

# The 26th International Symposium on Wireless Personal Multimedia Communications (WPMC 2023)

## Technical Program

	November 19 (Sunday)				November 20 (Monday)			November 21 (Tuesday)			November 22 (Wednesday)		
08:30-10:00					Keynotes			Technical Session 3	Workshop CONASENSE	Workshop TN/NTN	Invited Talk 2	On-line Session 1	Workshop AI
10:00-10:20					Coffee Break			Coffee Break			Coffee Break		
10:20-11:50					Keynotes			Technical Session 4	Workshop CONASENSE	Workshop TN/NTN	Invited Talk 3	On-line Session 2	Workshop AI
11:50-13:10	Registration				Lunch			Lunch			Lunch		
13:10-14:40	Tutorial 1	Tutorial 2	Tutorial 3	Tutorial 4	Invited Talk 1	Special Session 1	Technical Session 1	Technical Session 5	Workshop CONASENSE	Special Session 3	Technical Session 7	Special Session 4	Special Session 5
14:40-15:00	Coffee Break				Coffee Break			Coffee Break			Coffee Break		
15:00-16:30	Tutorial 1	Tutorial 2	Tutorial 3	Tutorial 4	Panel 1	Special Session 2	Technical Session 2	Technical Session 6	Workshop CONASENSE	Workshop O-RAN			
17:30-19:30	Welcome Reception							End by 16:15			Conference Banquet		

MSC 3707	MSC 3712	MSC 3711	MSC 2100A	MSC 3709	MSC 2100C	MSC 2707
MSC 3705	MSC 3704	MSC 3708	MSC 2708	MSC 3700	MSC 3713	MSC 2709

## Conference Proceeding:

[https://drive.google.com/drive/folders/1b54W9UJk6LwgZB0i\\_Wqz3sUgCkMqOXko](https://drive.google.com/drive/folders/1b54W9UJk6LwgZB0i_Wqz3sUgCkMqOXko)



## November 19, 2023 (Sunday)

### Registration

Time: 11:50-16:30  
Location: MSC 2709

### Tutorial

#### Tutorial Talk 1

Time: 13:10-14:40, 15:00-16:30  
Room: MSC 3712  
Speaker: Yuki Takeuchi, NTT Basic Research Laboratories

Topic: Quantum Computation and Sensing On Network

### **Tutorial Talk 2**

Time: 13:10-14:40, 15:00-16:30

Room: MSC 3711

Speaker: Chu-Hsiang Huang, Qualcomm Inc.

Topic: 5G to 6G: Towards A Ubiquitous Network with Intelligent Air Interface

### **Tutorial Talk 3**

Time: 13:10-14:40, 15:00-16:30

Room: MSC 3700

Speaker: Stavros Vakalis, University of South Florida

Topic: Recent Developments in Millimeter-Wave Imaging for Short-Range Sensing

### **Tutorial Talk 4**

Time: 13:10-14:40, 15:00-16:30

Room: MSC 2707

Speaker: Ning Wang, University of South Florida

Topic: Trustworthy Machine Learning Systems under Adversarial Environments

### **Coffee Break**

Time: 14:40-15:00

Location: MSC 2709

### **Welcome Reception**

Time: 17:30-19:30

Location: MSC 3707

## **November 20, 2023 (Monday)**

### **Keynotes**

#### **Keynote Talk 1**

Time: 8:30-9:15

Room: MSC 2100A

Speaker: Vahid Tarokh, Duke University

Topic: Data Driven Wireless Communications and Sensing

#### **Keynote Talk 2**

Time: 9:15-10:00

Room: MSC 2100A

Speaker: Akihiro Nakao, University of Tokyo

Topic: Democratizing Innovation for Next Generation Cyber Infrastructure

#### **Keynote Talk 3**

Time: 10:20-11:05

Room: MSC 2100A

Speaker: Lizhong Zheng, MIT

Topic: Neural Feature Learning for Engineering Problems

#### **Keynote Talk 4**

Time: 11:05-11:50

Room: MSC 2100A

Speaker: Prasant Mohapatra, University of South Florida  
Topic: Security in Internet of Things

