electronic Technology
Lin Chen, Université Paris-Sud
Xianfu Chen, VTT Technical Research Centre of Finland
Xu Chen, Sun Yat-Sen University
Yuh-Shyan Chen, National Taipei University
Zhi Chen, University of Electronic Science and Technology of China
Chi Cheng, China University of Geosciences (Wuhan)
Long Cheng, Virginia Tech
Shin-Ming Cheng, National Taiwan University of Science and Technology

Xiang Cheng, Peking University
Yu Cheng, Illinois Institute of Technology
Man Hon Cheung, The Chinese University of Hong Kong
Kaikai Chi, Zhejiang University of Technology
Luca Chiaraviglio, University of Rome Tor Vergata
Jihwan Choi, DGIST
Ji-Woong Choi, Daegu Gyeongbuk Institute of Science and Technology
Bong Jun Choi, The State University of New York
Junil Choi, Pohang University of Science and Technology (POSTECH)
Sooyong Choi, Yonsei University
Wan Choi, KAIST
Young-June Choi, Ajou University
Xiaoli Chu, University of Sheffield
Wei-Ho Chung, Academia Sinica
Domenico Ciuonzo, Network Measurement and Monitoring (NM2)
Bruno Clerckx, Imperial College London
Massimiliano Comisso, University of Trieste
Noel Crespi, Institut TELECOM SudParis
Marilia Curado, University of Coimbra
Mingjun Dai, University of Waterloo
Ngoc-Dung Dao, Huawei Technologies Canada Co.
Klaus David, University of Kassel
Luca De Nardis, University of Rome La Sapienza
Rodrigo de Lamare, University of York
Carl Debono, University of Malta
Ruilong Deng, University of Alberta
Mahsa Derakhshani, Loughborough University
Harpreet S. Dhillon, Virginia Tech
Stefan Dietzel, Humboldt-Universität zu Berlin
Guoru Ding, PLA University of Science and Technology
Haiyang Ding, Xidian University
Ming Ding, Data61
Zhiguo Ding, Lancaster University
Rui Dinis, Universidade Nova de Lisboa
Mianxiong Dong, Muroran Institute of Technology
Xiaodai Dong, University of Victoria
Qinghe Du, Xi'an Jiaotong University
Bertrand Ducourthial, Université de Technologie de Compiègne
George Efthymoglou, University of Piraeus
Waleed Ejaz, Ryerson University
Jocelyne Elias, Paris Descartes University
Maged El Kashlan, Queen Mary University of London
Hesham Elsayy, Saudi Arabia
Amr Elwakeel, Queen's University
Serhat Erkucuk, Kadir Has University
Wei Fan, Aalborg University
Dongfeng Fang, University of Nebraska-Lincoln
Shih-Hau Fang, Yuan Ze University
Marwan Fayed, University of Stirling
Afef Feki, Huawei Technologies
Mauro Femminella, University of Perugia
Wei Feng, Tsinghua University
Nuwan Ferdinand, University of Toronto
Lilatul Ferdouse, Ryerson University

M. Julia Fernández-Getino García, Universidad Carlos III de Madrid
Marco Fiore, CNR - IEIT
Carolina Fortuna, Jozef Stefan Institute
Jeff Frolík, University of Vermont
Takeo Fujii, The University of Electro-Communications
Xiaoying Gan, Shanghai Jiaotong University
Feifei Gao, Tsinghua University
Hui Gao, Beijing University of Posts and Telecommunications
Yue Gao, Queen Mary University of London
Ana García-Armada, Universidad Carlos III de Madrid
Rung-Hung Gau, National Chiao Tung University
Xin Ge, University of British Columbia
Jens Gebert, Nokia Bell Labs
Xavier Gelibert, Huawei Technologies Sweden AB
Jordi Joan Gimenez, Universitat Politècnica de València
Andrea Giorgetti, University of Bologna
Ramy H. Gohary, Carleton University
Marco Gomes, Instituto de Telecomunicações - University of Coimbra
Shimin Gong, Shenzhen Institutes of Advanced Technology
Alberto González, Universitat Politècnica de València
Ali Gorcin, Yildiz Technical University
Sedat Gormus, Karadeniz Technical University
Marco Gramaglia, IMDEA Networks Institute and University Carlos III of Madrid
Fabrizio Granelli, University of Trento
Jason Gross, West Virginia University
Yu Gu, Hefei University of Technology
Ke Guan, Beijing Jiaotong University
João Guerreiro, Instituto de Telecomunicações
Guan Gui, Nanjing University of Posts and Telecommunications
Aaron Gulliver, University of Victoria
Xueying Guo, University of California Davis
Gurkan Gur, Bogazici University
Ismail Guvenc, North Carolina State University
Majed Haddad, INRIA
Zoran Hadzi-Velkov, Ss. Cyril and Methodius University
Khalid A. Hafeez, UOIT
Abdelhakim Hafid, University of Montreal
Congzheng Han, IAP
Tao Han, University of North Carolina- Charlotte
Shinsuke Hara, Osaka City University
Wibowo Hardjawana, The University of Sydney
Kazunori Hayashi, Osaka City University
Danping He, Beijing Jiaotong University
Jianping He, Shanghai Jiao Tong University
Ruisi He, Beijing Jiaotong University
Shibo He, Zhejiang University
Xiaofan He, Lamar University
Yejun He, Shenzhen University
Mark Hedley, CSIRO
Prasanna Herath, University of Alberta / InterDigital Canada
Mehrdad Heyderzadeh, University of Texas at Dallas

Teruo Higashino, Osaka University
Kenichi Higuchi, Tokyo University of Science
Jun-Pyo Hong, Pukyong National University
Yi Hong, Monash University
Ekram Hossain, University of Manitoba
Fen Hou, University of Macau
Andrej Hrovat, Jožef Stefan Institute
Chih-Wei Huang, National Central University
Xiaojing Huang, University of Technology Sydney
Nasir Hussain, Queensland University of Technology
Taewon Hwang, Yonsei University
Aissa Ikhlef, Durham University
Muhammad Iqbal, Beijing University of Posts and Telecommunications
Muhammad Ismail, Texas A&M University at Qatar
Dhammika Jayalath, Queensland University of Technology
Bo Ji, Temple University
Yusheng Ji, National Institute of Informatics
Chunxiao Jiang, Tsinghua University
Hai Jiang, University of Alberta
Qi Jiang, Xidian University
Zhang Jianhua, Beijing University of Posts and Telecommunications
Hu Jin, Hanyang University
Yindi Jing, University of Alberta
Han-Shin Jo, Hanbat National University
Michael Joham, Munich University of Technology
Changhee Joo, UNIST
Jingon Joung, Chung-Ang University
Bang Chul Jung, Chungnam National University
Athanasios Kanatas, University of Piraeus
Sithampanathan Kandeepan, RMIT University
Andreas Kassler, Karlstad University
Tamer Khattab, Qatar University
Ahmed Khwaja, Ryerson university
David Kidston, Communications Research Centre Canada
Dongku Kim, Yonsei university
Seong Hwan Kim, Geoyngsang National University
Hyoil Kim, UNIST
Sooyoung Kim, Chonbuk National University
Martti Kirkko-Jaakkola, Finnish Geospatial Research Institute
Mithat Kisacikoglu, University of Alabama
Toshiaki Koike-Akino, MERL
Peng-Yong Kong, Khalifa University of Science
Marios Kountouris, Huawei Technologies
Haris Kremo, CONNECT Trinity College Dublin
Pawel Kryszkiewicz, Poznan University of Technology
Witold Krzymieñ, University of Alberta
Ivan Ku, Multimedia University
Tipparti Anil Kumar, SVS Group of Institutions
Rafael Kunst, Federal University of Rio Grande do Sul (UFRGS)
Thomas Kürner, Technische Universitaet Braunschweig
Ernest Kurniawan, Institute for Infocomm Research
Michelle Kwan, Kyoto University
Ingmar Land, Huawei Technologies

Peter Langendoerfer, IHP Microelectronics
Nadav Lavi, General Motors
Chia-Han Lee, National Chiao Tung University
Chia-Peng Lee, National Taiwan University
Jung Hoon Lee, Hankuk University of Foreign Studies
Inkyu Lee, Korea University
Namyoon Lee, Pohang University of Science and Technology (POSTECH)
Bin Li, BUPT
Changle Li, Xidian University
Cheng Li, MUN
Chih-Peng Li, National Sun Yat-Sen University
He Li, Muroran Institute of Technology
Hong Li, Chinese Academy of Sciences
Kai Li, CISTER Research Unit
Shenghong Li, CSIRO
David W. Li, Tsinghua University
Wei Li, University of Victoria
Wenjia Li, New York Institute of Technology
Ye Li, Linear Technology
Zan Li, Xidian University
Chengchao Liang, Carleton University
Hao Liang, University of Alberta
Xiaohui Liang, University of Massachusetts Boston
Runfa Liao, University of Electronic Science and Technology of China
Shao-Yu Lien, National Formosa University
Hyuk Lim, Gwangju Institute of Science and Technology
Rafael Lima, UFC - Universidade Federal do Ceara
Hai Lin, Osaka Prefecture University
Jia-Chin Lin, National Central University
Phone Lin, National Taiwan University
Siyu Lin, Beijing Jiaotong University
Yun Lin, Harbin Engineering University
An Liu, Hong Kong University of Science & Technology
Bo Liu, Deakin University
Chun-Hung Liu, National Chiao Tung University
Chunshan Liu, Macquarie University
Falin Liu, USTC
Jiajia Liu, Xidian University
Ju Liu, Shandong University
Kuang-Hao (Stanley) Liu, National Cheng Kung University
Qingwen Liu, Tongji University
Yuan Liu, South China University of Technology
Zhi Liu, Shizuoka University
F. Javier Lopez-Martinez, Universidad de Malaga
Pascal Lorenz, University of Haute Alsace
Ning Lu, Thompson Rivers University
Rongxing Lu, University of New Brunswick
Weidang Lu, Zhejiang University of Technology
Tom Luan, Deakin University
Michele Luglio, University of Rome "Tor Vergata"
Roger J. Luo, Ryerson University
Kai Luo, Huazhong University of Science and Technology
Xiliang Luo, ShanghaiTech University
Zhihan Lv, University College London
Zhan Ma, Nanjing University
Lorenzo Maggi, Huawei
Nurul Huda Mahmood, Aalborg University
Pietro Manzoni, Polytechnic University of Valencia
Johann M. Marquez-Barja, CTVR - Trinity College Dublin
Ian Marsland, Carleton University
Fabio Martignon, Université Paris-Sud
David Martin-Sacristán, Universitat Politècnica de València
Daniel Massicotte, UQTR - Université du Quebec a Trois-Rivieres - Canada
David Matolak, University of South Carolina
Michail Matthaiou, Queen's University Belfast
Rob Maunder, University of Southampton
Ahmed Mehaoua, University of Paris Descartes
Geoffrey Messier, University of Calgary
Wen Mi, Shanghai University of Electric Power
David Michelson, The University of British Columbia
Jelena Misic, Ryerson University
Vojislav Misic, Ryerson University
Nathalie Mitton, INRIA Lille Nord Europe
Keiichi Mizutani, Kyoto University
Sanam Moghaddamnia, Leibniz Universität Hannover
MohammadAli Mohammadi, Shahrekord University
Antonella Molinaro, University "Mediterranea" of Reggio Calabria
Jean-Philippe Montillet, Ecole Polytechnique Federale de Lausanne
Mohamed M. A. Moustafa, Egyptian Russian University
Andreas Mueller, Robert Bosch GmbH
Amitav Mukherjee, Ericsson Research
Mithun Mukherjee, Guangdong University of Petrochemical Technology
Muhammad Naeem, Ryerson university
Shusuke Narieda, National Institute of Technology
Keivan Navaie, Lancaster University
Derrick Wing Kwan Ng, University of New South Wales
Duy T. Ngo, University of Newcastle
Ha H. Nguyen, University of Saskatchewan
Nhut Nguyen, University of Texas at Dallas
Tobias Oechtering, KTH School of Electrical Engineering
Chia-Ho Ou, University of Victoria
Pasquale Pace, University of Calabria
Miao Pan, University of Houston
Ai-Chun Pang, National Taiwan University
Stefano Paris, Huawei Technologies Co. Ltd.
Daeyoung Park, Inha University
Panagiotis Paschalidis
Pavel Pechac, Czech Technical University in Prague
Tommaso Pecorella, University of Florence
Haixia Peng, Northeastern University
Dirk Pesch, Cork Institute of Technology
Prashant Pillai, Oxford Brookes University
Gema Piñero, Universitat Politècnica de València
Ioannis Psaromiligkos, McGill University
Shi Pu, University of Texas at Dallas
Yinan Qi, Samsung R&D Institute UK
Hua Qian, Chinese Academy of Sciences

Liping Qian, Zhejiang University of Technology
Yi Qian, University of Nebraska-Lincoln
Cui Qimei, Beijing University of Posts and Telecommunications
LI Qiyue, Hefei University of Technology
Tony Q.S. Quek, Singapore University of Technology and Design
François Quitin, Université Libre de Bruxelles
Md. Mizanur Rahman, Ryerson University
Nandana Rajatheva, University of Oulu
Vijay Rao, Delft University of Technology
Lars Rasmussen, KTH Royal Institute of Technology
S. Mohammad Razavizadeh, Iran University of Science and Technology (IUST)
Mubashir Husain Rehmani, COMSATS Institute of Information Technology
Chao Ren, Xidian University
Ju Ren, Central South University
Eric Renault, Institut Mines-telecom
Jesus Requena-Carrion, Queen Mary University of London
Taneli Riihonen, Aalto University School of Electrical Engineering
Vincent Roca, INRIA
Sandra Roger, Universitat Politècnica de València
Daniel Romero, University of Agder
Bo Rong, Communications Research Centre Canada
Sankardas Roy, Bowling Green State University
Guanying Ru, AT&T Lab
Humphrey Rutagwema, Communications Research Centre Canada
Walid Saad, Virginia Tech
Yalin Sagduyu, Intelligent Automation Inc./University of Maryland
Nikos C. Sagias, University of Peloponnese
Yukitoshi Sanada, Keio University
Susana Sargento, IT - Universidade de Aveiro
Chandrika Satyavolu, Oklahoma City University
Robert Schober, University British Columbia
Hamed Shah-Mansouri, University of British Columbia
Hangguan Shan, Zhejiang University
Mohammad Shaqfeh, Texas A&M University at Qatar
Mehrdad Shariat, Samsung R&D UK
Qinghua Shen, University of Waterloo
Yuan Shen, Tsinghua University
Ray E. Sheriff, University of Bradford
Shuyu Shi, National Institute of Informatics
Xiufang Shi, Zhejiang University
Yan Shi, Beijing University of Posts and Telecommunications
Zhiguo Shi, Zhejiang University
Soo Young Shin, Kumoh National Institute of Technology
Han Shuai, Harbin Institute of Technology
Chung Shue Chen, Bell Labs Nokia
Stephan Sigg, Aalto University
Adão Silva, DETI / Instituto de Telecomunicações / University of Aveiro
Oswaldo Simeone, New Jersey Institute of Technology
Keshav Singh, University of Edinburgh
Sarabjot Singh, Intel
Dirk T.M. Slock, EURECOM
Paschalis C. Sofotasios, Tampere University of Technology/Aristotle University of Thessaloniki
Lingyang Song, Peking University
Wei Song, University of New Brunswick
Sok-Ian (Ines) Sou, National Cheng Kung University
Nuno Souto, ISCTE-IUL/Instituto de Telecomunicações
Pawel Sroka, Poznan University of Technology
Razvan Stanica, INSA Lyon
Zhou Su, Shanghai University
Masashi Sugano, Osaka Prefecture University
Shinya Sugiura, Tokyo University of Agriculture and Technology
Hongjian Sun, Durham University
Ruoyu Sun, National Institute of Standards and Technology
Songlin Sun, Beijing University of Posts and Telecommunications
Yuxuan Sun, Tsinghua University
Zhi Sun, The State University of New York at Buffalo
Chang Kyung Sung, CSIRO
Ki Won Sung, KTH Royal Institute of Technology
Himal A. Suraweera, University of Peradeniya
Katsuya Suto, University of Waterloo
Patrick Tague, CMU
Hidekazu Taoka, NTT DOCOMO
Fernando Teixeira, The Ohio State University
Chintha Tellambura, University of Alberta
Kemal Tepe, University of Windsor
Fabrice Theoleyre, University of Strasbourg (CNRS)
Do Phu Thinh, University of Waterloo
John Thompson, University of Edinburgh
Preetha Thulasiraman, Naval Postgraduate School
Xiaohua Tian, Shanghai Jiao Tong University
Ali Tosun, University of Texas at San Antonio
Kamel Tourki, Huawei Technologies
Nghi Tran, University of Akron
Hsin-Mu Tsai, National Taiwan University
Meng-Hsun Tsai, National Cheng Kung University
Danny H.K. Tsang, Hong Kong University of Science and Technology
Theodoros Tsiftsis, Nazarbayev University
George Tsoulos, University of Peloponnese
Guan-Hua Tu, Michigan State University
H. D. Tuan, University of Technology Sydney
Md. Forkan Uddin, Bangladesh University of Engineering and Technology
Enes Ugur, UT Dallas
Anna Umbert, Universitat Politècnica de Catalunya (UPC)
Hans van den Berg, University of Twente / TNO
Fernando J Velez, Instituto de Telecomunicações and Universidade da Beira Interior
Alexey Vinel, Halmstad University
Haris Volos, DENSO Silicon Valley Innovation Center
Jean-Frederic Wagen, University of Applied Sciences of Western Switzerland

Chao Wang, Tongji University
Jingchao Wang, Institute of China Electronic System Engineering Corporation
Jintao Wang, Tsinghua University
Kun Wang, Nanjing University of Posts and Telecommunications
Lusheng Wang, Hefei University of Technology
Ping Wang, Nanyang Technological University
Shiqiang Wang, IBM T.J. Watson Research Center
Wei Wang, Zhejiang University
Xijun Wang, Xidian University
Xin Wang, Fudan University
Ying Wang, Beijing University of Posts and Telecommunications
Zehua Wang, The University of British Columbia
Dharmika Weerasinghe, University of Kelaniya
Hung-Yu Wei, National Taiwan University
Kaimin Wei, Jinan University
Xin Wei, Nanjing University of Post and Telecommunications
Hong Wen, University of Elec. Science and Tech. of China
Jinming Wen, University of Alberta
Qingsong Wen, Georgia Institute of Technology
Risto Wichman, Aalto University
Matthias Wilhelm, Momentum Engineering Inc.
David Tung Chong Wong, Institute for Infocomm Research
Vincent W.S. Wong, University of British Columbia
Isaac Woungang, Ryerson University
Huasen Wu, Beihang University
Jian Wu, University of California Davis
Jinsong Wu, Universidad de Chile
Qihui Wu, Nanjing University of Aeronautics and Astronautics
Qingqing Wu, National University of Singapore
Renyong Wu, Hunan University
Shaohua Wu, Harbin Institute of Technology
Yuan Wu, Zhejiang University of Technology
Minghua Xia, Sun Yat-sen University
Chengwen Xing, Beijing Institute of Technology
Chi Xu, University of Texas at Dallas
Chongbin Xu, Fudan University
Ding Xu, Nanjing University of Posts and Telecommunications
Jie Xu, Guangdong University of Technology
Li Xu, Fujian Normal University
Shaoyi Xu, Beijing Jiaotong University
Shengjie Xu, University of Nebraska-Lincoln
Wenjun Xu, Beijing University of Posts and Communications
Xiaodong Xu, Beijing University of Posts of Telecommunications
Yuhua Xu, PLA University of Science and Technology
Wu Xuanli, Harbin Institute of Technology
Minhui Xue, NYU Shanghai
Michel Yacoub, State University of Campinas
Koji Yamamoto, Kyoto University
Bo Yang, Shanghai Jiaotong University
Fan Yang, Xiamen University
Hong-Chuan Yang, University of Victoria
Kai Yang, Beijing Institute of Technology
Nan Yang, Australian National University
Shun-Ren Yang, National Tsing Hua University
Tingting Yang, Dalian Maritime University
Yaoqing Yang, University of Nebraska-Lincoln
Feng Ye, University of Dayton
Qiang Ye, University of Waterloo
Yun Ye, City University of New York
Phee Lep Yeoh, University of Sydney
Huiyue Yi, Shanghai Research Center for Wireless Communications
Yang Yi, University of Kansas
Tan Soon Yim, Nanyang Technological University
Li You, Southeast University
Néji Youssef, Sup'Com
Guanding Yu, Zhejiang University
Chau Yuen, Singapore University of Technology and Design
Murat Yuksel, University of Central Florida
Salahuddin Zabir, National Institute of Technology
Ammar Zafar, University of Technology Sydney
Alenka Zajic, Georgia Institute of Technology
Alberto Zanella, IEIIT-CNR
Aiqing Zhang, Anhui Normal University
Baoxian Zhang, University of Chinese Academy of Sciences
Deyu Zhang, Central South University
Guanglin Zhang, Donghua University
Haijun Zhang, University of Science and Technology
Honggang Zhang, Zhejiang University
Jiayi Zhang, National Institute of Standards and Technology
Jiucui Zhang, National Renewable Energy Laboratory
Kuan Zhang, University of Waterloo
Lei Zhang, University of Surrey
Ning Zhang, University of Waterloo
Ruonan Zhang, Northwestern Polytechnical University
Shan Zhang, University of Waterloo
Tiankui Zhang, Beijing University of Posts and Telecommunications
Weile Zhang, Xian Jiaotong University
Wuxiong Zhang, Shanghai Research Center for Wireless Communications
Yan Zhang, University of Oslo
Yongmin Zhang, University of Victoria
Zhongshan Zhang, University of Science and Technology Beijing (USTB)
Kanglian Zhao, Nanjing University
Lian Zhao, Ryerson University
Liqiang Zhao, Xidian University
Nan Zhao, Dalian University of Technology
Kan Zheng, Beijing University of Posts and Telecommunications
Meng Zheng, Shenyang Institute of Automation - Chinese Academy of Sciences

Yahong Rosa Zheng, Missouri University of Science and Technology

Lei Zhong, National Institute of Informatics

Haibo Zhou, University of Waterloo

Sheng Zhou, Tsinghua University

Xiaolin Zhou, Fudan University

Yi Zhou, Henan University

Yifeng Zhou, Communications Research Centre Canada

Yingjie Zhou, Sichuan University

Yong Zhou, University of British Columbia

Chunsheng Zhu, The University of British Columbia

Haojin Zhu, Shanghai Jiaotong Univ

Konglin Zhu, BUPT

Kun Zhu, Nanjing University of Aeronautics and Astronautics

Xu Zhu, University of Liverpool

Zuqing Zhu, University of Science and Technology of China

Reviewers

Mojtaba Ajami	Mohamed Ayadi	Glaucio Carvalho	Eunmi Chu	Orhan Ermis	Victor Gil	Xiaoman He
Valentine Aalo	Mohammad Mahdi	Marcelo Carvalho	Hongyun Chu	Pape Abdoulaye Fam	Kuldeep S. Gill	Yejun He
Mohammad Azam	Azari	Paulo Carvalho	Xiaoli Chu	Congmin Fan	Jordi Joan Gimenez	Ying He
Qammer H Abbasi	Gayan Lasintha	Vicente Casares-Giner	Zheng Chu	Congshan Fan	Marco Giordani	Yunhua He
Khadige Abboud	Amarasuriya Aruma	Paolo Casari	Pham Chuan	Qiang Fan	Andrea Giorgetti	Mark Hedley
Islam AbdAllah	Baduge	Eduardo Castaneda	Min Young Chung	Wei Fan	Lorenza Giupponi	Ahmed G. Helmy
Sherin Abdelhamid	B. Bai	Daniel Castanheira	Domenico Ciunzo	Dongfeng Fang	Moneeb Gohar	Prasanna Herath
Ayman Abdel-Hamid	Tianyang Bai	Abdulkadir Celik	Bruno Clerckx	Luoyang Fang	Ramy H. Gohary	Carlos Herranz
Javad Abdoli	Ali Balador	Seong Ho Chae	Maximo Cobos	Shih-Hau Fang	Marco Gomes	Michael Herrmann
Ali Abedi	Naveen Mysore	Houda Chafnaji	Baldomero Coll-Perales	Xiaoje Fang	Karina Gomez	Hessam
Alidu Abubakari	Balasubramanya	Haohan Chai	Luca Cominardi	Yudong Fang	Jie Gong	Shahram Shah Heydari
Mervat AbuElkheir	Anderson Balieiro	Xiaomeng Chai	Peter Faris	Hasan Farahneh	Shimin Gong	Teruo Higashino
Nof Abuzainab	Inkyu Bang	Tumula V. K. Chaitanya	Massimiliano Comisso	Farooq	Alberto González	Kenichi Higuchi
Koichi Adachi	Jinchen Bao	Benoit Champagne	Yaping Cui	Mousie Fasil	Ali Gorcin	Dinh Thai Hoang
Gopal Addada	Yuecai Bao	Aniruddha Chandra	Marilia Curado	Fatih	Sedat Gormus	Ng Yin Hoe
Mary Adedoyin	Yanan Bao	Hui-Ling Chang	Mario Marques da Silva	Moussie Fasil	Marco Gramaglia	Daesik Hong
Fjolla Ademaj	Jose Maria Barcelo-Ordinas	KyungHi Chang	Mingjun Dai	Fatih	Fabrizio Granelli	Jun-Pyo Hong
Raviraj Adve	Celalettin Umit Bas	Shan Chang	Xiaoming Dai	Romain Favraud	Jason Gross	Seung-Pyo Hong
Ali Afana	Ertugrul Basar	Shuo Chang	Ngoc-Dung Dao	Marwan Fayed	Christophe Gruet	Yi Hong
Mehrmaz Afshang	Asma Afzal	Wenson Chang	Kemal Davaslioglu	Afef Feki	Kai Gu	Yuanquan Hong
Khandakar Ahmed	Ali Kashif Bashir	Wang Chao	David	Hailong Feng	Kecai Gu	Zhihong Hong
Niaz Ahmed	Ejder Bastug	Zhang Chaoyi	Jamil de Araújo Farhat	Jianyuan Feng	Yu Gu	Francois Horlin
Qasim Ahmed	Suzan Bayhan	Debdeep Chatterjee	Fernando Rangel de Sousa	Mingjie Feng	Ke Guan	Ekram Hossain
Jaehyun Ahn	Luca Bedogni	Ioannis Chatzigeorgiou	Carl Debono	Wei Feng	Peiyuan Guan	S. Amir Hosseini
Bo Ai	Dario Bega	Da Chen	G. C. Deepak	Luca Debono	Xiaoxiao Guan	Fen Hou
Wessam Ajib	Rong Beini	Dajiang Chen	Maja Delibasic	Lilatul Ferdouse	Igor Guerreiro	Andrej Hrovat
Yasuhiro Akagi	Marko Beko	Hao Chen	Junn-Hornq Deng	Met. Julia Fernández-García	João Guerreiro	Bill Hsu
Furkan Akar	Albert Bel	Hongbin Chen	Ruichen Deng	Afonso Ferreira	Guan Gui	Chia-Chang (James) Hu
Abdulrahman Al-abbasi	Daniel Benevides da Costa	Jiacheng Chen	Ruilong Deng	Fethi	Aaron Gulliver	Bin Hu
Carlos Alexandre	Edgar Benitez	Jung-Chieh Chen	Yafeng Deng	Mustansar Fiaz	Wahab Ali Gulzar	Jia-Sheng Hu
Fawaz Alhazemi	Mustapha Benjillali	Lin Chen	Mehrdad Dianati	Marco Fiore	Ajay Babu Guntupalli	Jie Hu
Ahsan Ali	Robert Berisha	Nan Chen	Stefan Dietzel	Koorosh Firouzbakht	Hongzhi Guo	Shaoming Hu
Syed Huzaf Ali	Pedro Bento	Qi Chen	Fawad Ud Din	Jose Flordelis	Lin Guo	Chiachi Huang
Md Shipon Ali	Marion Berbineau	Qimei Chen	Guoru Ding	Carolina Fortuna	Xueying Guo	Chih-Wei Huang
M Zulfiqar Ali	Alireza Alizadeh	Roy Chen	Haiyang Ding	Jeff Frolik	Ankit Gupta	Chung-Ming Huang
Ameera Al-karkhi	Carlos J. Bernardos	Chung Shue Chen	Ming Ding	Martin Fuhrwerk	Gurkan Gur	Hui Huang
Salma Alkawafi	Yuanguo Bi	Wei Chen	Yuehua Ding	Takeo Fujii	Ismail Guvenc	Jie Huang
Osama Alluhaibi	Sudip Biswas	Xianfu Chen	Zhiguo Ding	Mohamed Gaafar	Ummayy Habiba	Liang Huang
Erika P. L. Almeida	Shashika Biyanwilage	Xiao Chen	Rui Dinis	Malgorzata Gajewska	Yassine Hadjadj Aoul	Sai Huang
Hisham Almelah	Maria Jesus L. Boada	Xiaoming Chen	Sudhir Dixit	Slawomir Gajewski	Zoran Hadzi-Velkov	Tse-Wei, Huang
Ahmed M Almradi	Mate Boban	Xu Chen	Tri-Nhu Do	Samoda Gamage	Afshin Haghighat	Xiaojing Huang
Ali Anoman	Carsten Bockelmann	Xuehan Chen	Johannes Dommel	Amila Tharaperiya Gamage	Ali A. Haghghi	Yu Huang
Ali H. Alqahtani	Tadilo Endeshaw Bogale	Yanliang Chen	Lijun Dong	Carlos Gañán	Sören Hahn	Babar Hussain
Fawaz Al-Qahtani	Rubbens Boisguene	Yu Chen	Mianxiang Dong	Feifei Gao	Syed Ali Haider	Chiachi Huang
Dimas I. Alves	Lukasz Bonenberg	Zheng Chen	Xiaodai Dong	Hui Gao	Noman Haider	Kyu-Sung Hwang
Sheeraz A. Alvi	Amnart Boonkajay	Long Cheng	Yanjie Dong	Jie Gao	Ahmad Abu Al Haija	Taewon Hwang
Mustapha Amara	Zied Bouida	Meng Cheng	Yi Dong	Qinghe Gao	Nazih Hajri	Ahmed Ibrahim
Ehsan, Md Amimul	Thomas Bourgeois	Nan Cheng	Jean-Baptiste Doré	Xiao Zheng Gao	Rami Hamdi	Renato F. Iida
Muhammad Amjad	Ines Bousnina	Shin-Ming Cheng	Pedro M. d'Orey	José Antonio García Naya	Parisa Hassanzadeh	Muhammad Ismail
Souheib Ben Amor	Wei Cheng	Wei Cheng	Stark C. Draper	Micheal Drieberg	Congzheng Han	Wu I-Jung
Ander	Xiang Cheng	Xiang Cheng	Micheal Drieberg	Qinghe Du	Tao Han	Aissa Ikhlef
Prince Anokye	Cesar Briso	Yu Cheng	Xu Du	Ana Garcia-Armda	Wei Han	Muhammad Usman Ilyas
Alagan Anpalagan	Shengrong Bu	Hatim Chergui	Xu Du	Juan Moreno García-Loygorri	Yonghee Han	Muhammad Ali Imran
Rafay Iqbal Ansari	Thai Chien Bui	Vishnu Vardhan Chetlur	Lingjie Duan	André Garcia-Saavedra	Shinsuke Hara	Muhammad Iqbal
Rafay Ansari	Berna Bulut	Man Hon Cheung	Sijing Duan	Benjamin Gateau	Wibowo Hardjawana	Naveed Iqbal
Khoirul Anwar	Eyuphan Bulut	Kaikai Chi	Bertrand Ducourthial	Mengyao Ge	Syed Ali Hassan	James Irvine
Zahid Anwar	Donghong Cai	Luca Chiaraviglio	Hui Dun	Xin Ge	Kazunori Hayashi	Mohammad M. Islam
Olli Apilo	Jun Cai	Chu Ching-Yun	Salman Durrani	Jens Gebert	Biao He	Shama Naz Islam
Tarek Arafa	Lin Cai	Yi-Tang, Chiu	George Eftymoglou	Xavier Gelabert	Bingtao He	Muhammad Ismail
Daniel Costa Araújo	Songfu Cai	Jihwan Choi	Waleed Ejaz	Camillo Gentile	Danping He	Mona Jaber
Mohmaed Amine Arfaoui	Yunlong Cai	Jin-Ghoo Choi	Ali Riza Ekti	Mohammad Ghasemahmadi	Hongli He	Syed Qaisar Jalil
Shlomi Arnon	Daniel Calabuig	Ji-Woong Choi	Amr El Mougry	Alireza Ghasempour	Hongliang He	Sobia Jangsher
Rabe Arshad	Claudia Campolo	Bong Jun Choi	Sameh Eldessoki	Hadi Ghauch	Li He	Tomaz Javornik
Behzad Asadi	Muhammet Ali Can	Junil Choi	Jocelyne Elias	Ammar Ghazal	Longzhuang He	Dushantha Nalin K. Jayakody
Antonis Aspreas	Huijin Cao	Wan Choi	Hussain Elkotby	Mahdi Ben Ghorbel	Peter He	Sang-Woon Jeon
Stylianios D. Assimonis	Yiqing Cao	Yu Chong	Mohamed Elnourani	Khanh Tran Gia	Qingli He	Yo-Seb Jeon
Edward Au	Yu Cao	Jensen Chou	Sara Elsayed		Ruisi He	Sumit Jha
Felipe Augusto	Henry Ramiro Carvajal Mora	Bing Chu	Karim Emara		Shibo He	Lei Ji

