

2020 2nd 6G Wireless Summit Final Program

Technical Program Overview

	Tuesday, March 17	Wednesday, March 18
8:00 - 8:45		Registration
8:45 - 9:00	Opening	Keynote Session
9:00 - 10:00	Keynote Session KS-1: Keynote Session 1 , Auditorium Roger Nichols (Keysight, USA)	KS-2: Keynote Session 2 , Auditorium Mikael Prytz (Ericsson Research, Sweden) Min Fang (ZTE Corporation, China)
10:00 - 10:30	Ted Rappaport (NYU WIRELESS, USA) Harish Viswanathan (Nokia Bell Labs, USA)	Coffee
10:30 - 11:00	Coffee	Panel
11:00 - 12:00	Technical Sessions TS1: Roadmapping Radio Systems towards THz Communications , Room 1 TS4: 6G Visions , Auditorium TS14: Dependable Communication , Room 2	Panel 2: Research Challenges on 6G Broadband , Auditorium Technical Sessions TS6: 6G Technology and Business Policy , Room 1 TS10: Machine Learning & Edge Intelligence , Room 2 TS12: Resource Optimization Towards 6G , Room 3
12:00 - 12:30		Lunch
12:30 - 13:00	Lunch	Keynote Session
13:00 - 13:30	Panel	KS-3: Keynote Session 3 , Auditorium Alain Abdel-Majid Mourad (Interdigital UK) Peiyong Zhu (Huawei Technologies, Canada)
13:30 - 15:00	Panel 1: Role of 6G in Driving Societal Transformation , Auditorium Technical Sessions TS8: Trust Security and Privacy , Room 1 TS15: Special Session on IoT , Room 2 TS18: Special Session - eHealth , Room 3	Technical Sessions TS3: millimeter Wave, THz and Beyond systems , Room 1 TS13: Global Connectivity , Room 2
15:00 - 15:30	Coffee	Coffee
15:30 - 17:30	Technical Sessions TS2: RF techniques and systems for 5G and 6G , Room 1 TS7: 6G Business Ecosystem , Auditorium TS9: Distributed Networking , Room 2 TS11: Physical Layer Techniques , Room 3	Technical Sessions TS5: 6G Why and How , Auditorium TS16: Special Session on THz , Room 1 TS17: Special Session: AI for 6G , Room 2
17:30 - 19:00	Welcome Cocktails	
19:00 - 22:00		Summit Dinner

PS1:
Poster Session,
room 3
and 4

Technical Program Details

Tuesday, March 17

08:45 – 10:30

KS1: Keynote Session 1

Room: Auditorium

Chair: Matti Latva-aho (University of Oulu, Finland)

Opening

New Generations of Wireless and Their Impact on Measurement (Video Presentation with live Q&A)

Roger Nichols (Keysight Technologies, USA)

Wireless Communication and Applications Above 100 GHz: Opportunities and Challenges for 6G and Beyond (Video Presentation with live Q&A)

Theodore Rappaport (New York University & NYU WIRELESS, USA)

Communications in the 6G Era (Video Presentation)

Harish Viswanathan (Nokia Bell Labs, USA)

11:00 – 12:30

TS1: Roadmapping Radio Systems towards THz Communications

Room 1

Chair: Aarno Pärssinen (University of Oulu, Finland)

Validation and Trials for Verticals White Paper

Ari T. Pouttu (Centre for Wireless Communications University of Oulu, Finland)

Histograms to Quantify Dataset Shift for Spectrum Data Analytics: A SoC Based Device Perspective

Zaheer Khan, Janne Lehtomäki and Chanaka Ashan Ganewattha (University of Oulu, Finland); Shahriar Shahabuddin (Nokia, Finland)

Power-efficient Radio Architectures towards THz Communications (Invited Presentation with pre-recorded video)

Joris Van Driessche (IMEC, Belgium)

TS4: 6G Visions

Room: Auditorium

Chair: Matti Latva-aho (University of Oulu, Finland)

6G: Towards Integrated Intelligence for a Connected World (Invited Presentation)