## Invited Talk

### Invited Talk 1

Time: 13:10-14:40

Room: MSC 3705

- Speaker: Ryuji Kohno, Yokohama National University  
Topic: Toward A Prospective New Paradigm of Wireless BAN with B5G, Metaverse, And Interactive GPT in Medical, Automotive, And Other Fields
- Speaker: Huseyin Arslan, Istanbul Medipol University  
Topic: 6G Waveform Options

## Panel

### Panel 1

Time: 15:00-16:30

Room: MSC 3705

Topic: Network Cyber-security in IoT

## Technical Sessions

### Technical Session 1: International Standards, Multimedia, Social Media, and Application Services

Time: 13:10-14:40

Room: MSC 3708

Chair: Fatemeh Hamidi-Sepehr

- **Campus-based Full-Scale and Portable Open-Source 5G SA Networks: Prototyping and Experiments**  
Kamar Mubasier and Frank Y. Li (University of Agder, Norway); Jon Anders Skadberg Øgaard (Telenor Maritime, Norway); Marius-Constantin Vochin (University Politehnica of Bucharest, Romania & BEIA Consult International, Romania)
- **C5 and Human Design-A Holistic Approach to Support Childhood Development and Personalization**  
Viktoria Andersen (CTIF Global Capsule, Bulgaria); Ramjee Prasad (Aarhus University, Denmark)
- **SDR-based 5G NR System Verification with Video Transmission for Wireless Emulator**  
Takeshi Matsumura (National Institute of Information and Communications Technology (NICT) & Kyoto University, Japan); Hikaru Kawasaki and Kazuo Ibuka (National Institute of Information and Communications Technology, Japan)
- **Network-Independent and User-Controlled RIS: An Experimental Perspective**  
Emre Arslan, Ertugrul Basar and Fatih Kilinc (Koc University, Turkey); Huseyin Arslan (University of South Florida & Istanbul Medipol University, USA)
- **Testing Black Boxes: Verification and Validation of AI Models in Wireless Communication Systems**  
Chu-Hsiang Huang (Qualcomm, Inc., USA); Taesang Yoo and Juan Montojo (Qualcomm Inc., USA); Changhwan Park (Qualcomm, Inc., USA); Mohammed Hirzallah (Qualcomm Inc, USA)

### Technical Session 2: Wireless Communications

Time: 15:00-16:30

Room: MSC 3708

Chair: Nizar Tayem

- **Coexistence of 5G-FSS Analysis on Adjacent Channel Interference in Indonesia with LNB Replacement**  
Ignatius Daru Kristiadi (PT. Bank Rakyat Indonesia (Persero), Tbk., Indonesia & Telkom University, Indonesia); Fachrul Reiza Medina (PT Bank Rakyat Indonesia, Indonesia); Rahmattio Fa'is Baihaqi (PT. Bank Rakyat Indonesia (Persero), Tbk., Indonesia & Telkom University, Indonesia)
- **Radio sensing in OFDM systems with bandwidth aggregation**  
Fatemeh Hamidi-Sepehr and Thushara Hewavithana (Intel Corporation, USA)
- **Distributed Multi-agent Interference Coordination in Native AI enabled Multi-Cell Networks for 6G**  
Xueqi Li, Qimei Cui, Borui Zhao, Xuefei Zhang and Xiaofeng Tao (Beijing University of Posts and Telecommunications, China)
- **Traffic Load Prediction and Power Consumption Reduction for Multi-band Networks**

Ndolane Diouf (Cheikh Anta Diop University, Senegal); Cesar Vargas Anamuro (IMT Atlantique, France); Cedric Gueguen (University of Rennes 1 & CNRS, France); Massa Ndong (New York University Abu Dhabi, United Arab Emirates); Kharouna Talla (Université Cheikh Anta Diop de Dakar, Senegal); Xavier Lagrange (IMT Atlantique & IRISA, France)

- **Path Power Prediction Improving Scheme for Millimeter-wave using LSTM under Indoor Environments**  
Takato Yamazaki and Kohei Ohno (Meiji University, Japan); Ulf Johannsen (Eindhoven University of Technology, The Netherlands); Sonia Heemstra de Groot (Eindhoven Technical University, The Netherlands)