Xiaodong Ji	Marcin Kowalczyk	Chia-Ying Lin	Fabio Martignon	Matteo Noschese	Ali Rakhshan	Shree K. Sharma
Yalei Ji	Yusuke Kozawa	Hai Lin	David Martin-Sacristán	Hideki Ochiai	Hamideh Ramezani	Prabhat Kumar
Yilin Ji	Haris Kremó	Huifa Lin	Francisco J. Martin-	Alberto Alcocer	Shermila Ranadheera	Sharma
Yusheng Ji	Aravindh	Jia-Chin Lin	Vega	Ochoa	Vijay Rao	Vivek Sharma
Chunxiao Jiang	Krishnamoorthy	Phone Lin	Ahmed Masmoudi	Tobias Oechtering	Ahmed Raouf	Vicki Shen
Yili Jiang	Rajet Krishnan	Siyu Lin	David Matolak	Claude Oestges	Ibrahim Rashdan	Ray E. Sheriff
Fan Jiang	Pawel Kryszkiewicz	Yun Lin	Takeshi Matsumura	Obinna Oguejiofor	Lars Rasmussen	Chenhao Shi
Hai Jiang	Meng-Lin Ku	Zhipeng Lin	Michail Matthaiou	Ehsan Olfat	M Mazhar Rathore	Lu Shi
Qi Jiang	Liping Kui	Kuang-Hao (Stanley)	Rob Maunder	Luis Oliveira	Ohara Kerausauskas	Shuyu Shi
Xiaolan Jiang	Parag Kulkarni	Liu	Jasmina McMenamy	Muhammad Shahmeer	Rayel	Weisen Shi
Zhiyuan Jiang	Vinod Kumar	An Liu	Weidong Mei	Omar	Mehdi Sharifi Rayeni	Yan Shi
Zhang Jianhua	Rafael Kunst	Bo Liu	Luciano Leonel	Oluwakayode Onireti	Sabogu-Sumah	Zhiguo Shi
A-Long Jin	Hideki Kuribayashi	Chenxi Liu	Mendes	Jorge Ortin	Raymond	Yeonggyu Shim
Hu Jin	Thomas Kürner	Chun-Hung Liu	Xiangming Meng	Hiroyuki Otsuka	S. Mohammad	Wonjae Shin
Juening Jin	Ernest Kurniawan	Chunshan Liu	Xianling Meng	Chia-Ho Ou	Razavizadeh	Soo Young Shin
Yichao Jin	Martin Kurras	Danpu Liu	Geoffrey Messier	Luxia Ouyang	Bin Ren	Kafayat Shobowale
Yong Jin	Gunes Kurt	Dantong Liu	Amine Mezghani	Shan Ouyang	Chao Ren	Arman Shojaeifard
Yindi Jing	John Harrison	Dong Liu	Wen Mi	Ozgur Ozdemir	Jiajie Ren	Hossein Shokri-
Han-Shin Jo	Kurunathan	Dongxiao Liu	David Michelson	Mustafa Ozger	Ju Ren	Ghadikolaei
Changhee Joo	Nandish P. Kuruvatti	Falin Liu	Georgios M. Milis	Metin Ozturk	Yuan Ren	Han Shuai
Eduard Jorswieck	Sachitha Kusaladharm	Fang Liu	Eric Miller	Savaş Oztürk	Yuwei Ren	Shuaizong Si
Wout Joseph	Yongjun Kwak	Jiagang Liu	Pascale Minet	Pasquale Pace	Olivier Renaudin	Ali Ahmed Siddig
Xi Ju	Michelle Kwan	Jiaxiang Liu	Ming kai	Diego Pacheco	Eric Renault	Stephan Sigg
Sandeep Narayanan	Chengzhe Lai	Ju Liu	Nikolaos I. Miridakis	Sangheon Pack	Marco Di Renzo	Adão Silva
Kadan Veedu	Peng-Yu Lai	Junyu Liu	Jawad Mirza	Beatrice Paillassa	Matthew Rhudy	Jayamuni Silva
Kai	Thanh Tu Lam	Ling Liu	Jelena Misic	Sujata Pal	Giuseppe Ribezzo	Baghya Nathali Silva
Anastasios Kakkavas	Peng Lan	Mengmeng Liu	Vojislav Misic	Furkan Paligu	Taneli Riihonen	Paulo Silva
Şeref Kalem	Ingmar Land	Mingming Liu	Vandana Mittal	Parul Pandey	André Riker	Oswaldo Simone
Shotaro Kamiya	Rodrigo Lange	Na Liu	Nathalie Mitton	Ai-Chun Pang	Jukka Rinne	Keshav Singh
S.M. Kamruzzaman	Nadav Lavi	Peixi Liu	Keiichi Mizutani	Apostolos	Syed Mehdi Abbas	Victor Sivneri
Athanasios Kanatas	Anh Duc Le	Qiang Liu	Zahra Mobini	Papathanassiou	Rizvi	Dirk T.M. Slock
Pushpendu Kar	Tuan Le	Qingwen Liu	Sanam Moghaddamnia	Priyabrata Parida	Muhammad Rizwan	Paschalis C.
Amir Karamoozian	Chia-Han Lee	Sheng Liu	N. R. Mohamad	Stefano Paris	Asghar	Sofotassios
Lutful Karim	Chia-Peng Lee	Weirong Liu	MohammadAli	Daeyoung Park	Vincent Roca	Foad Sohrabi
parishad karimi	Gilsoo Lee	Yan Liu	Mohammadi	Jaehyoung Park	Leonardo Jimenez	Morteza Soltani
Ali Karimidehkordi	Jung Hoon Lee	Ye Liu	Leila Mohammady	Jeonghun Park	Rodriguez	Changick Song
Andreas Kassler	Hoon Lee	Yin Liu	Mujahid Mohsin	Seokhwan Park	José Rodríguez-	Jiho Song
Sanjit Kaul	Jaesook Lee	Yinjun Liu	Antonella Molinaro	Sungwoo Park	Piñeiro	Lingyang Song
Hemani Kaushal	Jang-Won Lee	Yuanpeng Liu	Jose F. Monserrat	Panagiotis Paschalidis	Sandra Roger	Nan Song
Kezhong	Juyul Lee	Yunfeng Liu	Jean-Philippe	Greig Paul	Brian Romansky	Wei Song
Nabil Khalid	Gyu Myoung Lee	Zhengxuan Liu	Montillet	Henning Paul	Bo Rong	Ritesh Song
Ala Khalifa	Hong Sup Lee	Zhi Liu	Nektarios Moraitis	Rajib Paul	luca rose	luca rose
Shadi Khalifa	Yinman Lee	Brandon Lo	Guilherme Moritz	Pavel Pechac	Sankardas Roy	Nuno Souto
Kishwer Abdul Khaliq	Janne Lehtomäki	Adrian Loch	Hamed Mosavat	Tommaso Pecorella	Guanying Ru	Mujdat Soyuturk
Junaid Ahmed Khan	Bin Li	Luis Lolis	Jahromi	Haixia Peng	Liangzhong Ruan	Pawel Sroka
Danish Khan	Bingcong Li	Lee Ying Loong	Ahmad Mostafa	Kostas Peppas	Macey Ruble	Razvan Stanica
Mahmudur Khan	Bohan Li	Waslon Terlizzie A.	Ahmed Elhamy	Bhanukiran	Ruochen	Grzegorz Stepniak
M. Toaha Raza Khan	Boyu Li	Lopes	Mostafa	Perabathini	Humphrey Rutagemwa	Zhou Su
Amjad Saeed Khan	Chang Li	Renato Lopes	Mohammad Mozaffari	Ayodele Periola	Jongyeol Ryu	Luis Suarez
Tooba Khan	Changle Li	F. Javier Lopez-	Andreas Mueller	Dirk Pesch	Waleed Saad	Siva Subramani
Narendra Khatri	Changzhen Li	Martinez	Axel Mueller	Michael Peter	Harri Saarnisaari	Masashi Sugano
Tamer Khattab	Cheng Li	Pascal Lorenz	Imran Ahmed Mughal	Tran Khoa Phan	Yalcin Sadi	Shinya Sugiura
Manas Khatua	Feng Li	Ning Lu	Constantine Mukasa	Tal Philosof	Najmeh Sadoughi	Ajmyer Sultana
Mohammad G.	Gang Li	Rongxing Lu	Amitav Mukherjee	Vo Thi Luu Phuong	Jaroslav Sadowski	Chen Sun
Khoshkholgh	Guoxin Li	Weidang Lu	Hannah Munir	Gema Piñero	Nikos C. Sagias	Fei Sun
Ahmed Khwaja	Hao Li	Yishi Lu	Murad	Mehdi Maleki	Chiranjib Saha	Fenggang Sun
Seong Ki Yoo	Hong Li	Tom Luan	Juan José Murillo-	Pirbazari	Sudip Saha	Hongjian Sun
Abbas Kiani	Jiamin Li	Michele Luglio	Fuentes	Marcos Eduardo	Bassem Ben Salah	Li Sun
David Kidston	Jin Li	Changqing Luo	Sifat Ibne Mushfiq	Pivaro Monteiro	Abdelhamid Salem	Long Sun
Dongku Kim	Junling Li	Roger J. Luo	Erum Mushtaq	Pavol Poláček	Yukitoshi Sanada	Ruoyu Sun
Haesik Kim	Kai Li	Meizhu Luo	Tauseef Mushtaq	Basuki E. Priyanto	Young Jin Sang	Songlin Sun
Seong Hwan Kim	Lanhua Li	Xiliang Luo	Apollinaire	Ioannis Psaromiligkos	Seun Sangodoyin	Xiang Sun
Hyoil Kim	Min Li	Ling Lv	Nadembeqa	Shi Pu	Nico Saputro	Yuxuan Sun
Jaesin Kim	Mushu Li	Lu Lv	Muhammad Naeem	Haoran Qi	Chandrika Satyavolu	Zhao Sun
Jong-Ho Kim	Nanxiang Li	Feng Lyu	Manish Nair	Yinan Qi	Wolfgang Sauer-Greff	Chang Kyung Sung
Joongheon Kim	Qihao Li	Ling Lyu	Syed Ahsan Raza	Chen Qian	Stephan Saur	Ki Won Sung
Sooyoung Kim	Qizhen Li	Bojiang Ma	Naqvi	Hua Qian	Saurabha	Himal A. Suraweera
Sunghwan Kim	Tian Li	Guoyu Ma	Shusuke Narieda	Jin Qian	Giovanni Savino	Navod Suraweera
Taecheon Kim	David W. Li	Jinghuan Ma	Naveed Nawaz	Liping Qian	Ibrahim Savran	Katsuya Suto
Yonggang Kim	Wei Li	Xiao Ma	Amiya Nayak	Shiyou Qian	Akbar M. Sayeed	Ales Švigelj
Yongjae Kim	Xiuhua Li	Xiaofu Ma	Derrick Wing Kwan	Yi Qian	Müge Sayit	Michal Sybis
Young-bin Kim	Xuan Li	Yuanyuan Ma	Ng	Kangjian Qin	Yassine Selmi	Hina Tabassum
Ryota Kimura	Yan Li	Yuyu Ma	Hien Quoc Ngo	Zhijin Qin	Omid Semari	Patrick Tague
Martti Kirkko-	Yilin Li	George R.	Bao-Huy Nguyen	Chen Qiu	Victor Sergeev	Abd-Elhamid Taha
Jaakkola	Yingzhe Li	MacCartney Jr.	Duy Nguyen	Junfei Qiu	Ahmed El Shafie	Mahmoud Taherzadeh
Mithat Kisacikoglu	Yue Li	Setareh Maghsudi	Ha H. Nguyen	Li Qiyue	Rubayet Shafin	Satoshi Takahashi
Mustafa Kishk	Zan Li	Behrouz Maham	Phi Le Nguyen	Kaige Qu	Munam Ali Shah	Fangqing Tan
Hamilton Duarte	Jin Lian	Sabita Maharjan	Nhut Nguyen	François Quitin	Ali Shahini	Jie Tang
Klimach	Chengchao Liang	Ala Mahdavi	Thien Nguyen	Haneya Naeem Qureshi	Hamed Shah-	Wenjuan Tang
Kab Seok Ko	Hao Liang	Nurul Huda Mahmood	Minh Tri Nguyen	Mahmoud Qutqut	Mansouri	Xi Tao
Iwona Kochanska	Hengjing Liang	Maija Mäkelä	Jianbing Ni	Ayman Radwan	Muhammad Zeeshan	Xiaoyi Tao
Toshiaki Koike-Akino	Xiaohui Liang	Bessie Malila	Mimming Ni	Giuseppe Raffa	Shakir	Hidekazu Taoka
Joonas Kokkonieni	Runfa Liao	Francesco Mani	Yuanzhi Ni	Md. Mizanur Rahman	Shalli	Faisal Tariq
Long Kong	Xuewen Liao	Athanassios Manikas	Jarno Niemelä	Mostafizur Rahman	Hanguang Shan	Harsh Tataria
Peng-Yong Kong	Hyuk Lim	Pietro Manzoni	Nikos	Muhammed Tahsin	Bhavani Shankar	Fernando Teixeira
Yiming Kong	Mario Lima	Haowei Mao	Jing Ning	Rahman	Sivasothy	Chintha Tellambura
Adrian Kotelba	Cen Lin	Tianqi Mao	Dusit Niyato	Nandana Rajatheva	Shanmugalingam	Yinglei Teng
Georgia Koutsandria	Chia-Wei Lin	Ian Marsland	Noha	Sekhar Rajendran	Mohammad Shaqfeh	Sara Teodoro

Kemal Tepe	Monirosharieh	Hung-Yu Wei	Yu Xiaoyun	Shun-Ren Yang	Yves	Hanying Zhao
Fabrice Theoleyre	Vameghestahbanati	Kaimin Wei	Jianxiao Xie	Tingting Yang	Salahuddin Zabir	Hongmei Zhao
Do Phu Thinh	Hans van den Berg	Ping Wei	Zhiping Xie	Yao-Tsung Yang	Ammar Zafar	Jing Zhao
Ragnar Thobaben	Bane Vasic	Wally Wei	Yuanxue Xin	Yinping Yang	Syed Ali Raza Zaidi	Kaichuan Zhao
John Thompson	Francisco Vasquesb	Xin Wei	Zhao Xin	Zheng Yang	Alenka Zajic	Kanglian Zhao
Preetha Thulasiraman	Karthik Vasudeva	Zhiqing Wei	Wei Xing	Danhui Yao	Alberto Zanella	Lian Zhao
Ke Tian	Jonathan Vestin	Dingzhu Wen	Xiaoshuang Xing	Rugui Yao	Shahram Zarei	Liqaing Zhao
Xiaohua Tian	Sudip Vhaduri	Hong Wen	Qi Xiong	Yibo Yao	Mohamed Ridha	Lou Zhao
Stefano Tomasini	Carlos Alberto Vieira	Hui Wen	Chi Xu	Yavuz Yapıcı	Zenaidi	Nan Zhao
Samet Tonyali	Campos	Jinming Wen	Chongbin Xu	Muhammad Azfar	Baoxian Zhang	Xiaotang Zhao
Waqas Tariq Toor	Quoc-Tuan Vien	Yean-Fu Wen	Chugui Xu	Yaqub	Bei Zhang	Yiming Zhao
Ali Tosun	Vino Vinodrai	Zhixian Wen	Ding Xu	Cong Ye	Deyu Zhang	Yisheng Zhao
Michael Totaro	Binh Vo	Yang Wen-Hui	Guang Xu	Feng Ye	Fan Zhang	Xiaojian Zhen
Hanan Al Tous	Haris Volos	Younghoon Whang	Guixian Xu	Qiang Ye	Fenghui Zhang	Ouyang Zhenfeng
Trung Duy Tran	Mai Vu	Risto Wichman	Jianwen Xu	Yun Ye	Guangchi Zhang	Huanyang Zheng
Ha-Vu Tran	Tung T. Vu	Jeroen Wigard	Jie Xu	En-Hau Yeh	Guomei Zhang	Jianchao Zheng
Nghi Tran	Abdul Wahid	Matthias Wilhelm	Lei Xu	Phee Lep Yeoh	Haijun Zhang	Meng Zheng
Tuyen Tran	Chao Wang	SeungHwan Won	Ran Xu	Ja Yeong Kim	Hao Zhang	Yahong Rosa Zheng
Hsin-Mu Tsai	Cheng-Xiang Wang	David Tung Chong	Shaoyi Xu	Cenk M. Yetis	Honggang Zhang	Xi Zheng
Meng-Hsun Tsai	Chenmeng Wang	Wong	Shengjie Xu	Changyan Yi	Jian Zhang	Yang Zheng
Danny H.K. Tsang	Danyang Wang	Vincent W.S. Wong	Wenchao Xu	Feng Yi	Jiayi Zhang	Zhongming Zheng
Chi-Wei Tseng	Dexin Wang	Isaac Woungang	Wenjun Xu	Huiyue Yi	Jing Zhang	Sergey Zhidkov
Fan-Shuo Tseng	Feng Wang	Celimuge Wu	Xiaodong Xu	Turker Yilmaz	Jun Zhang	Lei Zhong
Hsiao-Yun Tseng	Guangchao Wang	Fei Wu	Yuhua Xu	Tan Soon Yim	Kecheng Zhang	Kecheng Zhang
Theodoros Tsiftsis	Hong Wang	Haimeng Wu	Feng Xuan	Liang Yin	Kuan Zhang	Fuhui Zhou
Charalampos C. Tsimenidis	Jingchao Wang	Huasen Wu	Minhui Xue	Rui Yin	Lei Zhang	Haibo Zhou
George Tsoulos	Jinghui Wang	Huici Wu	Zhen Xue	Xuefeng Yin	Li Zhang	Huan Zhou
Guan-Hua Tu	Jingrong Wang	Jian Wu	Xuguang	Yiyin	Liang Zhang	Lai Zhou
Fredrik Tufvesson	Junyuan Wang	Jinsong Wu	Michel Yacoub	Chanho Yoon	Lin Zhang	Lin Zhou
Esma Turgut	Kun Wang	Jwo-Yuh Wu	Ramnaresh Yadav	Jangho Yoon	Linyuan Zhang	Sheng Zhou
Seyhan Ucar	Lifeng Wang	Longfei Wu	Zelalem Yalew	Li You	Ning Zhang	Xiaolin Zhou
Emin Ucer	Lusheng Wang	Nan Wu	Koji Yamamoto	Bo Yu	Qianyun Zhang	Yi Zhou
Kazuaki Ueda	Pengbiao Wang	Hao Ping Wu	Wenke Yan	Heejung Yu	Ran Zhang	Yifeng Zhou
Guzin Ulutaş	Ping Wang	Qingqing Wu	Yutong Yan	Liang Yu	Ruonan Zhang	Yingjie Zhou
Anna Umbert	Qi Wang	Renyong Wu	Zhiwei Yan	Lisu Yu	Shan Zhang	Yiqing Zhou
Anum Umer	Qian Wang	Shaohua Wu	Chenchen Yang	F. Richard Yu	Tiankui Zhang	Yong Zhou
Prabhat Kumar Upadhyay	Rui Wang	Wen Wu	Fan Yang	Xianghao YU	Tingting Zhang	Yuchen Zhou
Momin Ayub Uppal	Shiqiang Wang	Xiaoyong Wu	Hao Yang	Xin Yu	Weile Zhang	Chunsheng Zhu
Muhammad Arslan Usman	Xianbin Wang	Yiqun Wu	Hong Yang	Zhiyuan Yu	Wuxiong Zhang	Dalin Zhu
Muhammad Usman	Xiaolu Wang	Yuan Wu	Hong-Chuan Yang	Chunjing Yuan	Xingjian Zhang	Haojin Zhu
Muhammad Rehan Usman	Xiaoshan Wang	Dov Wulich	Howard Yang	Jiantao Yuan	Xuewei Zhang	Hongbin Zhu
Vutha Va	Xiaoyan Wang	Alexander Wyglinski	Jingya Yang	Quan Yuan	Yang Zhang	Konglin Zhu
Shahin Vakiliinia	Xin Wang	Shurjeel Wyne	Kai Yang	Xiaoming Yuan	Yangying Zhang	Kun Zhu
	Xiyuan Wang	Minghua Xia	Li Yang	Xin Yuan	Yaomin Zhang	Lei Zhu
	Yishen Wang	Qian Xia	Mengqi Yang	Yuanyuan	Yongmin Zhang	Wei-Ping Zhu
	Yitu Wang	Xu Xia	Nan Yang	Che Yueling	Yu Zhang	Weihua Zhuang
	Yu Wang	Pei Xiao	Peng Yang	Chau Yuen	Zhongshan Zhang	David Ziung
	Zhihao Wang	Zhu Xiao	Ping Yang	Murat Yuksel	Guodong Zhao	Yuze Zou

Registration

Registration will take place in the Toronto Ballroom Foyer area. Opening times are:

- Sunday 24 September 2017 7:30 - 17:30*
- Monday 25 September 2017 7:30 - 17:30
- Tuesday 26 September 2017 8:00 – 17:30
- Wednesday 27 September 2017 8:00 – 16:00

* After 18:00 on Sunday, you may pick up your badge and tickets at the reception – bags can be picked up on Monday. (Your registration receipt is required to pick up your registration at the reception.)

Breaks

Coffee breaks will take place along with exhibits in Toronto Ballroom Foyer.

Social Events

Lunches are included as part of the full registration and will be served in the Toronto Ballroom. The welcome reception will be conducted on Sunday evening, 24 September 2017 in the Toronto Ballroom Foyer. The banquet on the evening of 25 September 2017 will also be conducted in the Toronto Ballroom. It will begin at 18:30.

Lunches, the reception and banquet require admission tickets and these are included in your registration packet to gain entry. Be sure to present the correct day's lunch ticket or you will not be served. You also may purchase tickets for these events at the registration desk.

Patrons and Exhibitors

IEEE VTS would like to thank the following donors, patrons and exhibitors for their support for the conference.

Platinum Patron and Exhibitor



Huawei

Exhibitor



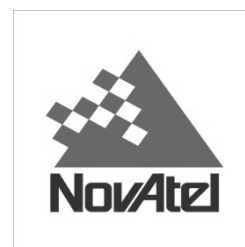
Springer

Bronze Patron



TELUS

Exhibitor



NovAtel, Inc

Conference Supporter and Exhibitor



Carleton University

Monday Opening Keynote

Monday 25 September 2017, 9:30–10:30 Toronto Ballroom

Getting Ready for 5G

Peiyong Zhu, Huawei Technologies Canada

Significant progresses have been made over the past few years in the standardization, field trials, commercial deployment plans and vertical market usage evaluations. The large scale commercial deployment may be earlier than the original anticipated 2020 target date. In this talk, an overview on the latest 3GPP 5G standard progress will be given including highlights on the key technologies and its roadmap. In addition, the latest Huawei 5G field trial results with multi-cells will be presented, including the demonstration of ultra-reliable and low latency application of autonomous driving car.

Dr. Peiyong Zhu is a Huawei Fellow. She is currently leading 5G wireless system research in Huawei. The focus of her research is advanced wireless access technologies with more than 200 granted patents. She has been regularly giving talks and panel discussions on 5G vision and enabling technologies. She served as the guest editor for IEEE Signal processing magazine special issue on the 5G revolution and co-chaired for various 5G workshops. She is actively involved in 3GPP and IEEE 802 standards development. She is currently a WiFi Alliance Board member.

Prior to joining Huawei in 2009, Peiyong was a Nortel Fellow and Director of Advanced Wireless Access Technology in the Nortel Wireless Technology Lab. She led the team and pioneered research and prototyping on MIMO-OFDM and Multi-hop relay. Many of these technologies developed by the team have been adopted into LTE standards and 4G products.

Peiyong Zhu received the Master of Science degree and Doctor Degree from Southeast University and Concordia University in 1985 and 1993 respectively.

Monday Industry Track: 5G and Wireless

Monday 25 September 2017, 11:00–12:30 York

Panel: 5G Radio Design

Moderator:	Benoît Pelletier	<i>InterDigital, Canada</i>
Panelists:	Amitava Ghosh	<i>Nokia Bell Labs</i>
	Peiyong Zhu	<i>Huawei</i>
	Ali Sadri	<i>Intel</i>
	Yves Lostanlen	<i>SIRADEL N.A. and WISE</i>

Dr. Benoît Pelletier received his Ph.D. degree in Telecommunications and Signal Processing in 2007 from McGill University, Montréal, Canada. As system design engineer for InterDigital Canada Ltée., he has contributed from 2007 to 2011 to the evolution of HSPA/HSPA+ systems, specializing in L1/L2 protocol design aspects. Now Member of Technical Staff, his current work focuses on the evolution of LTE and on the design of 5G wireless systems. In addition to being an author on numerous peer-reviewed journal and conference publications, he also holds over 40 granted patents and 100 patent applications. He co-organized the Device-to-Device Wireless Communications for Mobile Cellular Network workshop at ICC 2015, acted as TPC for the Globecom Workshop on Device-to-Device (D2D) Communication With and Without Infrastructure and as a reviewer for IEEE conferences and journals. His current research interests include 5G system design, device-to-device communications, vehicular communications, Hybrid-ARQ and statistical signal processing.

Dr. Amitabha (Amitava) Ghosh is a Nokia Fellow and Head of Small Cell Research, Nokia Bell Labs. Prior to this, he was Senior Director and Fellow of Technical Staff at Motorola Networks. He joined Motorola in 1990 after receiving his PhD in Electrical Engineering from Southern Methodist University, Dallas. Since joining Motorola he worked on multiple wireless technologies starting from IS-95, cdma-2000, 1xEV-DV/1XTREME, 1xEV-DO, UMTS, HSPA, 802.16e/WiMAX and 3GPP LTE. Dr. Ghosh has 60 issued patents, has written

multiple book chapters and has authored numerous external and internal technical papers. He is currently working on 3GPP LTE-Advanced and 5G technologies. His research interests are in the area of digital communications, signal processing and wireless communications. He is a Fellow of IEEE, recipient of 2016 Stephen O. Rice prize and co-author of the book titled “Essentials of LTE and LTE-A”.

Dr. Peiyong Zhu’s bio appears above.

Yves Lostanlen is Chief Technology Officer of SIRADEL (recently acquired by ENGIE) for wireless activities, leading the technology innovation for the related products and expert consulting. Yves is also CEO of SIRADEL North America, and is based in Toronto, Canada where he directly supervises the business development and strategic alliances in Canada and USA.

An expert in physical phenomena modeling, simulation, wireless air interface and protocols, signal processing and data analytics, Dr. Lostanlen joined SIRADEL in 2001 and has initiated and supervised more than 40 collaborative research projects involving 100+ research stakeholders in the Wireless Industry. He is also an Adjunct Research Professor at University of Toronto (Faculty of Applied Science and Engineering), a Senior Executive Fellow at WISE (Waterloo Institute for Sustainable Energy, University of Waterloo, Canada) and a Senior Member of IEEE. He holds a Habilitation (HDR) in Physics and Computer Science, a PhD and an MSc in Electrical & Computer Engineering, and an Executive MBA from Massachusetts Institute of Technology, MIT Sloan (USA).

Monday 25 September 2017, 14:00–15:30 York

Panel: 5G Network Design

Moderator: Klaus Doppler *Nokia Research Center, Berkeley*
Panelists: Simone Redana *Nokia Germany*
Imed Frigui *Ericsson*
Benoît Pelletier *InterDigital*
Ishan Vaishnavi *Huawei*
Naseem A. Khan *Verizon*

Mobile networks have become the main communication vehicle for the upcoming connected society. In addition to humans, billions of machines will be connected to the network in the future, leading to a massive network traffic increase beyond 2020. However, such traffic increase does not necessarily lead to a similar increase in the revenue of mobile network operators. They need to make very high investments to manage this traffic.

The challenge is thus to deploy a mobile network that can satisfy the requirements of the society and at the same time be sustainable for network operators. A fundamental piece to address this challenge is the design of a novel mobile network architecture that provides the necessary flexibility to offer new services in an efficient way. This notably requires the sharing or distribution of infrastructure resources dynamically, such that operators can increase revenue through new services, while leveraging the efficiency of the architecture to do so in a cost-effective way. Current mobile networks are not well suited to address the above challenge. In 4G mobile networks, large effort was made in making the air interface fully adaptive to changing radio conditions, but lack similar functionality to optimize the network side. While current architectures have been very successful, they do not provide the required flexibility to cope with the service and traffic diversity targeted by 5G mobile networks nor do they address the current trends in terms of topologies. These trends make networks increasingly heterogeneous and require tailored solutions to adapt to each specific scenario and service in an efficient way. The central goal of this panel is to discuss about future mobile network architectures that can flexibly adapt its operation to the specific characteristics and requirements of a given service and scenario.

Dr. Simone Redana is Head of Mobile Network Architecture & Systems Research Group in Nokia Bell Labs and Chairman of the 5GPPP Architecture Working Group. Simone received the MSc and Ph.D. degrees from the Politecnico di Milano, Milan, Italy, in 2002 and 2005 respectively. In 2006, he joined Siemens Communication in Milan where he worked as consultant during 2005. Since 2008 he has been with Nokia in Munich, Germany. Simone contributed and led relay concept design in various EU research projects (WINNER II, WINNER+ and ARTIST4G). He contributed to the business case analysis of relay deployments and to the standardization of Relays for Long Term Evolution (LTE) Release 10. Simone has coordinated the EU funded project 5G NORMA (Novel Architecture for the 5G era). His current research interests are on novel architecture solutions for 5G era.

Dr. Benoît Pelletier received his Ph.D. degree in Telecommunications and Signal Processing in 2007 from McGill University, Montréal, Canada. As system design engineer for InterDigital Canada Ltée., he has contributed from 2007 to 2011 to the evolution of HSPA/HSPA+ systems, specializing in L1/L2 protocol design aspects. Now Member of Technical Staff, his current work focuses on the evolution of LTE and on the design of 5G wireless systems. In addition to being an author on numerous peer-reviewed journal and conference publications, he also holds over 40 granted patents and 100 patent applications. He co-organized the Device-to-Device Wireless Communications

for Mobile Cellular Network workshop at ICC 2015, acted as TPC for the Globecom Workshop on Device-to-Device (D2D) Communication With and Without Infrastructure and as a reviewer for IEEE conferences and journals. His current research interests include 5G system design, device-to-device communications, vehicular communications, Hybrid-ARQ and statistical signal processing.

Dr. Naseem Khan is currently involved with wireless network strategy, architecture, planning, and standardization at Verizon focusing on 5G, SDN, NFV, IoT, mobile core, CPE, and spectrum sharing. His current responsibilities include defining 5G architecture and conducting 5G pre-commercial field trials. His previous work experience includes: wireless networks, network convergence, policy control/QoS, 3GPP IMS/VoLTE, IPTV, FTTP, and network performance, reliability, and management. He has led technology planning, evaluation, and implementation, industry partnerships and RFP initiatives. He has served on a number of standards committees and boards in leadership roles. Previously, he held management and senior technical positions at companies including AT&T/Lucent Bell Labs and Motorola. He holds a Ph.D. in Computer Science, and MS and BS in Electrical Engineering, and has received numerous awards including Verizon's Telecom Leaders Circle and Multiservice Forum's Senior Fellow.

Monday 25 September 2017, 16:00–17:30 York

Panel: 5G: A Critical Technology Enabler for Future Vertical Markets

Moderator: Anthony Soong *Huawei*
Panelists: Amitava Ghosh *Nokia Bell Labs*
Abhijit Navalekar *Qualcomm CDMA Technologies*
Kund Erik Skouby *Aalborg University*
Takayuki Shimizu *TOYOTA InfoTechnology Center*
Rath Vannithamby *Intel*

Anthony C. K. Soong (S'88-M'91-SM'02-F'14) received the Ph.D. degree in electrical and computer engineering from the University of Alberta. He is currently the Chief Scientist for Wireless Research and Standards at Huawei Technologies Co. Ltd, in the US. He currently serves on the Engineering College Industrial Advisory Board of The University of North Texas. He had served as Secretary and the board member of OPNFV (2014-2016), the chair for 3GPP2 TSG-C NTAH (the next generation radio access network technology development group) from 2007-2009 and vice chair for 3GPP2 TSG-C WG3 (the physical layer development group for CDMA 2000) from 2006-2011. Prior to joining Huawei, he was with the systems group for Ericsson Inc and Qualcomm Inc. His research group is actively engaged in the research, development and standardization of the next generation cellular system. His research interests are in statistical signal processing, robust statistics, wireless communications, spread spectrum techniques, multicarrier signaling, multiple antenna techniques, network virtualization, SDN and physiological signal processing. Dr. Soong is a Fellow of the IEEE. He has published numerous scientific papers and has more than 100 patents granted or pending. He received the 2017 IEEE Vehicular Technology Society James R. Evans Avant Garde Award, the 2013 IEEE Signal Processing Society Best Paper Award and the 2005 award of merit for his contribution to 3GPP2 and cdma2000 development. He has served on the advisory board of 2014 IEEE Communication Theory Workshop, Steering Committee of IEEE Int. Workshop on HetNet and on the technical program committee, as well as, chaired at numerous major conferences in the area of communications engineering. He has acted as guest editor for the IEEE Communications Magazine and IEEE Journal on Selected Areas in Communications.

Dr. Amitabha (Amitava) Ghosh's bio appears on Page 14.

Dr. Abhijit Navalekar is a Staff Engineer with Qualcomm CDMA Technologies (QCT). He received his B.E from University of Mumbai ('02) and MS ('05) and PhD ('09) in Electrical and Computer Engineering from Worcester Polytechnic Institute, Worcester, MA. He worked at several start ups before joining Qualcomm in 2012 where he currently works on commercialization of 4G/5G technologies on Qualcomm Snapdragon Chipsets. He has worked on multiple wireless/wireline technologies including DOCSIS, DAB, ATSC, 1X, EVDO and LTE. He is the author of several patents filed/issued and has won multiple of awards at Qualcomm. His research interests include mmWave communications, C-V2X and ADAS systems.

Professor Knud Erik Skouby is founding director of center for Communication, Media and Information technologies, Aalborg University-Copenhagen – a center providing a focal point for multi-disciplinary research and training in applications of CMI. Has a career as a university teacher and within consultancy since 1972. Working areas: Techno-economic Analyses; Development of mobile/ wireless applications and services; Regulation of telecommunications. Project manager and partner in a number of

international, European and Danish research projects. Served on a number of public committees within telecom, IT and broadcasting; as a member of boards of professional societies; as a member of organizing boards, evaluation committees and as invited speaker on international conferences; published a number of Danish and international articles, books and conference proceedings. Editor in chief of Nordic and Baltic Journal of Information and Communication Technologies (NBICT); Board member of the Danish Media Committee. Chair of WGA in Wireless World Research Forum; Dep. chair IEEE Denmark. Member of the Academic Council of the Faculty of Engineering and Science, AAU.

Dr. Takayuki Shimizu joined Toyota ITC US in 2012 and has been working on the research of wireless vehicular communications and the development of smart grid systems for plug-in electric vehicles. He received the B.E., M.E., and Ph.D. degrees from Doshisha University, Kyoto, Japan, in 2007, 2009, and 2012, respectively. From 2009 to 2010, he was a visiting researcher at Stanford University, CA, USA. His current research interests include millimeter-wave vehicular communication, vehicular communications for automated driving, and LTE/5G for vehicular applications. He is a 3GPP standardization delegate in RAN WGs and SA1 WG and he is a member of the IEEE and IEICE

Dr. Rath Vannithamby is a senior research scientist in Intel Labs, Intel Corporation, USA responsible for 5G research, a Senior Member of IEEE, an IEEE Communications Society Distinguished Lecturer for 2014-2017 and a two times recipient of Intel Top Inventor award in 2014 and 2016. Previously, he was a researcher at Ericsson, USA. He has published over 60 journal/conference papers and has over 250 patents granted/pending. He is an editor of a couple of books: (i) "Towards 5G: Applications, Requirements and Candidate Technologies" by Wiley and (ii) "Design and Deployment of Small Cell Networks" by Cambridge Press. He has also authored chapters of 3 books on 4G. He has given keynote speeches in numerous IEEE and other conferences and workshops. Dr. Vannithamby has been an associate editor for Journal of IEEE Communications Surveys and Tutorials since 2012, and he was an editor for IEEE Internet of Things Journal in the past. He was the lead-chair for workshops on (i) "5G Technologies" and (ii) "M2M Communications for IoT" in IEEE ICC 2014; and co-chair for "5G HetNets" workshop in GC'16, and "Main Trends in 5G Networks" workshop in ICC'17. He has given tutorials and hosted panels on 3G/4G/5G topics in numerous venues in IEEE conferences. He is a member and the Standards Liaison for IEEE ComSoc Signal Processing and Communications Electronics Technical Committee. He has also served on TPC for IEEE ICC, GC, VTC, WCNC, and PIMRC. His research interests are in the area of 5G radio access network, internet of things, ultra-dense networking, V2X, and ICN. Dr. Vannithamby received his BS, MS, and PhD degrees in EE from the University of Toronto, Canada.

Tuesday Plenary Keynotes

Tuesday 26 September 2017, 9:00–9:45 Toronto Ballroom

ACE Vehicles and their Impact on the 21st Century

Barrie Kirk, *Canadian Automated Vehicles Centre of Excellence (CAVCOE), Canada*

Autonomous, connected and electric (ACE) vehicles will change our lives, cities, society and the world in the 21st Century as much as the arrival of cars did during the 20th Century. Barrie Kirk's keynote will be in three parts: 1) an overview of the status, deployment and trends of AVs; 2) the big-picture socio-economic impacts on our lives, the economy and the world, and 3) more detailed information on the many impacts on the auto and technology sectors.

Barrie Kirk, P.Eng. is the Executive Director of the Canadian Automated Vehicles Centre of Excellence (CAVCOE). He has worked in the technology industries in Canada, the U.S. and the U.K., including senior management positions in Ottawa-area companies. He is a well-known consultant, speaker and

broadcaster on automated vehicles. His other roles include the Board of Directors of Unmanned Systems Canada and the Automotive Advisory Board of Centennial College, Ontario. Barrie received a B.Sc. (Honours) in Electrical Engineering from Coventry University, U.K. and is a Professional Engineer.

Tuesday 26 September 2017, 9:45–10:30 Toronto Ballroom

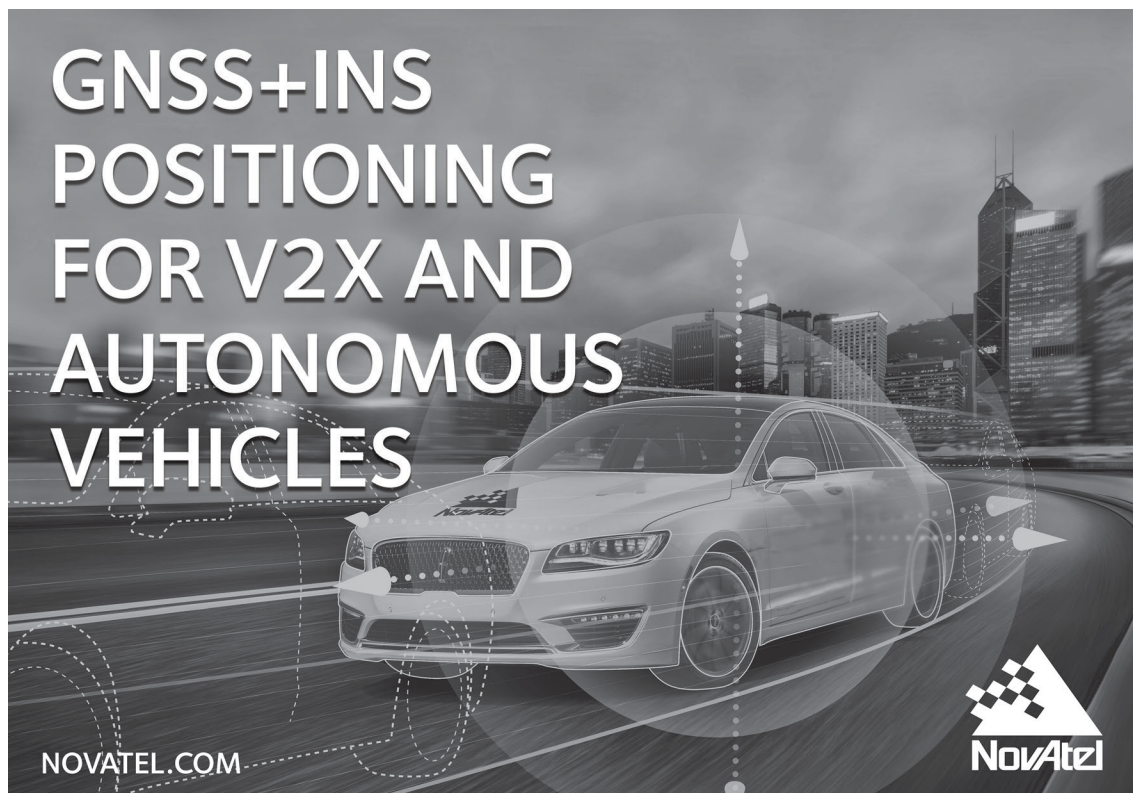
The Internet-Above-the-Clouds

Lajos Hanzo, *University of Southampton, United Kingdom*

Air transport has become an essential economic and social conduit throughout the world, which is expected to grow continuously in the coming years. Demands of “free flight” for air traffic and “Internet above the clouds” for in-flight entertainment has inspired the conception of Aeronautical Ad-hoc Networks (AANET), which are reminiscent of high-end Vehicular Ad-hoc Networking (VANET). They might be characterized as autonomous and self-configured wireless networking solutions for high-velocity aircraft. However, given the typically on order of magnitude higher aircraft speed, when compared to VANETs, AANETs tend to exhibit more dynamic topologies, larger and more variable geographical network size, stricter security requirements and more acrimonious propagation conditions. These characteristics lead to more grave challenges in scheduling, routing, channel modeling and antenna design, just to mention a few. These differences render many traditional VANET protocols inapplicable for AANETs, hence motivating the design of radically-improved AANET protocols in support of the unorthodox AANET scenarios and requirements. This keynote will characterize the associated scenarios, characteristics, requirements and challenges. Furthermore, we will critically appraise the applicability of existing VANET solutions to AANETs and motivate the research community to solve the rich set of open research problems in this radically new field.