Khaled B. Letaief (The Hong Kong University of Science and Technology, Hong Kong)

6G Flagship

Matti Latva-aho (University of Oulu, Finland); Ari T. Pouttu (Centre for Wireless Communications University of Oulu, Finland)

6G Indicators of Value and Performance

Volker Ziegler (Nokia Bell Labs & CTO, Germany); Seppo Yrjölä (Nokia & University of Oulu, Finland)

Vision 20/20 on 6G? (Invited Presentation with pre-recorded video)

CHIH-LIN I (China Mobile, China)

TS14: Dependable Communication

Room 2

Chair: Raimo Kantola (Aalto University, Finland)

Trust Networking for Beyond 5G and 6G

Raimo Kantola (Aalto University Finland, Finland)

An Approximate Expression for the Average AoI in a Multi-Source M/G/1 Queueing Model

Mohammad Moltafet and Markus Leinonen (University of Oulu, Finland); Marian Codreanu (LiU, Sweden)

Factory Automation: Resource Allocation of an Elevated LiDAR System with URLLC Requirements

Nalin Jayaweera (University of Oulu, Finland); Dileepa Madhubhashana Marasinghe (University of Oulu & Center for Wireless Communications, Finland); Nandana Rajatheva and Matti Latva-aho (University of Oulu, Finland)

Beyond Age: Urgency of Information for Timeliness Guarantee in Status Update Systems (Invited Presentation with pre-recorded video)

Xi Zheng, Sheng Zhou and Zhisheng Niu (Tsinghua University, China)

13:30 – 15:00

Panel 1: Role of 6G in Driving Societal Transformation

Room: Auditorium

Moderator: Marja Matinmikko-Blue (University of Oulu, Centre for Wireless Communications, Finland)

The role of future mobile communication networks in transforming industries and ecosystems is shaped not only by technical advances but also emerging business opportunities and related regulations. Regulators are gradually opening the 5G mobile market for verticals, which has started to change the traditional roles of operators, vendors and end users. 6G and United Nations Sustainable Development Goals (UN SDGs) target the same year 2030 calling for an interplay between the development of new wireless technologies and solving of key societal challenges. This panel brings together leading experts from industry, policy making and academia to discuss the role of 6G in society including new business opportunities and regulations.

Panelists (subject to change):

Dr. Volker Ziegler, Nokia Bell Labs, Germany

Prof. Henning Schulzrinne, Columbia University, USA

Mr. Bernard Barani, European Commission

Prof. Seppo Yrjölä, University of Oulu, Finland

TS8: Trust, Security and Privacy

Room 1

Chair: Mika E Ylianttila (University of Oulu, Finland)

Trust, Security and Privacy White Paper

Mika E Ylianttila (University of Oulu, Finland)

The Role of Blockchain in 6G: Challenges, Opportunities, and Research Directions

Tharaka Mawanane Hewa (University of Oulu, Finland); Gurkan Gur (Zurich University of Applied Sciences (ZHAW), Switzerland); Anshuman Kalla (Manipal University Jaipur, India); Mika E Ylianttila (University of Oulu, Finland); An Braeken (Vrije Universiteit Brussel, Belgium); Madhusanka Liyanage (University College Dublin, Ireland & University of Oulu, Finland)

A Measure of Personal Information in Mobile Data (Invited Presentation with pre-recorded video)

Ian Oppermann (NSW Government & Data Analytics Centre, Australia); Jakub Nabaglo (Triplebyte, USA); Wilko Henecka (CSIRO's Data61, Australia)

TS19: Special Session: IoT

Room 2

Chair: Hirley Alves (University of Oulu, Finland)

Beyond 5G Low-Power Wide-Area Networks: A LoRaWAN Suitability Study

Arliones Hoeller, Jr. (University of Oulu, Finland & Federal Institute for Education, Science, and Technology of Santa Catarina, Brazil); Jean Michel S Sant'Ana and Juho Markkula (University of Oulu, Finland); Konstantin Mikhaylov (University of Oulu & Solmu Technologies OY, Finland); Richard Demo Souza (Federal University of Santa Catarina, Brazil); Hirley Alves (University of Oulu, Finland)