## Special Sessions

### Special Session 1: Wireless Communications

Time: 13:10-14:40

Room: MSC 3704

Chair: Haesik Kim

- **Hardware Implementation of Direction of Arrival Estimation Algorithm Using LU Decomposition**  
Nizar Tayem (Texas A & M, USA); AbuMuhammad Moinuddeen (Texas A & M University Commerce, USA); Ahmed Hussain (Prince Mohammed University, Saudi Arabia); Redha M Radaideh (Texas A&M University-Commerce, USA)
- **A Smart Trouble Ticket Management Approach for Mobile Networks Using Unsupervised Learning**  
Thaina C. Saraiva and David Duarte (Instituto de Telecomunicações and CELFINET, a Cyient Company); Luís Miguel Mata (Instituto de Telecomunicações and Instituto Superior de Engenharia de Lisboa and Instituto Superior Técnico and CELFINET); Pedro Vieira (Instituto de Telecomunicações and Instituto Superior de Engenharia de Lisboa)
- **Comparative Analysis of Network Traffic between OpenQKD, OpenVPN and Apache Tomcat**  
Alexandru Vulpe (University Politehnica of Bucharest & Beam Innovation SRL, Romania); Marian Ilie (University Politehnica of Bucharest, Romania); Marius-Constantin Vochin (University Politehnica of Bucharest, Romania & BEIA Consult International, Romania)
- **Performance Evaluation of an SD-WAN Implementation**  
Alexandru Vulpe (University Politehnica of Bucharest & Beam Innovation SRL, Romania); Tiberiu Ruta and Alexandru Caranica (University Politehnica of Bucharest, Romania)

### Special Session 2: International Standards, Multimedia, Application Services, and AI-Enable Networks

Time: 15:00-16:30

Room: MSC 3704

Chair: Pedro Vieira

- **KMedoids and Birch Clustering Methods of Analyzing 6G High MmWave Bands**  
Saud Alhajaj Aldossari (PSAU, Saudi Arabia & PSAU University, Saudi Arabia)
- **Two Stages Beam Selection Method Using Machine Learning and Peak Finding Algorithm**  
Haesik Kim (VTT Technical Research Centre of Finland, Finland)
- **Frequency Resource Allocation Using Q-learning for User Link in High Throughput Satellite Communication**  
Go Otsuru (National Institute of Information and Communications Technology, Japan); Yukitoshi Sanada (Keio University, Japan); Hiroyuki Tsuji and Amane Miura (National Institute of Information and Communications Technology, Japan)
- **Area Sweep Coverage: a Trade-off between Tour-Length and Memory Requirements**  
Rinku Sen, (Calcutta University, India); Saumya Jaipuria (Indian Statistical Institute, India); Rajib Das (University of Calcutta, India)

## Coffee Break

Time: 10:00-10:20, 14:40-15:00

Location: MSC 3709

## Lunch

Time: 11:50-13:10

Location: MSC 2100C

**November 21, 2023 (Tuesday)**

## Technical Sessions

### Technical Session 3: Wireless Communications

Time: 8:30-10:00

Room: MSC 3713

Chair: Seda Doğan-Tusha

- **Towards Transmission Rate Control Considering the Effects of the Surrounding Environment**  
Fumiko Ohori (National Institute of Information and Communications Technology, Japan & Osaka University, Japan); Satoko Itaya, Mitsuru Uesugi and Akihiro Amagai (National Institute of Information and Communications Technology, Japan); Jun Hasegawa (NICT, Japan); Toru Osuga (National Institute of Information and Communications Technology, Japan); Takeshi Matsumura (National Institute of Information and Communications Technology (NICT) & Kyoto University, Japan); Hirozumi Yamaguchi (Osaka University, Japan)
- **Cross-layer Flow Control for Dual-link Wireless Access of AGV in Factory**  
Toru Osuga (National Institute of Information and Communications Technology, Japan); Fumiko Ohori (National Institute of Information and Communications Technology, Japan & Osaka University, Japan); Satoko Itaya (National Institute of Information and Communications Technology, Japan); Takeshi Matsumura (National Institute of Information and Communications Technology (NICT) & Kyoto University, Japan)
- **Packet-Level Index Modulation under Duty Cycle Constraints**  
Ryogo Oya, Takeo Fujii and Koichi Adachi (The University of Electro-Communications, Japan); Osamu Takyu (Shinshu University, Japan); Mai Ohta (Fukuoka University, Japan); Shinichiro Kakuda (The University of Electro-Communications, Japan)
- **An Adaptive Duplex Switching Scheme That Exploits Interference Statistics for Hybrid-Duplex Cellular Networks**  
Shi-Ming Lu, Hsuan-Jung Su and Ming-Ting Chen (National Taiwan University, Taiwan)
- **On Manipulating Routing Table to Realize Redirect Attacks in O-RAN by Malicious xApp**  
Chi-heng Tseng, Cheng-Feng Hung and Bing-Kai Hong (National Taiwan University of Science and Technology, Taiwan); Shin-Ming Cheng (National Taiwan University of Science and Technology & Academia Sinica, Taiwan)