Lajos Hanzo is a Fellow of the Royal Academy of Engineering (FEng), FIEEE, FIET and a EURASIP Fellow. He co-authored 18 IEEE Press - John Wiley books totalling in excess of 10 000 pages on mobile radio communications, published about 1600+ research entries at IEEE Xplore, organised and chaired major IEEE conferences and has been awarded a number of distinctions.

Lajos is also an IEEE Distinguished Lecturer. During 2008 - 2012 he was the Editor-in-Chief of the IEEE Press and also a Chaired Prof. at Tsinghua University, Beijing. Lajos has 30 000+ citations. For further information on research in progress and associated publications please refer to <http://www-mobile.ecs.soton.ac.uk>



Tuesday Industry Track: ACE (Autonomous, Connected, and Electric) Vehicles

Tuesday 26 September 2017, 11:00–12:30 York

Panel: Current Developments and the Future of Electric Vehicles

Moderator: **Barrie Kirk** *CAVCOE*
Panelists: **François Adam** *Institut du Véhicule Innovant (IVI)*
Josipa Petronic *CUTRIC*
Neal Hemenover *Transdev*

Although EVs have been around since the late 19th Century, the 20th Century was clearly the age of the internal combustion engine. Thought leaders predict that in the 21st Century, EVs will become dominant in many forms of transportation, leading to quieter vehicles that have zero emissions in operation and are therefore better for the environment. The panelists are from IVI, CUTRIC and Transdev, all organizations that are leaders in the EV ecosystem. They will describe what their organizations are doing in electric cars and public transportation, followed by discussion, questions and answers.

Barrie Kirk's bio appears on Page 17.

François Adam is the general manager of IVI since April 1st, 2015. Prior to that, he served as director of ITAQ from 2012 to 2015 and as electrical engineer from 2005 to 2011. Electrical engineering graduate from Sherbrooke University in 1992, he is working on electric vehicle development since 2002. Prior to joining ITAQ, he worked for Feel Good Cars and for Vehicle Nemo, where he participated on the elaboration of the first light car and light truck EV prototypes for these companies. His team has participated in the development of more than 10 different electric vehicle platforms over the last decade and is very proud to have received the 2016 Prix Génie Innovation by the OIQ (Quebec's professional engineer association) for its work on the electric school bus eLion. He is also the academic vice-president of InnovÉÉ, Quebec sectorial industrial research group on EVs and is a board member since its creation in 2012.

Josipa G. Petronic leading the formulation of several large-scale transportation technology trials through CUTRIC's consortium of private and public sector stakeholders, including the Pan-Ontario Electric Bus Demonstration & Integration Trial. Dr. Petronic has also served as the lead researcher in electric vehicle policy studies at McMaster University. She is currently completing the Ontario Electric Vehicle Technology Roadmap slated for publication in

the spring of 2017, funded by a federal Automotive Partnership Canada (APC) grant. Dr. Petronic worked previously as a senior research fellow at University College London (UCL) in the United Kingdom focusing on Science and Technology Studies and the history of mathematics and engineering. She completed her PhD in the History of Mathematics at the University of Edinburgh (Scotland) as a Commonwealth Scholar, after completing a Master's of Science in Science and Technology Studies (STS), also as a Commonwealth Scholar. She previously completed a Master's of Science in Political Philosophy at the London School of Economics and Political Science (LSE) and a bachelor's degree in Political Science and Journalism at Carleton University. Before pursuing graduate studies, Dr. Petronic worked as a journalist at the Globe and Mail, Toronto Star and Edmonton Journal. Dr. Petronic continues to lecture in Globalization Studies at McMaster University as part of the Institute for Globalization, and she lectures in interdisciplinary research methods as part of the Master's of Arts in Integrated Studies program at Athabasca University.

Neal Hemenover is Vice-President of Information Technology at Transdev, whose autonomous vehicles operations carry 4,000 passengers per day in two locations.

Tuesday 26 September 2017, 14:00–15:30 York

Panel: Business, Technology and Societal Impacts of Autonomous Vehicles

Moderator: **Barrie Kirk** *CAVCOE*
Panelists: **Laura Dierker** *Neptec*
Sebastian Fischmeister *University of Waterloo*
Jack N. Endo *Toyota Research Institute*
Fahad Khan *City of Toronto*

One of the exciting aspects of AVs is the tremendous breadth and depth of the subject. This panel includes:

- Neptec, a developer and manufacturer of LiDARS, used in robotics and autonomous systems.
- The University of Waterloo, which has a wide range of AV research and development activities. WatCAR is one of the research project and will be on display.
- Toyota, as one of the top car manufacturers, has a major R&D program focused on AVs.
- AVs will have a substantial impact on municipalities. The City of Toronto will describe its examination of the impact of Non-Passenger AVs, such as sidewalk delivery robots and automated service vehicles.

Barrie Kirk's bio appears on Page 17.

Laura Dierker has over 25 years' experience in the development of sustainable revenue streams for high technology. She has held roles in research, product management, industrial sales and

international market development. Ms. Dierker's experience includes creating new divisions and new markets for companies as diverse as telecommunications and consumer packaging. These efforts included program, product and contractual responsibility.

She has successfully commercialized both new and relaunched products globally including several years living and working in Europe. Ms. Dierker holds an Applied Physics degree from the University of Waterloo, and an MBA from the Ivey Business School at the University of Western Ontario.

Dr. Sebastian Fischmeister performs systems research at the intersection of software technology, distributed systems, and formal methods. His preferred application area includes distributed real-time embedded systems in the domain of automotive systems, avionics, and medical devices. Key highlights of his research include a framework for scalable locationbased pervasive computing systems and tree communication schedules for verifiable but flexible real-time communication. A slightly modified version of his real-time communication framework has been used for the plug-and-play demonstration of medical devices and to promote the ASTM F29.21 standard. He is now working on (a) information extraction of timesensitive systems, (b) using data analytics of extracted information for system validation and security, (c) runtime monitoring of safety-critical systems, and (d) reliable and robust performance evaluation of embedded systems Sebastian Fischmeister has received the APART stipend in 2005, the Ontario Early Researcher Award (ERA) in 2014, and throughout the years several best paper and tool awards. Fischmeister received the Dipl.-Ing. degree in Computer Science at the Vienna University of Technology, Austria, in March 2000, and his Ph.D. degree in Computer Science at the University of Salzburg, Austria in December 2002. He continued working at the University of Salzburg as researcher and lecturer and was awarded the Austrian APART stipend in 2005. He subsequently worked at the University of Pennsylvania, USA, as Post Graduate

Research Associate until 2008. Sebastian Fischmeister is currently Associate Professor at the Department of Electrical and Computer Engineering at the University of Waterloo, Canada.

Jack N. Endo joined Toyota Motor Corp.(TMC) and began his R&D work at Higashi Fuji Technical Center, Advanced Electronics Dev. division in 1986. Jack was involved in R&D of future EV system and motor control, an adaptive cruise control system(ACC), automotive radar and LIDAR, automated vehicle control system in early '90s and made a demonstration of automated driving and platooning at US I-15 in San Diego,CA in 1997. Jack was involved in establishing the new entity Toyota InfoTechnology Center (ITC) and led its expansion to the office in Palo Alto,CA in 2001. Then, Jack went back to Higashi Fuji to join BRIV to accelerate the R&D of Automated Driving, and heavily involved in promotion of Standardization and Gov-Industry collaboration as a member of Japan Automobile Manufacturers Association (JAMA). In March, 2017 Jack joined Toyota Research Institute in Silicon Valley, CA to further promote the development of Artificial Intelligence into Automated Driving System and Connected Vehicle System.

Fahad Khan is currently working to investigate and forecast the impacts of Automated Vehicles for the City of Toronto. Previously, he has worked as a Transportation Planning EIT at the Province of Alberta. Khan is a Civil Engineering graduate from the University of Toronto and is the first staff person across North America to be assigned an Automated Vehicle portfolio. . He graduated from the Masters of Engineering and Public Policy program at McMaster University. He enjoys being involved with future technology and automobiles and is looking forward to a future where the car is not just a mule used to move society, but a tool that creates opportunities currently impossible.

Tuesday 26 September 2017, 16:00–17:30 York

Panel: Key User Experiences With Connected Vehicles

Moderator: **Onur Altintas** *Toyota Info Technology Center*
Panelists: **Jim Lansford** *Qualcomm*
Warren Ali *Automotive Parts Manufacturers Association (APMA)*
Klaus David *University of Kassel*
Jose Duran *Nokia*

The term “CV” means different things to different people. In this session, the speakers will address the many facets of integrating communications and vehicles. The presentations will address a connected car platform, work on the new mobile phone system known as 5G, the many related initiatives by the Canadian auto supply chain, and pedestrian protection systems. The latter is key because in cities like Toronto, the majority of traffic deaths and serious injuries are not vehicle occupants but pedestrians and cyclists.

Dr. Jim Lansford is in the standards group at Qualcomm, responsible for Wi-Fi standards and strategy. He has over 35 years of experience in communications systems, digital signal processing, and strategic business development. Prior to its acquisition by Qualcomm in August 2015, he was a Fellow in the Global Standards Group at Cambridge Silicon Radio (CSR).

Dr. Lansford has been Chief Technology Officer of three wireless startups (Momentum Microsystems, Mobilian, and Alereon) and held senior technical positions at Harris and Intel Corporation before CSR and Qualcomm. Dr. Lansford was formerly the co-chair of 802.15.3a (high speed UWB) as well as former chair of 802.19 (Coexistence) within IEEE 802, and was also a vice-chair of IEEE 802.15.2. He is currently chair of the Wireless Next Generation Standing Committee in IEEE 802.11. In the Wi-Fi Alliance, he chairs the Automotive Market Segment Task Group, the DSRC Marketing Task Group, and the Long Range Strategy Group. In addition to his experience with Qualcomm and other companies, Dr. Lansford has served on the teaching and/or

research faculty of Georgia Tech, the University of Colorado at Colorado Springs, and Oklahoma State University; he was also a Visiting Associate Professor at Texas State University. He is currently active as an Adjunct Professor in the graduate Interdisciplinary Telecommunications Program at the University of Colorado – Boulder. Dr. Lansford has a Ph.D. in Electrical Engineering from Oklahoma State, an MSEE from Georgia Tech, and a BSEE with highest honors from Auburn University.

Warren Ali is Director, Emerging Technologies Initiatives, of APMA, Canada. APMA is Canada’s national association representing OEM producers of parts, equipment, tools, supplies and services for the worldwide automotive industry. The Association provides important representation to both Federal and Provincial Governments, supports regional government initiatives and creates and executes global marketing initiatives in order to develop trade and business opportunities for the membership.

Prof Klaus David is full University Professor since 1998 and since 2000 head of the chair of communication technology (ComTec) at Kassel University, Germany. His research interests include mobile networks, applications and context awareness. He has 12 years of industrial experience in major companies like HP, Bell Northern Research, IMEC, T-Mobile (as Head of Group and UMTS project leader) and IHP (as Head of Department), with five years of international experience in the UK, Belgium, USA, and Japan. He has published over 200 scientific articles, including 3 books, and has registered over 10 patents. He is active in IEEE (Editor in Chief IEEE VT Magazine, BoG IEEE VT), ngmn (next generation mobile networks) as advisor, WWRf (Wireless World Research Forum) as publication manager and he is involved in many conferences, such as IST Future Network & Mobile Summit 2012 Berlin as TPC chair or 2013, 14, 15,16 and

18 in IEEE PerCom as TPC member. Also Prof. David is a regular technology and strategy consultant to industry as well as co-founder of two startup companies.

Jose Duran is currently leading 5G initiatives in Nokia for early Cellular Operator deployments as well as for Verticals and Ecosystems. He has over thirty years' experience in telecom, 27 of which in wireless fixed and mobile solutions and services, delivering and launching four generations of cellular systems. He has held a number of leadership positions in Product Management, Partner Management and Architecture, Research and Technology, while working in several parts of the world. He joined Nokia in 2016, and before worked at Bell-Northern Research, Nortel and Alcatel-Lucent. Jose holds a Bachelor's and a Master's degree in Electrical Engineering from University of Ottawa, Canada.

Wednesday Plenary Keynotes

Wednesday 27 September 2017, 9:00–9:45 Toronto Ballroom

Wireless Powered Communication Systems as an Enabling Technology for the Internet of Things

Robert Schober, *Friedrich-Alexander-University Erlangen-Nürnberg*

Although wireless power transfer (WPT) has been first proposed by Nikola Tesla more than one hundred years ago, the application of this concept as a means to facilitate perpetual energy supply for wireless communication systems has emerged only recently. In fact, WPT and simultaneous wireless information and power transfer (SWIPT) are now seen by many as promising enabling technologies for large-scale sensor networks and the Internet of Things. In this talk, we will first discuss the benefits, limitations, and possible applications of WPT/SWIPT systems. In the main part of the talk, we will investigate the implications of WPT/SWIPT on the design and optimization of wireless communication systems with special emphasis on the impact of the adopted energy harvesting model. In the last part of the talk, we will elaborate on the challenges that have to be overcome to make WPT/SWIPT practical and suggest some topics for future research.

Robert Schober (S'98, M'01, SM'08, F'10) was born in Neuendettelsau, Germany, in 1971. He received the Diplom (Univ.) and the Ph.D. degrees in electrical engineering from the Friedrich-Alexander-University of Erlangen-Nürnberg (FAU), Germany, in 1997 and 2000, respectively. From May 2001 to April 2002 he was a Postdoctoral Fellow at the University of Toronto, Canada, sponsored by the German Academic Exchange Service (DAAD). From 2002-2011, he was a Professor at the University of British Columbia (UBC), Vancouver, Canada. Since January 2012 he is an Alexander von Humboldt Professor and the Chair for Digital Communication at FAU. His research interests fall into the broad areas of Communication Theory, Wireless Communications, and Statistical Signal Processing.

Dr. Schober received several awards for his work including the 2002 Heinz Maier-Leibnitz Award of the German Science Foundation (DFG), the 2004 Innovations Award of the Vodafone

Foundation for Research in Mobile Communications, the 2006 UBC Killam Research Prize, the 2007 Wilhelm Friedrich Bessel Research Award of the Alexander von Humboldt Foundation, the 2008 Charles McDowell Award for Excellence in Research from UBC, a 2011 Alexander von Humboldt Professorship, and a 2012 NSERC E.W.R. Stacie Fellowship. In addition, he received several best paper awards. Dr. Schober is a Fellow of the Canadian Academy of Engineering and a Fellow of the Engineering Institute of Canada. From 2012-2015 he served as Editor-in-Chief of the IEEE Transactions on Communications. He is currently the Chair of the Steering Committee of the new Communication Society (ComSoc) journal IEEE Transactions on Molecular, Biological and Multiscale Communication and serves on the Editorial Board of the Proceedings of the IEEE. Furthermore, he is a Member-at-Large of the Board of Governors and a Distinguished Lecturer of ComSoc.

Wednesday 27 September 2017, 9:45–10:30 Toronto Ballroom

How to Harness Opportunistic Resource and Capability: A Collaborative Network Design Approach

Yuguang (Michael) Fang, *University of Florida, USA*

Connected things in various cyber-physical systems (CPSs) such as IoTs and smart cities enable us to sense physical environments, extract intelligent information, and better regulate physical systems we heavily depend on in our daily life. This has also generated tremendous traffic burden on our existing telecommunications infrastructure, resulting in significant spectrum shortage. Moreover, it has been witnessed that battery-powered devices such as smart phones tend to deplete their energy much faster than before and this trend will continue if not carefully considering network-wide power consumption. Furthermore, heterogeneity in network technologies

and devices and the lack of comprehensive study on interdependency in a system of systems have also caused serious concerns on security and privacy. How to take a holistic approach to carefully examining network-wide design issues on spectrum, energy and security is of paramount importance.

In this keynote, the speaker will discuss various related problems and challenges in a connected world and then present a novel collaborative network solution to enabling connected things to effectively harvest in-network capability (spectrum, energy, storage, and computing power) in a cognitive fashion to intelligently manage the spectrum efficiency, energy efficiency, and yes, security!

Dr. Yuguang “Michael” Fang received MS degree from Qufu Normal University, Shandong, China in 1987, PhD degree from Case Western Reserve University in 1994 and PhD degree from Boston University in 1997. He was an assistant professor in Department of Electrical and Computer Engineering at New Jersey Institute of Technology from 1998 to 2000. He then joined the Department of Electrical and Computer Engineering at University of Florida in 2000 and has been a full professor since 2005. He held a University of Florida Research Foundation (UFRF) Professorship (2006-2009, 2017-2020), a University of Florida Term Professorship (2017-2019) and Changjiang Scholar Chair Professorship awarded by the Ministry of Education of China (is currently affiliated with Dalian Maritime University).

Dr. Fang received the US National Science Foundation Career Award in 2001 and the Office of Naval Research Young Investigator Award in 2002, 2015 IEEE Communications Society CISTC Technical Recognition Award, 2014 IEEE Communications Society WTC Recognition Award, and multiple

Best Paper Awards from IEEE Globecom (2015, 2011 and 2002) and IEEE ICNP (2006). He has also received 2010-2011 UF Doctoral Dissertation Advisor/Mentoring Award, 2011 Florida Blue Key/UF Homecoming Distinguished Faculty Award, and the 2009 UF College of Engineering Faculty Mentoring Award. He was the Editor-in-Chief of IEEE Transactions on Vehicular Technology (2013-2017), the Editor-in-Chief of IEEE Wireless Communications (2009-2012), and serves/served on several editorial boards of journals including IEEE Transactions on Mobile Computing (2003-2008, 2011-2016), IEEE Transactions on Communications (2000-2011), and IEEE Transactions on Wireless Communications (2002-2009). He has been actively participating in conference organizations such as serving as the Technical Program Co-Chair for IEEE INFOCOM'2014 and the Technical Program Vice-Chair for IEEE INFOCOM'2005. He is a fellow of the IEEE (2008) and a fellow of the American Association for the Advancement of Science (AAAS) (2015).

Wednesday Industry Track: Connected World

Wednesday 27 September 2017, 11:00–12:30 York

Panel: IoT Connectivity – Standard Convergence of Market Battlefield

Moderator:	Ahmed Alshaily	<i>Assistant Director, Wireless Lab, University of Toronto</i>
Panelists:	Landon Garner	<i>Chief Marketing Officer, Ingenu</i>
	Fraser Gibbs	<i>Chief Technology Officer, eleven-x</i>
	Yves Lostanlen	<i>SIRADEL N.A. and WISE</i>
	Rath Vannithamby	<i>Senior Research Scientist, Intel</i>

The emergence of wireless Internet of Things (IoT) applications has ignited a new gold rush era for wireless system design as existing wireless systems fall short in scaling to wireless IoT connectivity requirements. Numerous newly introduced wireless systems, standards and technologies aiming to cater to the requirements of wireless IoT connectivity scenarios are facing off in a battle royal fashion for wireless IoT dominance. This panel will discuss the current state of Low Power Wireless Access (LPWA) IoT connectivity along with the future of massive Machine Type Communication (mMTC).

Dr. Ahmed Alshaily is the assistant director of the Wireless Lab, University of Toronto and a member of the 5G Spectrum and Wireless Networks team at TELUS. He is also an adviser for the Next Generation Mobile Networks (NGMN) alliance and actively contributes to 3GPP, ITU and the IEEE ComSoc Standards Development. Ahmed received his Bachelors of Engineering from King Saud University and both his Masters of Engineering and PhD in Engineering from the University of Toronto.

As chief marketing officer, **Landon Garner** oversees the development and execution of all brand and marketing strategy for Ingenu. Prior to joining Ingenu, Mr. Garner served as director of marketing for RacoWireless, a leading enabler of cellular M2M connectivity solutions – helping guide the company through two major capital events, and closing with the company’s final exit in late 2014. Mr. Garner also worked in a similar role

for KORE, following its acquisition of RacoWireless. Earlier in his career, he worked for Nu Skin, a leading personal care product company, as part of their global product marketing team, managing its flagship brand as it grew to generate more than a billion dollars in revenue. Mr. Garner holds a bachelor’s degree in marketing communications from Brigham Young University and an MBA from the University of Hawaii’s Shilder College of Business.

Fraser Gibbs has worked for 20 years in the telecommunications industry including 15 years guiding BlackBerry’s wireless road map from GSM to LTE. As CTO of eleven-x, he heads both the LTE consulting and IoT network divisions as they lead the Canadian wireless industry into the future.

Yves Lostanlen’s bio appears on Page 14.

Rath Vannithamby’s bio appears on Page 16.

Wednesday 27 September 2017, 14:00–15:30 York

Panel: Smart Cities

Moderator: Jeffrey Stanier *Head of Ottawa Wireless Development Site, Ericsson*
Panelists: David Sonnenschein *VP of SAP IoT Accelerator*
Alvin Chin *Senior Researcher, BMW Group*
Harmke de Groot *Senior Director Intuitive IoT, IMEC*
Doru Calin *Bell Labs Fellow, Nokia Mobile Networks*

David Sonnenschein brings more than 20 years' experience in the connected enterprise from his work with both startups of Silicon Valley and his time with SAP driving solutions on emerging technology trends. Leading the SAP IoT Startup Accelerator since 2012, David has had exposure to some great early wins in relevant to the Industrial Internet of Things and Smart Cities. SAP brings 40+ years of software innovation to the topic of the Internet of Things.

The Ultimate Smart Driving Machine in the Smart City *Alvin Chin*

A Smart City is a city which has technology embedded in its city infrastructure like street lights and traffic lights that operate together as a network in a grid computing platform. The Internet of Things (IoT) is playing a huge role in enabling the city infrastructure to become smart, by equipping it with sensors and connecting it to the cloud in order to make it become a self-sustaining connected ecosystem. The car now does not become a function of going from point A to point B anymore, but rather delivers a holistic experience that revolves around the activities in our daily lives and the dynamic changes in the city environment. What are the issues and challenges for driving a car in the Smart City? Learn how BMW is tackling these issues using machine learning and big data computing to create the Ultimate Smart Driving Machine.

Dr. Alvin Chin is a Senior Researcher in Machine Learning at BMW Technology Corporation, Chicago. His research interests include connected car, machine learning, big data, mobile social networking, and ubiquitous computing. Dr. Chin has authored more than 30 publications and 10 patents, including pending. He received a PhD in Computer Science from the University of Toronto and previously worked for Nokia Research Center, Nokia and Microsoft in Beijing, China. He can be contacted at alvin.chin@bmwna.com and more about Dr. Chin can be found at his website <http://www.alvinchin.com>.

Everything connected: a new dawn for mobility

Harmke de Groot

IoT will play an important role in finding solutions for a greener and safer world. It will help us improve our health and comfort. Take for example our mobility problems, today a source of stress, with environmentally unfriendly impact and economic losses because of delays. An intuitive IoT will make sure that vehicles will adapt and change their behavior depending on the situation: in the first stage to avoid delays and crashes, but this will expand towards fully autonomous driving. The use of drones to monitor agriculture and to deliver packages will be a fact in 10 to 20 years from now. Realizing this kind of smart mobility is only possible with radically new technology. However new technology is not enough. To realize many IoT scenarios also radically new industry eco-systems and new business models are needed as everything is connected together. In

some cases also new legal and ethical challenges will need to be resolved. Together with a wide range of industrial and academic partners, Imec is tackling some of the most important technical challenges to realize smart cities but we are also piloting large scale tests, so future applications and services can already be tested today with government, end-users, researchers and the full industrial eco-system working together.

Harmke de Groot is Imec's I2oT and EC teams of more than 250 researchers are internationally recognized for their work on innovative algorithms, network, radio, and sensor solutions for person-centric IoT, smart cities, smart buildings and automotive applications. Because of this R&D scale the programs have a unique application oriented approach with real life validation, where mass production requirements are taken into account from the start. Together with a wide range of industrial and academic partners these R&D programs address the challenges of connectivity, limited autonomy, functionality, interoperability, ease of use, data fusion and security to enable a wide range of new applications and a truly intuitive user experience.

Harmke worked at Philips Semiconductors (now NXP), Philips Research and Microsoft before joining Imec and Holst Centre in 2008. She is (co-)author of more than 80 publications including a book on embedded system design. She holds a Master of Science in EEE from the University of Technology Eindhoven (1997) and a Master of Business Administration from TIAS Business school (2013). Her personal research interest these days is focused on innovation management & leadership, specifically on organization characteristics and individual behavior which enhances chances that innovation partnerships are formed and executed successfully. Inspired by her daily work, she investigates this topic at the University of Tilburg.

Dr. Doru Calin (S'95–M'99–SM'05) is a Bell Labs Fellow, Director and Innovation Domain Leader with Nokia Mobile Networks CTO in Murray Hill, NJ, USA. He has broad responsibilities for accelerating innovations in 5G, mobile network virtualization, mobile edge cloud computing, cloud based technologies, IoT and verticals. Dr. Calin serves also as an Adjunct Professor with Columbia University, New York City, as an Associate Editor of IEEE Communications Letters and as an Editorial Board Member of the Springer's Wireless Personal Communications International Journal. At Nokia he held a variety of positions in research, applied research, and management of research. He was a Technical Consultant with Bouygues Telecom, and a Senior Research Engineer with Motorola Research Labs, Paris. He holds 30 independent patents awarded in multiple countries, over 20 patents pending and has co-authored over 75 research publications. He is the recipient of an IEEE WCNC 2015 best paper award, IEEE Globecom 2013 HetNets Workshop best paper, two Bell Labs President's Gold Awards, four Bell Labs Teamwork awards and a Motorola 3GPP standards award. He received a Ph.D. (High Hons.) degree in electrical and computer engineering from the University of Versailles and TELECOM SudParis, France in 1998 and has been a Senior Member of IEEE since 2005.

Wednesday 27 September 2017, 16:00–17:30 York

Panel: Technology Challenges in Enabling Safe Integration of Unmanned Aerial Vehicles (UAVs)/Drones into National Air Space in Urban Environments

Moderator: Ravi Pragada *InterDigital*
Panelists: Attila Takacs *Ericsson Garage*
Alistair Munro *EUROCAE WG-105 (Unmanned Aircraft Systems) Focus Team*
Kyle Snyder *NextGen Air Transportation Program*
Zlatko Zahirovic *Bell Mobility*
Kamesh Namuduri *University of North Texas*

Unmanned Aerial Vehicles (UAV) are a profoundly disruptive technology poised to impact positively and substantially several industries. UAVs will reshape economic, social, security, environmental and political landscapes over the decades to come with PwC predicting that the addressable market value of drone powered solutions is over \$127 billion. Current Air traffic control (ATC) systems cannot scale sufficiently to include UAV and provide command, control and communications (C3) infrastructure. NASA, with assistance from a confederation of industrial affiliates and partners, is developing an Unmanned Aerial System (UAS) Traffic Management (UTM) system to facilitate a framework for low altitude UAV operations and this is also being addressed at global level by GUTMA (Global UTM Association). It is envisioned that terrestrial cellular infrastructure will also provide coverage and C3 services to UAVs to enable beyond visual line-of-sight (BVLOS) operations. There are several challenges from a communications perspective in integrating UAVs to the terrestrial cellular network and to ensure their coexistence with terrestrial, commercial cellular users. Low altitude UAV operational complexities and traffic management, detect-and-avoid (DAA) challenges in urban and suburban environments, enabling end-to-end security, remote identification and tracking, acute differences in propagation conditions and interference patterns between terrestrial base stations and UAVs compared with terrestrial mobiles, higher mobility and velocity, stringent obligations in reliability and safety, ultra-low latency link for C3 are some of the elemental themes that require convincing answers. We discuss core principles in communications, UTM, end-to-end security and DAA to facilitate safe integration of UAVs into National Air Space.

Ravi Pragada is the Senior Principal Engineer at InterDigital where he is responsible for leading all incubation activities within the Future Wireless Business Unit. He currently leads research related to Unmanned systems and associated technologies. He has actively contributed to and held leadership positions in various next generation cellular system projects viz., millimeter wave air-interface design and development, device-to-device communications, millimeter wave backhaul and beyond 4G architectures. He also held engineering positions in product development including lead software architect for HSPA/UMTS and LTE protocol stack development projects covering handset and infrastructure products. He is a prolific inventor with 100+ granted or pending patent applications. He is a recipient of numerous innovation awards including InterDigital's Chairman's award, President's award, multiple CTO awards as well as Lucy Mahjoubian distinguished publication award. Prior to InterDigital he has part of Tier 1 OEM team that developed RNC and NodeB infrastructure for 3GPP UMTS system. He received his M.S. in computer science and engineering from the State University of New York at Buffalo and B.E. from Andhra University, India.

Attila Takacs is the Director of Innovation, heading the Ericsson Garage, the corporate incubator in Silicon Valley. Currently, he is coordinating drone related IoT activities and in particular focuses on drone/UAV traffic management. He has broad experience in research, standardization, technology strategy, and innovation management. He is a proven corporate entrepreneur with a track record of successfully introducing disruptive, as well as advanced technology innovations to products; from the idea phase, growing to multi-million-dollar initiatives. He was on the forefront of innovation initiatives that later culminated in the creation of two new, strategic product areas in Ericsson: Cloud and Software Defined Networking. Mr. Takacs is an accomplished inventor with about 30 granted patents and numerous conference and journal articles. He holds an M.Sc. in computer science and a post-graduate degree in banking informatics both from the Budapest University of Technology.

Dr. Alistair Munro has over 35 years experience in the design, implementation and validation of distributed systems and communications technologies. After a long career in academia, when he was Toshiba Professor of Communications Networks at Bristol University, UK, he worked at Airbus Defense and Space in the ASTRAEA program which addressed the integration of remotely piloted aircraft in non-segregated airspace. He was technical lead for communications, spectrum management and security in ASTRAEA. He chairs the Focus Team in EUROCAE WG-105 (Unmanned Aircraft Systems) which deals with these topics and is Advisor to UK CAA in the ICAO RPAS Panel. In these capacities he contributes to delivering regulatory standards, guidance material technical system and equipment specifications for secure command and control of unmanned aircraft.

Kyle Snyder, Director, NextGen Air Transportation Program returned home to North Carolina in 2012 to lead the development of an Unmanned Aircraft Systems (UAS) Ecosystem as part of an effort to transition the state to a modern air transportation system. Through his experiences in industry, academia, government, and the non-profit sector, Kyle has developed a unique perspective and skill set for transitioning new aviation technologies from research laboratories and prototype phases into operational products. In the role as the NGAT Program Director, Kyle is reaching across North Carolina to connect researchers and educators with industry and government offices that are preparing for future aviation capabilities. Having seen the initial Space Shuttle launches from his backyard as kid, to standing on the flight line for a couple of the last SR-71 flights at NASA Dryden, to being a driving force in the domestic integration of UAS for civil and commercial operations, Kyle continues to be inspired by science of flight and seeks to share those moments with those around him (especially his wife and young son!). Kyle received his M.B.A. in Aerospace from University of Tennessee, Knoxville, M.S. in Mathematics from University of Tennessee Space Institute, Tullahoma and B.A. in Mathematics, Computer Science from Catawba College, Salisbury, NC.

Zlatko Zahirovic joined Bell working as a Technician and is now Senior Manager. Zlatko's passions include technology and finding more use cases for cellular connectivity; he also appreciates self-driving cars and also is an avid enthusiast of drone/quad-copter technology. Our core function is to provide connectivity to cell towers, radio towers and switching centers. The team is focused on many projects related to those core needs but also have our own "20% time" which we've been successfully seeding for the last 3 years.

Prof. Kamesh Namuduri received his B.S. degree in Electronics and Communication Engineering from Osmania University, India, in 1984, M.S. degree in Computer Science from University of Hyderabad in 1986, and Ph.D. degree in Computer Science and Engineering from University of South Florida in 1992. Over the past eight years, his research is focused on aerial networking

and communications. He co-organized a series of workshops on "Airborne Networking and Communications" in conjunction with AIAA, AUUVSI, and ACM Conferences. He is serving as the chair for the IEEE Standards Working Group (IEEE 1920.1: Aerial Communications and Networking Standards). He is a co-editor for an upcoming book on "Unmanned Aerial Vehicle Networks". He has published over one hundred research articles during his career. He is leading the Smart and Connected Community project on "Deployable Communication Systems" in collaboration with the Government, public, and private organizations. This living laboratory project was demonstrated thrice during the Global City Teams Challenge hosted jointly by the National Institute of Standards and Technology and US Ignite in 2015, 2016, and 2017.

Tutorials

A range of tutorials will be held on Sunday 24 September given by experts from industry and academia.

Sunday 24 September 2017 9:00–12:30 Casson

T1: Connected Vehicles

Shahrokh Valaee, University of Toronto

Today's vehicles are equipped with a plurality of microprocessors and microcontrollers, which in some models easily exceeds one hundred. Adding to this immense processing power, various sensing capabilities, unlimited battery lifetime, and large body for placement of multiple antennas and sensors, make today's vehicles very powerful sensing and computing machines. We are witnessing the emergence of Self-Driving Vehicles, which intend to be an assistant to, or completely replace, the driver. Unfortunately, we also notice the accidents that such autonomous vehicles are involved in. Researchers, engineers, and government entities are investigating whether autonomous driving will be able to address all the needs for a safe driving experience.

In this tutorial, we will show that autonomous driving alone will not be able to remove accidents on roads and will indeed be the start of a new chapter for auto industry that will pave the path for the more advanced Connected Vehicles technology. A connected vehicle communicates with its immediate and extended neighbourhood and becomes an important node in a smart environment. This tutorial discusses the various technologies that are the potential enabler of connected vehicles and smart cities.

Shahrokh Valaee is a Professor in the Edward S. Rogers Sr. Department of Electrical and Computer Engineering at the University of Toronto. He is the founder and the Director of the Wireless and Internet Research Laboratory (WIRLab) at the University of Toronto. Professor Valaee is the Lead TPC Chair of PIMRC 2017, and has served as Networks Track Co-Chair of WCNC 2015, TPC Co-Chair of ICT 2014, Tutorial Chair of PIMRC2014, Co-Chair of the Wireless Networks Track of WPMC 2012, and the TPC chair of PIMRC 2011, among other conference chairing activities. He has served as an Editor of IEEE Transactions on Wireless Communications, and IEEE Signal Processing Letters, and as a guest editor for several journals including IEEE Wireless Communications Magazine, Wiley Journal on Wireless Communications and Mobile Computing, and EURASIP Journal on Advances in Signal Processing. He is currently serving as an Editor of Journal of Computer and System Science and the Area Editor of Localization and Location Based Services of Springer Encyclopaedia of Wireless Networks. Professor Valaee is a Fellow of the Engineering Institute of Canada. His research includes, vehicular networks, localization and tracking, and cellular systems.

Sunday 24 September 2017 14:00–17:30 Osgoode East

T2: Vehicular Communications and 5G Paradigm - Vision and Practices

Muhammad Alam, University of Aveiro

Transportation systems play an extremely important role in modern society and effective vehicular connectivity techniques can significantly enhance efficiency of travel, reduce traffic incidents and improve safety, alleviate the impact of congestion; devising the so-called Intelligent

Transportation Systems (ITS) experience. While some of the enabling technologies are entering their mature phase, e.g., traffic flow sensors, IEEE 802.11p and ETSI ITS G5, there is still the need of a complete integrated solution that can take the most benefits from a real-time analysis of the data gathered and appropriate reaction on the transportation system. The closed loop interaction between vehicles, drivers and the transportation infrastructure puts more pressure on the research community to tackle the challenges and requirements of future mobility. The plethora of new application areas of Intelligent Transportation Systems has raised concern about the inter-connectivity of future vehicles. For instance, many ITS services have time-lines constraints that are not fulfilled by the communication protocols proposed so far, specifically in road congestion and accident scenarios. Further, the technology choice for vehicular communication has raised more concerns – which technology to use for vehicular communications? 3GPPP committee has launched efforts to study the feasibility of LTE-based services for vehicular communication and connected vehicles are being considered a relevant part of the future 5G ecosystem. Therefore, this tutorial covers the existing standards for vehicular communications in a critical manner and presents a comprehensive overview of future mobility envisioned in 5G.

Muhammad Alam (Ph.D., Senior Researcher) holds a PhD degree in computer science from University of Aveiro, Portugal (2013-14). In 2009, he joined the Instituto de Telecomunicações - Aveiro (Portugal) as researcher and completed his Ph.D from University of Aveiro with a specialization in Inter Layer and Cooperative Design Strategies for Green Mobile Networks. He has participated in several European Union FP7 projects such as Hurricane, C2POWER, ICSI, PEACE and Portuguese government funded projects such SmartVision. Currently, he is working as senior researcher at Instituto de Telecomunicações and participating in European Union and Portuguese government funded projects. His research interests include IoT, Real-time wireless communication, 5G, Vehicular networks, Context-aware systems and Radio resource management in next generation wireless networks. He is the editor of Book "Intelligent Transportation Systems, Dependable Vehicular Communications for Improved Road Safety". He is the author of several journal and conference publications as well as book chapters. He is also the TPC member and reviewer for a number of reputed conferences, journals, and magazines. He is IEEE and IEEE IES member. He served as general co-chair of future 5V conference and also served as session chairs in a number of reputed conferences such as IEEE IECON 2016, IEEE WFCSS 2016, IEEE ITSC 2015. He also provided his services as guest editor to several journals.