Reconfigurable Intelligent Surface-Aided Grant-Free Access for Uplink URLLC

Dick Carrillo Melgarejo (Lappeenranta University of Technology, Finland); Charalampos Kalalas (CTTC, Spain); Arthur Sousa de Sena (Lappeenranta University of Technology, Finland); Pedro Henrique Juliano Nardelli (Lappeenranta University of Technology & University of Oulu, Finland); Gustavo Fraidenraich (Unicamp & Communication Department, Brazil)

LEO Small-Satellite Constellations in Post-5G Connectivity (Invited Presentation with pre-recorded video)

Petar Popovski (Aalborg University, Denmark)

Learning-based Random Access Control Optimization for Cellular-based Massive IoT (Invited Presentation with pre-recorded video)

Yansha Deng (King's College London, United Kingdom (Great Britain))

TS18: Special Session on eHealth

Room 3

Chair: Heikki Karvonen (University of Oulu, Centre for Wireless Communications, Finland)

Challenges of Future Wireless Technologies in Wearable Devices (Invited Presentation)

Jyrki Schroderus (Polar, Finland)

Smart Wireless Body Area Networks in 6G (Invited Presentation with pre-recorded video)

John Farserotu (CSEM, Switzerland)

How 6G Technology can Change the Future Wireless Healthcare (Invited Presentation with pre-recorded video)

Lorenzo Mucchi (University of Florence, Italy); Sara Jayousi (PIN University of Florence, Italy); Stefano Caputo (University of Florence, Italy); Elisabetta Paoletti and Paolo Zoppi (USL Toscana Centro, Italy); Simona Geli and Pietro Dioniso (MEDEA srl, Italy)

Can Data Analytics Predict and Prevent the Onset of Seizures in Epileptic Patients? (Invited Presentation with pre-recorded video)

Behnaam Aazhang (Rice University, USA)

15:30 – 17:30

TS2: RF Techniques and Systems for 5G and 6G

Room 1

Chair: Earl McCune (RF Communications Consulting & Eridan Communications, USA)

RF & Spectrum White Paper

Aarno Pärssinen (University of Oulu, Finland)

On the use of sub-harmonic mixer in sliding-IF architecture for mm-Wave/THz transceivers

Sumit P Singh, Mostafa Jafari Nokandi, Timo Rahkonen and Aarno Pärssinen (University of Oulu, Finland)

A 25 GHz Active Phase Shifter Using 10 bit Cartesian Control

Alok Sethi, Janne P Aikio, Rehman Akbar, Mikko Hietanen, Timo Rahkonen and Aarno Pärssinen (University of Oulu, Finland)

Design of a 20-80 GHz Down-Conversion Mixer for 5G Wireless Communication with 22nm CMOS

Henri Hurskainen, Rehman Akbar and Aarno Pärssinen (University of Oulu, Finland)

Confluence of Electromagnetics, Circuits and Systems Enables the Third Wireless Revolution (Invited Presentation with pre-recorded video)

Harish Krishnaswamy (Columbia University, USA)

Towards Terahertz/6G Systems-on-a-Chip (Invited Presentation with pre-recorded video)

Ullrich Pfeiffer (University of Wuppertal, Germany)

TS7: 6G Business Ecosystem

Room: Auditorium

Chair: Ari T. Pouttu (Centre for Wireless Communications University of Oulu, Finland)

Challenges and Opportunities related to Implementation and Trials of 5G for Verticals - a Regulatory Perspective (Invited Presentation)

Heidi Himmanen (Traficom, Finland)

Business of 6G White Paper

Seppo Yrjölä (Nokia & University of Oulu, Finland)

Brazil 6G Project - An Approach to Build a National-wise Framework for 6G Networks

José Marcos Brito and Luciano Leonel Mendes (Inatel, Brazil); José Gustavo Gontijo (MCTIC, Brazil)

A View into Mobile Communications in 2030 (Invited Presentation with pre-recorded video)