### Technical Session 4: Wireless Network

Time: 10:20-11:50

Room: MSC 3713

Chair: Huan-Bang Li

- **Federated Learning Composite Ad Hoc Interference Maps**  
Rafael Kaliski (National Sun Yat-Sen University, Taiwan); Ingrid A Winata (National Taiwan University of Science and Technology, Taiwan)
- **Radio resource allocation in low- to medium-load regimes for energy minimization with C-RAN**  
Tania Alhaji, Nicolas Huin and Karine Amis (IMT Atlantique, France); Xavier Lagrange (IMT Atlantique & IRISA, France)
- **Slicing 5G Core Network based on the Ryu SDN Controller for Everything as a Service**  
Pantelimon-Teodor Tivig (University Politehnica of Bucharest & Luxoft Romania, Romania); Eugen Borcoci (University Politehnica of Bucharest, Romania); Marius-Constantin Vochin (University Politehnica of Bucharest, Romania & BEIA Consult International, Romania); Indika Anuradha Mendis Balapuwaduge and Frank Y. Li (University of Agder, Norway)
- **On Using Authenticated Encryption for Securing Controller Area Networks in Autonomous Mobile Platforms**  
Amar A Rasheed (Sam Houston State University, USA); Mohamed Baza (College of Charleston, USA); Mohammad S Khan (East Tennessee State University, USA); Cihan Varol (Sam Houston State University, USA); Narashimha Karpoor (SHSU, USA); Gautam Srivastava (Brandon University & China Medical University, Canada)
- **Proposal of an Adaptive Control Algorithm in D2D Communication For Enhancing Drone Collision Avoidance**  
Huan-Bang Li (National Institute of Information and Communications Technology, Japan); Takeshi Matsumura (National Institute of Information and Communications Technology (NICT) & Kyoto University, Japan)

### Technical Session 5: Security and Privacy in Communications

Time: 13:10-14:40

Room: MSC 3713

Chair: Fumihide Kojima

- **Physical-Layer Authentication Over Spatially Correlated MIMO Channels**  
Kenta Miwa (The University of Electro-Communications, Japan); Kengo Ando and Giuseppe Thadeu Freitas de Abreu (Constructor University, Germany); Koji Ishibashi (The University of Electro-Communications, Japan)
- **Hash-Based Function Call Graph Fusion Method for IoT Malware Detection**  
Gao-Yu Lin and Ming Huang Lin (National Taiwan University of Science and Technology, Taiwan); Shin-Ming Cheng (National Taiwan University of Science and Technology & Academia Sinica, Taiwan)
- **Fundamental Field Experiments of OFDMA Systems Using VHF-band in Urban Area**  
Hiroshi Harada (Kyoto University, Japan)

- **MQTT Protocol based IoT solution for Voice-controlled Smart Home**  
Soumya Ranjan Samal (Technical University of Sofia, Bulgaria); Annapurna Mishra (Silicon Institute of Technology, India); Shuvabrata Bandopadhyaya (Banasthali Vidyapeeth Rajasthan, India); Albena Mihovska (Aarhus University, Denmark); Amarjit Roy (VIT AP University, India); Vladimir K. Poulkov (Technical University of Sofia, Bulgaria)

### Technical Session 6: Wireless Network

Time: 15:00-16:30 (to be finished by 16:15)