Sunday 24 September 2017 9:00–12:30 Osgoode East

T3: Flexible Radio Access Beyond 5G: A Future Projection

Hüseyin Arslan, University of South Florida

Today's wireless services and systems have come a long way since the rollout of the conventional voice-centric cellular systems. The demand for wireless access in voice and multi-media applications has increased

tremendously. In addition to these, new application classes like extreme mobile broadband communication, ultra reliable and low latency communications, massive machine type communications, and Internet of Things have gained significant interest recently for 5G. The trend on the variety and the number of mobile devices along with the mobile applications will certainly continue beyond 5G, creating a wide range of technical challenges such as cost, power efficiency, spectrum efficiency, extreme reliability, low latency, robustness against diverse channel conditions, cooperative networking capability and coexistence, dynamic and flexible utilization of wireless spectrum. In order to address these technical challenges, 5G waveforms and radio access technologies (RATs) should be much more flexible. The current 4G systems rely on the orthogonal frequency multiple access (OFDM) waveform, which is not capable of supporting the diverse applications that 5G and beyond will offer. This is because the traffic generated by 5G and beyond is expected to have radically different characteristics and requirements when compared to current wireless technology. For 5G to succeed, numerous waveform alternatives have been explored to best meet its various technical requirements. However, none of the alternatives were able to address all the requirements at the same time.

Dr. Arslan (IEEE Fellow) has received his BS degree from Middle East Technical University (METU), Ankara, Turkey in 1992; MS and Ph.D. degrees in 1994 and 1998 from Southern Methodist University (SMU), Dallas, TX, USA. From January 1998 to August 2002, he was with the research group of Ericsson Inc., NC, USA, where he was involved with several projects related to 2G and 3G wireless communication systems. Since August 2002, he has been with the Electrical Engineering Dept. of University of South Florida, Tampa, FL, USA, where he is a Professor. In December 2013, he joined Istanbul Medipol University to found the Engineering College, where he has worked as the Dean of the School of Engineering and Natural Sciences. He has also served as the director of the Graduate School of Engineering and Natural Sciences at the same university. In addition, he has worked as a part-time consultant for various companies and institutions including Anritsu Company, Savronik Inc., and The Scientific and Technological Research Council of Turkey.

Dr. Arslan's research interests are related to advanced signal processing techniques at the physical and medium access layers, with cross-layer design for networking adaptivity and Quality of Service (QoS) control. He is interested in many forms of wireless technologies including cellular radio, wireless PAN/LAN/MANs, fixed wireless access, aeronautical networks, underwater networks, in vivo networks, and wireless sensors networks. His current research interests are on 5G and beyond, physical layer security, interference management (avoidance, awareness, and cancellation), cognitive radio, small cells, powerline communications, smart grid, UWB, multi-carrier wireless technologies, dynamic spectrum access, co-existence issues on heterogeneous networks, aeronautical (High Altitude Platform) communications, in vivo channel modeling and system design, and underwater acoustic communications. He has served as technical program committee chair, technical program committee member, session and symposium organizer, and workshop chair in several IEEE conferences. He is currently a member of the editorial board for the IEEE Surveys and Tutorials and the Sensors Journal. He has also served as a member of the editorial board for the IEEE Transactions on Communications, the IEEE Transactions on Cognitive Communications and Networking (TCCN), the Elsevier Physical Communication Journal, the Hindawi Journal of Electrical and Computer Engineering, etc

Sunday 24 September 2017 14:00–17:30 Governor General Parlor
T4: Error Correction Coding for 5G and Beyond: Design Requirements and Target Technologies
Stark Draper, Nuwan Ferdinand, Edward S. Rogers Sr., University of Toronto

In the first half of this tutorial we will introduce the audience to the basics of the two families of error correction codes standardized for 5G cellular systems: LDPC codes and Polar codes. The emphasis will be on developing foundational knowledge of the code families and basic decoding algorithms as well as the advantages, disadvantages, and limitations of each family. The emphasis will be on developing understanding through illustrative numerical comparisons. In the second half of the tutorial we will consider three important application areas: in

5G, in vehicle-to-vehicle communications, and in the Internet-of-things. We will introduce each application area in the context of the novel challenges it presents to error correction, the design requirements, and the degree to which LDPC and Polar codes stack up. By the end of the tutorial the audience will have a broad sense of what error correction coding can now deliver, and what it must deliver beyond 5G.

Stark Draper is an Associate Professor of ECE at the University of Toronto and was an Associate Professor at the University of Wisconsin, Madison. His industrial work on error correction includes developing codes for Mitsubishi Electric's optical transport networks, and licensing a novel L3 cache design to Intel Corp. As a research scientist he has worked at the Mitsubishi Electric Research Labs (MERL), Disney's Boston Research Lab, Arraycomm Inc., the C. S. Draper Laboratory, and Ktaadn Inc. He completed postdocs at the University of Toronto and at the University of California, Berkeley. He received the M.S. and Ph.D. degrees from the Massachusetts Institute of Technology (MIT), and the B.S. and B.A. degrees in Electrical Engineering and in History from Stanford University. His research interests include communications and information theory, error-correction coding, statistical signal processing and optimization, security, as well as the application of these disciplines to computer architecture. Dr. Draper has received the NSERC Discovery Award, the NSF CAREER Award, the 2010 MERL President's Award, and teaching awards from the UofT, UW-Madison, and MIT. He received an Intel Graduate Fellowship, Stanford's Frederick E. Terman Engineering Scholastic Award, and a U.S. State Department Fulbright Fellowship. He is a member of the IEEE Information Theory Society Board of Governors.

Nuwan Ferdinand is a postdoctoral fellow of Department of Electrical and Computer Engineering at the University of Toronto. He received his PhD degree, in the field of Telecommunication engineering, at the Centre for Wireless Communications, the University of Oulu, Finland in 2016. His research interests are communication theory, coding theory and their applications in communication networks. His recent research results include practical lattice codes for communication networks and coding to speed up machine learning algorithms.

Sunday 24 September 2017 9:00–12:30 Governor General Parlor
T5: Stochastic Geometry-Based Modeling and Analysis of 5G Cellular Networks
Ekram Hossain, University of Manitoba

Recently, stochastic geometry models have been shown to provide tractable and accurate performance bounds for cellular wireless networks including multi-tier and cognitive cellular networks, underlay device-to-device (D2D) communications, energy harvesting-based communication, coordinated multipoint transmission (CoMP) transmissions, full-duplex (FD) communications, etc. These technologies will enable the evolving fifth generation (5G) cellular networks. Stochastic geometry, the theory of point processes in particular, can capture the location-dependent interactions among the coexisting network entities. It provides a rich set of mathematical tools to model and analyze cellular networks with different types of cells (e.g., macro cell, micro cell, pico cell, or femto cell) with different characteristics, in terms of several key performance indicators such as SINR coverage probability, link capacity, and network capacity. This tutorial will provide an extensive overview of the stochastic geometry modeling approaches for next-generation cellular networks, and the state-of-the-art research on this topic. After motivating the requirement for spatial modeling for the evolving 5G cellular networks, the basics of stochastic geometry modeling tools and the related mathematical preliminaries will be discussed. Then, a comprehensive survey on the literature related to stochastic geometry models for single-tier as well as multi-tier and cognitive cellular networks and underlay D2D communications will be presented. Then, a taxonomy of the stochastic geometry modeling approaches based on the target network model, the point process used, and the performance evaluation technique will be discussed.

Ekram Hossain (F'15) is currently a Professor in the Department of Electrical and Computer Engineering at University of Manitoba, Winnipeg, Canada. His current research interests include modeling, design, and analysis of wireless networks with emphasis on 5G cellular networks, cooperative and cognitive wireless systems, and green radio communications. He is an author/editor of several books in these areas. He was selected as a Distinguished Lecturer of the IEEE Vehicular Technology Society for the term 2016-2017.

Sunday 24 September 2017 9:00–12:30 Fitzgerald

T7: Software Defined Infrastructures for Big Sensed Data in the IoT

Amr El Mougny, German University in Cairo and Mohamed Ibnkahla, Carleton University

The Internet of Things (IoT) envisions a world where everyday objects are transformed into smart entities using sensors/actuators and technologies from ubiquitous and pervasive computing. These smart objects are expected to generate Big Sensed Data (BSD) that can leverage a great number of new applications. However, this raw BSD needs to be collected efficiently and then processed, analyzed, and possibly stored before becoming high-level information that can be consumed by the applications. So far, data collection mechanisms have focused on localized sensor networks; while the most popular platform for data storage and processing has been the centralized cloud. This tutorial shed light on why these mechanisms are not suitable for current and future requirements of the IoT. In particular, the tutorial discusses large scale data collection mechanisms that are energy efficient and inexpensive, including techniques such as public sensing and crowdsourcing. The data collection techniques considered in the tutorial focus on scalability and quality of service requirements. Furthermore, the tutorial provides in-depth examination of state-of-the-art technologies proposed for software-defined and distributed infrastructures that support the requirements of the IoT. Moreover, the tutorial discusses how BSD can be processed and turned into high-level information that can leverage smart applications. Thus, techniques such as complex-event processing and context-awareness will be reviewed as well, since they are capable of supporting real-time information processing in a distributed infrastructure. We also discuss the challenges of how these technologies and others can be implemented in a distributed architecture to ensure scalability

Amr El Mougny is currently an assistant professor at the German University in Cairo, Cairo, Egypt. He is the head of the IoT lab and is currently leading several projects such as Networked Appliances, Applications, and Sensing Systems for the Smart City, and iTram: an Information and Communication Technology Framework for Intelligent Transportation Systems, among others. Before that, Amr El Mougny was a post-doctoral fellow at Ottawa University, Ottawa, Canada, where he managed a research project on LTE-based public safety networks. Amr received his PhD from Queen's University, Kingston, Canada in 2013 and his MSc degree from Concordia University, Montreal, Canada in 2006. He has co-authored several book chapters and has over 30 publications.

Mohamed Ibnkahla is currently a Full Professor and Cisco Industrial Research Chair at the Department of Systems and Computer Engineering, Carleton University, Ottawa, Canada. He was with the Department of Electrical and Computer Engineering, Queen's University, Kingston, Canada (2000-2015), and the Department of Electronics, INP, Toulouse, France (1996-1999). The Cisco Industrial Research Chair is on "Internet of Everything (IoE) Sensor Networks and Technologies". Dr. Ibnkahla has been leading several projects with industry and government agencies. He is currently involved in a number of projects applying wireless communications in key areas of the e-Society, including: smart power grid, control of renewable energy, water management, public health, environment monitoring, wildlife tracking, food traceability and safety risk monitoring, highway safety, intelligent transportation systems, etc. Mohamed obtained the Ph.D. degree and the Habilitation a Diriger des Recherches degree (HDR) from the National Polytechnic Institute of Toulouse (INP), Toulouse, France, in 1996 and 1998, respectively. He obtained an Engineering degree in Electronics (1992) and a Diplome d'Etudes Approfondies degree (equivalent to MSc) in 1992 all from INP. He has published several books and over 50 peer-reviewed papers.

Sunday 24 September 2017 14:00–17:30 Fitzgerald

T8: Leveraging Big Sensed Data in Vehicular IoT systems

Hossam Hassanein and Sharief Oteafy, Queen's University

The Internet of Things (IoT) is proliferating on reliable and scalable collection of sensed data. Meanwhile, the growing domain of sensing over smart vehicles and smart devices (tablets, smartphones), are all

generating an exponentially increasing amount of data. The ensuing advent of Big Sensed Data (BSD) is generating critical challenges. First, collected data is mainly insightful to each deployed network, any "sense-making" processes to be built upon heterogeneously collected data faces significant interoperability problems, exposing challenges with varying quality, data-labelling inconsistencies, inaccuracies, time-sensitivities and different reporting granularities. Second, sensing systems inherently adopt a collect-and-report model, whereby collected data is indiscriminately pushed onto the networking infrastructure, regardless of the Quality of Information (QoI) or its value (VoI). Not only do we face scalability issues, but establishing reliable Vehicular Information Services on top of BSD is not attainable over inconsistently collected, validated and reported data. Thus, the future of Big Data is hampered by the sheer volume of reported data, its uncalibrated discrepancies, and worse by the flood of redundant and lower quality data. Real-time decision making is inherently built on the efficacy of ubiquitous sensing systems, not on the aggregation of devices that are isolated in operation and management. In a time when important IoT applications such as real-time road monitoring, health Informatics and emergency services require rapid and scalable access to contextual information about patients, mobile crowds and the general public, the status quo falls significantly short.

Hossam S. Hassanein (S'86 - M'90 - SM'06 - F'17) is a leading authority in the areas of broadband, wireless and mobile networks architecture, protocols, control and performance evaluation. His record spans more than 500 publications in journals, conferences and book chapters, in addition to numerous keynotes and plenary talks in flagship venues. Dr. Hassanein has received several recognition and best papers awards at top international conferences. He is the founder and director of the Telecommunications Research (TR) Lab at Queen's University School of Computing, with extensive international academic and industrial collaborations. Dr. Hassanein is a senior member of the IEEE, and is the past chair of the IEEE Communication Society Technical Committee on Ad hoc and Sensor Networks (TC AHSN). He is an IEEE Communications Society Distinguished Speaker (Distinguished Lecturer 2008-2010). Dr. Hassanein is a Fellow of the IEEE and has received several recognitions and best papers awards.

Sharief Oteafy (IEEE S'08-M'13) is an Adjunct Assistant Professor at the School of Computing, Queen's University. Dr. Oteafy received his PhD in 2013 from Queens University, focusing on adaptive resource management in Next Generation Sensing Networks, introducing the notion of Organic sensor networks that adapt to their environment and scale in functionality with resource augmentation. His current research focuses on dynamic architectures for enabling large scale synergy in the Internet of Things; encompassing dynamic resource management across IoT platforms, in addition to managing the proliferation of Big Sensed Data. Dr. Oteafy is actively engaged in the IEEE Communications Society, and an IEEE and ACM member since 2008. He is an active member of the IEEE ComSoc Standards Association and is currently the Ad Hoc and Sensor Networks standards Liaison, and a voting member in the ComSoc Tactile Internet standard WG. Dr. Oteafy co-authored a book on "Dynamic Wireless Sensor Networks", published by Wiley, and presented over 40 peer-reviewed publications in Sensing systems and the IoT. He co-chaired a number of IEEE workshops, in conjunction with IEEE ICC and IEEE LCN conferences, and served on the TPC of numerous IEEE and ACM symposia. Dr. Oteafy has delivered tutorials on Big Sensed Data management in IEEE ICC, IEEE CAMAD and IEEE Globecom conferences, and serves as an Associate Editor in IEEE Access.

The following tutorials have been cancelled:

T6: Spectrum Access Ecosystem: Dynamic Radio Spectrum Access as a Service

Keivan Navaie, Lancaster University

T9: Onboard Sensor Fusion Methods for Vehicular Platforms

Mohamed Atia, Carleton University

T10: Air-to-X Channel Modeling for UAVs, Drones, and Future Air-Ground Communications

David W. Matolak, University of South Carolina

Workshops

W1: IEEE Workshop on Next Generation Backhaul/Fronthaul Networks (IEEE BackNets 2017)

Heterogeneous small-cell networks (HetNets) are considered as one of the key architectural enablers to the challenging demands such as high spectral and energy efficiency of 5G mobile networks. Although the small-cell concept has been articulated and studied for many years within the 4G LTE framework, the concept has never found widespread application mainly due to the cost of deployment. In the conventional wireless networks, the cost of the macro-BS has been a dominant factor. The cost of a small-cell BS, on the other hand, is much lower in comparison to that of a macro-BS; but efficient and satisfactory operation of all these densely deployed small cells hinges on a smart, economical and ubiquitous backhaul/fronthaul networks provisioning ultra-low latency (time to reaction over wireless links), high data rate and high reliability. Such backhaul and fronthaul networks will guarantee the global information and communication requirements in future smart and resilient cities and solve the ubiquitous connectivity. Hence, there are considerable market interests on the development of innovative and smart wireless backhaul/fronthaul solutions for ultra-dense small cells deployed in HetNets.

The workshop will provide an opportunity for exchanging ideas and creating new space for innovative game-changing backhaul/fronthaul solutions to the challenging problems of designing smart backhauling/fronthauling for ultra-dense small cell deployment in HetNet. Proceedings of BackNets 2017 will be a collection of outstanding technical research/position and industrial papers covering novel backhaul/fronthaul solutions and recent research results with wide range of technologies within the 5G frameworks. The workshop keynote speakers and panelists will examine the technical challenges, review the economic feasibility, and discuss possible paths to research and regulatory solutions for future generation of backhaul/fronthaul communications and networking.

Workshop Chairs

Muhammad Zeeshan Shakir, University of the West of Scotland

Muhammad Ali Imran, University of Glasgow

David J. Love, Purdue University

Syed Ali Raza Zaidi, University of Leeds

Technical Programme Committee:

Bessie Malila, University of Cape Town

Anvar Tukmanov, BT

Bhavani Shankar, Mysore R, University of Luxembourg

Hina Tabassum, University of Manitoba

Mihailovic Andrej, Kings College London

Omid Semiari, Virginia Tech

Josep Mangués-Bafalluy, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC)

Program

Sunday 24 September 2017 9:00-10:30 York

Keynote Session 1

Chair: Halim Yanikomeroglu, Carleton University, Canada

- 1 Ultra-Agile Infrastructure for Ultra-Fast Connectivity**
Halim Yanikomeroglu, Carleton University, Canada
- 2 Towards 5G Mobile Transport Platforms for Industry Verticals**
Xavier Costa-Pérez, NEC Laboratories Europe, Germany
- 3 The Internet of Everything: When Drones meet 5G in Context-Aware Smart Cities**
Walid Saad, Virginia Tech, USA

Sunday 24 September 2017 11:00-12:30 York

Keynote Session 2

Chair: Hayssam Dahrouj, Effat University, Saudi Arabia

- 5 Next Generation Fronthaul Interface towards 5G mobile networks: IEEE P1914.1 Standard for Packet-based Fronthaul Transport Networks**
Aleksandra Checko, MTI Radiocomp, Denmark & IEEE 1914.1 Project
- 6 On the Design of Hybrid Radio/Free-Space Optical Backhauls for Next Generation Wireless Systems**
Hayssam Dahrouj, Effat University

Sunday 24 September 2017 14:00-15:30 York

Paper Session 1

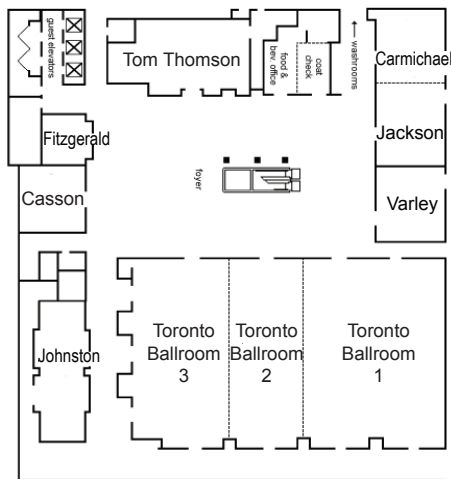
Chair: Hayssam Dahrouj, Effat University, Saudi Arabia

- 1 Case Study on Using the User-Centric-Backhaul Scheme to Unlock the Realistic Backhaul**
Mona Jaber, University of Surrey; Muhammad Ali Imran, University of Glasgow; Anvar Tukmanov, BT Research and Innovation; Andy Sutton, University of Salford; Rahim Tafazolli, University of Surrey
- 2 An Energy Efficient Integral Routing Algorithm for Software-defined Networks**
Ghadeer, Mohamad Khattar Awad, Kuwait University
- 3 Auction Based Spectrum Efficient Offloading Mechanism in HetNets**
Lu Wang, Pu Cheng, Sihai Zhang, Zhou Wuyang, University of Science and Technology of China
- 4 Transmission Rate Maximization in Self-Backhauled Wireless Small Cell Networks**
Maryam Lashgari, University of Tehran; Behrouz Maham, Nazarbayev University; Walid Saad, Virginia Tech
- 5 Energy-Aware Sensor Networks via Sensor Selection and Power Allocation**
Lama Niyazi, Effat University; Anas Chaaban, King Abdullah University of Science and Technology; Hayssam Dahrouj, Effat University; Tareq Y. Al-Naffouri, Mohamed-Slim Alouini, King Abdulah University of Science and Technology (KAUST)
- 6 Improvement on the Performance of Predictive Handover Management by Setting a Threshold**
Metin Ozturk, Paulo Valente Klaine, Muhammad Ali Imran, University of Glasgow

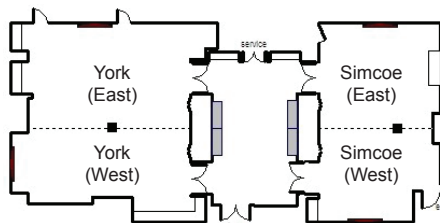
Tutorial and Workshop Program

	York	Simcoe	Tom Thomson	Jackson	Carmichael	Gov. General Main	Casson	Osgoode East	Osgoode West	Varley	FitzGerald Office	Gov. General Parlor
SUNDAY 24 September												
7:30-17:30	Registration (Toronto Ballroom Foyer)											
9:00-10:30	W1: Next Generation Backhaul/Fronthaul Networks			W5: 5G Millimeter-Wave Channel Measurement, Models, and Systems	W6: Networked Vehicles for Intelligent Transportation and Smart Grids	W12: IEEE 5G and Beyond Testbed	T1: Connected Vehicles	T3: Flexible Radio Access Beyond 5G: A Future Projection		W9: Non-Orthogonal Multiple Access Techniques for 5G Radio Access Networks	T7: Software Defined Infrastructures for Big Sensed Data in the IoT	T5: Stochastic Geometry-Based Modeling and Analysis of 5G Cellular Networks
10:30-11:00	Refreshments (Toronto Ballroom Foyer)											
11:00-12:30	W1: Next Generation Backhaul/Fronthaul Networks			W5: 5G Millimeter-Wave Channel Measurement, Models, and Systems	W6: Networked Vehicles for Intelligent Transportation and Smart Grids	W12: IEEE 5G and Beyond Testbed	T1: Connected Vehicles	T3: Flexible Radio Access Beyond 5G: A Future Projection		W9: Non-Orthogonal Multiple Access Techniques for 5G Radio Access Networks	T7: Software Defined Infrastructures for Big Sensed Data in the IoT	T5: Stochastic Geometry-Based Modeling and Analysis of 5G Cellular Networks
12:30-14:00	Lunch Break (on your own)											
14:00-15:30	W1: Next Generation Backhaul/Fronthaul Networks Radio Access	W2: Research Advancements in Future Internet Architectures	W3: Vehicular Information Services for the Internet of Things	W5: 5G Millimeter-Wave Channel Measurement, Models, and Systems	W6: Networked Vehicles for Intelligent Transportation and Smart Grids	W12: IEEE 5G and Beyond Testbed	W7: Vehicular Security	T2: Vehicular Communications and 5G Paradigm - Vision and Practices	W8: Resource Allocation and Spectrum Management in Internet of Things Heterogeneous Networks	W9: Non-Orthogonal Multiple Access Techniques for 5G Radio Access Networks	T8: Leveraging Big Sensed Data in Vehicular IoT systems	T4: Error Correction Coding for 5G and Beyond: Design Requirements and Target Technologies
15:30-16:00	Refreshments (Toronto Ballroom Foyer)											
16:00-17:30	W1: Next Generation Backhaul/Fronthaul Networks Radio Access	W2: Research Advancements in Future Internet Architectures	W3: Vehicular Information Services for the Internet of Things	W5: 5G Millimeter-Wave Channel Measurement, Models, and Systems	W6: Networked Vehicles for Intelligent Transportation and Smart Grids	W12: IEEE 5G and Beyond Testbed	W7: Vehicular Security	T2: Vehicular Communications and 5G Paradigm - Vision and Practices	W8: Resource Allocation and Spectrum Management in Internet of Things Heterogeneous Networks	W9: Non-Orthogonal Multiple Access Techniques for 5G Radio Access Networks	T8: Leveraging Big Sensed Data in Vehicular IoT systems	T4: Error Correction Coding for 5G and Beyond: Design Requirements and Target Technologies
18:00-20:00	VTC2017-Fall Welcome Reception (Toronto Ballroom)											

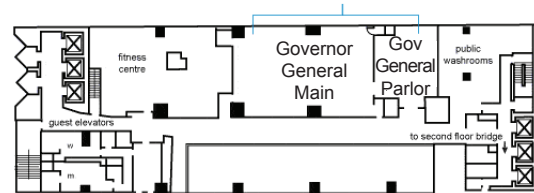
Convention Level



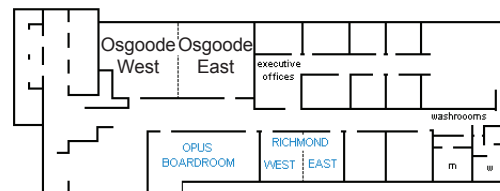
Lobby Level



Second Floor



Third Floor



(A) Simcoe	(B) Tom Thomson	(C) Jackson	(D) Carmichael	(E) Governor General	(F) Casson	(G) Osgoode East	(H) Osgoode West	(I) Varley	(P) Toronto 3	Industry Track York	
SUNDAY 24 September											
7:30-17:30	Registration (Toronto Ballroom Foyer)										
9:00-17:30	Tutorials and Workshops										
18:00-20:00	Welcome Reception										
MONDAY 25 September											
7:30-17:30	Registration (Toronto Ballroom Foyer)										
9:00-9:45	Opening & Welcome: Haim Yanikomenglu, VTC2017-Fall General Chair; Javier Gozalvez, VTS President; Christian (Cai) Chua, VTC2017-Fall Honorary Chair; Weihua Zhuang, VTC2017-Fall TPC Chair										
9:45-10:30	Keynote Address: Getting Ready for 5G, Peiyang Zhu, Huawei Technologies Canada										
10:30-11:00	Refreshments and Exhibits (Toronto Ballroom Foyer)										
11:00-12:30 (1)	Security Issues in Vehicular Networks	M2M Communications	Data Center and Cloud Computing	NOMA and SCMA Systems	Massive MIMO I	Vehicular Communications	MAC Layer Issues in Vehicular Networks	Spatial Modulation	W10: Innovations in Sustainable Spectrum Management for 5G and Beyond	Vehicular Networks	5G Radio Design
12:30-14:00	Lunch (Toronto 1 & 2 Ballroom)										
14:00-15:30 (2)	Vehicular Channels	Vehicular and Delay-tolerant Networks	Physical Layer Issues in Vehicular Networks	LTE/LTE-A	Energy Harvesting and Efficiency I	Resource Allocation and Mobility Management	Wireless Caching	Resource Allocation in Cognitive Radio Networks	W10: Innovations in Sustainable Spectrum Management for 5G and Beyond	Digital Transmission Systems	5G Network Design
15:30-16:00	Refreshments and Exhibits (Toronto Ballroom Foyer)										
16:00-17:30 (3)	Channel Measurements and Modeling	Small Cells	Wireless Security I	Wi-Fi and LAA	Software-defined and Cloud-enabled Networks	Security and Privacy in Vehicular Networks	Resource Allocation in Vehicular Networks	Estimation and Synchronization	W10: Innovations in Sustainable Spectrum Management for 5G and Beyond	Wireless Networks I	5G: A Critical Technology Enabler for Future Vertical Markets
18:30-21:30	VTC2017-Fall Gala Banquet										
TUESDAY 26 September											
8:00-17:30	Registration (Toronto Ballroom Foyer)										
9:00-9:45	Keynote: ACE Vehicles and their Impact in the 21st Century, Barrie Kirk, CAVCOE										
9:45-10:30	Keynote: The Internet Above the Clouds, Lajos Hanzo, University of Southampton										
10:30-11:00	Refreshments and Exhibits (Toronto Ballroom Foyer)										
11:00-12:30 (4)	5G RF Design	Cooperative Communications I	Broadband Wireless Networks I	Massive MIMO II	Coding Techniques	Spectrum Sharing	D2D and IoT Communications	Green Wireless Networking I	5G Techniques	5G Techniques	Current Developments and the Future of Electric Vehicles
12:30-14:00	Awards Luncheon (Toronto 1 & 2 Ballroom)										
14:00-15:30 (5)	MIMO Channels	MIMO and Beamforming	Relay and Resource Allocation	Millimeter Wave Communications I	Coverage and Resource Allocation	Transmission and Detection	Wireless and Ubiquitous Sensing	W11: From 4G to B5G Systems	Radio Access & Propagation Models	Radio Access & Propagation Models	Business, Technology and Societal Impact of Autonomous Vehicles
15:30-16:00	Refreshments and Exhibits (Toronto Ballroom Foyer)										
16:00-17:30 (6)	Resource Allocation in M2M Networks	Energy Harvesting and Efficiency II	Wireless Security II	MIMO Systems	Indoor Localization	Multiple Access Control in M2M networks	Wireless M2M Networks	W11: From 4G to B5G Systems	Multiple Antennas Systems	Multiple Antennas Systems	Key User Experiences with Connected Vehicles
WEDNESDAY 27 September											
8:00-16:00	Registration (Toronto Ballroom Foyer)										
9:00-9:45	Keynote: Wireless Powered Communication Systems as an Enabling Technology for the Internet of Things, Robert Schober, Friedrich-Alexander-University										
9:45-10:30	Keynote: How to Harness Opportunistic Resource and Capability: A Collaborative Network Design Approach, Michael Fang, University of Florida										
10:30-11:00	Refreshments and Exhibits (Toronto Ballroom Foyer)										
11:00-12:30 (7)	Millimeter Wave Communications II	Cloud RAN	EV-Grid Integration and Charging Management	5G Systems	Massive MIMO III	Applications in M2M Networks	OFDM Systems	Green Wireless Networking II	D2D Communication	Green Communication Systems	IoT Connectivity - Standard Convergence of Market Battlefield
12:30-14:00	Lunch (Toronto 1 & 2 Ballroom)										
14:00-15:30 (8)	Connected and Automated Vehicles	Performance Evaluation in M2M Networks	Broadband Wireless Networks II	Multicarrier Systems	Channel Coding	Cognitive Radio Networking	Positioning and Tracking	Performance Analysis for Vehicular Networks	Wireless Sensor Networks	Wireless Networks II	Smart Cities
15:30-16:00	Refreshments and Exhibits (Toronto Ballroom Foyer)										
16:00-17:30 (9)	Vehicular Transportation Systems	Beamforming	Cooperative Communications II	Wireless Services	Energy Efficient Transmission	Traffic Monitoring in Vehicular Networks	Detection and Equalization	Spectrum Sensing	Heterogeneous Networks	Heterogeneous Networks	Technology Challenges in Enabling Safe Drones in Urban Environments

Sunday 24 September 2017 16:00-16:30 York

Paper Session 2

Chair: Hayssam Dahrouj, Effat University, Saudi Arabia

1 Improvement on the Performance of Predictive Handover Management by Setting a Threshold

Metin Ozturk, Paulo Valente Klaine, Muhammad Ali Imran, University of Glasgow

2 Transport Network Design for FrontHaul

Philippe Sehier, Anne Bouillard, Fabien Matthieu, Thomas Deiss, Nokia

Sunday 24 September 2017 16:30-17:30 York

Panel

Fronthaul and Backhaul for 5G and Beyond

Moderator: Frank Rayal, Xona Partners, Canada

Panelists: Hesham ElBakoury, Huawei;
Aleksandra Checko, MTI Group
Mohammad Akhter, IDT
Glenn Parsons, Ericsson
Yves Lostanlen, Siradel
Scott Wakelin, Microsemi
Richard Maiden, Intel, USA

W2: (3rd RAFNET) Research Advancements in Future Internet Architectures

Recently, a lot of research efforts have been made from both academia and industry side to promote various new and emerging network paradigms. The reason is that during the past decade, it has been realized that the current internet architecture was originally designed for end-to-end host centric communications, however, the actual focal of communications is the content itself. Hence, we have witnessed new architectures such as an Information Centric Network (ICN) with various extensions like Content-Centric Network (CCN), Named Data Network (NDN), Data-Oriented Network Architecture, and so on. On the other hand, enormous efforts in cellular networks have been made for improving the user experience and as a result, today, we are able to use LTE-A and other networks. In this context, the upcoming 5G networking architectures, whose ongoing research is focused on the networking mechanisms in regards to the massive increase in the number of connected devices, bandwidth requirements, reduced latency, and the deployment of supporting operational mechanisms such as network virtualization, cloud-based deployments, mobile edge computing, and storage and new utilization scenarios. Moreover, these new technologies are being applied in other networking domains as well, including VANETs, Smart Grid, Smart Cities, Internet of Things, Big Data, etc.

General Chairs:

Syed Hassan Ahmed, Kyungpook National University

Waleed Ejaz, Ryerson University

Danda B. Rawat, Howard University

Academic Steering Committee:

Mohsen Guizani, University of Idaho

Jaime Lloret, UPV

Guo Song, Hong Kong Polytechnic University

Claudia Campolo, University in Reggio Calabria

Sherali Zeadally, University of Kentucky

Mahasweta Sarkar, San Diego State University

Giovanni Pau, UPMC-LIP6

Houbing Song, West Virginia University

Technical Program Committee:

Di Zhang, Waseda University

Suzan Bayhan, University of Helsinki

Ali Kashif Bashir, University of the Faroe Islands

Zhiwei Yan, CNIC

Marica Amadeo, Uni. "Mediterranea" of Reggio Calabria

Wael Guibene, Intel Labs

Muhammad Faran Majeed, AIT

Hongseok Yoo, Kyungwoon University

Cormac J. Sreenan, University College Cork

Yusun Chang, Georgia Institute of Technology

Rasheed Hussain, University of Amsterdam

Zhihan Lv, University College London

Imran Khan, Schneider Electric

Suhail Jabbar, Kyungpook National University

Murad Khan, Sarhad University

Zeeshan Pervez, University of the West of Scotland

Muhammad Bilal Amin, Kyung Hee University

Ejaz Ahmed, University of Malaya

Kishwer Abdul Khaliq, University of Bremen

Fatima Hussain, Ryerson University

Adnan Shahid, Taif University

Syed Ali Hassan, NUST

Papers

Sunday, 24 September 2017, 14:00-17:30 Simcoe

1 User Localization in Next Generation Wireless Networks

Shahrokh Valaee, University of Toronto

2 A New Similarity Computation Method in Collaborative Filtering based Recommendation System

Xiaokun Wu, Yongfeng Huang, Tsinghua University; Shihui Wang, Hubei University

3 A Novel Framework for Software Defined Wireless Sensor Networks

Khandakar Ahmed, Victoria University; Nazmus Nafi, RMIT University; Waleed Ejaz, Ryerson University, Canada; Mark A Gregory, RMIT University; Asad Masood Khattak, Zayed University

4 Delay Constraint Location Privacy Scheme in VANETs

Humera Yasmeen, Omair Ahmad Khan, Abdul Wahid, Munam Ali Shah, COMSATS Institute of Information Technology

5 A novel architecture for Information Sharing & Exchange between IoT systems

Hui Zhang, Jing Dong, China Electronics Standardization Institute

6 E-Lithe: A lightweight secure DTLS for IoT

Asma Haroon, COMSATS Institute of Information Technology; Sana Akram, Bahria University, Islamabad; Munam Ali Shah, Abdul Wahid, COMSATS Institute of Information Technology

7 Native ICN Deployment in LTE Networks

Prakash Suthar, Cisco Systems Inc; Milan Stolic, Anil Jangam, Cisco Systems

W3: Vehicular Information Services for the Internet of Things

The Internet of Things (IoT) has recently gained great attention from both academia and industry. Among the key enablers of IoT, smart vehicles have been promising solutions for providing on-road communication and ubiquitous information

services. The real value of vehicular resources is much realized when translated into information services that put these resources into action. Expanding the smart vehicle-based services/applications beyond the intelligent transportation services requires research and development efforts to explore new service scopes, create innovative system architectures, and design enabling technologies. Enabling pervasive and diversified vehicular service provisioning in the IoT era entails synergizing several related technologies such as distributed cloud and fog computing, networking infrastructures, crowdsourcing, public sensing, information-centric networking, privacy and security techniques.

This workshop is designed to highlight the ongoing efforts towards vehicular service provisioning and related technology blend. The workshop also addresses issues that arise when dealing with smart vehicles such as resource and service discovery, data communication and delivery, quality of information assessment, resource recruitment, and incentive modelling.

General Chairs:

Sherin Abdelhamid, Queen's University, Canada
Khalid Elgazzar, University of Louisiana at Lafayette, USA

Technical Program Committee:

Damla Turgut, University of Central Florida
Aboelmagd Noureldin, Royal Military College
Abd El-Hamid Taha, Alfaisal University

Amr El Mougy, German University in Cairo
Ayman Radwan, Instituto de Telecomunicações-Aveiro
Karim Emara, Ain Shams University
Ayman Abdel-Hamid, Arab Academy for Science, Technology, and Maritime Transport
Ala Abu Alkheir, University of Ottawa
Eslam AbdAllah, Queen's University
Michael W Totaro, University of Louisiana

Program

Sunday, 24 September 2017 14:00-14:40 Tom Thomson

Keynote

Adapting LTE/LTE-A to Vehicular M2M Communications
Jelena Mistic, Ryerson University

Sunday, 24 September 2017 14:40-15:30 Tom Thomson

Session I

1 Performance Evaluation of Multicast Video Distribution with User Cooperation in LTE-A Vehicular Environments
Jayashree Thota, Berna Bulut, Angela Doufexi, Simon Armour, University of Bristol

2 Connecting the Autonomous: A Distributed Game Theory Approach for VANET Connectivity
Marina Wagdy, Ahmad Mostafa, Ahmed Hamad, The British University in Egypt

Sunday, 24 September 2017 16:00-17:30 Tom Thomson

Session II

1 Joint Subjective and Objective Data Capture and Analytics for Automotive Applications

Mathias Johanson, Jonas Jalming, Alkit Communications AB; Emmanuel Frécon, RISE SICS; Boel Nelson, Tomas Olovsson, Chalmers University of Technology; Mats Gjertz, Volvo Car Corporation

2 VehiCache: Vehicle Updates via Mobile Phones

Nadav Lavi, Tal Filosof, General Motors; Moshe Laifenfeld, SpaceGate

3 A Priority Algorithm to Control the Traffic Signal for Emergency Vehicles

Md Asaduzzaman, Krishnamurthy Vidyasankar, Memorial University of Newfoundland

W5: 5G Millimeter-Wave Channel Measurement, Models, and Systems

Millimetre-wave wireless technology represents both a tremendous opportunity and a significant challenge for the 5G wireless community. Many industry, academic and government labs are developing the insights, methods and techniques that will be required to realize the full benefits of this ground-breaking technology. The National Institute of Standards and Technology (NIST) recently formed a broad-based 5G mm-Wave Channel Model Alliance and the U.S. National Science Foundation (NSF) recently sponsored a Research Coordination Network on mm-Wave Wireless. Their objective is to bring together a broad cross-section of mm-wave wireless researchers from around the world in order to promote both: 1) development and dissemination of best practices in these important fields and 2) intra- and cross-disciplinary cooperation. This workshop provides researchers in propagation and channel modelling, antennas and hardware, communications theory and signal processing, and networking and protocols with an opportunity to share recent accomplishments and best practices, learn about challenges in other disciplines and pursue opportunities for intra- and cross-disciplinary cooperation.