Luis M. Correia (IST/INESC-ID - University of Lisbon & INESC, Portugal)

TS9: Distributed Networking

Room 2

Chair: Tarik Taleb (Aalto University, Finland)

Shaping the Ubiquitous, Transparent, and Tactile Wireless Network of the Future (Invited Presentation)

Abhimanyu Gosain (Northeastern University, USA)

Networking White Paper

Tarik Taleb (Aalto University, Finland)

Edge Intelligence White Paper

Ella Peltonen (University of Oulu, Finland)

Identifying Requirements Affecting Latency in a Softwarized Network for Future 5G and Beyond

Idris Badmus (Centre for Wireless Communications, University of Oulu, Finland); Abdelquoddouss Laghrissi (Centre for Wireless Communications, University of Oulu, Finland); Marja Matinmikko-Blue (University of Oulu, Centre for Wireless Communications, Finland); Ari T. Pouttu (Centre for Wireless Communications University of Oulu, Finland)

Balancing Dynamic Scheduling Overhead to Maximize SDF Performance

Mattis Hasler and Robert Wittig (TU Dresden, Germany); Emil Matus and Gerhard P. Fettweis (Technische Universität Dresden, Germany)

Performance and Efficiency Optimization of Multi-layer IoT Edge Architecture

Muneeb Ejaz (Centre for Wireless Communication, University of Oulu, Finland); Tanesh Kumar, Mika E Ylianttila and Erkki Harjula (University of Oulu, Finland)

TS11: Physical Layer Techniques

Room 3

Chair: Nandana Rajatheva (University of Oulu, Finland)

Adaptive Detection Probability for mmWave 5G SLAM

Henk Wymeersch (Chalmers University of Technology, Sweden); Gonzalo Seco-Granados (Universitat Autònoma de Barcelona, Spain)

Broadband Connectivity White Paper

Nandana Rajatheva (University of Oulu, Finland)

Massive MIMO Stochastic Geometry and Analysis of Beamforming with Partial CSIT

Christo Kurisummoottil Thomas and Dirk Slock (EURECOM, France)

Subpacketization-Beamformer Interaction in Multi-Antenna Coded Caching

MohammadJavad Salehi and Antti Tölli (University of Oulu, Finland); Pooya Shariatpanahi (Sharif University of Technology, Iran)

A Chirp-Based Frequency Synchronization Approach for Flat Fading Channels

Ana Belen Martinez and Atul Kumar (Technische Universität Dresden, Germany); Marwa Chafii (ENSEA, France); Gerhard P. Fettweis (Technische Universität Dresden, Germany)

Hierarchical User Clustering for mmWave-NOMA Systems

Dileepa Madhubhashana Marasinghe (University of Oulu & Center for Wireless Communications, Finland); Nalin Jayaweera, Nandana Rajatheva and Matti Latva-aho (University of Oulu, Finland)

Wednesday, March 18

08:45 – 10:00

KS2: Keynote Session 2

Room: Auditorium

Chair: Ari T. Pouttu (Centre for Wireless Communications University of Oulu, Finland)

Towards 6G (Video Presentation with live Q&A)

Mikael Prytz (Ericsson Research, Sweden)

Service-Native Challenges toward 6G Network in 2030 (Video Presentation with live Q&A)

Min Fang (ZTE Corporation, China)

10:30 – 12:00

Panel 2: Research Challenges on 6G Broadband

Room: Auditorium

Moderator: Nandana Rajatheva (University of Oulu, Finland)

TS6: 6G Technology and Business Policy

Room 1

Chair: Seppo Yrjölä (Nokia & University of Oulu, Finland)

How could 6G Transform Engineering Platforms Towards Ecosystemic Business Models?