Room: MSC 3713

Chair: Rafael Kaliski

- **Interpolation Accuracy Evaluation for 3D Radio Environment Maps Construction**  
Antoni Ivanov, Krasimir Tonchev, Vladimir K. Poulkov and Agata Manolova (Technical University of Sofia, Bulgaria); Atanas Georgiev Vlahov (Technical University of Sofia & Research and Development and Innovation Consortium, Bulgaria)
- **Indoor and Outdoor Measurement Campaign for Unlicensed 6 GHz Operation with Wi-Fi 6E**  
Seda Doğan-Tusha (University of Notre Dame, USA); Armed Tusha (Istanbul Medipol University, Turkey); Hossein Nasiri (University of Notre Dame, USA); Muhammad Iqbal Rochman (University of Chicago, USA); Monisha Ghosh (University of Notre Dame, USA)
- **A Novel Random Access for Ultra-Low Latency Communications**  
Yousef Alanezi, Kwang-Cheng Chen and Zixiang Nie (University of South Florida, USA)

### Special Session

#### Special Session 3: Wireless Networks

Time: 13:10-14:40

Room: MSC 3708

Chair: Chih-Cheng Tseng

- **C5 Model Therapy for Stress Management: A Case Study of Global Mainstream Media Professionals**  
Amit Chandra Deshmukh (CTIF Global Capsule, Denmark); Ramjee Prasad (Aarhus University, Denmark)
- **Emerging Approaches towards Food Waste Valorization**  
Shweta Kunal Bhonsle (CTIF Global Capsule, India); Ramjee Prasad (Aarhus University, Denmark)
- **Prediction of Radio Wave Attenuation due to Clouds by using Support Vector Machine Model**  
Vivek Kumar (Noida Institute of Engineering and Technology, India & Aarhus University, Denmark)
- **Prediction of Radio Wave Attenuation due to Rain by SVM**  
Vivek Kumar (Noida Institute of Engineering and Technology, India & Aarhus University, Denmark)

### Workshops

#### Workshop 1: CONASENSE 2023

Room: MSC 3711

Chair: Eduardo Cerqueira

Time: 8:30-10:00, 10:20-11:50, 13:10-14:40, 15:00-16:30

8:30-10:00

- **Welcome Introduction**
- **Keynote Speech 1**

10:20-11:50

- **A Computer Aided Design Tool for NISQ Logic Synthesis**  
Albert Barron Dinkins V, Austin Bristow and Kwang-Cheng Chen (University of South Florida, USA)
- **Quantum Wireless Imaging and Remote Sensing: State-of-the-Art Technologies and Opportunities**  
Brian Sisco and Kwang-Cheng Chen (University of South Florida, USA)
- **Quantum Computing Technologies to Accelerate 6G and CONASENSE Integration Beyond 2030**  
Paulo Sergio Rufino Henrique (CTIF Global Capsule Aarhus University & Aarhus University Denmark, France); Ramjee Prasad (Aarhus University, Denmark); Albena Mihovska (CGC Foundation, Denmark & SmartAvatar B.V., The Netherlands)

13:10-14:40

- **A CNN-Based Routing Scheme for Minimizing TCP Flow Completion Time in SD-DCNs**  
Yingjie Zhou, Mingchun Xu and Yu Chen (Beijing University of Posts and Telecommunications, China)
- **Validation of a CommSense Based ISAC System Using In-Situ mmWave Propagation Model**  
Sandip Jana and Kiran Kumar Reddy (IIT Hyderabad, India); Amit Kumar Mishra (University of Cape Town, South Africa); Mohammed Zafar Ali Khan (Indian Institute of Technology Hyderabad, India)

- **Keynote Speech 2**

15:00-16:30 (to be finished by 16:15)

- **Symphony of Sensors: The Harmonious Art of Massive Data Generation**

Ragini A. Mishra (University of Mumbai, India); Albena Mihovska (SDSU, USA); Ramjee Prasad (Aarhus University, Denmark)

- **Closure and Awards**

### **Workshop 2: R&D Activities on Acceleration of Interworking between Terrestrial and Non-terrestrial Networks for Beyond 5G-based Society (Workshop TN/NTN)**

Room: MSC 3708

Chair: Hikaru Kawasaki, Takeshi Matsumura

Time: 8:30-10:00, 10:20-11:50

8:30-10:00

- **Investigation on Radiation Pattern of Antenna Installed in Drones for Improving Accuracy of Wireless Emulation**

Hirokazu Sawada, Takashi Matsuda and Kyoichi Iigusa (National Institute of Information and Communications Technology, Japan); Takeshi Matsumura (National Institute of Information and Communications Technology (NICT) & Kyoto University, Japan)