General Chairs:

David G. Michelson, University of British Columbia
Akbar Sayeed, University of Wisconsin - Madison
David W. Matolak, University of South Carolina
Technical Program Committee:
Anmol Bhardwaj, University of British Columbia
Camillo Gentile, NIST
Hongmei Zhao, Zhengzhou University of Light Industry

Ismail Guvenc, North Carolina State University
Mai Vu, Tufts University
Naveed Iqbal, Huawei Technologies
Robert Heath, University of Texas – Austin
Ruise He, Beijing Jiaotong University
Ruoyu Sun, National Institute for Standards and Technology
Yahong Rosa Zheng, Missouri University of Science & Technology

Program

Sunday, 24 September 2017 09:00-09:30 Jackson

Keynote I

Meeting the 5G Channel Measurement Challenge
Michel Gagne, Keysight Technologies

Sunday, 24 September 2017 09:30-10:30 Jackson

Session I

1 Methods for Channel Sounder Measurement Verification
Kate Remley, Camillo Gentile, National Institute of Standards and Technology; Alenka Zajic, Georgia Institute of Technology; Jeanne Quimby, National Institute of Standards and Technology

- 2 Fast Link Configuration for mmWave Multiuser MIMO Downlink Using Spatial AoD Angular Supports**
Gilwon Lee, Robert W. Heath Jr., The University of Texas at Austin
- 3 Measurements and Characterization of Surface Scattering at 60 GHz**
Angelos A. Goulianos, University of Bristol; Moray Rumney, Keysight Technologies; Mark Beach, Andrew Nix, Evangelos Mellios, Alberto Loaize Freire, Thomas Barrat, University of Bristol; Pete Cain, Keysight Technologies

Sunday, 24 September 2017 11:00-12:00 Jackson

Session II

- 1 A Compact, Wide Field-of-View Gradient-index Lens Antenna for Millimeter-wave MIMO on Mobile Devices**
Wenlong Bai, Jonathan Chisum, University of Notre Dame
- 2 UAV Air-to-Ground Channel Measurements and Modeling at 60 GHz**
Wahab Ali Gulzar, NCSU; Ozgur Ozdemir, Ismail Guvenc, North Carolina State University
- 3 Unsupervised Clustering for Millimeter-Wave Channel Propagation Modeling**
Jian Wang, National Institute of Standards and Technology

Sunday, 24 September 2017 12:00-12:30 Jackson

Panel Session

New and Emerging mmWave Usage Scenarios

Moderator: David Michelson, University of British Columbia
Panelists: Ismail Guvenc, North Carolina State University
Yvo de Jong, Communications Research Centre, Canada
Mikko Valkama, Tampere University of Technology

Sunday, 24 September 2017 14:00-14:30 Jackson

Keynote II

Meeting the 5G Channel Modelling Challenge using MATLAB

Amit Kansal, The MathWorks

Sunday, 24 September 2017 14:30-15:30 Jackson

Session III

- 1 Modeling of Directional Fading Channels for Millimeter Wave Systems**
Naveed Iqbal, Huawei; Christian Schneider, Technische Universität Ilmenau; Jian Luo, Huawei Technologies Duesseldorf GmbH; Diego Dupleich, Robert Mueller, Reiner Thomä, Technische Universität Ilmenau
- 2 Beamwidth-Dependent Directional Propagation Loss Analysis based on 28 and 38 GHz Urban Micro-Cellular (UMi) Measurements**
Juyul Lee, Jinyi Liang, Jae Joon Park, Myung-Don Kim, ETRI
- 3 Effect of Human Crowd Obstruction on the Performance of an Urban Small-Cell Millimeter-Wave Access Network**
Mohammed Zahid Aslam, Yoann Corre, SIRADEL; Yves Lostanlen, ENGIE - SIRADEL

Sunday, 24 September 2017 16:00-17:30 Jackson

5G mmWave Channel Model Alliance Meeting

- 1 Alliance Business Meeting**
Kate Remley, NIST
- 2 White Paper on Modelling**
Camillo Gentile, NIST
- 3 White Paper on Measurement**
Kate Remley, NIST
- 4 Ecosystem Tools**
Nada Golmie, NIST
- 5 Interface between Modelling & Measurement**
Akbar Sayeed, University of Wisconsin - Madison

W6: Networked Vehicles for Intelligent Transportation and Smart Grids (NetV)

Safety, mobility and environment challenges call for a new round of revolution on modern transportation. Thanks to the rapid advances in wireless communication technologies, in the future, vehicles can quickly and reliably exchange information and thus connected to each other and to infrastructure, so vehicles, users and transportation system operators can make smart and green decisions to enhance safety, reduce travel delay and congestion, and save energy. Furthermore, networking solutions can be applied to well address the range and fueling/charging problems, providing a much-needed boost to the rollout of electric vehicles (EVs), a key for future clean and green transportation.

At the same time, utilities around the globe are racing to make their power grids more intelligent by adopting ICT technologies, and networked EVs and charging stations can further provide demand response services to power grids. The nexus of the Internet, vehicles (including self-driving ones), fueling/charging stations, and power grids constitutes a perfect storm of opportunities for future Intelligent Transportation Systems (ITS) and Smart Grids (SG). The new paradigm of networked vehicles will not only revolutionize how things and people are transported, but also likely how information and energy are exchanged and delivered.

Many relevant industry standards and consortia are being created to prepare for the coming new paradigm of networked vehicles. NetV 2017 is to bring together the latest innovations and advances around the world on the modeling, design, implementation, and evaluation of networked vehicles architecture, protocols, control, applications and services.

General Chair:

Xuemin (Sherman) Shen, University of Waterloo, Canada

TPC Chairs:

Phone Lin, National Taiwan University, Taiwan

Lin Cai, University of Victoria, Canada

Lian Zhao, Ryerson University, Canada

Kuang-Hao Liu, National Cheng Kung University, Taiwan

Shun-Ren Yang, National Tsing Hua University, Taiwan

Program

Sunday, 24 September 2017 9:00-10:30 Carmichael

NetV Performance

- 1 A Decentralized Load Balancing Approach for Neighbouring Charging Stations via EV Fleets**
Mushu Li, Lian Zhao, Ryerson University

2 Path Loss Measurement And Modeling For Low-Altitude UAV Access Channels

Kun Wang, Ruonan Zhang, Northwestern Polytechnical University; Liang Wu, Huawei Technologies Ltd.; Zhimeng Zhong, Huawei Technologies Co., Ltd.; Lin He, Jiawei Liu, Xiaoyan Pang, Northwestern Polytechnical University

3 Performance Analysis of Connectivity Considering User Behavior in V2V and V2I Communication Systems

Bin Pan, Hao Wu, Beijing Jiaotong University

4 Performance Analysis of High Speed Railways Communications Inside a Tunnel Using LTE-R

Kuldeep S. Gill, Paulo Victor R. Ferreira, Alexander Wyglinski, Worcester Polytechnic Institute

Sunday, 24 September 2017 11:00-12:00 Carmichael

NetV Control

1 Coverage Control Of Wheeled Mobile Robots For Unknown Moving Targets Interception

Zhi-Hong Guan, Kai Luo, Bin Hu, Huazhong University of Science and Technology; Xuemin (Sherman) Shen, University of Waterloo

2 Loop-Free Enhanced Intersection-Based Perimeter Geo-Routing With Carry-And-Forward For Urban Vanets

Mehdi Tavakoli Garrosi, Xi Xiang, Mohsen Noroozi, Leibniz Universität Hannover

3 Remote Estimation Over Control Area Networks

Aditya Mahajan, McGill University

4 Incentive for Distributed Optimization in Multi-User Network: A Study of Two Scenarios

Jie Gao, Mushu Li, Peter He, Lian Zhao, Ryerson University

Sunday, 24 September 2017 14:00-15:30 Carmichael

Keynote

1 Resource Allocation, Analysis and Machine Learning in Vehicular Networks

Zhu Han, University of Houston, USA

Sunday, 24 September 2017 16:00-17:20 Carmichael

NetV Functionality

1 A Study on Networking Functionalities and Challenges for Machine-to-Machine Mobile Networks

Yeh-Cheng Lin, Chia-Peng Lee, Phone Lin, National Taiwan University

2 A TD-LTE-A Based Efficient Radio Access Scheme for Real-time Data Transmission over Relay Unmanned Aerial Vehicle Networks

Yuki Takahashi, Yuichi Kawamoto, Hiroki Nishiyama, Nei Kato, Tohoku University; Fumie Ono, Ryu Miura, National Institute of Information and Communications Technology

3 Dynamic Charging Scheduling for EV Parking Lots with Renewable Energy

Yongmin Zhang, Lin Cai, University of Victoria

Sunday, 24 September 2017 17:20-17:30 Carmichael

Announcement of W6 Best Paper Award

W7: Second International Workshop on Vehicular Security (V-SEC 2017)

The Second International Workshop on Vehicular Security (V-SEC 2017) will bring together members of the vehicular security community (industry, government, academia) at the 86th IEEE Vehicular Technology Conference. At this second instalment of this workshop series, the latest research findings in this emerging area will be shared and new research opportunities will be identified through the exchange of ideas among the IEEE attendees. The half day V-SEC 2017 workshop will include a tutorial presentation of this emerging area and a series of technical presentations concluding with a panel discussion. Topics include: secure vehicular communications, vehicular networking security, vehicular hardware security, privacy and data protection issues in vehicular settings, security of open vehicle application platforms, vehicle cyber intrusion detection systems and incident response, vehicular sensor security, spectrum sensing data falsification and countermeasures, vehicular privacy.

General Chairs:

Joseph Chapman, The MITRE Corporation, USA

Perry Engle, The MITRE Corporation, USA

Rich Pietravalle, The MITRE Corporation, USA

Alexander M. Wyglinski, Worcester Polytechnic Institute, USA

Program

Sunday, 24 September 2017 14:00-15:30 Casson

Keynotes

1 Security and Privacy Challenges in Automobile Systems

Sandip Kundu, US National Science Foundation

2 Global scale deployment of Trust and Privacy management based on open standards for Cooperative Intelligent Transport Systems (C-ITS)

Brigitte Lonc, Renault

Sunday, 24 September 2017 16:00-16:40 Casson

Vehicular Security and Privacy

1 Introducing Differential Privacy to the Automotive Domain: Opportunities and Challenges

Boel Nelson, Tomas Olovsson, Chalmers University of Technology

2 SyNORM: Symmetric Non Repudiated Message Authentication in Vehicular Ad hoc Networks

Farshad Rahimi Asl, Reza Samavi, McMaster University

Sunday, 24 September 2017 16:40-17:30 Casson

Panel

A Connected, Autonomous Automotive Future and Vehicular Cyber Security

Moderator: Rich Pietravalle, The MITRE Corporation

W8: Resource Allocation and Spectrum Management in Internet of Things (IoT) Heterogeneous Networks

Internet of Things (IoT) is defined as an interconnection of smart objects/things having seamless connectivity with heterogeneous quality of service requirements. Therefore, classical methods of communication, allocation and connectivity will not work well, and there is need of improved resource allocation and network management techniques. Design and analysis of new techniques will enhance and optimize the network performance, by admitting maximum machines\ users into the network, with varying capabilities.

Various resource management approaches across protocol layers are the intended target for this workshop. It will cover resource allocation issues for IoT networks for different applications; such as from device centric to information centric services/networks.

This workshop aims to comprehend thorough, and unified vision of the resource allocation issue in complex multi-user, multi-machine and multi-operator IoT heterogeneous networks. It aims to bring together researchers, academics, individuals working on selected areas of resource allocation and spectrum management in IoT networks, and share their new ideas, latest findings, and results in the said area.

Workshop Chairs and Organisers:

Fatima Hussain, University of Guelph and Ryerson University
Syed Ali Hassan, National University of Sciences and Technology
Javaid Talib, Amazon

Steering Committee and Honorary Chairs:

Alexander Ferworn, Ryerson University
Xavier Fernando, Ryerson University
Charlie Obimabo, University of Guelph

Technical Program Committee:

Markku Juntti, University of Oulu
Tadashi Matsumo, Japan Advance Institute of Science and Technology
Des McLernon, University of Leeds

Mark Flanagan, University College Dublin

Ali Imran, Oklahoma University
Sajid Saleem, National University of Sciences and Technology
Shahid Mumtaz, Institute of Telecommunications
Aravind Kailas, Volvo Inc
Ali Arhsad Nasir, King Faisal University of Petroleum and Engineering
Xiliang Luo, ShanghaiTech University
Hesham ElSawy, King Abdullah University of Science and Technology
Vitaly Skachek, University of Tartu
Yonghui Li, University of Sydney
Zihuai Lin, University of Sydney
Eirik Rosnes, University of Bergen, Norway

Program

Sunday, 24 September 2017, 14:00 - 17:30, Osgoode West

Opening Remarks

Fatima Hussain, University of Guelph, Ryerson University

Welcome

Xavier Fernando, Ryerson University

Keynote

Catherine Rosenberg, University of Waterloo

1 Adaptive Switching for Efficient Energy Harvesting in Energy Constraint IoT Devices

Arif Obaid, Ryerson University; Fatima Hussain, University of Guelph; Xavier Fernando, Ryerson University

2 A Voyage-Based Cooperative Resource Allocation Scheme in Maritime Broadband Access Network

Ailing Xiao, Ning Ge, Liuguo Yin, Chuan'ao Jiang, Tsinghua University

3 C-V2X based basic safety related ITS spectrum requirement analysis

Lu Gao, Yan Li, Jim Misener, Shailesh Patil, Qualcomm

4 Optimal Network Selection Based on Software Defined Wireless Networks of 5G

Haiqi Jiang, Huazhong University of Science and Technology

5 Optimal Power Allocation for Cognitive Radios with Multiple Status Changes in Primary User Traffic

Mian Qin, Shouyi Yang, Ruizhe Zhang, Fang Wang, Zhengzhou University

6 Wireless Information and Power Transfer: Issues, Advances and Challenges

Tharindu Perera, Tomsk Polytechnic University; Dushantha Nalin K. Jayakody, National Research Tomsk Polytechnic University; Symeon Chatzinotas, SnT, University of Luxembourg; Vishal Sharma, Soonchunhyang University

W9: Workshop on Non-Orthogonal Multiple Access Techniques for 5G Radio Access Networks

The 5G air interface is targeted to have higher transmission rates, faster access, support of larger user density, and better user experience for enhanced mobile broadband (eMBB) services. Meanwhile, it connects to new vertical industries and new devices, creating new application scenarios such as massive machine-type communications (mMTC) and ultra-reliable and low-latency communications (URLLC) services by supporting massive number of devices and enabling mission critical transmissions with ultra-high reliability and ultra-low latency requirement, respectively. In the study towards 5G air interface standardization, non-orthogonal multiple access (NoMA) is one of the most popular topics with 15 different schemes proposed already. Generally, NoMA can efficiently support higher capacity with greater flexibility and robustness, as well as adaptability towards large number of connections. These properties contribute towards a better user experience for variant kinds of services.

This workshop aims to provide a platform for the leading researchers in this area, both from academia and industry, to share their views and the most recent ideas, progress in algorithm and procedure design, as well as prototype implementation in lab or field on NoMA related techniques for 5G radio access networks. The workshop also aims to stimulate enthusiastic discussions among all experts on how the NoMA can best fit in the whole system design and help to meet the diverse requirements of 5G radio networks for eMBB, mMTC, as well as URLLC services.

General Chairs:

Peiyang Zhu, Huawei Technologies
Yoshihisa Kishiyama, NTT DoCoMo
Wei Yu, University of Toronto

Executive Committee:

Pingzhi Fan, Southwest Jiaotong University
Zhaoyang Zhang, Zhejiang University
Yan Chen, Huawei Technologies
Muhammad Ali Imran, University of Glasgow

Technical Program Committee:

Yiqun Wu, Huawei Technologies
Chen Qian, Samsung
Gang Wu, UESTC
Jian Zhang, Fujitsu
Jinho Choi, Gwangju Institute of Science and Technology
Linglong Dai, Tsinghua University
Ming Zhao, USTC
Ren Bin, CATT
Xiaoming Dai, Beijing Science and Technology University
Shidong Zhou, Tsinghua University
Wen Chen, Shanghai Jiaotong University
Zhanji Wu, BUPT
Shuangfeng Han, CMCC

Program

Sunday, 24 September 2017 9:00-10:30 Varley

Session 1 Oral Presentations

- 1 Blind Multiple User Detection for Grant-free MUSA without Reference Signal**
Zhifeng Yuan, Chunlin Yan, Yifei Yuan, Weimin Li, ZTE Corporation
- 2 Low complexity detection algorithm for low PAPR interleaving based NoMA schemes**
Chen Qian, Qi Xiong, Bin Yu, Chengjun Sun, Samsung Electronics
- 3 On the Performance of IDMA-based Non-Orthogonal Multiple Access Schemes**
Afshin Haghighat, Shahrokh Nayeb Nazar, Robert Olesen, InterDigital
- 4 Two Simplified Multiuser Detection Algorithms For Uplink SCMA Systems Via Generalized Approximate Message Passing**
Yu Huang, Yunzhou Li, Jing Wang, Tsinghua University
- 5 A survey of Non-Orthogonal Multiple Access for 5G**
Kun Lu, Zhanji Wu, Beijing University of Posts and Telecommunications
- 6 Ultra-Dense Networks in 5G: Interference Management via NoMA and Treating Interference as Noise**
Navid Naderializadeh, Oner Orhan, Intel Corporation; Hosein Nikopour, Intel Labs; Shilpa Talwar, Intel Corporation

Sunday, 24 September 2017 11:00-12:30 Varley

Session 2 Keynote Speeches I

- 1 NOMA – A Paradigm Shift in Multiple Access for Next Generation Wireless Networks**
Zhiguo Ding, Lancaster University
- 2 Scalable SCMA**
Jianglei Ma, Huawei Technologies
- 3 Non-orthogonal Multiple Access for Internet of Things**
Zhaoyang Zhang, Zhejiang University

Sunday, 24 September 2017 14:00-15:00 Varley

Session 3 Keynote Speeches II

- 1 The Myths, Realities and Futures of NOMA: A Historic Perspective on FDMA, TDMA, CDMA, OFDMA, SDMA, IDMA, CCMA and ‘all that’...**
Lajos Hanzo, University of Southampton
- 2 NOMA: Principles and New Results**
Jinho Choi, Gwangju Institute of Science and Technology

Sunday, 24 September 2017 15:00-16:30 Varley

Session 4 Posters

- 1 A Nonbinary LDPC-Coded SCMA System with Optimized Codebook Design**
Qingli He, B. Bai, Dan Feng, Hengzhou Xu, Min Zhu, Xidian University

Zhikun Xu, Spreadtrum
Roy Chen, MediaTek
Debdeep Chatterjee, Intel
Lars Thiele, Fraunhofer HHI
Xiaoming Chen, Zhejiang University
Pei Xiao, University of Surrey
Chengxiang Wang, Heriot-Watt University
Shuai Han, Harbin Institute of Technology
Zhiguo Ding, Lancaster University
Rui Yin, Georgia Institute of Technology
Yiqing Cao, Qualcomm Technologies
Zhijin Qin, Imperial College
Chao Wang, Huawei Technologies
Yu Zhang, Zhejiang University of Technology

2 A Novel Opportunistic NOMA Scheme for 5G Massive MIMO Multicast Communications

Ke Xiao, Shun Dai, North China University of Technology; Humphrey Rutagemwa, Bo Rong, Communications Research Centre Canada, Gong Liang, Academy of Broadcast Planning; Kadoch Michel, Ecole de technologie superieure

3 A Novel Uplink NOMA Scheme Based on Low Density Superposition Modulation

Chengxin Jiang, Zhanji Wu, Beijing University of Posts and Telecomm

4 Bandwidth Minimization under Probabilistic Constraints and Statistical CSI for NOMA

Krishna Chitti, Fredrik Rusek, Lund University; Tumula V. K. Chaitanya, Huawei Technologies Sweden AB

5 Detection of Carrier-Interferometry Code Based Overloaded Multi-carrier CDMA Signals

Ming-Shiu Li, Yu T. Su, National Chiao Tung University

6 Hybrid Message Passing based Low Complexity Receiver for SCMA System over Frequency Selective Channels

Weijie Yuan, Beijing Institute of Technology; Huiming Huang, BSIR; Nan Wu, Beijing Institute of Technology; Lei Zhou, BSIR; Jingming Kuang, Beijing Institute of Technology

7 Investigation of Non-Orthogonal Multiple Access Techniques for Future Cellular Networks

Ryan Keating, Rapeepat Ratasuk, Nokia Networks; Amitava Ghosh, Nokia

8 Joint Pattern Assignment and Power Allocation in PDMA

Jie Zeng, Tsinghua University; Bei Liu, Chongqing University of Post and Communications; Xin Su, Tsinghua University

9 Non-Orthogonal Multiple Access with Low Code Rate Spreading and Short Sequence Based Spreading

Sergey Sosnin, Intel Corp.; Gang Xiong, Intel Corporation; Debdeep Chatterjee, Intel; Yongjun Kwak, Intel Corporation

10 On Power Allocation and User Grouping for Sparse Coded Non-Orthogonal Multiple Access in the Downlink

Johannes Dommel, Staphan Fähse, Lars Thiele, Fraunhofer HHI

11 On the performance of Non-orthogonal Multiple Access (NOMA) in a Cloud-RAN system

Rupesh Singh Rai, Jiangzhou Wang, H. Zhu, University of Kent

12 Resource Spread Multiple Access - A Novel transmission scheme for 5G Uplink

Yiqing Cao, Haitong Sun, Joseph Soriaga, Tingfang Ji, Qualcomm Technologies Inc.

13 SCMA-Based Uplink and Downlink Resource Reuse for Clustered mMTC

FangSheng Zhong, Ming Zhao, Zhou Wuyang, University of Science and Technology of China

- 14 Statistical QoS Provisioning for Half/Full-Duplex Cooperative Non-Orthogonal Multiple Access**
Xianhao Chen, Gang Liu, Zheng Ma, Southwest Jiaotong University
- 15 System-level performance of C-NOMA: a cooperative scheme for capacity enhancements in 5G mobile networks**
Andrea Marcano, Henrik L. Christiansen, Technical University of Denmark

Sunday, 24 September 2017 16:30-17:30 Varley

Session 5 Panel

NoMA Enabled 5G New Radio, How Different Will It Be?

Moderator: Yan Chen, Huawei Technologies
Panelists: Yoshihisa Kishiyama, NTT DoCoMo
Jianglei Ma, Huawei Technologies
Zhiguo Ding, Lancaster University
Lajos Hanzo, University of Southampton
Zhaoyang Zhang, Zhejiang University
Jinho Choi, GIST

W10: Innovations in Sustainable Spectrum Management for 5G and Beyond

Sustainable spectrum management is an emerging multi-disciplinary field of research with a long-term vision towards agile spectrum assignment and real-time monetization, assisted by the use of spectrum intelligence. Organized by the Communications Research Centre (CRC), Government of Canada, the objective of this one-day workshop is to share and discuss different views on how technology innovations to support agile spectrum assignment could impact and evolve the regulatory vision towards sustainable spectrum management, and how regulatory changes may drive technology innovations in this domain. Comprising a series of keynote talks and a panel, this workshop will bring together prominent leaders who are influencing the direction of future spectrum management, to examine and debate the way forward, as we move into 5G and beyond.

For researchers attending VTC2017-Fall, this workshop will provide forward looking views of the wireless ecosystem stakeholders towards the realization of agile spectrum assignment, with an emphasis on the interdisciplinary research in spectrum monitoring, data science and spectrum monetization. For all participants, this workshop additionally provides a unique forum to obtain the broad perspective of wireless ecosystem stakeholders with respect to the future of spectrum management.

Organizer:

Shalini Periyalwar, CRC, Govt. of Canada

Technical Program Committee:

John Lodge, CRC, Govt. of Canada

Louise Lamont, CRC, Govt. of Canada

Program

Monday, 25 September 2017 11:00-12:30 Varley

1 Next Generation Spectrum Management

Philip Marnick, OFCOM

Current Advances in Spectrum Management – Views on Spectrum Sharing Technologies

2 Spectrum Sharing in Action: An Update on CBRS and Beyond

Lee Pucker, WINNFORUM

3 Multi-RAT Coordination Challenges

Kumar Balachandran, Ericsson

Monday, 25 September 2017 14:00-15:30 Varley

Future Spectrum Management - Spectrum Monitoring and Research Platforms

4 DARPA’s Spectrum Collaboration Challenge

Paul Tilghman, DARPA

Veena Rawat, GSMA

Cindy-Lee Cook, Govt. of Canada

Michael Christensen, Govt. of Canada

Halim Yanikomeroglu, Carleton University, Canada

5 Data Science to Support Spectrum Management

Michael Cotton, NTIA

6 A Cloud-Based, Low-Cost Spectrum Monitoring Solution

Taj Manku, Cognitive Systems

Monday, 25 September 2017 16:00-16:30 Varley

Panel Session

Moderator: Shalini Periyalwar, CRC

Panelists: Philip Marnick, Lee Pucker, Kumar Balachandran,
Paul Tilghman, Michael Cotton, Taj Manku, Yvo de Jong,
Mathieu Gemme

Monday, 25 September 2017 16:30-17:30 Varley

Future Spectrum Management – Regulator Views

7 Innovations in Sustainable Spectrum Management

Yvo de Jong, CRC, Government of Canada

8 Spectrum Management 2.0

Mathieu Gemme, Spectrum and Telecommunications Sector,
Government of Canada

W11: From 4G to Beyond 5G (B5G) Systems: Expectations, Realities and Disruptions

This workshop is sponsored by the Wireless World Research Forum (WWRF). The speakers in this workshop deliberate where the wireless and mobile technologies have been, where they are, and what needs to happen to match the expectations with realities and where are the gaps to fulfill those promises as we develop successive generations of wireless standards. The workshop addresses the following topics concerning the gap between the near-term commercial deployments of LTE-A, LTE-A Pro and the longer-term vision of 5G and Beyond systems.

- Has 4G (including LTE Adv Pro) truly exhausted its potential to meet most of the requirements of the 5G wireless systems and whether is it soon expected to reach the level of maturity in deployment so as to justify yet another new generation of wireless systems (such as 5G) which would mean significant capital expenditure by the mobile operators?

- User studies to validate whether 4G (LTE/LTE-A Pro) is not adequate to meet the requirements of the new use cases being defined for the 5G system to a very large extent. Update on the 5G standards and product developments to validate whether the deployment schedule of 2020 could be realistically met and whether there are compelling business cases to justify the investments in 5G systems.
- Interworking of 5G systems with the present-day wireless systems (3G to LTE-A Pro) and migration strategies to ensure that the evolved system would continue to work seamlessly and in a manner that is profitable for different actors in the value chain.
- Technology differentiators and research advances from 4G to 5G systems and beyond.
- Is 5G disruptive enough to justify investments by the operators or 4G would continue to evolve beyond LTE-A Pro until a new 6G standard appears truly disruptive in its approach with new internet protocols, quantum computing, RF energy harvesting, High-Altitude Platforms (HAPS), massive MIMO, cooperative networks, Artificial Intelligence (AI) techniques etc.?

Organizers:

Sudhir Dixit, Basic Internet Foundation & WWRF
Vino Vinodrai, Vinodrai & Associates Inc and WWRF

Vinod Kumar, WWRF
Angela Alexiou, University of Piraeus & WWRF

Program

Tuesday, 26 September 2017 14:00-15:30 Varley

Business Considerations in 4G to 5G and Beyond Systems

Chair: Vino Vinodrai, Vinodrai & Associates Inc and WWRF

1 5G New Deployment Scenarios: Opportunities and Challenges

Reinaldo Valenzuela, Nokia Bell Labs

2 Building the Road to 5G

Derek McAvoy, Bell Canada

3 Initial Results on Deep Learning for Joint Channel Equalization and Decoding

Geoffrey Ye Li, Georgia Institute of Technology

4 Quantifying the Real Benefit of Coordination

Catherine Rosenberg, University of Waterloo

Tuesday, 26 September 2017 16:00-17:30 Varley

Technology Advances in 4G to 5G and Beyond Systems

Chair: Sudhir Dixit, Basic Internet Foundation & WWRF

1 Cognitive Dynamic System as the Supervisor of Complex Wireless Communication Networks for 5G

Simon Haykin, McMaster University

2 Urban Mobility Management: From Real-Time Awareness to Integrated Control

Alberto Leon-Garcia, University of Toronto

3 Asymmetric Links Beamforming for mmWave Overlay in LTE-based Heterogeneous Network

Alexander Maltsev, Andrey Pudeyev, Ilya Bolotin, Intel; Olesya Bolkhovskaya, University of Nizhny Novgorod

4 Panel Discussion

Sunday, 24 September 2017, 9:00 - 17:30, Governor General

W12: IEEE 5G and Beyond Testbed

Following the successful IEEE 5G Roadmap Workshop at ICC, the IEEE 5G and Beyond Initiative will be holding a Testbed Workshop focusing on experimental testbeds on 5G and Beyond. The objective of this workshop is to bring together developers, practitioners, technical experts and researchers to share experiences and advance the state of the art in all aspects of 5G systems prototyping, evaluation and testing. The workshop also aims to solicit contributions and promote discussion on the novel methodological studies and experimental paradigms for future 5G testbeds and co-development and co-deployment of experimental platforms. Of particular interest are ideas on extending publicly available testbeds with 5G related technologies as they become available and how they can be used to address common technological and scientific problems that are related to advanced wireless systems.

Organizing Committee:

Ivan Seskar, Rutgers University
Tracy Van Brakle, AT&T
Ashutosh Dutta, AT&T
Thomas Magedanz, FOKUS
Chrysa Papagianni, University of Maryland
Harold Tepper, IEEE

Amitava Ghosh, Nokia
Abhimanyu Gosain, Northeastern College of Engineering
Abhay Karandikar, Indian Institute of Technology
Ivo Maljevic, Telus
Alfons Mittemaier, ONF
Sofie Pollin, KU Leuven
Ari Pouttu, Oulu University
Ashok Sunder Rajan, Intel
Ivan Seskar, Rutgers University
Christoph Thuemmler, Edinburgh Napier University
Sarah Yost, National Instruments
Wuxiong Zhang, Shanghai Institute of Fog Computing

Speakers:

Bashar Abdullah, Ciena
Mischa Dohler, King's College London
Ilie Daniel Gheorghe Pop, FOKUS

VTC2017-Fall Technical Papers

Monday 25 September 2017

Monday 25 September 2017 11:00-12:30 Simcoe

1A: Security Issues in Vehicular Networks

Chair: Eiji Okamoto, Nagoya Institute of Technology, Japan

- 1 Achieving Secure CoMP Joint Transmission Handover in LTE-A Vehicular Networks**
Qinglei Kong, Ma Maode, Nanyang Technological University;
Rongxing Lu, University of New Brunswick
- 2 On the Performance Evaluation of Vehicular PKI Protocol for V2X Communications Security**
Farah Haidar, Arnaud Kaiser, IRT SystemX; Brigitte Lonc, Renault
- 3 Optimized Certificate Revocation List Distribution for Secure V2X Communications**
Giovanni Rigazzi, Andrea Tassi, Robert Piechocki, Theo Tryfonas, Andrew Nix, University of Bristol
- 4 Secrecy-Based Resource Allocation for Vehicular Communication Networks with Outdated CSI**
Wei Yang, Peking University; Rongqing Zhang, Colorado State University; Chen Chen, Xiang Cheng, Peking University
- 5 Security Modeling and Analysis on Intra Vehicular Network**
Jinli Zhong, Suguo Du, Lu Zhou, Haojin Zhu, Fan Cheng, Cailian Chen, Shanghai Jiao Tong University; Qingshui Xue, Shanghai Institute of Technology

Monday 25 September 2017 11:00-12:30 Tom Thomson

1B: M2M Communications

Chair: Mohamed Mahmoud, Tennessee Tech. University, USA

- 1 Energy-Efficient Millimeter-Wave M2M 5G Systems with Beam-Aware DRX Mechanism**
Cheng-Hsiang Ho, An Huang, Ping-Jung Hsieh, Hung-Yu Wei, National Taiwan University
- 2 Full-Duplex SIMO Relaying for Machine-Type Communications in Cellular Networks**
Utku Tefek, Teng Joon Lim, National University of Singapore
- 3 Grouping Based Uplink Resource Allocation for Massive M2M Communications over LTE-A**
Shaoyi Xu, Beijing Jiaotong University
- 4 Opportunistic Scheduling of Machine Type Communications as Underlay to Cellular Networks**
Samad Ali, Nandana Rajatheva, University of Oulu
- 5 Uniqueness-based Resource Allocation for M2M Communications in Narrowband IoT Networks**
Ahmed Elhamy Mostafa, The University of British Columbia; Yasser Gadallah, The American University in Cairo

Monday 25 September 2017 11:00-12:30 Jackson

1C: Data Center and Cloud Computing

Chair: Bin Cao, Harbin Institute of Technology (Shenzhen), China

- 1 A Joint Batch-Routing and Channel Assignment Approach in Hybrid Data Center Networks**
Boutheina Dab, University Paris-Est; Ilhem Fajjari, Orange Labs; Nadjib Aitsaadi, ESIEE Paris
- 2 Load Balancing Oriented Computation Offloading in Mobile Cloudlet**
Danhui Yao, Lin Gui, Shanghai Jiao Tong University; Fen Hou, University of Macau; Fei Sun, Shanghai Jiao Tong University; Daihui Mo, Institute of China Electronic Equipment System Engineering Corporation; Hangguan Shan, Zhejiang University

3 Multi-Path TCP Incomplete Information Repeated Bayesian Game

Mohammad Javad Shamani, UNSW; Saeid Rezaei, West Tehran Islamic Azad University; Aruna Seneviratne, Data 61 group, NICTA; Hamed Kebriaei, University of Tehran

4 Stochastic Game between Cloud Broker and Cloudlet for Mobile Cloud Computing

Fenghui Zhang, West Anhui University; Yuan Liu, Weirong Liu, Hao Liang, Yi Zang, University of Alberta; Maosheng Fu, West Anhui University

5 Time-saving First: Coflow Scheduling for Datacenter Networks

Wuyunzhaola Borjigin, Kaoru Ota, Mianxiong Dong, Muroran Institute of Technology

Monday 25 September 2017 11:00-12:30 Carmichael

1D: NOMA and SCMA Systems

Chair: Jinho Choi, GIST, Korea

1 Joint Subcarrier Assignment and Power Allocation in Downlink SCMA Systems

Wenfeng Zhu, Ling Qiu, Zheng Chen, University of Science and Technology of China

2 On the Average Rate and Power Allocation of Multi-Antenna Uplink NOMA

Jinling Dai, Liang Sun, Chenyang Yang, Beihang University

3 On the Power Allocation and Constellation Selection in Downlink NOMA

Estela Carmona Cejudo, H. Zhu, Osama Alluhaibi, University of Kent

4 Outage Probability Analysis and Optimization in Downlink NOMA Systems with Cooperative Full-duplex Relaying

Lin Zhang, UESTC, China; Ming Xiao, KTH; Jiaqi Liu, Gang Wu, Dengsheng Lin, Shaoqian Li, University of Electronic Science and Technology of China

5 Non-Orthogonal Coded Access for Contention-Based Transmission in 5G

Qing Wang, Beijing Jiaotong University; Zhuyan Zhao, Nokia; Deshan Miao, Nokia Bell Labs; Yuantao Zhang, Nokia; Jingyuan Sun, Nokia Bell Labs; Ming Liu, Zhangdui Zhong, Beijing Jiaotong University

Monday 25 September 2017 11:00-12:30 Governor General

1E: Massive MIMO I

Chair: Xianbin Wang, Western University, Canada

1 Antenna Deployment of 5G Ultra High-Density Distributed Massive MIMO by Low-SHF-Band Indoor and Outdoor Experiments

Tatsuki Okuyama, Satoshi Suyama, Jun Mashino, Yukihiro Okumura, NTT DOCOMO, INC.; Kotaro Shiizaki, Chiyoshi Akiyama, Masafumi Tsutsui, Hiroyuki Seki, Morihiko Minowa, Fujitsu

2 Common Sparsity based Channel Estimation for FDD Massive MIMO-OFDM Systems via Multitask Bayesian Compressive Sensing

Wei Ji, Ling Qiu, University of Science and Technology of China

3 Generalized Approximate Message Passing Detection with Row-Orthogonal Linear Preprocessing for Uplink Massive MIMO Systems

Hao Fan, Wenjin Wang, Southeast University; Dan Zhang, TU Dresden; Xiqi Gao, Southeast University

4 Generalizing Hybrid Beamforming Solutions for Massive MIMO Systems

Mohammed Alarfaj, Huaping Liu, Oregon State University

5 Massive MIMO with Quasi Orthogonal Pilots: A Flexible Solution for TDD Systems

Haneya Naeem Qureshi, University of Oklahoma; Ijaz Haider Naqvi, Momin Ayub Uppal, Lahore University of Management Sciences

Monday 25 September 2017 11:00-12:30 Casson

1F: Vehicular Communications

Chair: Taulant Berisha, Vienna University of Technology, Austria

1 Delay Analysis of a Reliable Broadcast Scheme for 12V/V2I Communications

Atef Abdrabou, United Arab Emirates University; Sagar Naik, University of Waterloo

2 4G LTE on the Road - What Impacts Download Speeds Most?