Seppo Yrjölä (Nokia & University of Oulu, Finland); Marja Matinmikko-Blue (University of Oulu, Centre for Wireless Communications, Finland); Petri Ahokangas (University of Oulu, Finland)

Antecedents of future 6G mobile ecosystems

Petri Ahokangas (University of Oulu, Finland); Seppo Yrjölä (Nokia & University of Oulu, Finland); Marja Matinmikko-Blue (University of Oulu, Centre for Wireless Communications, Finland); Veikko Seppänen and Timo Koivumäki (University of Oulu, Finland)

Spectrum Challenges for Beyond 5G: The case of Mexico

Lizeth Lopez-Lopez (Universidad Autonoma de San Luis Potosi, Mexico); Marja Matinmikko-Blue (University of Oulu, Centre for Wireless Communications, Finland); Marco Cardenas-Juarez (Autonomous University of San Luis Potosi, Mexico); Enrique Stevens-Navarro (Universidad Autonoma de San Luis Potosi, Mexico); Rafael Aguilar-Gonzalez (Universidad Autónoma Metropolitana - Iztapalapa, Mexico); Marcos Katz (University of Oulu, Finland)

Vision and Requirements of Mobile Network beyond 2030 (Invited Presentation with pre-recorded video)

Guangyi Liu (Research Institute of China Mobile, China)

TS10: Machine Learning and Edge Intelligence

Room 2

Chair: Jukka Riekkilä (University of Oulu, Finland)

Localization White Paper

Carlos Hércules Morais de Lima (University of Oulu, Finland)

Machine Learning White Paper

Samad Ali (University of Oulu, Finland)

Interoperable GPU Kernels as Latency Improver for MEC

Juuso Haavisto and Jukka Riekkilä (University of Oulu, Finland)

From Learning to Meta-Learning: Reduced Training Overhead and Complexity for Communication Systems (Invited Presentation with pre-recorded video)

Oswaldo Simeone (King's College London, United Kingdom (Great Britain)); Sangwoo Park (Korea Advanced Institute of Science and Technology, Korea (South)); Joonhyuk Kang (KAIST, Korea (South))

TS12: Resource Optimization Towards 6G

Room 3

Chair: Nurul Huda Mahmood (University of Oulu, Finland)

Critical and Massive MTC towards 6G White Paper

Nurul Huda Mahmood (University of Oulu, Finland)

Six Key Features of Machine Type Communication in 6G

Nurul Huda Mahmood, Hirley Alves, Onel Luis López, Mohammad Shehab, Diana Pamela Moya Osorio and Matti Latva-aho (University of Oulu, Finland)

Do We Still Need Wi-Fi in the 6G Era? (Invited Presentation with pre-recorded video)

Henning Schulzrinne (Columbia University, USA)

Efficient Global Optimization (Invited Presentation with pre-recorded video)

Bho Matthiesen (University of Bremen, Germany)

13:00 – 15:00

KS3: Keynote Session 3

Room: Auditorium

Chair: Nandana Rajatheva (University of Oulu, Finland)

Dissecting Target KPIs Evolution towards 6G (Video Presentation with live Q&A)

Alain Abdel-Majid Mourad (Interdigital Europe Ltd, United Kingdom (Great Britain))

6G: The Next Horizon (Video Presentation with live Q&A)

Peiyang Zhu (Huawei Technologies, Canada)

TS3: mmW, THz and Beyond Systems

Room 1

Chair: Marcos Katz (University of Oulu, Finland)

Opportunities and Challenges for Visible Light Communications in 6G

Marcos Katz and Iqrar Ahmed (University of Oulu, Finland)

Near- to farField EM study for 3x3 dipole lens antenna at 300 GHz with different permittivity lenses

Mikko Kokkonen, Sami Myllymaki and Heli Jantunen (University of Oulu, Finland)

A Differential Dual-band Dual-polarized Antenna for 5G mmWave Communication System

Zeeshan Siddiqui (University of Oulu & Centre for Wireless Communications, Finland); Marko Sonkki, Marko E Leinonen and Jiangcheng Chen (University of Oulu, Finland); Markus Berg (University of Oulu & Excellant LTd., Finland); Aarno Pärssinen (University of Oulu, Finland)

Electromagnetic Measurement Techniques for Materials and Device Used in 6G Wireless Communications