- **Multiple Access Technology using Long-range Wide-angle Array Antennas Mounted on High Altitude Platform Station**

Takashi Matsuda, Ryu Miura and Miho Koshikawa (National Institute of Information and Communications Technology, Japan); Jun Suzuki and Tetsumi Takamori (SKY Perfect JSAT Corporation, Japan); Takeshi Matsumura (National Institute of Information and Communications Technology (NICT) & Kyoto University, Japan)

- **Performance Evaluation of Congestion Control for QUIC in Asymmetrical Latency Environment**

Hikaru Kawasaki, Kazuo Ibuka and Homare Murakami (National Institute of Information and Communications Technology, Japan); Takeshi Matsumura (National Institute of Information and Communications Technology (NICT) & Kyoto University, Japan)

- **Interference Analysis and Mitigation for UAV Communications in Drone Corridors**

Cameron Ellis, Minglong Zhang and Vuk Marojevic (Mississippi State University, USA)

- **User Pairing Method using Radio Map for Spectrum Sharing between Non-Terrestrial Networks and Terrestrial Networks**

Shugo Hirano (The University of Electro-Communications, Japan); Hirofumi Nakajo and Takeo Fujii (The University of Electro-Communications, Japan)

10:20-11:50

- **Panel Discussion**

### **Workshop 3: Workshop on Open RAN technologies, Use Cases, and Testbed (Workshop O-RAN)**

Room: MSC 3708

Chair: En-Cheng Liou

15:00-16:30 (to be finished by 16:15)

- **Keynote Talk: Open architecture in B5G area and its security challenge**

- **Dynamic Radio Resource Allocation Scheme for the B5G Mobile Systems Evaluated on the B5G/IoT Testbed with High Reliability and High Elasticity**

Fumihide Kojima (National Institute of Information and Communications Technology, Japan); Renri Nakano (NICT, Japan); Takeshi Ikenaga (Kyushu Institute of Technology, Japan)

- **Closed-loop Security Management for Developing O-RAN Infrastructure and B5G RIC Applications**

Yi-Chih Tung (Ming Chi University of Technology, Taiwan); En Cheng Liou, Chung Hsiang Cheng and Tzu Hang Lin (National Yang Ming Chiao Tung University, Taiwan); ShuMin Chuang (National Central University, Taiwan & Telecom Technology Center, Taiwan)

- **Demonstration: 5G O-RAN testbed with CVE security rAPP in academic field**

### **Coffee Break**

Time: 10:00-10:20, 14:40-15:00

Location: MSC 3709

### **Lunch**

Time: 11:50-13:10

Location: MSC 2708

## Banquet

Time: 17:30-20:30

Location: Columbia Centennial Museum

## November 22, 2023 (Wednesday)

### Technical Session

#### Technical Session 7: IoT, Sensor, Networks, and AI-Enabled Networks

Time: 13:10-14:40

Room: MSC 3713

Chair: Pavlos Lazaridis

- **Optimal Deep Learning model for UAVs: A Case Study**  
Chandan Kumar and Ali Jannesari (Iowa State University, USA)
- **Standardizing Personal Medical Data in 5G and 6G Era**  
Ana Koren (FER, Croatia); Ramjee Prasad (Aarhus University, Denmark)
- **Federated Learning with Packet Losses**  
Angelo Rodio and Giovanni Neglia (Inria, France); Fabio Busacca (University of Catania, Italy); Stefano Mangione (Università di Palermo, Italy); Sergio Palazzo (University of Catania, Italy); Francesco Restuccia (Northeastern University, USA); Ilenia Tinnirello (University of Palermo, Italy)