Mark Akselrod, Nico Becker, Markus Fidler, Leibniz Universität Hannover; Ralf Lübben, Robert Bosch GmbH

3 Automotive Communications in LTE: a Simulation-based Performance Study

Federico Montori, Università di Bologna; Marco Gramaglia, IMDEA Networks Institute and University Carlos III of Madrid; Luca Bedogni, University of Bologna; Marco Fiore, IEIIT - CNR; Farid Sheikh, Nomor Research GmbH; Luciano Bononi, University of Bologna; Andrea Vesco, ISMB

4 On the Value of Vehicular Relay Nodes in Cellular Networks

Nadav Lavi, General Motors; Hanoch Levy, Tel-Aviv University

5 Radio Access for Future 5G Vehicular Networks

Barbara M. Masini, Alessandro Bazzi, CNR-IEIIT; Enrico Natalizio, Université de Technologie de Compiègne

Monday 25 September 2017 11:00-12:30 Osgoode East

1G: MAC Layer Issues in Vehicular Networks

Chair: Murali Narasimha, Huawei US, USA

1 An RSU controlled IEEE 802.11ac based MAC protocol for Multi-vehicle uplink transmission in VANET

M Zulfikar Ali, Jelena Mistic, Vojislav Mistic, Ryerson University

2 Enhanced Algorithms for the IEEE 802.11p Deployment in Vehicular Ad Hoc Networks

Yamen Nasrallah, University of Ottawa; Irfan Al-Anbagi, University of Regina; Hussein T. Mouftah, University of Ottawa

3 MmWave System for Future ITS: A MAC-layer Approach for V2X Beam Steering

Ioannis Mavromatis, Andrea Tassi, Robert Piechocki, Andrew Nix, University of Bristol

4 SWeRC: Self-Weighted Semi-Cooperative DSRC Congestion Control based on LIMERIC

Torsten Lorenzen, Leibniz Universität Hannover

5 A New Backoff Scheme with Collision Detection for IEEE 802.11p Vehicular Networks

Xiaoying Lei, Yangzhou University; Seung Hyong Rhee, Kwangwoon University

Monday 25 September 2017 11:00-12:30 Osgoode West

1H: Spatial Modulation

Chair: Kim Haesik, VTT Technical Research Centre of Finland, Finland

1 Antenna Grouping in Dual-Polarized Generalized Spatial Modulation

Golara Zafari, University of Western Ontario; Mutlu Koca, Bogazici University; Xianbin Wang, M.G.S. Sriyananda, University of Western Ontario

2 Beam Angle Channel Modulation

Javad Hoseyni, Jacek Ilow, Dalhousie University

3 Improved Quadrature Spatial Modulation

Binh Vo, Ha H. Nguyen, University of Saskatchewan

4 Low-Complexity Symbol Detection for Generalized Spatial Modulation MIMO Systems

Hye-Yeon Yoon, Tae-Hwan Kim, Korea Aerospace University

5 Virtual Spatial Modulation with Diversity Improvement

Qiang Li, Miaowen Wen, South China University of Technology; Jun Li, Guangzhou University; Xiang Cheng, Peking University; Fangjiang Chen, South China University of Technology

Monday 25 September 2017 11:00-12:30 Toronto 3

1P: Vehicular Networks

Chair: Ibrahim Rashdan, Institute of Communications and Navigation, Germany

1 A Measurement-Based Handover Method for Communication-Based Train Control Systems

Mei Ya Chan, Sami Baroudi, University of Toronto; Joseph Siu, Thales Canada Transportation Solutions; Jorg Liebeherr, University of Toronto

2 Bus-Based Cloudlet Cooperation Strategy in Vehicular Networks

Zhe Wang, Zhangdui Zhong, Beijing Jiaotong University; Dongmei Zhao, McMaster University; Minming Ni, Beijing Jiaotong University

3 Connectivity and clustering in a network of randomly distributed vehicles on a highway

Gleb Dubosarskii, Xianbin Wang, Serguei Primak, The University of Western Ontario

4 Know Thy Neighbor - A Data-Driven Approach to Neighborhood Estimation in VANETs

Karsten Roscher, Thomas Nitsche, Rudi Knorr, Fraunhofer ESK

5 Probability-based Location Prediction Algorithm

Qingqi Pei, Xidian University

6 V2R Communication Protocol Based on Game Theory Inspired Clustering

Celimuge Wu, Tsutomu Yoshinaga, The university of electro-communications; Yusheng Ji, National Institute of Informatics

7 Analysis of A Location-Aware Probabilistic Strategy for Opportunistic Vehicle-to-Vehicle Relay

Wei Song, Xi Tao, University of New Brunswick

8 Impact of Varying Penetration Rate of Intelligent Routing Capabilities on Vehicular Traffic Flow

Christian Backfrieder, Manuel Lindorfer, Upper Austria University of Applied Sciences; Christoph Mecklenbräuker, TU Wien; Gerald Ostermayer, Upper Austria University of Applied Sciences

9 Data Collection from Smart-city Sensors through large-scale Urban Vehicular Network

Muhammad Awais Khan, Instituto de Telecomunicações; Susana Sargento, IT - Universidade de Aveiro; Miguel Luis, Instituto de Telecomunicações

10 Modeling and Prediction of Vehicle Routes Based on Hidden Markov Model

Ademar Takeo Akabane, University of Campinas; Richard W Pazzi, University of Ontario Institute of Technology; Edmundo Roberto Mauro Madeira, Leandro Villas, University of Campinas

11 Optimal Routing with In-Route Charging of Mobility-on-Demand Electric Vehicles

Mustafa Ammous, Syrine Belakaria, Sameh Sorour, Ahmed Abdel-Rahim, University of Idaho

12 Towards an Application for Real-Time Travel Mode Detection in Urban Centers

Elton Soares, Carlos Alvaro Quintella, Carlos Alberto Vieira Campos, Federal University of the State of Rio de Janeiro

13 Stacked LSTM Deep Learning Model for Traffic Prediction in Vehicle-to-Vehicle Communication

Xunsheng Du, Huaqing Zhang, Hien Van Nguyen, Zhu Han, University of Houston

14 Optimal Deployment Density for Maximum Coverage of Drone Small Cells

Jiejie Xie, PLA University of Science and Technology; Chao Dong, Nanjing Institute of Communications Engineering; Aijing Li, Hai Wang, Weijun Wang, PLA University of Science and Technology

15 On Spectral Sharing Based on Power Control for Aerial and Ground Communication Links

Fumie Ono, NICT; Hideki Ochiai, Yokohama National University; Ryu Miura, Fumihide Kojima, National Institute of Information and Communications Technology

Monday 25 September 2017 14:00-15:30 Simcoe

2A: Vehicular Channels

Chair: Alenka Zajic, Georgia Tech, USA

1 Double-Directional Channel Characterization of Truck-to-Truck Communication in Urban Environment

Rui Wang, University of Southern California; Olivier Renaudin, Austrian Institute of Technology; Celalettin Umit Bas, Seun Sangodoyin, Andreas F. Molisch, University of Southern California

2 Interference analysis for UAV connectivity over LTE using aerial radio measurements

István Z. Kovács, Nokia Bell Labs; Rafael Amorim, Huan Cong Nguyen, Aalborg University; Jeroen Wigard, Nokia Bell Labs; Preben Mogensen, Aalborg University

3 Millimeter Wave Vehicular Blockage Characteristics Based on 28 GHz Measurements

Jae Joon Park, Juyul Lee, Jinyi Liang, Kyung-Won Kim, Kwang-chun Lee, Myung-Don Kim, ETRI

4 Second Order Statistics of Non-Isotropic UAV Ricean Fading Channels

Linzhou Zeng, Xiang Cheng, Peking University; Cheng-Xiang Wang, Heriot-Watt University; Xuefeng, Tongji University

5 Using LTE Networks for UAV Command and Control Link: A Rural-Area Coverage Analysis

Huan Cong Nguyen, Rafael Amorim, Aalborg University; Jeroen Wigard, István Z. Kovács, Nokia Bell Labs; Preben Mogensen, Aalborg University

Monday 25 September 2017 14:00-15:30 Tom Thomson

2B: Vehicular and Delay-tolerant Networks

Chair: Ergin Dinc, KTH Royal Institute of Technology, Sweden

1 Data Dissemination in Software-Defined Vehicular Networks (Invited Paper)

Yuanzhi Ni, University of Victoria; Jianping He, Shanghai Jiao Tong University; Lin Cai, University of Victoria

2 Schemes for Enabling Vehicles Parked Out-of-RSU Range to Participate in Group Communication

Young-Hoon Park, Sookmyung Women's University

3 Security in Use Cases of Vehicle-to-everything Communications (Invited Paper)

Kaigui Bian, Gaoxiang Zhang, Lingyang Song, Peking University

4 A Protocol for Data Discovery and Retrieval in Content-Centric and Delay-Tolerant Networks

Cláudio Diego Souza, Danielle Ferreira, Carlos Alberto Vieira Campos, Federal University of the State of Rio de Janeiro

5 Privacy-Preserving Ride Sharing Organization Scheme for Autonomous Vehicles in Large Cities

Ahmed B Sherif, Ahmad Alsharif, Jacob E Moran, Mohamed Mahmoud, Tennessee Tech University

Monday 25 September 2017 14:00-15:30 Jackson

2C: Physical Layer Issues in Vehicular Networks

Chair: Yejun He, Shenzhen University, China

1 Adaptive Channel Prediction, Beamforming and Scheduling Design for 5G V2I Network

Tadilo Endeshaw Bogale, INRS, University of Quebec; Xianbin Wang, The University of Western Ontario; Long Le, INRS, University of Quebec

2 Performance of eCall Modem with Turbo Codes in AWGN and AMR

Samer Zakhem, John Liu, Jacob Brandenburg, Wayne State University

3 RSS Estimation Based on Bayesian Learning Mechanism by Vehicular Sensor Networks

Silan Zheng, Cailian Chen, Xinning Guan, Shanghai Jiao Tong University; Li Yu, Huazhong University of Science and Technology

4 RSSI-based Attention Target Approach Detection for a Vehicle Reminder System with Beaconing Devices

Yoshito Watanabe, Yozo Shoji, NICT

5 Vehicle-to-Vehicle Message Content Plausibility Check through Low-Power Beaconing

Taeho Kim, Hyogon Kim, Korea University

Monday 25 September 2017 14:00-15:30 Carmichael

2D: LTE/LTE-A

Chair: Peng Yang, Huazhong University of Science and Technology, China

1 A Novel UE Preference based Component Carrier Selection Algorithm in LTE-Advanced

Wanyue Qu, Peking University; Yusun Fu, Shanghai Huawei Technologies Co., Ltd; Yuping Zhao, Peking University

2 Downtilts Optimization and Power Allocation for Vertical Sectorization in AAS-Based LTE-A Downlink Systems

Jinping Niu, Northwest University

3 Initial Cell Search Method with MLD Based Frequency Offset Estimation in LTE Heterogeneous Networks

Aya Shimura, Mamoru Sawahashi, Tokyo City University; Satoshi Nagata, Yoshihisa Kishiyama, NTT DOCOMO, INC.

4 Analysis of LTE Relay Interface for Self-Backhauling in LTE Mesh Networks

Romain Favraud, Navid Nikaein, Eurecom

5 On the Impact of Preamble-Priority-Aware Downlink Control Signaling Scheduling in LTE/LTE-A Networks

Carlos A. Astudillo, Tiago P.C. de Andrade, Nelson L.S. da Fonseca, University of Campinas

Monday 25 September 2017 14:00-15:30 Governor General

2E: Energy Harvesting and Efficiency I

Chair: Shaohua Wu, Harbin Institute of Technology (Shenzhen), China

1 Joint Time Allocation and Power Splitting Schemes for DF Energy Harvesting Relaying Networks

DanWang, Yongzhao Li, Yinghui Ye, Xidian University; Hongxing Xia, Hubei Engineering University; Hailin Zhang, Xidian University

- 2 **Optimal Resource Allocation for Data Offloading in Energy-harvesting Small-cell Networks**
Yutong Yan, Liping Qian, Yuan Wu, Weidang Lu, Zhejiang University of Technology
- 3 **Performance of Multi-Antenna Wireless-Powered Communications With Nonlinear Energy Harvester**
Yuzhen Huang, PLA University of Science and Technology; Trung Q. Duong, Queen's University Belfast
- 4 **Robust Beamforming and Base Station Activation for Energy Efficient Downlink C-RAN**
Yong Wang, Lin Ma, Yubin Xu, Harbin Institute of Technology
- 5 **Energy-saving Algorithm with Dimension Reduction on the Uplink for Multimedia Push**
Huangqing Chen, Zhihe Li, Zhong Xiaofeng, Jing Wang, Tsinghua University

Monday 25 September 2017 14:00-15:30 Casson

2F: Resource Allocation and Mobility Management

Chair: Dongmei Zhao, McMaster University, Canada

- 1 **An Optimized Fast Handover Scheme Based on Distributed Antenna System for High-Speed Railway**
Wael Ali, Junyuan Wang, H. Zhu, Jiangzhou Wang, University of Kent
- 2 **Distributed Simplicial Homology Based Load Balancing Algorithm for Cellular Networks**
Ngoc-Khuyen Le, Anais Vergne, Philippe Martins, Laurent Decreusefond, Télécom ParisTech
- 3 **Optimal Power Allocation to Increase Secure Energy Efficiency in A Two-Way Relay Network**
Rugui Yao, Tamer Mekkawy, Fei Xu, Northwestern Polytechnical University
- 4 **A Fresh Look into the Handoff Mechanism of IEEE 802.11s under Mobility**
Adnan Noor Mian, Tayyaba Liaqat, Abdul Hameed, Information Technology University, Lahore
- 5 **Privacy-Preserving Intra-MME Group Handover Via MRN in LTE-A Networks for Repeated Trips**
Zaher Hadda, Al-Aqsa University; Ahmad Alsharif, Ahmed B Sherif, Mohamed Mahmoud, Tennessee Tech University

Monday 25 September 2017 14:00-15:30 Osgoode East

2G: Wireless Caching

Chair: Guiyang Luo, Beijing University of Posts and Telecommunications, China

- 1 **Cache-Aided Heterogeneous Networks: Coverage and Delay Analysis**
Mohamed Abd-Elaziz Abd-Elmagid, Nile University; Ozgur Ercetin, Sabanci University; Tamer ElBatt, Cairo University & Nile University
- 2 **Cache Placement Solutions in Software-Defined Radio Access Networks**
Ngoc-Dung Dao, Hamid Farmanbar, Hang Zhang, Huawei Technologies Canada Co. Ltd.
- 3 **Content Caching for Heterogeneous Small-cell Networks with Intelligent Content Access**
Tuong Duc Hoang, Long Le, University of Quebec
- 4 **Joint Caching and Multicast for Wireless Fronthaul in Fog Radio Access Networks**
Xing Wei, Beijing Jiaotong University
- 5 **Maximized traffic offloading by content sharing in D2D communication**
Xinying Yu, Chong Tan, Lin Ma, Min Zheng, Zhiyong Bu, Shanghai Institute of Microsystem and Information Technology CAS

Monday 25 September 2017 14:00-15:30 Osgoode West

2H: Resource Allocation in Cognitive Radio Networks

Chair: Li Wang, Beijing University of Posts and Telecommunications, China

- 1 **Distributed Power Control Based on LQR and LQG Regulator for A Cognitive Radio Network**
Xiaohui Zhao, Shuying Zhang, Jilin University
- 2 **Energy Efficient Power Allocation for UAV Cognitive Radio Systems**
Lokman Sboui, King Abdullah University of Science and Technology (KAUST); Hakim Ghazzai, Qatar Mobility Innovations Center (QMIC); Zouheir Rezki, University of Idaho; Mohamed-Slim Alouini, King Abdulah University of Science and Technology (KAUST)
- 3 **Joint Optimization for Computation Offloading and Resource Allocation in Internet of Things**
Mengling Guan, Li Wang, Beijing University of Posts and Telecommunications; Bo Bai, Huawei Technologies Co., Ltd.; Zhu Han, University of Houston; Shi Jin, Southern University
- 4 **Power Control with Power Budget for Uplink Transmission in Heterogeneous Networks**
Junhui Zhao, Yongqiang Ning, Beijing Jiaotong University; Yi Gong, South University of Science and Technology of China; Ran Rong, Ajou University
- 5 **Resource Allocation for 3D Drone Networks Sharing Spectrum Bands**
Keiji Yoshikawa, Shota Yamashita, Koji Yamamoto, Takayuki Nishio, Masahiro Morikura, Kyoto University

Monday 25 September 2017 14:00-15:30 Toronto 3

2P: Digital Transmission Systems

Chair: Teng Joon Lim, National University of Singapore, Singapore

- 1 **On the Performance of High-Rate LDPC Codes with Low-Resolution Analog-to-Digital Conversion**
Niklas Doose, Peter A. Hoeher, Kiel University
- 2 **Punctured Scheduling for Critical Low Latency Data on a Shared Channel with Mobile Broadband**
Klaus I. Pedersen, Nokia - Bell Labs; Guillermo Pocovi, Aalborg University; Jens Steiner, Saeed R. Khosravirad, Nokia Bell Labs
- 3 **Dynamic Power Splitting Schemes for Non-Linear EH Relaying Networks: Perfect and Imperfect CSI**
Kaipeng Wang, Yongzhao Li, Yinghui Ye, Hailin Zhang, Xidian University
- 4 **Digital Cancellation of the Remodulation Effect in IQ RFDAC Based LTE Direct Conversion Transmitters**
Jovan Markovic, Ram Sunil Kanumalli, Peter Preyler, Christian Mayer, DMCE GmbH & Co KG, Freistadter Straße 400, 4040 Linz; Mario Huemer, Johannes Kepler University Linz
- 5 **Novel Asymmetric Zero Correlation Zone Sequence Sets for Code Division Multiple Access**
Longye Wang, Xiaoli Zeng, Tibet University; Hong Wen, University of Elec. Science and Tech. of China; Gaoyuan Zhang, HAUST
- 6 **A Cross-Layer Image Transmission Scheme for Deep Space Exploration**
Junxin Luo, Shaohua Wu, Siyue Xu, Jian Jiao, Zhang Qinyu, Harbin Institute of Technology
- 7 **A Kernel-Based QAM Symbol Error Probability Estimation Technique**
Pasteur Poda, Université Nazi BONI; Samir Saoudi, IMT Atlantique Bretagne-Pays de la Loire

- 8 Cross-QAM Signaling in Free Space Optical Communication Systems with Generalized Pointing Errors**
Nikhil Sharma, LNM Institute of Information Technology, Jaipur; Parul Garg, Netaji Subhas Institute of Technology
- 9 Fast Converging ADMM-Penalized Algorithm for Turbo-Like OVXDM**
Peng Lin, Yafeng Wang, Daoben Li, Beijing University of Posts and Telecommunications
- 10 Maximum Likelihood Decoder for Index Coded PSK Modulation for Priority Ordered Receivers**
Divya U. Sudhakaran, B. Sundar Rajan, Indian Institute of Science, Bangalore
- 11 Performance Approximation of Compressive Sensing Multi-User Detection via Replica Symmetry**
Yalei Ji, Carsten Bockelmann, Armin Dekorsy, University of Bremen
- 12 Performance Evaluation For Vertical Inhomogenous Underwater Visible Light Communications**
Noha Anous, Texas A&M University at Qatar (TAMUQ); Mohamed Abdallah, Hamad Bin, Khalifa University; Khalid Qaraq, Texas A&M University at Qatar (TAMUQ)

- 13 Assessment on Using Multitaper and Higher-Order STBC Techniques for Spectrum Estimation in Cognitive Radio**
Ahmed Abdul Salam, Ray E. Sheriff, University of Bradford; Saleh Al-Araji, (formerly) Khalifa University of Science and Technology; Kahtan Mezher, Khalifa University of Science and Technology; Qassim Nasir, University of Sharjah
- 14 Automatic Modulation Classification for MIMO-OFDM Systems with Imperfect Timing Synchronization**
Xiaoyu Yuan, Yongzhao Li, Mingjun Gao, Tao Li, Hailin Zhang, Xidian University
- 15 Control Signal Transmission based on IFDMA and Receiver with Nonlinear Amplifier for Compensating Access Channel Mismatch**
Ryo Kurosawa, Osamu Takyu, Shinshu University; Mai Ohta, Fukuoka University; Takeo Fujii, The University of Electro-Communications; Fumihito Sasamori, Shiro Handa, Shinshu University

Monday 25 September 2017 16:00-17:30 Simcoe

3A: Channel Measurements and Modeling

Chair: Matthias Paetzold, University of Agder, Norway

- 1 A Three-Dimensional Time-Varying Model for 5G Indoor Dual-Mobility Channels**
Shuai Nie, Georgia Institute of Technology; Chong Han, Shanghai Jiao Tong University; Ian F. Akyildiz, Georgia Institute of Technology
- 2 Diffraction Loss Model based on 28 GHz Over-Rooftop Propagation Measurements**
Kyung-Win Kim, Myung-Don Kim, Jae Joon Park, Juyul Lee, Jinyi Liang, Kwang-chun Lee, ETRI
- 3 Direction of Arrival Estimation with Uniform Planar Array**
Lili Wei, Qian (Clara) Li, Geng Wu, Intel Corporation USA
- 4 Exploring Ergodicity Over Frequency to Examine Small-Scale Propagation Effects**
James Jamison, Jeff Frolik, The University of Vermont
- 5 Modeling of Spatially Correlated Geometry-based Stochastic Channels**
Fjolla Ademaj, Martin Müller, Stefan Schwarz, Markus Rupp, Technische Universität Wien

Monday 25 September 2017 16:00-17:30 Tom Thomson

3B: Small Cells

Chair: Wenchao Xu, University of Waterloo, Canada

- 1 A Green Mesh Routers? Placement to Ensure Small Cells Backhauling in 5G Networks**
Imed Allal, Khaoula Dhifallah, Joël Penhoat, Yvon Gourhant, Orange labs France; Sidi-Mohammed Senouci, University of Bourgogne
- 2 Cooperative Distributed Resource Allocation for Downlink Femto-Cellular Networks**
Dadong Ni, Li Hao, Southwest Jiaotong University
- 3 Dynamic ICIC for Post-Scheduling Outage Probability Minimization in Small Cell Networks**
Megumi Kaneko, National Institute of Informatics; Kazunori Hayashi, Osaka City University
- 4 Hierarchical Resource Allocation in Ultra-Dense Networks**
Yuanfei Liu, Ying Wang, Ruijin Sun, Beijing University of Posts and Telecommunications; Rui Huang, China Academy of Information and Communications Technology

5 Inter-Cell Interference Sub-space Coordination for 5G Ultra-Dense Networks

Ali Karimidehkordi, Nurul Huda Mahmood, Aalborg University; Klaus I. Pedersen, Nokia - Bell Labs; Preben Mogensen, Aalborg University, Nokia Bell Labs

Monday 25 September 2017 16:00-17:30 Jackson

3C: Wireless Security I

Chair: Telex Ngatched, Memorial University, Canada

- 1 Artificial-Noise-Resistant Eavesdropping in MISO Wiretap Channels: Receiver Construction and Performance Analysis**
Dongyang Xu, Pinyi Ren, Xi'an Jiaotong University; James A Ritcey, University of Washington
- 2 Control of Multi-Hop Wireless Networks with Security Constraints**
Qiuming Liu, Li Yu, Jun Zheng, Huazhong University of Science and Technology
- 3 Cooperative Anti-Jamming Strategy and Outage Probability Optimization for Multi-hop Ad-hoc Networks**
Xiuji Wang, Ming Lei, Minjian Zhao, Zhejiang University; Min Li, The University of Newcastle
- 4 Cooperative Secure Transmission for Two-Hop Relay Networks with Limited Feedback**
Dawei Wang, Pinyi Ren, Xi'an Jiaotong University; Julian Cheng, University of British Columbia; Qinghe Du, Yichen Wang, Li Sun, Xi'an Jiaotong University
- 5 MISO Secure Transmission with Imperfect Channel State Information**
Huanhuan Song, Hong Wen, Lin Hu, Zhengguang Zhang, Luping Zhang, University of Electronic Science and Technology of China

Monday 25 September 2017 16:00-17:30 Carmichael

3D: Wi-Fi and LAA

Chair: Nan Cheng, University of Waterloo, Canada

- 1 Joint Resource Allocation for LTE over Licensed and Unlicensed Spectrum**
Xiaojian Zhen, Hangguan Shan, Guanding Yu, Zhejiang University; Yu Cheng, Lin Cai, Illinois Institute of Technology; Aiping Huang, Zhejiang University
- 2 Research on Coverage Enhancement of Narrowband M2M Communications Based on Unlicensed Spectrum**
Shaoyi Xu, Beijing Jiaotong University

3 Seamless Gate-to-Gate Connectivity Concept: Onboard LTE, Wi-Fi and LAA

Ergin Dinc, Michal Vondra, Royal Institute of Technology (KTH); Cicek Cavdar, KTH Royal Institute of Technology

4 User Satisfaction-Aware WiFi Offloading in Heterogeneous Networks

Jiao Xu, Harbin Institute of Technology, Shenzhen; Shaohua Wu, Harbin Institute of Technology; Luyao Xu, Harbin Institute of Technology, Shenzhen; Ning Zhang, University of Waterloo; Zhang Qinyu, Harbin Institute of Tech.

5 Utility-Based Resource Allocation under Multi-Connectivity in Evolved LTE

Konstantinos Alexandris, Chia-Yu Chang, Kostas Katsalis, Navid Nikaein, Thrasyvoulos Spyropoulos, EURECOM

Monday 25 September 2017 16:00-17:30 Governor General

3E: Software-defined and Cloud-enabled Networks

Chair: Frank Yong Li, University of Agder, Norway

1 Efficient Flow Instantiation via Source Routing in Software Defined Vehicular Networks

Kushan Sudheera, Ma Maode, Nanyang Technological University; Peter Han Joo Chong, Auckland University of Technology

2 Handoff Delay Analysis in SDN-enabled Mobile Networks: A Network Calculus Approach (Invited Paper)

Chun-Rong Lin, Yu-Jia Chen, Li-Chun Wang, National Chiao Tung University

3 Resource Allocation in Software-defined and Information-Centric Vehicular Networks with Mobile Edge Computing

Ying He, Chengchao Liang, Carleton University; Zheng Zhang, Beijing University of Technology; F. Richard Yu, Carleton University; Nan Zhao, Hongxi Yin, Dalian University of Technology

4 Video Rate Adaptation and Traffic Engineering in Mobile Edge Computing and Caching-enabled Wireless Networks

Chengchao Liang, Ying He, F. Richard Yu, Carleton University; Nan Zhao, Dalian University of Technology

5 Online Cloud Offloading using Heterogeneous Enhanced Remote Radio Heads

Yousef Shnaiwer, King Fahd University of Petroleum and Minerals; Sameh Sorour, University of Idaho; Parastoo Sadeghi, The Australian National University; Tareq Y. Al-Naffouri, King Abdullah University of Science and Technology

Monday 25 September 2017 16:00-17:30 Casson

3F: Security and Privacy

Chair: Xiaohui Liang, University of Massachusetts at Boston, USA

1 Achieve Unconditional Security for MIMO-BAN Under Short Blocklength Wiretap Code

Tang Jie, Hong Wen, University of Electronic Science and Technology of China; Kai Zeng, George Mason University; Lin Hu, Song Lin Chen, University of Electronic Science and Technology of China

2 A PHY-Aided Secure IoT Healthcare System With Collaboration of Social Networks

Peng Hao, Xianbin Wang, The University of Western Ontario

3 Cooperative Jamming Aided Secrecy Enhancement in Wireless Networks With Multiple Eavesdroppers

Lin Hu, Hong Wen, University of Electronic Science and Technology of China; Bin Wu, Tianjin University; Tang Jie, Fei Pan, Zhengguang Zhang, University of Electronic Science and Technology of China; Yixin Jiang, Southern Electric Power Research Institute; Aidong Xu, Electric Power Research Institute China Southern Power Grid

4 Physical Layer Security Assisted 5G Network Security

Fei Pan, University of Electronic Science and Technology of China; Yixin Jiang, Southern Electric Power Research Institute; Hong Wen, Runfa Liao, University of Electronic Science and Technology of China;

Aidong Xu, Electric Power Research Institute China Southern Power Grid

5 PQuery: Achieving Privacy-Preserving Query with Communication Efficiency in Internet of Things

Nafiseh Izadi Yekta, Rongxing Lu, University of New Brunswick

Monday 25 September 2017 16:00-17:30 Osgoode East

3G: Resource Allocation in Vehicular Networks

Chair: Atef Amin Abdrabou, United Arab Emirates University, UAE

1 Privacy-preserving Time-sharing Services for Autonomous Vehicles

Mohammad Hadian, Xiaohui Liang, Thamer Altuwaiyan, University of Massachusetts Boston

2 A multi-radio, multi-hop ad-hoc radio communication network for Communications-Based Train Control (CBTC)

Jahanzeb Farooq, Siemens A/S, Ballerup, Denmark; Lars Bro, nyantec UG, Berlin, Germany; Rasmus Thystrup Karstensen, Siemens A/S, Ballerup, Denmark; Jose Soler, DTU Fotonik

3 Fairness-Aware Game Theoretic Approach for Service Management in Vehicular Clouds

Moayad Aloqaily, Carleton University; Burak Kantarci, Hussein T. Mouftah, University of Ottawa

4 Joint Job Partition and Collaborative Computation Offloading in Multi-User Network

Siqi Mu, Zhangdui Zhong, Beijing Jiaotong University; Dongmei Zhao, McMaster University; Minming Ni, Beijing Jiaotong University

5 Performance Improvement of Low-latency V2I Uplink Using Superposed Cooperative V2V Transmission

Eiji Okamoto, Nagoya Institute of Technology; Hiraku Okada, Nagoya University; Yoshinao Ishii, Satoshi Makido, Toyota Central R&D Labs., Inc

Monday 25 September 2017 16:00-17:30 Osgoode West

3H: Estimation and Synchronization

Chair: Long Le, INRS-EMT University of Quebec, Canada

1 An Optimal Low Complexity LMMSE Channel Estimator for OFDM System

Jyoti Prasanna Patra, Poonam Singh, National Institute of Technology Rourkela

2 Cognitive Framework for the Estimation of Doubly Selective Channels

Kelvin Chelli, Praharsha Sirsi, Thorsten Herfet, Saarland Informatics Campus

3 Compensation of Phase Noise in OFDM/OQAM Systems

Kengo Ikeuchi, Manabu Sakai, Hai Lin, Osaka Prefecture University

4 Non-Orthogonal Frame Synchronization for Low Latency Communication

Stephan Pfletschinger, Hochschule Offenburg; Pau Closas, Northeastern University

5 Channel Estimation for Overlay Coding in Multibeam Satellite Systems

Nazli Ahmad Khan Beigi, Mohammad Reza Soleymani, Concordia University

Monday 25 September 2017 16:00-17:30 Toronto 3

3P: Wireless Networks I

1 Reputation Routing in MANETs

Prateek Kumar Singh, Koushik Kar, Rensselaer Polytechnic Institute; Charles Kamhoua, Air Force Research Laboratory

2 Fuzzy-Based Joint User Association and Resource Allocation in HetNets

Ali Alnoman, Lilatul Ferdouse, Alagan Anpalagan, Ryerson University

- 3 Optimal Question Answering Routing in Dynamic Online Social Networks**
Imad Ali, Academia Sinica and National Tsing Hua University; Ronald Y. Chang, Academia Sinica; Jo-Chi Chuang, Cheng-Hsin Hsu, National Tsing Hua University; Cenk M. Yetis, Academia Sinica
- 4 Outage-Based Admission Control for Multi-User MISO Transmission with Imperfect CSIT**
Stefan Schwarz, Technische Universität (TU) Wien
- 5 Capacity Region of a MAC With a Wireless-Powered DF Relay-to-Destination Link**
Runfa Zhou, The Hong Kong University of Science and Technology; Roger Shu Kwan Cheng, Hong Kong University of Science and Technology
- 6 Multi-Technology Data Collection: Short and Long Range Communication**
Rúben Oliveira, Miguel Luís, Lucas Guardalben, Instituto de Telecomunicações; Susana Sargento, IT - Universidade de Aveiro
- 7 Fast Convergence Outer Loop Link Adaptation With Infrequent Updates In Steady State**
Ramon A Delgado, Katrina Lau, Richard H Middleton, University of Newcastle, NSW, Australia; Robert S. Karlsson, L5GR Systems, Ericsson AB; Torbjörn Wigren, Ying Sun, Ericsson AB
- 8 Integrated Access and Backhaul in Fixed Wireless Access Systems**
Mona Hashemi, Mikael Coldrey, Martin Johansson, Ericsson Research; Sven Petersson, Ericsson
- 9 SINR Model for MBSFN Based Mission Critical Communications**
Alaa Daher, ETELM, Telecom ParisTech; Marceau Coupechoux, TELECOM Paris Tech; Philippe Godlewski, Telecom ParisTech; Jean-

Marc Kelif, Orange Labs; Pierre Nguat, PNG-Technologies; Pierre Minot, ETELM

- 10 Cross-Layer Routing for Multicasting Multiple Description Coded Media in Wireless Mesh Networks**
Abdulah Algnas, Dongmei Zhao, McMaster University
- 11 A Novel Virtual Network Fault Diagnosis Method Based on Long Short-Term Memory Neural Networks**
Lei Zhang, Xiaorong Zhu, Su Zhao, Ding Xu, Nanjing University of Posts and Telecommunications
- 12 Antenna Parameters Optimization in Self-Organizing Networks: Multi-armed Bandits with Pareto Search**
Tomoaki Ohtsuki, Keio University
- 13 A New Node Centrality Evaluation Model for Multi-community Weighted Social Networks**
Jingru Li, Li Yu, Huazhong University of Science and Technology; Jia Zhao, Wuhan Zhongyuan Electronics Group Co., Ltd.; Chaozhun Wen, Huazhong University of Science and Technology
- 14 Optimal Stochastic Package Delivery Planning with Deadline: A Cardinality Minimization in Routing**
Suttinee Sawadsitang, Nanyang Technological University; Jiang Siwei, Singapore Institute of Manufacturing Technology (SIMTech) A*STAR; Dusit Niyato, Ping Wang, Nanyang Technological University
- 15 Outage Probability and Throughput of SWIPT Relay Networks with Differential Modulation**
Lina Mohjazi, Sami Muhaidat, University of Surrey; Mehrdad Dianati, University of Warwick; Mahmoud Al-Qutayri, Khalifa University

Tuesday 26 September 2017

Tuesday 26 September 2017 11:00-12:30 Simcoe

4A: 5G RF Design

Chair: Xiaolin Zhou, Fudan University, China

- 1 A Real-Time Millimeter-Wave Phased Array MIMO Channel Sounder**
Celalettin Umit Bas, Rui Wang, University of Southern California; Dimitris Psychoudakis, Thomas Henige, Robert Monroe, Samsung Research America; Jeongho Park, Samsung Electronics; Jianzhong Charlie Zhang, Samsung Research America; Andreas F. Molisch, University of Southern California
- 2 Concurrent, Multi-band, Single-Chain Radio Receiver for High Data-Rate HetNets**
Ravinder Singh, Qiang Bai, Timothy O'Farrell, Kenneth Lee Ford, Richard Langlely, University of Sheffield
- 3 Investigation and Comparison of 3GPP and NYUSIM Channel Models for 5G Wireless Communications**
Theodore S. Rappaport, Shu Sun, New York University; Mansoor Shafi, Spark, New Zealand
- 4 Millimeter-wave beam mis-alignment analysis based on 28 and 38 GHz urban measurements**
Juyul Lee, Jinyi Liang, Myung-Don Kim, Jae Joon Park, ETRI
- 5 Novel Synthesis of Dual-Frequency RF Energy-Harvesting Rectifier Incorporating Coupled Lines**
Md Ayatullah Maktoomi, Fadhel M Ghannouchi, Rushi Vyas, University of Calgary

Tuesday 26 September 2017 11:00-12:30 Jackson

4C: Cooperative Communications I

Chair: Matilde Sanchez Fernandez, Universidad Carlos III de Madrid, Spain

- 1 Achievable Rates of the MIMO Multiway Distributed-Relay Channel with Full Data Exchange**
Xiang Zhao, Jianwen Zhang, ShanghaiTech University; Yingjun Zhang, Chinese University of Hong Kong; Xiaojun Yuan, ShanghaiTech University
- 2 Diversity Analysis of MIMO Network Coded Cooperation Systems with Relay Selection**
Ali Reza Heidarpour, Masoud Ardakani, University of Alberta
- 3 Hybrid Nonorthogonal Multiple Access with Half and Full Duplex Cooperative Users**
Zhiyuan Lin, Wei Chen, Tsinghua University
- 4 Hierarchically Modulated Network-Coding-Assisted Cooperation in Multiuser Relay Networks**
Chunling Peng, Fangwei Li, Chongqing University of Posts and Telecommunications; Huaping Liu, Oregon State University
- 5 Network Coded Cooperation Based on Relay Selection with Imperfect CSI**
Ali Reza Heidarpour, Masoud Ardakani, Chintha Tellambura, University of Alberta