Masahiro Horibe (National Institute of Advanced Industrial Science and Technology & National Metrology Institute of Japan, Japan)

Low-Resolution to the Rescue for All-Digital mmWave Massive MIMO (Invited Presentation with pre-recorded video)

Christoph Studer (Cornell University and Cornell Tech, USA)

Photonics Illuminates 6G (Invited Presentation with pre-recorded video)

Fan Chen (ZTE Corp., China)

TS13: Global Connectivity

Room 2

Chair: Harri Saarnisaari (University of Oulu, Finland)

Forsway Xtend - A Key 5G/6G Technology to Provide Broadband to Rural and Remote Areas (Invited Presentation)

Mats Andersson (Forsway, Sweden)

Connectivity for Remote Areas White Paper

Harri Saarnisaari (University of Oulu, Finland)

6G: Super-connecting the Connected and Connecting the Unconnected (Invited Presentation with pre-recorded video)

Mohamed-Slim Alouini (King Abdullah University of Science and Technology (KAUST), Saudi Arabia)

Reconfigurable Intelligent Surfaces: Myths and Realities (Invited Presentation with pre-recorded video)

Emil Björnson (Linköping University, Sweden)

15:30 – 17:30

TS5: 6G: Why and How?

Room: Auditorium

Chair: Sudhir Dixit (Basic Internet Foundation, USA)

6G - Challenges for Brazil (Invited Presentation)

José Gustavo Gontijo (MCTIC, Brazil)

Spectrum Management in the 6G Era: Role of Regulation and Spectrum Sharing

Marja Matinmikko-Blue (University of Oulu, Centre for Wireless Communications, Finland); Seppo Yrjölä (Nokia & University of Oulu, Finland); Petri Ahokangas (University of Oulu, Finland)

6G Drivers and UN SDGs White Paper

Marja Matinmikko-Blue (University of Oulu, Centre for Wireless Communications, Finland)

6G for Digital Inclusion and Sustainable Development

Josef Noll (University of Oslo, Norway)

China's Views on 6G (Invited Presentation with pre-recorded video)

Zhisheng Niu (Tsinghua University, China)

Challenges and Technologies for 6G (Invited Presentation with pre-recorded video)

Juho Lee (Samsung Electronics. Co., Ltd, Korea (South))

TS16: Special Session on THz

Room 1

Chair: Joonas Kokkonen (University of Oulu, Finland)

Experimental Demonstration of Ultra-broadband Secure Communications at True Terahertz Frequencies (Invited Presentation)

Josep M Jornet (Northeastern University, USA)

Characterization of Effects of Door Materials to Integrated Radio Radiation Patterns in Locker Unit

Markku Jokinen (University of Oulu & Centre for Wireless Communications, Finland); Markus Berg (University of Oulu & Excellant LTd., Finland); Heikki Karvonen (University of Oulu, Centre for Wireless Communications, Finland); Marko E Leinonen and Tuomo Hänninen (University of Oulu, Finland); Ari T. Pouttu (Centre for Wireless Communications University of Oulu, Finland)

Signal-processing Challenges in Leveraging 100 Gb/s Wireless THz

Pedro Rodriguez-Vazquez (Bergische Universität Wuppertal, Germany); Marko E Leinonen (University of Oulu, Finland); Janusz Grzyb (University of Wuppertal, Germany); Nuutti Tervo and Aarno Pärssinen (University of Oulu, Finland); Ullrich Pfeiffer (University of Wuppertal, Germany)

THz Wireless Communication Systems - Challenges and Applications (Invited Presentation with pre-recorded video)

Colja Schubert (Fraunhofer Heinrich-Hertz-Institut, Germany)

Beam Profile Characterisation of Emitters for Terahertz Wireless Links (Invited Presentation with pre-recorded video)

Mira Naftaly (National Physical Laboratory, United Kingdom (Great Britain)); Jess Smith (University of Surrey, United Kingdom (Great Britain))

TS17: Special Session on AI for 6G

Room 2

Chair: Ella Peltonen (University of Oulu, Finland)