### Special Session

#### Special Session 4: International Standards, Multimedia, Application Services, and AI-Enable Networks

Time: 13:10-14:40

Room: MSC 3711

Chair: Alexandru Vulpe

- **Psychological Challengers in Future Governance of Wireless Technology**  
Raj Kumar Dubey (USA); Ramjee Prasad (Aarhus University, Denmark)
- **Anomaly Recognition in Internet of Things using Blockchain-based Quality of Experience techniques**  
Seyed Salar Sefati (Politehnica University of Bucharest, Romania); Alexandru Vulpe (University Politehnica of Bucharest & Beam Innovation SRL, Romania); Eduard Popovici (University "Politehnica" of Bucharest, Romania); Simona V. Halunga (University Politehnica of Bucharest, Romania)
- **Network Traffic Data Prediction Using Deep Learning**  
Erdem Demircioglu (ULAK Haberlesme AS, Turkey); Omer Buminhan Cay (ULAK Haberlesme, Turkey); Evren Tuna (Ulak Communications Inc., Turkey); Huseyin Arslan (University of South Florida & Istanbul Medipol University, USA)
- **Centralized Radio Access Network (C-RAN) Architecture for 5G using Front haul (FH) and Backhaul (BH) Networks**  
Hemanshi Anil and Vaibhav Gupta (VIT, India); Nandakumar Sendrayan (VIT University, India); Sibaram Khara (Sharda University, Greater Noida, India); T Velmurugan (VIT University, India)
- **Opportunities and Limitations of Dialogue-based Foreign Language Learning AI Applications**  
Despoina N. Gkountara (CTIF GLOBAL CAPSULE, Skagen, Denmark & University of Huddersfield, United Kingdom (Great Britain)); Pavlos Lazaridis (University of Huddersfield, United Kingdom (Great Britain)); Ramjee Prasad (Aarhus University, Denmark)

#### Special Session 5: International Standards, Multimedia, Application Services, and AI-Enable Networks

Time: 13:10-14:40

Room: MSC 3704

Chair: Chih-Cheng Tseng

- **Artificial Intelligence and Its Clinical Application In Approximate Caries Detection On Bitewing Radiographs**  
Smita Salagare (Denmark); Ramjee Prasad (Aarhus University, Denmark); Hristijan Petreski (Aarhus University & Software Competitiveness International, Germany)
- **Brain Computer Interfaces in Transportation**  
Jayesh Thatte (University of Mumbai, India); Ramjee Prasad (Aarhus University, Denmark)
- **Revolutionizing Retail: Enhancing the Smart Self-Checkout Experience**  
Jafar Mapara (University of Mumbai, India); Ramjee Prasad (Aarhus University, Denmark)
- **Exploring Real World Applications of AI**



Aaryav Virendra Jain (Manipal Academy of Higher Education, India); Ramjee Prasad (Aarhus University, Denmark)

- **Mathematising Thinking for 4IR to Enrich Every 8 Billion us**  
Sandeep Srivastava (IYCWorld Softinfrastructure Pvt Ltd, India); Ramjee Prasad (Aarhus University, Denmark)

## On-line Sessions

### Online Session 1

Time: 8:30-10:00

Room: MSC 3711

Chair: Ana Koren

- **Inter-Slot Frequency Hopping with DMRS Bundling for NR Coverage Enhancement**  
Nanxi Li (China Telecom, China); Hang Yin and Bowen Wang (China Telecom Research Institute, China); Jianchi Zhu (China Telecom, China)
- **Cramer-Rao Lower Bound Analysis for OTFS and OFDM Modulation Systems**  
Bowen Wang, Jianchi Zhu, Xiaoming She and Peng Chen (China Telecom Research Institute, China)
- **Dynamic Multi-Tenant RAN Slicing for eMBB, URLLC, and mMTC in 5G Networks**  
Zeina Awada (Saint Joseph University, Lebanon); Melhem El Helou (Saint Joseph University of Beirut, Lebanon); Kinda Khawam (Université de Versailles, France); Samer Lahoud (Dalhousie University, Canada)
- **User location uncertainty in RIS-aided channel optimization**  
Sanaz Kianoush (National Research Council of Italy (CNR), Italy); Laura Dossi (CNR-IEIT, Italy); Roberto Nebuloni (Ieiiit - Cnr, Italy); Alessandro Nordio (CNR-IEIT, Italy); Stefano Savazzi (Consiglio Nazionale delle Ricerche CNR, Italy)
- **Efficient Communication for Realtime Systems**  
Ramesh Yadava (The Indus Entrepreneur "TiE", USA); Ramjee Prasad (Aarhus University, Denmark)