Tuesday 26 September 2017 11:00-12:30 Carmichael

4D: Broadband Wireless Networks I

Chair: Ai-Chun Pang, National Taiwan University, Taiwan

- 1 A Cross-Layer Downlink Scheduling Scheme for Balancing QoS in IEEE 802.16 Broadband Wireless Access Systems**
Hassen Hamouda, Majmaah University; Mohamed Ouweis Kabaou, Gabes University; Mohamed Salim Bouhlel, University of Sfax
- 2 Performance Analysis of a Mission-Critical Portable LTE System in Targeted RF Interference**
Vuk Marojevic, Raghunandan M Rao, Sean Ha, Jeffrey Reed, Virginia Tech
- 3 To Bond or not to Bond: An Optimal Channel Allocation Algorithm For Flexible Dynamic Channel Bonding in WLANs**
Caihong Kai, Yuting Liang, Tianyu Huang, Hefei University of Technology; Xu Chen, Sun Yat-Sen University
- 4 Feasibility Study of Providing Backward Compatibility with MPTCP to WiGig/IEEE 802.11ad**
Kien Nguyen, Mirza Golam Kibria, Kentaro Ishizu, Fumihide Kojima, National Institute of Information and Communication Technology
- 5 Swift Indoor Benchmarking Methodology for Mobile Broadband Networks**
Michael Rindler, Sebastian Caban, Martin Lerch, Philipp Svoboda, Markus Rupp, TU Wien

Tuesday 26 September 2017 11:00-12:30 Governor General

4E: Massive MIMO II

Chair: Yves Lostanlen, SIRADEL, Canada

- 1 On the Impact of Strong Nonlinear Effects on Massive MIMO SVD Systems with Imperfect Channel Estimates**
João Guerreiro, Instituto de Telecomunicações; Rui Dinis, Universidade Nova de Lisboa; Paulo Carvalho, FCT- Universidade Nova de Lisboa
- 2 Performance Analysis of Low Complexity Coordinated Beamforming for Massive MIMO System**
Jun Shikida, NEC Corporation; Naoto Ishii, NEC
- 3 Performance Evaluation of Low-Complexity FDE Receivers for Massive MIMO Schemes with 1-bit ADCs**
Ricardo Candeias, FCT-UNL; João Guerreiro, Instituto de Telecomunicações; Rui Dinis, Universidade Nova de Lisboa; Paulo Carvalho, FCT- Universidade Nova de Lisboa
- 4 Pilot Allocation and Sum-rate Analysis in Distributed Massive MIMO Systems**
Ramiz Sabbagh, H. Zhu, Jiangzhou Wang, University of Kent
- 5 Reducing On-chip Memory for Massive MIMO Baseband Processing using Channel Compression**
Yangxurui Liu, Ove Edfors, Liang Liu, Viktor Öwall, Lund University

Tuesday 26 September 2017 11:00-12:30 Casson

4F: Coding Techniques

Chair: Qiang Ye, University of Waterloo, Canada

- 1 Codeword shaping enhanced Polar coded cooperation under fading channels**
Xiang Gao, Shaohua Wu, Xiaoming Jiang, Kun Li, Zhang Qinyu, Harbin Institute of Technology
- 2 Embedded Coding Techniques for FSO Communication**
Thuan Nguyen, Thinh Nguyen, Oregon State University
- 3 Nonbinary LDPC Coded Spatial Modulation**
Dan Feng, Hengzhou Xu, Qiang Zhang, B. Bai, Xidian University
- 4 On Achievable Rate Region Using Location Assisted Coding (LAC) for FSO Communication**
Thuan Nguyen, Duong Nguyen-Huu, Thinh Nguyen, Oregon State University

5 User Scheduling Based on Horizontal and Vertical Double Codebook for 3D MU-MIMO

Guomei Zhang, Jie Li, Hao Sun, Zhenzhen Gao, Xi'an Jiaotong University

Tuesday 26 September 2017 11:00-12:30 Osgoode East

4G: Spectrum Sharing

- 1 Crowdsourcing-assisted Radio Environment Maps for V2V Communication Systems**
Keita Katagiri, Koya Sato, Takeo Fujii, The University of Electro-Communications
- 2 Enhanced Overlay Spectrum Sharing Scheme for Cognitive Radio Networks**
Raed F. Manna, Emirates Telecommunications Corporation (Etisalat); Fawaz Al-Qahtani, Texas A & M University at Qatar; Salam Zummo, KFUPM; Mohammad Shaqfeh, Texas A&M University at Qatar
- 3 Multi-Operator Spectrum Sharing Models under Different Cooperation Schemes for Next Generation Cellular Networks**
Professor Mohammed N. Patwary, Birmingham City University; Md Asaduzzaman, Raouf Abozariba, Staffordshire University
- 4 New Spectrum Utilization Efficiency Metrics for Coexistence and Spectrum Sharing Applications**
Yifeng Zhou, Communications Research Centre Canada
- 5 Cognitive Radio Based Resource Allocation for Sum Rate Maximization in Dual Satellite Systems**
Dai Nguyen, Minh Tri Nguyen, Long Le, INRS- University of Quebec

Tuesday 26 September 2017 11:00-12:30 Osgoode West

4H: D2D and IoT Communications

Chair: Hung-Yu Wei, National Univ. of Taiwan, Taiwan

- 1 An Availability-aware and Cost-efficient VNF Placement Strategy for IoT Networks**
He Zhu, Changcheng Huang, Carleton University
- 2 A Runtime Framework for Context-Sensitive Device-to-Device Communication**
Zhang Yan, Beijing University of Post and Telecommunication; Zheng Song, Virginia Tech; Tian Ye, Wendong Wang, Beijing University of Posts and Telecommunications
- 3 Location-based Decision-making Mechanism for Device-to-Device Link Establishment**
Filip Lemic, Technische Universität Berlin; Arash Behboodi, RWTH Aachen University; Vlado Handziski, Anatolij Zubow, Adam Wolisz, Technische Universität Berlin
- 4 Performance of LoRa-based IoT Applications on Campus**
Shie-Yuan Wang, Yo-Ru Chen, Tzu-Yang Chen, Chia-Hung Chang, Yu-Hsiang Cheng, Chun-Chia Hsu, Yi-Bing Lin, National Chiao Tung University
- 5 Sensor Calibration for Floor Detection by D2D Communications**
Ting-Hui Chiang, National Chiao Tung University; Ling-Jyh Chen, Academia Sinica; Yu-Chee Tseng, National Chiao Tung University

Tuesday 26 September 2017 11:00-12:30 Varley

4I: Green Wireless Networking I

Chair: Hangguan Shan, Zhejiang University, China

- 1 Advanced Sleep Modes and their impact on flow-level performance of 5G networks**
Fatma Ezzahra Salem, Orange Labs; Azeddine Gati, Zwi Altman, Orange; Tijani Chahed, Institut Mines-Telecom; Telecom SudParis
- 2 Energy-efficient Preventive Mechanism for Fault Tolerance in Wireless Multimedia Sensor Networks**
Bouatit Mohamed-Nacer, Selma Boumerdassi, CNAM; Adel Djama, ESI; Ruben H. Milocco, GCAyS, Fac. Ingeniería. U.N. Comahue

3 Energy Harvesting in Heterogenous Networks with Hybrid Powered Communication Systems

Ahmad Alsharoa, Iowa State University; Abdulkadir Celik, King Abdullah University of Science and Technology; Ahmed Kamal, Iowa State University

4 Energy Efficient Radio Resource Allocation Scheme Using Receiver Puncturing Technique for 5G Networks

Haesik Kim, VTT Technical Research Centre of Finland; Gabriel Villardi, Ma Jing, NICT

5 How Many Hops are Needed in Multi-hop Energy Harvesting Wireless Networks

Xiangli Liu, Jianhuan Wang, Zan Li, Xidian University

Tuesday 26 September 2017 11:00-12:30 Toronto 3

4P: 5G Techniques

Chair: Benoit Champagne, McGill University, Canada

1 A Novel Airborne Self Organising Architecture for 5G+ Networks

Hamed Ahmadi, University College Dublin; Konstantinos Katzis, European University Cyprus; Muhammad Zeeshan Shakir, University of the West of Scotland

2 A Novel SA-PNC Method for Macro and Small cells Coexistence Under the Same Spectrum

Syed Saqlain Ali, Institute of Telecommunication, University of Aveiro; Daniel Castanheira, University of Aveiro; Adão Silva, DETI / Instituto de Telecomunicações / University of Aveiro

3 Field Trial Investigation of Wired and Wireless Calibration Schemes for Real-time Massive MIMO Prototype

Wenliang Liang, Huawei Technologies Co. Ltd

4 Pilot Allocation for Multi-Cell TDD Massive MIMO Systems

Wanming Hao, Osamu Muta, Kyushu University; Haris Gacanin, Nokia Bell Labs; Hiroshi Furukawa, Kyushu University

5 Scheduler Reducing CSI Feedback Overhead and Computational Complexity for 5G Ultra High-Density Distributed Antenna Systems with Hybrid BF

Shinya Kumagai, Takaharu Kobayashi, Daisuke Jitsukawa, Takashi Seyama, Takashi Dateki, Hiroyuki Seki, Koji Matsuyama, Morihiko Minowa, Fujitsu Limited

6 User Selection and Rank Adaptation for Multi-User Massive MIMO with Hybrid Beamforming

Hiroyuki Miyazaki, Satoshi Suyama, Tatsuki Okuyama, Jun Mashino, Yukihiro Okumura, NTT DOCOMO, INC.

7 A Joint Time Allocation and UE Scheduling Algorithm for Full-Duplex Wireless Powered Communication Networks

Jie Hu, Yinghong Xue, Qin Yu, Kun Yang, University of Electronic Science and Technology of China

8 Analysis of Wireless-Powered Device-to-Device Communications with Ambient Backscattering

Xiao Lu, Hai Jiang, University of Alberta; Dusit Niyato, Nanyang Technological University; Dong In Kim, Sungkyunkwan University (SKKU), Korea; Ping Wang, Nanyang Technological University

9 Addressing Deep Indoor Coverage in Narrowband-5G

Sandip Gangakhedkar, Huawei Technologies Duesseldorf GmbH; Ömer Bulakci, Huawei Technologies GRC; Joseph Eichinger, Huawei Technologies Duesseldorf GmbH

10 Keep Pets and Elephants away: Towards Dynamic Process Location Management in 5G

Shahin Vakili, Concordia University; Halima Elbiaze, University of Quebec a Montreal; Behdad Heidarpour, École de technologie supérieure

11 Multi-service Signal Multiplexing and Isolation for Physical-Layer Network Slicing (PNS)

Lei Zhang, Juquan Mao, Pei Xiao, University of Surrey

12 Sparse Code Multiple Access for 5G Radio Transmission

Yiqun Wu, Huawei; Wang Chao, Huawei Technologies; Yan Chen, Huawei; Alireza Bayesteh, Huawei Technologies Canada Co. Ltd.

13 Cost of Increased Bandwidth Efficiency in 5G NR

Toni Levanen, Tampere University of Technology; Kari Pajukoski, Nokia Bell Labs; Markku Renfors, Mikko Valkama, Tampere University of Technology

14 Co-time Co-frequency Full-Duplex Visible Light On-Chip Communication Using a Pair of InGaN/GaN Quantum-Well Diodes

Bingcheng Zhu, Wei Cai, Yongchao Yang, Xumin Gao, Jialei Yuan, Yongjin Wang, Nanjing University of Posts and Telecommunications

15 5G New Radio UL Coverage with Peak Clipping

Toni Levanen, Tampere University of Technology; Jorma Kaikkonen, Sari Nielsen, Kari Pajukoski, Nokia Bell Labs; Markku Renfors, Mikko Valkama, Tampere University of Technology

Tuesday 26 September 2017 14:00-15:30 Simcoe

5A: MIMO Channels

Chair: Yves Lostanlen, Siradel, Canada

1 Channel Estimation for FDD Massive MIMO OFDM Systems

Die Hu, Fudan University; Lianghua He, Tongji University

2 Enhancing the Resolution of the Spectrogram of Non-Stationary Mobile Radio Channels by Using Massive MIMO Techniques

Matthias Pätzold, University of Agder; Carlos A. Gutierrez, Universidad Autonoma de San Luis Potosi

3 Markov Process Based Array Non-Stationarity Modeling for Massive MIMO Channels

Lihua Pang, Xi'an University of Science and Technology; Yang Zhang, Guangliang Ren, Fengkui Gong, Xidian University; Anyi Wang, Xi'an University of Science and Technology; Jiandong Li, Xidian University

4 Radio Propagation Measurement-Based Simulations of the Capacity of Multi-User D-MIMO Indirect Path Communication Systems in a Small Cluttered Room at 2, 18, and 28 GHz

Robert Bultitude, Mohamad Alkadmani, Carleton University

5 Self-Interference Channel Characteristics of a 2x2 MIMO Full-Duplex Transceiver

Fei Chen, Robert Morawski, Tho Le-Ngoc, McGill University

Tuesday 26 September 2017 14:00-15:30 Jackson

5C: MIMO and Beamforming

Chair: Juyul Lee, ETRI, Korea

1 Beamforming and Scheduling for mmWave Downlink Sparse Virtual Channels With Non-Orthogonal and Orthogonal Multiple Access

Alessandro Brighente, Università degli studi di Padova; Stefano Tomasin, University of Padova

2 Distributed Filter Design and Power Allocation for Small-Cell MIMO Networks

Xiong Guojun, City University of Hong Kong; Taejoon Kim, University of Kansas and City University of Hong Kong; David J. Love, Purdue University

3 Impact of LOS/NLOS Propagation on the Coverage Performance of Multi-Stream MIMO-ZFBF Cellular Downlink

Mohammad G. Khoshkholgh, Victor C. M. Leung, The University of British Columbia

4 Indoor and Outdoor Experiments on 5G Radio Access Using Distributed MIMO and Beamforming with a Variety of TP Deployments

Daisuke Kurita, Kiichi Tateishi, NTT DOCOMO, INC.; Hideshi Murai, Ericsson Japan; Arne Simonsson, Ericsson

5 Performance of Overlaid MIMO Cellular Networks with TAS/MRC Under Hybrid-Access Small Cells and Poisson Field Interference

Amr, Abdelkhalik; Fawaz Al-Qahtani, Texas A & M University at Qatar; Redha M. Radaydeh, KAUST; Mohammad Shaqfeh, Texas A&M University at Qatar; Raed F. Manna, Emirates Telecommunications Corporation (Etisalat)

Tuesday 26 September 2017 14:00-15:30 Carmichael

5D: Relay and Resource Allocation

Chair: Zhiguo Ding, Lancaster University, UK

1 Adaptive CDI-CQI Feedback Bit Partitioning for Quantized MISO-SDMA in Downlink HetNets

Mohammad G. Khoshkholgh, Victor C. M. Leung, The University of British Columbia

2 Hardware Design and Implementation of Sparse Code Multiple Access

Yunfei Wu, Jincheng Dai, Chao Dong, Beijing University of Posts and Telecommunications; Xin Bian, b

3 Incremental Selective Decode-and-Forward Relaying for Power Line Communication

Ankit Dubey, National Institute of Technology Goa; Chinmoy Kundu, Queen's University Belfast; Ngatched Telex, Octavia A. Dobre, Memorial University; Ranjan K. Mallik, IIT Delhi

4 Modeling and Mitigating the In-Band Emission Interference in D2D-Enabled Cellular Networks

Hind Albasry, Jiangzhou Wang, University of Kent

5 Resource Allocation for Outdoor-to-Indoor Compress-and-Forward SUDAS with Independent Relay Processing

Aravindh Krishnamoorthy, Robert Schober, Friedrich-Alexander-Universität Erlangen-Nürnberg; Marco Breiling, Fraunhofer Institute for Integrated Circuits IIS

Tuesday 26 September 2017 14:00-15:30 Governor General

5E: Millimeter Wave Communications I

Chair: Ali Heidarpour, University of Alberta, Canada

1 An Energy-Efficient Hybrid Precoding Algorithm for Multiuser mmWave Massive MIMO Systems

Qiaomei Yu, Xiongfei Zhai, Minjian Zhao, Zhejiang University

2 Compact Antenna Spacing in mmWave MIMO Systems Using Random Phase Precoding

G. D. Surabhi, A. Chockalingam, Indian Institute of Science, Bangalore

3 Hybrid Beamforming for Downlink Massive MIMO Systems with Multi-antenna User Equipment

Sohail Payami, Mir Ghoraiishi, University of Surrey; Mehrdad Dianati, University of Warwick

4 Millimeter Wave Hybrid Beamforming with DFT-MUB Aided Precoder Codebook Design

K Satyanarayana, Mohammed El-Hajjar, University of Southampton; Ping-Heng Kuo, Alain Mourad, InterDigital Communications; Lajos Hanzo, University of Southampton

5 Optimal Angular Spread of the Multipath Clusters in mmWave Systems under Pilot Contamination

Jorge Iscar Vergara, Florida International University; Ismail Guvenc, North Carolina State University; Sener Dikmese, Tampere University of Technology; Ahmed S. Ibrahim, Florida International University

Tuesday 26 September 2017 14:00-15:30 Casson

5F: Coverage and Resource Allocation

Chair: Jun Cai, University of Manitoba, Canada

1 Design of TD-LTE based Signal Indoor Distribution System

Tingting Yang, Ouyang Zhenfeng, Dalian Maritime University; Jiajia Liu, Xidian University; Zhou Su, Shanghai University; Tom Luan, Deakin University

2 Dynamics of Communication, Caching and Computing Resource Sharing: a Game Model

Hanwen Zhang, Gang Liu, Zheng Ma, Pingzhi Fan, Southwest Jiaotong University

3 Resource Allocation for Content Delivery in Cache-enabled OFDM Small Cell Networks

Xiuhua Li, University of British Columbia; Xiaofei Wang, Keqiu Li, Tianjin University; Hongjun Chi, Shandong Academy of Sciences; Victor C. M. Leung, The University of British Columbia

4 Resource Allocation for Energy Harvesting Assisted D2D Communications Underlying OFDMA Cellular Networks

Shuo Yu, Waleed Ejaz, Ling Guan, Alagan Anpalagan, Ryerson University

5 Selective Free Data Access to Cellular Networks

Behdad Heidarpour, Zbigniew Dziong, École de technologie supérieure; Wing Cheong Lau, The Chinese University of Hong Kong; Shahin Vakilinia, Concordia University

Tuesday 26 September 2017 14:00-15:30 Osgoode East

5G: Transmission and Detection

Chair: Liping Qian, Zhejiang University of Technology, China

1 BeamSpace MIMO-NOMA for Millimeter-Wave Communications Using Lens Antenna Arrays

Bichai Wang, Linglong Dai, Tsinghua University; Xiqi Gao, Southeast University; Lajos Hanzo, University of Southampton

2 Design and Analysis of an Iterative Quantum Receiver With Photon-Number-Resolving Detector

Chenjia Wei, Lingda Wang, Xiaolin Zhou, Pengfei Tian, Fudan University; Julian Cheng, University of British Columbia

3 MIMO Radars with Orthogonal Waveforms: A Novel Approach for Enhanced Performance under Swerling Targets

Faran Awais Butt, Ijaz Haider Naqvi, Lahore University of Management Sciences (LUMS); Usman Riaz, Air University Islamabad

4 MOSTPC: Performance of A Massive Oblique Space-Time-Polarization Precoding System over Ricean-K Fading Channel

Chenggui Lou, Bin Cao, Lin Gao, Harbin Institute of Technology; Limin Sun, University of Chinese Academy of Sciences; Zhang Qinyu, Harbin Institute of Tech.

5 Quantum Multiuser Communication Systems with Adaptive Feedback Measurement and Chip-Interleaved Iter-PIC Receiver

Lingda Wang, Xiaolin Zhou, Pengfei Tian, Fudan University

Tuesday 26 September 2017 14:00-15:30 Osgoode West

5H: Wireless and Ubiquitous Sensing

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

1 Multi-Parameter Based Self-Feedback Effectiveness Evaluation in a Multi-Sensor Fusion Positioning System

Wanlong Zhao, Weixiao Meng, Han Shuai, Harbin Institute of Technology; Rose Qingyang Hu, Utah State University

2 5G Ubiquitous Sensing: Passive Environmental Perception in Cellular Systems

Bahareh Gholampoorayzdi, Isha Singh, Stephan Sigg, Aalto University

- 3 Combined UKF/KF for Fast In-motion Attitude Determination of SINS**
Siyuan Tan, Wenhao Wang, Bocheng Zhu, Peking University
- 4 Cramer-Rao Lower Bounds for Positioning with Large Intelligent Surfaces**
Sha Hu, Fredrik Rusek, Ove Edfors, Lund University
- 5 "Silence is Golden": Exploring Ambient Signals for Detecting Motions in a Real-time Manner**
Yu Gu, Jinhai Zhan, Hefei University of Technology; Anonymous Account 81834, Anonymous; Xiaoyan Wang, Ibaraki University

Tuesday 26 September 2017 14:00-15:30 Toronto 3

5P: Radio Access & Propagation Models

Chair: Rongqing Zhang, Peking University, China

- 1 Performance Evaluation of A Hybrid-beamforming Sounder for 26 GHz Channel Measurements**
Xuefeng Yin, Xi Chu, Jiajing Chen, Tongji University; Zhimeng Zhong, Huawei Technologies Co., Ltd.
- 2 Downlink Capacity Comparison of MMSE-SVD and BD-SVD for Cooperative Distributed Antenna Transmission using Multi-user Scheduling**
Yuta Seki, Fumiyuki Adachi, Tohoku University
- 3 Dynamic Power Splitting for Three-Step Two-Way Multiplicative AF Relay Networks**
Zhaorui Wang, Yongzhao Li, Yinghui Ye, Hailin Zhang, Xidian University
- 4 Body Mass Index Effect on Ultrawideband MIMO BAN Channel Characterization**
Seun Sangodoyin, Andreas F. Molisch, University of Southern California
- 5 Distributed Measurements of the Penetration Loss of Railroad Cars**
Martin Lerch, Philipp Svoboda, TU Wien; Stephan Ojak, OBB Technische Services GmbH; Markus Rupp, Christoph Mecklenbräuker, TU Wien
- 6 Land Mobile Satellite Propagation Channel Characterization Based On RF Measurements and Fish-eye Images**
Jonathan Israel, Mehdi Ait Lghil, ONERA

- 7 Measurement-Based Path Loss and Delay Spread Propagation Models in VHF/UHF Bands for IoT Communications**
Ebrahim Bedeer, Ulster University; Jeff Pugh, Colin Brown, CRC Canada; Halim Yanikomeroglu, Carleton University
- 8 The Effects of the Rotating Step on Analyzing the Virtual Multi-antenna Measurement Results at 28 GHz**
Zhixue Hu, Tian Lei, Pan Tang, Tao Jiang, Zhang Jianhua, Beijing University of Posts and Telecommunications
- 9 Ultra-wideband Channel Modeling for Hurricanes**
Wahab Ali Gulzar, NCSU; Ismail Guvenc, North Carolina State University; Arindam Chowdhury, Florida International University
- 10A Distributed Approach for Improving EPC Controller Performance**
Modhawi Alotaibi, Amiya Nayak, University of Ottawa
- 11 Associating Spatial Information to Directional Millimeter Wave Channel Measurements**
Erich Zöchmann, Martin Lerch, Stefan Pratschner, Ronald Nissel, Sebastian Caban, Markus Rupp, TU Wien
- 12 Cross-Correlation Properties of Large-Scale Parameters Based on LTE Channel Measurements in High-Speed Railway Scenarios**
Nan Zhang, Cheng Tao, Tao Zhou, Beijing Jiaotong University
- 13 Intercell Interference-Aware Scheduling for Delay Sensitive Applications in C-RAN**
Yi Li, Mustafa Cenk Gursoy, Senem Velipasalar, Syracuse University
- 14 Low Density Spreading Signature Vector Extension (LDS-SVE) for Uplink Multiple Access**
Jian Zhang, Xin Wang, Xianjun Yang, Fujitsu R&D Center Co., Ltd.; Hua Zhou, Fujitsu
- 15 Spatial Propagation Characteristics of 28 GHz Frequency Band in UMi Scenario**
Yu Han, Tian Lei, Pan Tang, Xinzhuang Zhang, Zhixue Hu, Zhang Jianhua, Beijing University of Posts and Telecommunications

Tuesday 26 September 2017 16:00-17:30 Simcoe

6A: Resource Allocation in M2M Networks

Chair: Mi Wen, Shanghai Univ., China

- 1 A Study of Multicast Message Allocation for Content Distribution with Device-to-Device Communications**
Jianguo Xie, Wei Song, Xi Tao, University of New Brunswick
- 2 Distributed fast loop-free transition of routing protocols**
Nina Pelagie Bekono, Université Clermont Auvergne; Nancy El Rachkidy, Université Blaise Pascal; Alexandre Guitton, Université Clermont Auvergne
- 3 Dynamic Power Strategy Space for Non-Cooperative Power Game With Pricing**
Shu Fu, Chongqing University; Zhou Su, Shanghai University
- 4 Fair Resource Allocation Algorithm for Chunk based OFDMA Multi-User Networks**
Yanyan Shen, Xiao xia Huang, Shenzhen Institutes of Advanced Technology, CAS; Bo Yang, Shanghai Jiaotong University; Shimin Gong, Shuqiang Wang, Shenzhen Institutes of Advanced Technology, CAS
- 5 On OFDM-Based Resource Allocation in LTE Radio Management System for Unmanned Aerial Vehicles (UAVs) (Invited Paper)**
Hiroki Nishiyama, Yuichi Kawamoto, Daisuke Takaishi, Tohoku University

Tuesday 26 September 2017 16:00-17:30 Jackson

6C: Energy Harvesting and Efficiency II

Chair: Liping Qian, Zhejiang University of Technology, China

- 1 Bargaining-Based Power Allocation of Hybrid Green Cellular Networks with Energy Harvesting**
Lin Wang, Xing Zhang, Shuo Wang, Juwo Yang, Beijing University of Posts and Telecommunications
- 2 Energy Efficiency Fairness in Heterogeneous Cellular Networks with Wireless Power Transfer**
Jing Zhang, Guoheng Liu, Yan Liao, Qingjie Zhou, Qiang Li, Huazhong University of Science and Technology
- 3 Joint Channel Bandwidth and Power Allocations for Downlink Non-orthogonal Multiple Access Systems**
Yuan Wu, Liping Qian, Haowei Mao, Weidang Lu, Zhejiang University of Technology; Haibo Zhou, University of Waterloo
- 4 Minimizing the Update Complexity of Facebook HDFS-RAID Locally Repairable Code**
Mehrtash Mehrabi, Masoud Ardakani, Majid Khabbazian, University of Alberta
- 5 Transmission Strategy for D2D Terminal with Ambient RF Energy Harvesting**
Luyan Wang, Xuewen Liao, Yang Li, Xi'an Jiaotong University

Tuesday 26 September 2017 16:00-17:30 Carmichael

6D: Wireless Security II

Chair: Rose Hu, Utah State University, USA

- 1 LTE Physical-Layer Identity Detection in the Presence of Jamming**
Amr El-Keyi, Carleton University; Oktay Ureten, Trevor Yensen, Allen-Vanguard Corporation; Halim Yanikomeroglu, Carleton University
- 2 Recommendation Trust for Improved Malicious Node Detection in Ad hoc Networks**
Saneha Ahmed, NED University of Engineering and Technology
- 3 Reed Solomon Codes for the Reconciliation of Wireless PHY Layer based Secret Keys**
Michelle Fernando, Dhammika Jayalath, Queensland University of Technology; Seyit Camtepe, DATA61 / CSIRO; Ernest Foo, Queensland University of Technology
- 4 Secrecy Performance of Full-Duplex Relay System With Randomly Located Eavesdroppers**
Donghyun Jung, Jae Hong Lee, Seoul National University
- 5 Secure Transmission Scheme in K-tier Dense Heterogeneous Cellular Networks with Imperfect Channel State Information**
Yunjia Xu, Kaizhi Huang, Dazhao Ding, Xiaohui Qi, Yajun Chen, National Digital Switching System Engineering and Technological Center

Tuesday 26 September 2017 16:00-17:30 Governor General

6E: MIMO Systems

Chair: Rui Dinis, Instituto de Telecomunicações, Portugal

- 1 Centralized and Distributed Sparsification for Low-Complexity Message Passing Algorithm in C-RAN Architectures**
Alessandro Brighente, Università degli studi di Padova; Stefano Tomasin, University of Padova
- 2 Coordinated DPC-Based Precoding Design for Energy Efficiency Optimization in Downlink Multi-Cell MIMO Systems**
Ji Wang, Huazhong University of Science and Technology; Xin Gui, Samsung R&D Center Beijing; Weimin Wu, Yingzhuang Liu, Huazhong University of Science and Technology
- 3 Stopping Condition for Greedy Block Sparse Signal Recovery**
Yu Luo, Ronggui Xie, Huarui Yin, Weidong Wang, University of Science and Technology of China
- 4 User Loading in Downlink Multiuser Massive MIMO with 1-bit DAC and Quantized Receiver**
Jindan Xu, Wei Xu, Fengfeng Shi, Hua Zhang, Southeast University
- 5 Constellation Design for Quadrature Spatial Modulation**
Binh Vo, Ha H. Nguyen, University of Saskatchewan; H. D. Tuan, University of Technology, Sydney

Tuesday 26 September 2017 16:00-17:30 Casson

6F: Indoor Localization

Chair: Xiaoyan Wang, Ibaraki University, Japan

- 1 Cramer-Rao Bound Analysis of Wi-Fi Indoor Localization Using Fingerprint and Assistant Nodes**
Li Qiyue, Wei Li, Wei Sun, Jie Li, Hefei University of Technology; Zhi Liu, Shizuoka University
- 2 Holding-Manner-Free Heading Change Estimation for Smartphone-based Indoor Positioning**
Lili Xie, Tian Jun, Genming Ding, Qian Zhao, Fujitsu Research and Development Center Co., Ltd.

- 3 Multipath-Aided Direct Path ToA Reconstruction for Integrated UWB Receivers in Generalized NLoS**
Jimmy Maceraudi, François Dehmas, CEA-Leti; Benoît Denis, CEA-Leti Minatec; Bernard Uguen, IETR / CNRS / Université Rennes-I

- 4 Sub-Nyquist Rate UWB Indoor Positioning using Power Delay Profile and Time of Arrival Estimates**
Bilal Maqsood, Ijaz Haider Naqvi, Lahore University of Management Sciences (LUMS)

- 5 Wireless Localisation Using Spectral Flatness Weights**
Orestis Georgiou, Ultrahaptics; William Thompson, Toshiba TREL

Tuesday 26 September 2017 16:00-17:30 Osgoode East

6G: Multiple Access Control in M2M networks

Chair: Zhu Haojin, Shanghai Jiao Tong University, China

- 1 A Data Aggregation Scheme with Fine-grained Access Control for the Smart Grid (invited paper)**
Wen Mi, Shanghai University of Electric Power, China; Xu Zhang, Shanghai University of Electric Power; Hongwei Li, University of Electronic Science and Technology of China, Chengdu; Anonymous Account 70762, Anonymous
- 2 A Joint SUCR Protocol and TA Information Pilot Random Access Scheme**
Xiaojie Li, Ying Li, Huimei Han, Xudong Guo, Xidian University
- 3 Prototype System based Enhanced Scheduled Access Mechanism for WBAN**
Yao Zhang, Changle Li, Xidian University; Tom Luan, Deakin University; Yueyang Song, Xiaoming Yuan, Xidian University
- 4 Scheduling transmissions with latency constraints in an IEEE 802.15.4e TSCN network**
Ines Khoufi, Pascale Minet, Inria; Badr Rmili, CNES
- 5 802.11ax: the Coming New WLAN System with More than 4x MAC Throughput Enhancement**
Xun Yang, yuchen Guo, Osama Aboul-Magd, Huawei Technologies

Tuesday 26 September 2017 16:00-17:30 Osgoode West

6H: Wireless M2M Networks

Chair: Yo-Ru Chen, National Chiao Tung University, Taiwan

- 1 Coverage Maximization with Switched Multi-Element Antennas in Next Generation Cellular Networks**
Shih-Fan Chou, Hsiu-Wen Yen, Yen-Ju Chen, Ai-Chun Pang, National Taiwan University; Ting-Wu Ho, Industrial Technology Research Institute
- 2 Cross-layer QoE-based Incentive Mechanism for Video Streaming in Multi-hop Wireless Networks**
Mahdi Mousavi, Wasir R. KhudaBukhsh, Heinz Koepl, Anja Klein, Technische Universität Darmstadt
- 3 Distributed Antenna System using Concurrent Transmission for Wireless Automation System**
Kulanuch Chutisemachai, Theerat Sakdejayont, Chun-Hao Liao, Makoto Suzuki, Hiroyuki Morikawa, The University of Tokyo
- 4 Effective Capacity of Multi-Stream MIMO-ZFBF Communications in Large Wireless Networks**
Mohammad G. Khoshkholgh, Victor C. M. Leung, The University of British Columbia
- 5 On Physical Layer Security in Finite-Area Wireless Networks: An Analysis Framework**
Jiajia Liu, Jiahao Dai, Yongpeng Shi, Wen Sun, Xidian University

Tuesday 26 September 2017 16:00-17:30 Toronto 3

6P: Multiple Antennas Systems

Chair: Ali Heidarpour, University of Alberta, Canada

- 1 A Search-free Algorithm for Precoder Selection in FD-MIMO Systems with DFT-based Codebooks**
Federico Penna, Hongbing Cheng, Jungwon Lee, Samsung

- 2 Indoor Localization with Irregular Antenna Deployment**
Yang Zheng, Junyu Liu, Min Sheng, Jiandong Li, Xidian University
- 3 On the Power Leakage Problem in BeamSpace MIMO Systems with Lens Antenna Array**
Tian Xie, Linglong Dai, Xinyu Gao, Tsinghua University; Haipeng Yao, Beijing University of Posts and Telecommunications; Xiaodong Wang, Columbia University
- 4 Performance and PAPR Analysis of Single-Carrier Massive MIMO System with Channel Imperfections**
Heshani Gamage, Nandana Rajatheva, Matti Latva-aho, University of Oulu
- 5 Distributed Power Allocation in MIMO Interference Relay Networks with Direct Links via ADMM**
Cenk M. Yetis, Ronald Y. Chang, Academia Sinica
- 6 A New Generalized Khatri-Rao Products Approach for Correlated Source Number Estimation**
Jing Wang, Fei Ji, Fangjiong Chen, Hua Yu, Qiang Li, South China University of Technology
- 7 Computationally Effective Direction of Arrival Estimation for Nested Arrays via DFT Method**
Xiaofei Zhang, Zhen wang, Nanjing University of Aeronautics and Astronautics
- 8 Downlink Resource Allocation With Multiple Users per Resource and Modulation Assignment**
Dževdan Kapetanović, Naveed Butt, Rocco Di Taranto, Ericsson

- 9 Performance Analysis on 3D Beamforming for Downlink In-Band Wireless Backhaul for Small Cells**
Jinping Niu, Northwest University
- 10 Robust Sum Secrecy Rate Optimization for MIMO Two-way Full Duplex Systems**
Zheng Chu, Tuan Le, Huan X. Nguyen, Middlesex University; Arumugam Nallanathan, King's College London; Mehmet Karamanoglu, Middlesex University
- 11 Single Channel Blind Source Separation for MISO Communication Systems**
Priyanka Dey, Nikita Trivedi, Udit Satija, Barathram Ramkumar, M. Sabarimalai Manikandan, Indian Institute of Technology Bhubaneswar
- 12 Theory and Design of a Direct Space-to-Information Converter for Rapid Detection of Interferer DoA**
Matthew Bajor, Tanbir Haque, John Wright and Peter R. Kinget, Columbia University
- 13 A Suboptimal Approach for Minimum Transmit Power NOMA Beamforming**
Jinho Choi, Gwangju Institute of Science and Technology
- 14 High Speed Beam Tracking Demonstrated Using a 28 GHz 5G Trial System**
Kjell Larsson, Ericsson Research; Björn Halvarsson, Damanjit Singh, Ericsson AB; Ranvir Chana, Jawad Manssour, Ericsson; Minsoo Na, Changsoo Choi, Sungho Jo, SK Telecom
- 15 The Communicative Vehicle: Multiple Antennas in a Chassis Antenna Cavity**
Gerald Artner, Technische Universitaet Wien

Wednesday 27 September 2017

Wednesday 27 September 2017 11:00-12:30 Simcoe

7A: Millimeter Wave Communications II

Chair: Mohamed M. A. Mustafa, Egyptian Russian University, Egypt

- 1 Analysis of Broadcast Signaling for Millimeter Wave Cell Discovery**
Yilin Li, Jian Luo, Mario Castaneda, Nikola Vucic, Wen Xu, Huawei Technologies Duesseldorf GmbH; Giuseppe Caire, Technical University of Berlin
- 2 A Spatial-Spectral Interference Model for Millimeter Wave 5G Applications**
Solmaz Niknam, Balasubramaniam Natarajan, Kansas State University; Hani Mehrpouyan, Boise State University
- 3 Time Series Measurement of IEEE 802.11ad Signal Power Involving Human Blockage with HMM-based State Estimation**
Yusuke Koda, Koji Yamamoto, Takayuki Nishio, Masahiro Morikura, Kyoto University
- 4 Uplink Performance Analysis in D2D-Enabled mmWave Cellular Networks**
Esma Turgut, Mustafa Cenk Gursoy, Syracuse University
- 5 Capacity Analysis and Optimization of Millimeter Wave Cellular Networks with Beam Scanning**
Rui Xu, Jiancun Fan, Ying Zhang, Xinmin Luo, Xi'an Jiaotong University

Wednesday 27 September 2017 11:00-12:30 Tom Thomson

7B: Cloud RAN

Chair: Shahin Vakili, Ericsson, Canada

- 1 Analysis of Different Cloud-RAN Implementation Strategies in Small Cells Scenarios**
Tiago Monteiro, Instituto Superior Técnico; Luis M. Correia, IST - University of Lisbon / INESC

- 2 A Novel Optimization Framework for C-RAN BBU Selection based on Resiliency and Price**
Mohammed Yazid Lyazidi, UPMC; Lorenza Giupponi, CTTC; Josep Mangles-Bafalluy, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC); Nadjib Aitsaadi, ESIEE Paris; Rami Langar, LIGM-CNRS, UPEM
- 3 Fairness and User Assignment in Cloud-RAN**
Hadi Ghauch, Sahar Imtiaz, Mikael Skoglund, KTH Royal Institute of Technology; George Koudouridis, Huawei Technologies Sweden AB; James Gross, KTH Royal Institute of Technology
- 4 Optimizing Synchronous Handover in Cloud RAN**
Troels Kolding, Nokia Bell Labs; Lucas Chavarria Gimenez, Aalborg University; Klaus I. Pedersen, Nokia - Bell Labs
- 5 Energy Efficient Multiple Association in CoMP based 5G Cloud-RAN Systems**
Lilatul Ferdouse, Ali Alnoman, Ryerson University; Adrian Bulzacki, ARB Labs; Alagan Anpalagan, Ryerson University

Wednesday 27 September 2017 11:00-12:30 Jackson

7C: EV-Grid Integration and Charging Management

Chair: Sameh Sorour, University of Idaho, USA

- 1 Decentralized Coordination of Electric Vehicle Charging Stations for Active Power Compensation**
Peng Zhuang, Hao Liang, University of Alberta
- 2 Optimizing Service Frequency for Urban Rail Transit: A Game-Theoretical Methodology**
Jiao Ma, Changle Li, Dong Weiwei, Zhe Liu, Xidian University; Tom Luan, Deakin University; Lina Zhu, Xidian University
- 3 Stable Matching Based Cooperative V2V Charging Mechanism for Electric Vehicles**
Rongqing Zhang, Colorado State University; Xiang Cheng, Peking University

4 Vehicle-to-Grid Frequency Regulation Signal Optimization based on Inhomogeneous Hidden Markov Model

Yuan Liu, Hao Liang, University of Alberta

5 Whether to Charge or Discharge an Electric Vehicle? An Optimal Approach in Polynomial Time

Ruilong Deng, Hao Liang, University of Alberta

Wednesday 27 September 2017 11:00-12:30 Carmichael

7D: 5G Systems

Chair: Jinho Choi, GIST, Korea

1 A Probability Based Modulation and Its Application in Ultra Reliable Low Latency Communications in 5G

Fan Yang, Xin Wang, Fujitsu R&D Center Co., Ltd.