Edge AI: A View from Finland (Invited Presentation)

Sasu Tarkoma (University of Helsinki, Finland)

Lessons on Building Edge AI Solutions towards 6G (Invited Presentation)

Aaron Yi Ding (Delft University of Technology, The Netherlands)

Novel Machine Learning Approach for Edge Server Placement (Invited Presentation)

Leena Ruha (University of Oulu, Finland)

Privacy-Preserving Machine Learning and Edge AI (Invited Presentation)

Antti Honkela (University of Helsinki, Finland)

13:00 – 17:30

PS: Poster Session

Room 3 and 4

Ultra-low Latency, Low Energy and Massiveness in the 6G era via CSIT-limited Schemes: a WET Use Case

Onel Luis López, Nurul Huda Mahmood and Hirley Alves (University of Oulu, Finland)

Optimum Location of Power Beacons in Massive Wireless Powered Networks

Osmel Martinez Rosabal, Onel Luis López and Hirley Alves (University of Oulu, Finland); Samuel Montejo (Universidad Tecnológica Metropolitana, Chile); Matti Latva-aho (University of Oulu, Finland)

From 5G to 6G: Vision, key drivers and research direction

Muhammad Zeeshan Asghar and Khaula Zeeshan (University of Jyväskylä, Finland); Timo Hämäläinen (University of Jyväskylä, Finland); Pekka Neittaanmäki (University of Jyväskylä, Finland)

The Legal Questions for Human and Digital Twin Interactions in the Age of 6G Technology

Basak Ozan Ozparlak (Kadikoy & Ozan&Ozan Law Office, Turkey)

Permutation Channel Modulation

Rahmat Faddli Siregar, Nandana Rajatheva and Matti Latva-aho (University of Oulu, Finland)

User Association in Millimeter Wave Cellular Networks with Intelligent Reflecting Surfaces

Ehsan MoeenTaghavi, Nandana Rajatheva and Matti Latva-aho (University of Oulu, Finland)

Comparative Analysis of 5G/B5G Enabled Small Cells Deployment in Pakistan

Muhammad Rafay Khan Sial (Superior University, Lahore, Pakistan)

3D Deployment of Multiple UAV Base Stations for Next-Generation Wireless Networks

Sivalingam Thushan and Nandana Rajatheva (University of Oulu, Finland); Kapuruhamy Badalge Shashika Manosha (Centre for Wireless Communications, University of Oulu, Finland); Maheshi Buddhinee Dissanayake (Faculty of Engineering, University of Peradeniya, Sri Lanka & King's College London, United Kingdom (Great Britain)); Matti Latva-aho (University of Oulu, Finland)

Provenance-driven Edge Analytics Architecture

Prabhat Ram, Teemu Karvonen, Ella Peltonen, Lauri Lovén and Markku Oivo (University of Oulu, Finland)

Seamless Multi-connectivity with User-space Networking Libraries & Control Plane Negotiations

Seppo Hätönen, Ashwin Rao and Sasu Tarkoma (University of Helsinki, Finland)

Preliminary Results on D Band Penetration Losses

Joonas Kokkonen, Juha-Pekka Käräjäoja and Markku Juntti (University of Oulu, Finland)

Cooperative Localization Utilizing Reinforcement Learning for 5G Networks

Ghazaleh Kia and Laura Ruotsalainen (University of Helsinki, Finland)

Dynamic Weight Based Beam Sweeping Algorithm for Initial Access in mmWave 5G

Indika Perera and Nandana Rajatheva (University of Oulu, Finland)

Iterative Bayesian-based Localization Mechanism with Mixture Distribution

Henrique Hilleshein (University of Oulu, Finland); Carlos Hércules Morais de Lima (University of Oulu, Finland); Hirley Alves and Matti Latva-aho (University of Oulu, Finland)

Mobile Augmented Reality Enhanced by 5G and Edge Computing

Xiang Su (University of Helsinki & University of Oulu, Finland); Jacky Cao (University of Oulu, Finland); Pan Hui (Hong Kong University of Science and Technology & University of Helsinki, Hong Kong)