### Online Session 2

Time: 10:20-11:50

Room: MSC 3711

Chair: Sibaram Khara

- **Multi Stage LLR Estimation with Ordering in A Non-linear Receiver for Overloaded MIMO Systems**  
Satoshi Denno, Shuhei Makabe and Yafei Hou (Okayama University, Japan)
- **A Reliable Antenna Array for the 28GHz mmWave Band in a 5G Massive MIMO Communication**  
Zie Eya Ekolle (Yokohama National University, Japan); Ryuji Kohno (YRP International Alliance Institute, Japan & Yokohama National University, Japan); Mohammad Ghavami (London South Bank University, United Kingdom (Great Britain))
- **Quantum Machine Learning- The Need of Time**  
Vandana Rohokale (SPPU Pune, Maharashtra & Sinhgad Institute of Technology and Science, Pune, India); Ramjee Prasad (Aarhus University, Denmark)
- **Graph Convolutional Network for Channel and Power Allocation in Device-to-Device Communication**  
Lei Gao (China Telecom Research Institute, China); Xinxin Zhang (Beijing University of Posts and Telecommunications, China); Shan Yang, Xiaoming She, Peng Chen and Jianxiu Wang (China Telecom Research Institute, China)
- **Unlocking Inner Potential: Tactile Internet's Impact on Healing and Self-Actualization**  
Swati Sharma (Aarhus University & None, India)

## Invited Talk

### Invited Talk 2

Time: 8:30-10:00

Room: MSC 3713

- Speaker: Kentaro Ishizu, National Institute of Information and Communications Technology
- Speaker: Hsuan-Ju Su, National Taiwan University

### Invited Talk 3

Time: 10:20-11:50

Room: MSC 3711

- Speaker: Damla Turgut, University of Central Florida
- Speaker: Vladimir Poulkov, Technical University of Sofia

## Workshop

#### **Workshop 4: Workshop on AI-Enhanced Green Communication for Sustainable Smart Cities (Workshop AI)**

Room: MSC 3704

Chair: Mohammad S. Khan, Amir H Gandomi, M S Mekala

Time: 8:30-10:00, 10:20-11:50

8:30-10:00

- **Symphony of Sensors: The Harmonious Art of Massive Data Generation by Devices**  
Ragini A. Mishra (University of Mumbai, India); Alben Mihovska (Research&Development&innovation Consortium (RDIC), Bulgaria); Ramjee Prasad (Aarhus University, Denmark)
- **Research Issues in False Information Broadcasting Rogue Node Detection for Green VANETs**  
Abinash Borah (Oklahoma State University, USA); Anirudh Paranjothi (Oklahoma State University, USA & Stillwater, USA)
- **An Effective Network Topology Coexistence Scheme for the Low-Energy Wireless Grid Structures in the Green Communication Systems**  
Fumihide Kojima (National Institute of Information and Communications Technology, Japan)

10:20-11:50

- **GPT for the Metaverse in Smart Cities**  
Ramalingam M (Vellore Institute of Technology, India); Gokul Yenduri (VIT University & Vellore Institute of Technology, India); Mohamed Baza (College of Charleston, USA); Gautam Srivastava (Brandon University & China Medical University, Canada); Deepti Raj G (Vellore Institute of Technology, India); Chemmalar Selvi Govardanan, Assistant (Vellore Institute of Technology India, India); Thippa Reddy Gadekallu (Vellore Institute of Technology, India)
- **A Lite SVM-based Semantic Search Model for Bigdata Analytics in Smart Cities**  
Kayam Saikumar (Koneru Lakshmaiah Education Foundation, India); K Srinivas Rao (MLR, India); Mohamed Baza (College of Charleston, USA); Amar A Rasheed (Sam Houston State University, USA); Akundi Sai Hanuman (Gokaraju Lailavathi Womens Engineering, India); Ahmed J. Obaid, AJO (University of Kufa & Kufa University, Iraq)
- **Security-aware Ad hoc Networking Protocol for Vehicular Safety Systems**  
Danai Chasaki, David Randazzo and Sarvesh Kulkarni (Villanova University, USA)
- **Suitability of Lightweight Cryptographic Algorithms for Internet of Things Domains**  
Michael McFarlane (Brandon University, Canada); Gautam Srivastava (Brandon University & China Medical University, Canada); Darshan M (Lakehead University, Canada)

#### **Coffee Break**

Time: 10:00-10:20, 14:40-15:00

Location: MSC 3709

#### **Lunch**

Time: 11:50-13:10

Location: MSC 2100C