2 Energy Beamforming for Full-Duplex Wireless Powered Communication in Presence of Eavesdropper

Juhwan Seo, Jae Hong Lee, Seoul National University

3 Generalized Pattern Search for Beam Discovery in Millimeter Wave Systems

Mohammed Jasim, Nasir Ghani, University of South Florida

4 On the Joint Use of Time Reversal and POPS-OFDM for 5G Systems

Wafa Khrouf, Zeineb Hraiech, Fatma Abdelkefi, Mohamed Siala, Higher School of Communications of Tunis (SUP'COM); Matthieu Crussière, Institute of Electronics and Telecommunications of Rennes

5 Network Slicing with Elastic SFC

Xu Li, Hang Zhang, Huawei Technologies Canada Co. Ltd.

Wednesday 27 September 2017 11:00-12:30 Governor General

7E: Massive MIMO III

Chair: Ali Alnoman, Ryerson University, Canada

1 Performance of a Non-Coherent Massive SIMO M-DPSK System

Victor Monzon, Ana García-Armada, Universidad Carlos III de Madrid; Mohammed El-Hajjar, Lajos Hanzo, University of Southampton

2 Recursive Power Allocation with Interference Minimization for Time Varying Massive MIMO

Ilmiawan Shubhi, Hidekazu Murata, Kyoto University

3 Robust Approximate Message Passing Detection Based on Minimizing Bethe Free Energy for Massive MIMO Systems

Shujing Chen, Wenjin Wang, Southeast University; Dan Zhang, TU Dresden; Xiqi Gao, Southeast University

4 Spectral Efficiency Maximization for Massive Multiuser MIMO Downlink TDD Systems via Data Power Allocation with MRT Precoding

Omid Saatlou, M. Omair Ahmad, M.N.S Swamy, Concordia University

5 User Grouping with Load Balance in FDD Massive MIMO System

YI XIE, Northwestern Polytechnical University; Jiancun Fan, Xi'an Jiaotong University; Xiangwei Zhou, Louisiana State University; Geoffrey Ye Li, Georgia Institute of Technology; Xun Li, Huawei Shanghai Research Institute; Bo Li, Northwestern Polytechnical University

Wednesday 27 September 2017 11:00-12:30 Casson

7F: Applications in M2M Networks

Chair: Michael Barbeau, Carleton University, Canada

1 Discovering Routers as Secondary Landmarks for Accurate IP Geolocation

Zhihao Wang, Chinese Academy of Sciences; Yongle Chen, Taiyuan University of Technology; Hui Wen, Chinese Academy of Sciences; Lian Zhao, Ryerson University; Limin Sun, University of Chinese Academy of Sciences

2 Efficient Bayesian Communication Approach For Smart Agriculture Applications

Cristanel Razafimandimby, Inria Lille; Valeria Loscri, Inria Lille - Nord Europe; Anna Maria Vegni, University of Roma Tre; Alessandro Neri, COMLAB Telecommunications Laboratory, Rome, Italy

3 Measuring Centrality Metrics Based on Time-ordered Graph in Mobile Social Networks

Huan Zhou, China Three Gorges University; Chunsheng Zhu, Victor C. M. Leung, The University of British Columbia; Shouzhi Xu, China Three Gorges University

4 Online Pricing Crowdsensed Fingerprints for Accurate Indoor Localization

Xiaohua Tian, Wencan Zhang, Shanghai Jiao Tong University; Jingchao Wang, Institute of China Electronic System Engineering Corporation; Wenxin Li, Shitao Li, Xinyu Wu, Yucheng Yang, Shanghai Jiao Tong University

5 Task delegation through multi-agent negotiation in embedded systems by the platform MERMAID

Tifaine Inguere, University of Maine and STMicroelectronics; Florent Carlier, Valérie Renault, University of Maine

Wednesday 27 September 2017 11:00-12:30 Osgoode East

7G: OFDM Systems

Chair: Hideki Ochiai, Yokohama National University, Japan

1 A Leakage Minimization Approach to Zero-Tail OFDM with Orthogonal Spreading in a Multiple Access Channel with Uncorrelated Scatterings

Thomas Bourgeois, Noriyuki Hashimoto, Yasuhiro Suegara, KDDI Research, Inc.

2 Evaluation of Static Sequence Assisted DFT-spread-OFDM for 5G Systems

Jean-Christophe Sibel, Cristina Ciochina, Mitsubishi Electric R&D Centre Europe; Fumihito Hasegawa, Mitsubishi Electric Corporation

3 MIMO Self-Coherent OFDM

Qianyu Jin, Yi Hong, Emanuele Viterbo, Monash University

4 Performance Analysis of OFDM over Multi-scale Multi-lag Channels

Yun Liu, South China University of Technology; Zhongkai Univ. of Agric. & Eng.; Fei Ji, Fangjiong Chen, Miaowen Wen, Hua Yu, Yinming Cui, South China University of Technology

5 Using the Fireworks Algorithm for ML Detection of Nonlinear OFDM

João Guerreiro, Instituto de Telecomunicações; Marko Beko, ULHT, UNINOVA, ISR-IST; Rui Dinis, Universidade Nova de Lisboa; Paulo Carvalho, FCT- Universidade Nova de Lisboa

Wednesday 27 September 2017 11:00-12:30 Osgoode West

7H: Green Wireless Networking II

Chair: Jianbing Ni, University of Waterloo, Canada

1 Wake-up Radio-enabled Routing for Green Wireless Sensor Networks

Stefano Basagni, Northeastern University; Valerio Di Valerio, Georgia Koutsandria, Chiara Petrioli, University of Rome 'La Sapienza'

2 Energy Efficient Relay-Assisted Cell Zooming in a Wireless Heterogeneous Network

Sidhant Chatterjee, Zekun Zhang, Rose Qingyang Hu, Utah State University

3 Ensuring Reliable and Stable Communications in Mobile Ad-hoc Networks

Tareq Hayajna, Kadoch Michel, Ecole de technologie supérieure; Bo Rong, Communications Research Centre Canada

4 Green C-RAN: A Joint Approach to the Design and Energy Optimization

Song Guo, Hong Kong Polytechnic University; Deze Zeng, China University of Geosciences, Wuhan; Li Gu, Huazhong University of Science and Technology

5 Inversely Proportional Carrier Sense Threshold and Transmit Power Setting towards Green WLANs

Bo Yin, Liang Lin, Koji Yamamoto, Takayuki Nishio, Masahiro Morikura, Kyoto University; Hirantha Abeyskera, NTT Corporation

Wednesday 27 September 2017 11:00-12:30 Varley

7I: D2D Communication

Chair: Haixia Peng, University of Waterloo, Canada

1 A Distance-based Power Control Scheme for D2D Communications Using Stochastic Geometry

Asmaa Abdallah, Mohammad Mansour, Ali Chehab, American University of Beirut

2 Delay-Tolerant Resource Allocation for D2D Communication Using Matching Theory

Hessam Yousefi, Quazi Rahman, Xianbin Wang, Western University

3 Social-Aware Relay Selection for Device-to-Device Underlying Cellular Networks

Xuejie Zhu, Qinghe Du, Pinyi Ren, Xi'an Jiaotong University

4 The Effect of D2D Communication on the Uplink Cellular Network Performance

Hind Albasry, University of Kent

5 Underlay D2D Communication in a Finite Cellular Network with Exclusion Zone

Jing Guo, Salman Durrani, Xiangyun Zhou, The Australian National University; Halim Yanikomeroglu, Carleton University

Wednesday 27 September 2017 11:00-12:30 Toronto 3

7P: Green Communication Systems

Chair: Mehrtash Mehrabi, University of Alberta, Canada

1 A Power Efficient Technique for Double Layer Massive MIMO Schemes

Paulo Carvalho, Rui Dinis, Afonso Ferreira, Guilherme Gaspar, FCT-Universidade Nova de Lisboa; Dushantha Nalin K. Jayakody, National Research Tomsk Polytechnic University

2 Energy-Efficient Hybrid Transceiver Designs for Millimeter Wave Communication Systems

Deepa Jagyasi, P. Ubaidulla, International Institute of Information Technology (IIIT), Hyderabad

3 Does Wake-up Radio Always Consume Lower Energy Than Duty-Cycled Protocols?

Min Zhang, Debasish Ghose, Frank Y. Li, University of Agder

4 SMDP-Based Resource Allocation for Wireless Networks with Energy Harvesting Constraints

Mohammed Baljon, Mushu Li, Ryerson University; Hongbin Liang, Southwest Jiaotong University; Lian Zhao, Ryerson University

5 The Energy Efficient and Disjointed Multipath for Void Handling in Wireless Sensor Networks

Hyunchong Cho, Chungnam National University; Seungmin Oh, UCLA; Yongbin Yim, Sangdae Kim, Taehun Yang, Sang-Ha Kim, Chungnam National University

6 Cognitive Radio Networking with Cooperative and Energy Harvesting

Ala'eddin Masadeh, Ahmed Kamal, Zhengdao Wang, Iowa State University

7 Application of Short Erasure Correcting Codes for Cognitive Radio

Muhammad Moazam Azeem, Université Pierre et Marie CURIE (UPMC), Paris; Abdul Baqi Khan, Jubail University College; Uzma Azeem, Yanbu University College

8 Dynamic Time and Power Allocation for Opportunistic Energy Efficient Cooperative Relay

John Heron, Hongjian Sun, Durham University

9 Adaptive Distributed Laser Charging for Efficient Wireless Power Transfer

Qingqing Zhang, Tongji University; Xiaojun Shi, China Electronics Technology Group Corporation; Qingwen Liu, Tongji University; Pengfei Xia, Tongji University; Yong Liao, China Academy of Electronics and Information Technology

10 Energy Efficient Packet Transmission Strategies for Wireless Body Area Networks with Rechargeable Sensors

Zhen Zhao, Shiwei Huang, Jun Cai, University of Manitoba

11 A Physical Layer Design of Energy-Efficient Data Transmission in 2D Communication Environments

Yuichi Masuda, The University of Tokyo; Akihito Noda, Nanzan University; Hiroyuki Shinoda, The University of Tokyo

Wednesday 27 September 2017 14:00-15:30 Simcoe

8A: Connected and Automated Vehicles

Chair: Yan Yang, Beijing Jiaotong University, China

1 Autonomous Vehicle as an Intelligent Transportation Service in a Smart City

I-Cheng Lin, Che-Yu Lin, Hsuan-Man Hung, National Taiwan University; Cui Qimei, Beijing University of Posts and Telecommunications; Kwang-Cheng Chen, University of South Florida

2 Diversification of Autonomous Vehicle Driving Behavior

Tokunbo Makanju, Shinsaku Kiyomoto, KDDI Research

3 Fog Assisted Driver Behavior Monitoring for Intelligent Transportation System

Mohammad Azam, Xavier Fernando, Ryerson University

4 Impact to Longitude Velocity Control of Autonomous Vehicle from Human Driver's Distraction Behavior

Wen Yan, Suyu Peng, Chunguo Li, Luxi Yang, Southeast University

5 A Multi-Class Dispatching and Charging Scheme for Autonomous Electric Mobility On-Demand

Syrine Belakaria, Mustafa Ammous, Sameh Sorour, Ahmed Abdel-Rahim, University of Idaho

Wednesday 27 September 2017 14:00-15:30 Tom Thomson

8B: Performance Evaluation in M2M Networks

Chair: Michael Barbeau, Carleton University, Canada

1 An Experimental Baseline for Underwater Acoustic Broadcasts

Stephane Blouin, DRDC Atlantic Research Centre; Michel Barbeau, Carleton University

2 Performance analysis of video services over WLANs with channel bonding

Mengqi Han, Sami Khairy, Lin Cai, Yu Cheng, Illinois Institute of Technology; Fen Hou, University of Macau

3 Performance of data caching in cloud sensing

Jelena Mistic, Vojislav Mistic, Fatemeh Banaie, Ryerson University

4 The Multi-Cast Packet Loss in Mobile Ad-hoc Networks

Siyang Liu, Shanghai Jiao Tong University; Jingchao Wang, Institute of China Electronic System Engineering Corporation; Xiaoying Gan, Xiaohua Tian, Shanghai Jiao Tong University

5 Transmission Rate Analysis in Multi-level Hierarchical Coded Caching

Cai Guoqing, Xiong Wang, Jinbei Zhang, Shanghai Jiao Tong university; Jingchao Wang, Institute of China Electronic System

Engineering Corporation; Xiaoying Gan, Xiaohua Tian, Xingbing Wang, Shanghai Jiao Tong University

Wednesday 27 September 2017 14:00-15:30 Jackson

8C: Broadband Wireless Networks II

Chair: Mohammad Shaqfeh, Texas A&M University at Qatar, Qatar

1 A Low Complexity Matching Game Approach for LTE-Unlicensed

Francesco Chiti, Romano, Benedetta Picano, University of Florence; Yunan Gu, Xunsheng Du, Zhu Han, University of Houston

2 Eliminating Pilot Contamination Using Dual Pilot Sequences in Massive MIMO (Invited Paper)

Abdelmalik Nasser Aljalai, Chen Feng, Victor C. M. Leung, Rabab Ward, The University of British Columbia

3 Enabling Backoff and Eliminating Redundant Idle Period for Medium Access in LTE-U

Geeth P. Wijesiri N.B.A., Frank Y. Li, University of Agder

4 Utility Privacy Trade-off for Noisy Channels in OFDM Systems

Mehmet Özgün Demir, Boğaziçi University; Selahattin Gökceli, Istanbul Technical University; Guido Dartmann, University of Applied Sciences Trier; Volker Lücken, Gerd Ascheid, RWTH Aachen University; Gunes Kurt, Istanbul Technical University

5 Performance Analysis of the Random Access Channel in NB-IoT

Ruki Harwahyu, Ray-Guang Cheng, NTUST; Chia-Hung Wei, Foxconn Advanced Communication Academy (FACA)

Wednesday 27 September 2017 14:00-15:30 Carmichael

8D: Multicarrier Systems

Chair: Kun Chen, Universidad Carlos III, Spain

1 Circular Convolution Filter Bank Multicarrier (FBMC) System with Index Modulation

Jian Zhang, Minjian Zhao, Zhejiang University; Lei Zhang, University of Surrey; Jie Zhong, Tianhang Yu, Zhejiang University

2 Cross-Layer Spectral Efficiency of Adaptive Communications Systems with QoS Constraints

Anas Saci, Arafat Al-Dweik, Abdallah Shami, University of Western Ontario

3 Fourth-Order Moment Analysis of Filtered Single-Carrier and OFDM Signals

Hideki Ochiai, Yokohama National University

4 Superimposed Training for Channel Estimation in FBMC-OQAM

Kun Chen-Hu, Juan Carlos Estrada-Jiménez, M. Julia Fernández-Getino García, Ana García-Armada, Universidad Carlos III de Madrid

5 Synchronization Method for FBMC Systems

Wonsuk Chung, Samsung Electronics Co.; Beomju Kim, Insik Jung, Jintae Kim, Yonsei University; Hyunkyung Yu, Samsung Electronics; Sooyong Choi, Daesik Hong, Yonsei University

Wednesday 27 September 2017 14:00-15:30 Governor General

8E: Channel Coding

Chair: Swaminathan Ramanathan, Nanyang Technological University, Singapore

1 Design of Check-Hybrid LDPC Codes for Data Communications over Helicopter-Satellite Channels

Ping Wang, Liuguo Yin, Jianhua Lu, Tsinghua University

2 Parameter Identification of Reed-Solomon Codes over Noisy Environment

Swaminathan Ramanathan, A.S. Madhukumar, Nanyang Technological University; Wang Guohua, Ting Shang Kee, Temasek laboratories, NTU Singapore

3 Polar Codes for SCMA Systems

Monirosharieh Vameghestahbanati, Ian Marsland, Ramy H. Gohary, Halim Yanikomeroglu, Carleton University

4 Throughput-based Design of Polar Codes

Hossein Khoshnevis, Ian Marsland, Halim Yanikomeroglu, Carleton University

5 Low Complexity Decoding for Spinal Codes: Sliding Feedback Decoding

Siyue Xu, Shaohua Wu, Junxin Luo, Jian Jiao, Zhang Qinyu, Harbin Institute of Technology.

Wednesday 27 September 2017 14:00-15:30 Casson

8F: Cognitive Radio Networking

Chair: Yue Gao, Queen Mary University of London, UK

1 An Energy-efficient Routing Protocol for Cognitive Radio Enabled AMI Networks in Smart Grid

Yang Zhutian, Yinming Gu, Zhilu Wu, Harbin Institute of Technology; Nan Zhao, Dalian University of Technology; Xianbin Wang, The University of Western Ontario

2 Cognitive Heterogeneous Networks with Best Relay Selection over Unreliable Backhaul Connections

Huy T. Nguyen, Inje University; Trung Q. Duong, Queen's University Belfast; Octavia A. Dobre, Memorial University; Won-Joo Hwang, Inje University

3 Heterogeneous Cooperative Spectrum Sensing Test-Bed Using Software-Defined Radios

Kuldeep S. Gill, Alexander Wyglinski, Worcester Polytechnic Institute

4 Optimal Cooperative Strategy in Energy Harvesting Cognitive Radio Networks

Fudong Li, Hai Jiang, University of Alberta; Rongfei Fan, Beijing Institute of Technology, China; Peng Tan, TELUS

5 Robust Secure Beamforming for Cognitive Satellite Terrestrial Networks at Millimeter-Wave Frequency

Zhi Lin, PLA University of Science and Technology; Kun Wang, Nanjing University of Posts and Telecommunications; Wei Xu, Southeast University; Song Guo, Hong Kong Polytechnic University

Wednesday 27 September 2017 14:00-15:30 Osgoode East

8G: Positioning and Tracking

Chair: Qiyue Li, Hefei University of Technology, China

1 A Globally Optimal Solution to Maximum Likelihood Bearing-Only Geolocation

Yifeng Zhou, Communications Research Centre Canada

2 A Self-Navigation Method with Monocular Plane Discovery

Shan Meng, Zhixian Wen, Xiaojian Su, Wenming Tang, Shenzhen University

3 Confidence Field-based Temporal Alignment and Positioning for Vehicles Using Multiple Sensors

Jinlong SUN, Zhilu Wu, Zhenqiang Yin, Harbin Institute of Technology

4 Position Estimation Under Model Misspecification

Rico Mendrzik, Gerhard Bauch, Hamburg University of Technology

5 Real-Time Hazard Symbol Detection and Localization Using UAV Imagery

Nils Tijtgat, Bruno Volckaert, Filip De Turck, Universiteit Gent

Wednesday 27 September 2017 14:00-15:30 Osgoode West

8H: Performance Analysis for Vehicular Networks

Chair: Xiaoying Lei, Yangzhou University, China

1 Decentralized Relaying and Performance Analysis in Vehicular Ad Hoc Networks

Wuwen Lai, Beijing Institute of Technology; Wei Ni, CSIRO; Hua Wang, Beijing Institute of Technology; Ren Ping Liu, University of Technology Sydney

2 Throughput Analysis of In-Vehicle Internet Access via On-Road WiFi Access Points

Wenchao Xu, Haibo Zhou, Weisen Shi, University of Waterloo; Feng Lyu, Shanghai Jiao Tong University; Xuemin (Sherman) Shen, University of Waterloo

3 Performance Analysis of EDCA for IEEE 802.11p/DSRC based V2V Communication in Discrete Event System

LeWang, WPI; Renato F. Iida, Alexander Wyglinski, Worcester Polytechnic Institute

4 Performance Analysis of Vehicle Platooning using a Cellular Network

Murali Narasimha, Vip Desai, Anthony Soong, George Calcev, Philippe Sartori, Weimin Xiao, Huawei U.S. Wireless R&D

5 Performance Evaluation of Vehicle-to-Vehicle Communication for Cooperative Collision Avoidance at Urban Intersections

Ibrahim Rashdan, Fabian de Ponte Müller, Martin Schmidhammer, Stephan Sand, German Aerospace Center (DLR)

Wednesday 27 September 2017 14:00-15:30 Varley

8I: Wireless Sensor Networks

Chair: Metin Ozturk, University of Glasgow, UK

1 Trail-based Location Service in Event-driven Wireless Sensor and Actor Networks

Guanglun Liu, Zhezhuang Xu, Haotian Yan, Hao Jiang, Fuzhou University; Cailian Chen, Shanghai Jiao Tong University; Li Yu, Huazhong University of Science and Technology

2 Coordinationless Coordinated Fastlane Network Service in Wireless Multimedia Sensor Networks

Zhonghu Xu, Kai Xing, University of Science and Technology of China

3 DFTR: Dynamic Fault-Tolerant Routing protocol for Convergecast WSNs

Gérard Chalhouh, Hamadoun Tall, Jinpeng Wang, Michel Misson, Université Clermont Auvergne

4 Dynamic Anchors based Void Avoidance Scheme for Real-time Application in WSNs

Sangdae Kim, Taehun Yang, Cheonyong Kim, Hyunchoong Cho, Chungnam National University; Sang-Ha Kim, ChungNam National University

5 A Low Power Cyber-Attack Detection and Isolation Mechanism for Wireless Sensor Network

Gurpreet Singh Dhunna, Irfan Al-Anbagi, University of Regina

Wednesday 27 September 2017 16:00-17:30 Simcoe

9A: Vehicular Transportation Systems

Chair: Jie Gao, Ryerson University, Canada

1 A Novel Pricing Scheme to Optimally Schedule the Charging Demands with User Utilities

Zhou Su, Hui Hui, Shanghai University; Tingting Yang, Dalian Maritime University; Yilong Hui, Qiarong Liu, Rui Xing, Shanghai University

2 TLB-VTL: 3-Level Buffer based Virtual Traffic Light Scheme for Intelligent Collaborative Intersections

Gaochao Wang, Yandong Hou, Yanyu Zhang, Yi Zhou, Henan University; Ning Lu, Thompson Rivers University; Nan Cheng, Huawei Technologies Canada Research and Development Centre

3 In-vehicle CAN message authentication: An evaluation based on industrial criteria

Nasser Nowdehi, Aljoscha Lautenbach, Tomas Olovsson, Chalmers University of Technology

Wednesday 27 September 2017 14:00-15:30 Toronto 3

8P: Wireless Networks II

Chair: Premanandana Rajatheva, University of Oulu, Finland

1 IEEE 802.11ax: Joint Effects of Power Control and IQ Imbalance Mitigation Schemes on the Performance of OFDM Uplink Multi-User MIMO

Roger Hoefel, Federal University of Rio Grande do Sul

2 Cognitive Co-existence of Unlicensed Wireless Networks through Beamforming

Golara Zafari, Xianbin Wang, The University of Western Ontario

3 PD-MAC: Pulse Detection Based MAC Protocol in Distributed Wireless Networks

Chao Dong, Nanjing Institute of Communications Engineering; Aijing Li, PLA University of Science and Technology; Shaojie Tang, University of Texas at Dallas; Fan Wu, Guihai Chen, Shanghai Jiao Tong University

4 Performance Analysis of Physical Layer Network Coding for Two-way Relaying over Non-regenerative Communication Satellites

B. Sundar Rajan, Indian Institute of Science, Bangalore; Saket D. Buch, Indian Institute of Science

5 Cooperative Neural Fitted Learning for Distributed Energy Management in Microgrids via Wireless Networks

Weirong Liu, Peng Zhuang, Yuan Liu, Hao Liang, University of Alberta; Zhiwu Huang, Jun Peng, Central South University

6 Motion simulation framework and models on the battlefield

Qian Sun, Lin Tian, Hongning Zhao, Bule Sun, Yiqing Zhou, Chinese Academy of Sciences; Bingqiang Yang, Huawei; Jinglin Shi, Chinese Academy of Sciences

7 Outage Performance Analysis on Multiuser Linear Network Coded Cooperation System Considering Path Loss

Wenbiao Ji, Qian Hu, Zhenzhou Tang, Wenzhou University

8 Cooperative Forwarding using Distributed MISO in OFDMA Multihop Networks

Fabian Hohmann, Anja Klein, TU Darmstadt

9 Performance Analysis of Fiber-optic Inband Relaying against both Self- and Inter-cell Interference

Ryota Nakao, Norihiro Naganuma, Shigeki Takano, Hiroyuki Otsuka, Kogakuin University

4 Parameter Estimation of Traction Batteries by Energy and Charge Counting during Reference Cycles

Joern Adermann, Daniel Brecheisen, Philip Wacker, Lienkamp Markus, Technical University of Munich

5 Reliability comparison of bidirectional automotive dc/dc converters

Michael Muerken, AUDI AG; Peter Gratzfeld, Karlsruhe Institute of Technology

Wednesday 27 September 2017 16:00-17:30 Tom Thomson

9B: Beamforming

Chair: Haneya Naeem Quresh, University of Oklahoma, USA

1 Enhanced Precoding Design with Adaptive Beam Width for 5G New Radio Systems

Victor Sergeev, Lobachevsky State University of Nizhni Novgorod; Alexei Davydov, Intel; Gregory Morozov, Oner Orhan, Wookbong Lee, Intel Corporation

2 Low-Complexity Precoding for Spatial Modulation

Peng Cheng, University of Sydney; Zhuo Chen, CSIRO; Andrew Zhang, UTS; Yonghui Li, Branka Vucetic, The University of Sydney

3 Max-min Fair Beamforming for SWIPT Systems with Non-linear EH Model

Elena Boshkovska, FAU; Xiaoming Chen, Zhejiang University; Linglong Dai, Tsinghua University; Derrick Wing Kwan Ng, University of New South Wales; Robert Schober, University British Columbia

4 Multicast Beamforming Capabilities of LTE MBSFN for V2X Communications

Illia Safiulin, TStefan Schwarz, Markus Rupp, Technische Universität (TU) Wien

5 User Selection and Decoding Precedence Based on the Anisotropic Orthogonal Procrustes Analysis for Uplink Multi-User MIMO

Shih-Hsun Cheng, Chia-Hung Hung, Jung-Chun Kao, National Tsing Hua University

Wednesday 27 September 2017 16:00-17:30 Jackson

9C: Cooperative Communications II

Chair: Kim Haesik, VTT Technical Research Centre of Finland, Finland

1 On the Effect of Hardware Impairments on Two-Way Relay Networks with ICE

Anoop Kumar Mishra, Sindhu C. M. Gowda, Poonam Singh, National Institute of Technology Rourkela

2 Optimal Time-Switching Relaying Protocol for Wireless-Powered DF Relay Networks

Mengqi Yang, Yonghong Kuo, Jian Chen, Long Yang, Lu Lv, Xidian University

3 Outage Performance of Variable-Gain AF Relaying Systems in the Combined Presence of HWI and ICE: Analysis and Comparison

Anoop Kumar Mishra, Debmalaya Mallick, Sindhu C. M. Gowda, Poonam Singh, National Institute of Technology Rourkela

4 Outage Probability of Cooperative Relay Networks in η - μ , κ - μ and Mixed Fading Channels

Dharmendra Dixit, Pravas Ranjan Sahu, Indian Institute of Technology Bhubaneswar

5 Profitable Relay Selection in Cooperative Cellular Network with Mobile Relays

Benish Sharfeen Khan, Sobia Jangsher, Farrukh Bhatti, Institute of Space Technology

Wednesday 27 September 2017 16:00-17:30 Carmichael

9D: Wireless Services

Chair: Humphrey Rutagemwa, Communications Research Centre, Canada

1 AAOG: Anti-Addiction on Online Gaming leveraging CSI from Commodity WiFi Devices

YuFu, Min Peng, Qing F. Zhou, HeFei University of Technology

2 Analysis of a LTE-based Textile Massive MIMO Proposal for Public Safety Networks

Estefanía Crespo-Bardera, Matilde Sánchez-Fernández, Ana García-Armada, Universidad Carlos III de Madrid; Aaron Garrido Martín, Alfonso Fernández Durán, Nokia Spain

3 Gaming and Learning Approaches for Multi-user Computation Offloading

Sowndarya Sundar, Ben Liang, University of Toronto

4 Optimal Cost-Based Cyber Insurance Policy Management for Mobile Services

Dinh Thai Hoang, Dusit Niyato, Ping Wang, Nanyang Technological University

5 Wireless Physical Layer Characteristics Based Random Number Generator: Hijack Attackers

NingGao, Xiaojun Jing, Beijing University of Posts and Telecommunications; Shichao Lv, University of Chinese Academy of

Sciences; Junsheng Mu, Beijing University of Posts and Telecommunications; Limin Sun, University of Chinese Academy of Sciences

Wednesday 27 September 2017 16:00-17:30 Governor General

9E: Energy Efficient Transmission

Chair: Lian Zhao, Ryerson University, Canada

1 Cell Splitting for Energy-Efficient Massive MIMO

Olli Apilo, Mika Lasanen, VTT Technical Research Centre of Finland; Jiaheng Wang, Southeast University; Aarne Mämmelä, VTT Technical Research Centre of Finland

2 Data Precoding and Energy Transmission for Parameter Estimation in MIMO Wireless-Powered Sensor Networks

Naveen K. D. Venkateshgowda, Hoon Lee, Inkyu Lee, Korea University

3 Interference Alignment with Power Splitting Relays in Multi-User Multi-Relay Networks

Man Chu, Xi'an Jiaotong University; Biao He, University of California, Irvine; Xuwen Liao, Zhenzhen Gao, Shihua Zhu, Xi'an Jiaotong University

4 Maximum Achievable Rates with Transmission and Circuit Total Power Constraints

Mohammad Shaqfeh, Fawaz Al-Qahtani, salah, Hussein Alnuweiri, Texas A&M University at Qatar

5 NOMA-based Energy-Efficient Wireless Powered Communications in 5G Systems

Tewodros A. Zewde, Mustafa Cenk Gursoy, Syracuse University

Wednesday 27 September 2017 16:00-17:30 Casson

9F: Traffic Monitoring in Vehicular Networks

Chair: Shan Zhang, University of Waterloo, Canada

1 A Study of Pilot Placement Optimization with Constrained MDPs in IEEE802.11p Systems

Yan Yang, Beijing Jiaotong University; Yejun He, Shenzhen University; Mohsen Guizani, University of Idaho

2 Autonomous Deployment of UAVs as Access Points to Serve Wireless Terminals

Che-Wei Chou, Li-Hsing Yen, National Chiao Tung University

3 Benchmarking In-Train Coverage Measurements of Mobile Cellular Users

Taulant Berisha, Philipp Svoboda, Technische Universität Wien; Stephan Ojak, OBB Technische Services GmbH; Christoph Mecklenbräuker, Technische Universität Wien

4 SmartMonitoring: Reckoning Traffic Statuses of Road System in Real-time Based on Scarce Road Surveillance Cameras

Wenjian Ding, Yang Wang, Yan Guo, Wuji Chen, Liusheng Huang, Hengchang Liu, University of Science and Technology of China

5 Train Velocity and Data Throughput - A Large Scale LTE Cellular Measurements Study

Johan Garcia, Stefan Alfredsson, Anna Brunstrom, Karlstad University; Claes Beckman, KTH Center for Wireless Systems, Wireless@KTH

Wednesday 27 September 2017 16:00-17:30 Osgoode East

9G: Detection and Equalization

Chair: Alex Wyglinski, Worcester Polytechnic Institute, USA

1 An Efficient Low Complexity Gaussian Approximation-Based Scheme for SCMA Detection

Yudan Wang, Ling Qiu, Xinmin Li, University of Science and Technology of China

2 Blind Nonlinear Compensation for RF Receiver Employing Sub-Nyquist Sampling A/D Conversion

Kan Kimura, Yasushi Yamao, The University of Electro-Communications

3 Dual-Mode Time-Domain Single-Carrier Index Modulation with Frequency-Domain Equalization

Miyu Nakao, Shinya Sugiura, Tokyo University of Agriculture and Technology

4 SCMA Uplink Decoding With Codebook Collision

YanJun Yang, Yuping Zhao, Dou Li, Peking University

5 Time-Domain Turbo Equalization for Oversampled Single Carrier System Over Doubly Selective Fading Channels Using Kalman Filtering

Yue Cao, Jianhua Ge, Chensi Zhang, Xidian University

Wednesday 27 September 2017 16:00-17:30 Osgoode West

9H: Spectrum Sensing

Chair: Guangyue Lu, Xi'an University of Posts and Telecommunications, China

1 Hybrid sub-Nyquist Spectrum Sensing with Geo-location Database in M2M Communications

Yue Gao, Xingjian Zhang, Yuan Ma, Queen Mary University of London

2 LDLT Decomposition Based Spectrum Sensing in Cognitive Radio Using Hard Decision Criterion

Guangyue Lu, Yuxin Li, Xi'an University of Posts and Telecommunications; Yinghui Ye, Xidian University

3 Near-Optimal Distributed Cooperative Spectrum Sensing and Access: A Benefit-and-Compensation Approach

Yuli Zhang, Yuhua Xu, PLA University of Science and Technology; Qihui Wu, Nanjing University of Aeronautics and Astronautics; Alagan Anpalagan, Ryerson University; Shuo Feng, McMaster University, Hamilton, Canada

4 Performance of Spectrum Sensing Based on Absolute Value Cumulation in Laplacian Noise

Yinghui Ye, Yongzhao Li, Xidian University; Guangyue Lu, Xi'an University of Posts and Telecommunications; Fuhui Zhou, Nanchang University; Hailin Zhang, Xidian University

5 Robust Cooperative Spectrum Sensing Against Probabilistic SSDF Attack in Cognitive Radio Networks

Jun Wu, Southeast University; Cong Wang, Southeast University

Wednesday 27 September 2017 16:00-17:30 Varley

9I: Heterogeneous Networks

Chair: Wen Wu, University of Waterloo, Canada

1 A Greedy Heuristic Algorithm for Context-Aware User Association and Resource Allocation in Heterogeneous Wireless Networks

Mohamad Zalgout, Matthieu Crussière, Institute of Electronics and Telecommunications of Rennes

2 Mobility and Reliability in LTE-5G Dual Connectivity Scenarios

Henrik Martikainen, Magister solutions LTD; Ingo Viering, Nomor Research GmbH; Andreas Lobinger, Bernhard Wegmann, Nokia Bell Labs, Germany

3 Interference and Background Noise Effects in Wireless Networks with Poisson Fields of Transmitters

Natalia Ermolova, Aalto University

4 Fairness-Aware Interference Coordination by Combined SFR and CoMP for Heterogeneous Networks

Luyao Xu, Shaohua Wu, Jiao Xu, Ye Wang, Zhang Qinyu, Harbin Institute of Technology

5 Optimal FemtoCell density for Maximizing Throughput in 5G Heterogeneous Networks Under Outage Constraints

Talha Mir, Linglong Dai, Yang Yang, Wenqian Shen, Bichai Wang, Tsinghua University

Shape the future of communications

VTS Members - Join the IEEE 5G Technical Community FREE!



Visit 5g.ieee.org and click **Join the IEEE 5G Technical Community**

VTS is actively involved in the Initiative so our members can participate to get

- Quarterly Tech Focus newsletter with exclusive articles on 5G topics
- Free access to selected Xplore papers
- Opportunity to volunteer in the Initiative, with involvement in technology roadmaps, publications, education, community development and standards activities