Admission Control Algorithm for eMBB - URLLC Users Coexistence

Nipuni Ginige (University of Oulu, Finland); Kapuruhamy Badalge Shashika Manosha (Centre for Wireless Communications, University of Oulu, Finland); Nandana Rajatheva and Matti Latva-aho (University of Oulu, Finland)

Autoencoder based End-to-End Learning of Physical Layer Communications

R. Nuwanthika Sandeepani Rajapaksha, Nandana Rajatheva and Matti Latva-aho (University of Oulu, Finland)

Trust Networking and its Applications in 6G

Maria Riaz, Mandana Ghasemi and Raimo Kantola (Aalto University, Finland); Arkadiusz Biernacki (Silesian University of Technology, Poland)

Regular paper with pre-recorded presentations

Power Consumption Analysis for Mobile MmWave and Sub-THz Receivers

Presentation Paper

Panagiotis Skrimponis (New York University, USA); Sourjya Dutta (New York University & Polytechnic School of Engineering, USA); Marco Mezzavilla (NYU Tandon School of Engineering, USA); Sundeep Rangan (New York University, USA); Seyed Hadi Mirfarshbafan (Cornell University, USA); Christoph Studer (Cornell University and Cornell Tech, USA); James Buckwalter (University of California - Santa Barbara, USA); Mark J W Rodwell (University of California, Santa Barbara, USA)

Tri-band Single Chain Radio Receiver for Concurrent Radio

Presentation Paper

Stephen Henthorn and Timothy O'Farrell (University of Sheffield, United Kingdom (Great Britain)); Sajid Asif (The University of Sheffield, United Kingdom (Great Britain)); Mohammad Reza Anbiyaei (Alzahra University, Iran); Kenneth Lee Ford (University of Sheffield, United Kingdom (Great Britain))

Hybrid Precoding for 6G Terahertz Communications: Performance Evaluation and Open Problems

Presentation Paper

Longfei Yan and Chong Han (Shanghai Jiao Tong University, China); Jinhong Yuan (University of New South Wales, Australia)

Plasmonic Nanoantennas for 6G Intra/Inter-Chip Optical-Wireless Communications

Presentation Paper

Andreia Aparecida de Castro Alves (Federal University of Itajubá, Brazil); Marcello Caldano (Inatel- Instituto Nacional de Telecomunicações, Brazil); J. Siqueira (Inatel, Brazil); Fernando Zanella (National Institute of Telecommunications, Brazil); Jorge Ricardo Mejía-Salazar (Inatel, Brazil); Arismar Cerqueira S. Jr. (INATEL, Brazil)

5G New Radio Evolution Towards Sub-THz Communications

Presentation Paper

Oskari Tervo (Nokia Bell Labs, Finland); Toni A Levanen (Tampere University, Finland); Kari Pajukoski (Nokia, Bell-Labs, Finland); Jari Hulkkonen and Pekka J Wainio (Nokia Bell Labs, Finland); Mikko Valkama (Tampere University, Finland)

Nano-Antenna Modelling Based on Plasmonic Charge Distribution for THz-based 6G Applications

Presentation Paper

Fernando Zanella (National Institute of Telecommunications, Brazil); Hugo R. D. Filgueiras (Instituto Nacional de Telecomunicações - Inatel, Brazil); Guido Valerio (Sorbonne Université, France); César Dartora (Federal University of Paraná - UFPR, Brazil); Andre Mariano (UFPR, Brazil); Arismar Cerqueira S. Jr. (INATEL, Brazil)

6G subnetworks for Life-Critical Communication

Presentation Paper

Gilberto Berardinelli (Aalborg University, Denmark); Preben Mogensen (Nokia–Bell Labs, Research Center Aalborg, Sweden); Ramoni O. Adeogun (AAU, Denmark)

Enhancing Security in 6G Visible Light Communications

Presentation Paper

Simone Soderi (IMT School for Advanced Studies Lucca, Italy)

Privacy-Aware Blockchain Innovation for 6G: Challenges and Opportunities

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