

## ICUFN 2023 Advance Program

### [Program at a Glance]

<b>July 3, 2022 (Monday)</b>			
14:00 ~ 17:00	<b>ICUFN Committee Meeting (IAC/SC/OC)</b>		
Room	Room A	Room B	Room C
<b>July 4, 2023 (Tuesday)</b>			
13:00 ~ 14:00	Registration		
14:00 ~ 15:30	Workshop 1A The 1st International Workshop on Technologies for 5G-V2X based Enhanced Automotive Valet Parking I (EAVP 2023 I)	Workshop 1B The 10th International Workshop on Intelligent Vehicles I (IV 2023 I)	Workshop 1C The 4th International Workshop on Smart Radio for IoT Era (SRIoT 2023)
15:30 ~ 16:00	Coffee Break		
16:00 ~ 17:30	Workshop 2A The 1st International Workshop on Technologies for 5G-V2X based Enhanced Automotive Valet Parking II (EAVP 2023 II)	Workshop 2B The 10th International Workshop on Intelligent Vehicles II (IV 2023 II)	Workshop 2C-I The 3rd International Workshop on Artificial Intelligence for Information, Communications, and Applications (AIICA 2023) Workshop 2C-II The 3rd International Workshop on B5G/6G Wireless Networks (B5G/6G 2023)
<b>July 5, 2023 (Wednesday)</b>			
09:00 – 09:30	Coffee/Tea and Pastry		

09:30 ~ 10:30	<p style="text-align: center;">Opening Address Prof. Seong Ho Jeong, Organizing Committee Co-Chair</p> <p style="text-align: center;">Welcome Address 1 Prof. Een-Kee Hong, President of KICS</p> <p style="text-align: center;">Welcome Address 2 Prof. Catherine Kuszla, OMNES Education Research Dean</p> <p style="text-align: center;">Keynote Speech 1 Prof. Shiwen Mao, Auburn University</p>		
10:30 ~ 11:30	<p style="text-align: center;">Tutorial 1 TBD</p>		
11:30 ~ 13:30	<p style="text-align: center;">Lunch (Crêperie Contemporaine 142 / A French Restaurant)</p>		
13:30 ~ 14:50	<p style="text-align: center;">Oral Session 1A Wireless and Communication Networks I</p>	<p style="text-align: center;">Oral Session 1B AI/Machine Learning Applications I</p>	<p style="text-align: center;">Oral Session 1C Future Internet and Networks</p>
14:50 ~ 15:00	<p style="text-align: center;">Session Break</p>		
15:00 ~ 16:20	<p style="text-align: center;">Oral Session 2A Wireless and Communication Networks II</p>	<p style="text-align: center;">Oral Session 2B AI/Machine Learning Applications II</p>	<p style="text-align: center;">Oral Session 2C Security and Network Management</p>
16:20 ~ 16:50	<p style="text-align: center;">Coffee Break</p>		
16:50 ~ 18:10	<p style="text-align: center;">Oral Session 3A Mobile and Vehicular Networks, Autonomous Vehicles</p>	<p style="text-align: center;">Oral Session 3B Ubiquitous Computing and Sensor Networks</p>	<p style="text-align: center;">Oral Session 3C WLAN, WPAN, WBAN</p>
18:30 ~ 20:30	<p style="text-align: center;">Banquet (Novotel Paris Centre Tour Eiffel)</p>		

**July 6, 2023 (Thursday)**

09:00 – 09:30	Coffee/Tea and Pastry		
09:30 ~ 10:30	Keynote Speech 2 Prof. Mérouane Debbah CentraleSupélec, Paris-Saclay University, and Mohamed bin Zayed University of Artificial Intelligence		
10:30 ~ 11:30	Tutorial 2 TBD		
11:30 ~ 13:30	Lunch (Ristorante Pasta del Nonno / An Italian Restaurant)		
13:30 ~ 14:50	Oral Session 4A Wireless and Communication Networks III	Oral Session 4B e-Health	Poster Session 1
14:50 ~ 15:00	Session Break		
15:00 ~ 16:20	Oral Session 5A Wireless and Communication Networks IV	Oral Session 5B IoT	Poster Session 2
16:20 ~ 16:50	Coffee Break		
16:50 ~ 18:10	Oral Session 6A Machine Learning and Computational Intelligence	Oral Session 6B Computer Vision Applications	Poster Session 3

**July 7, 2023 (Friday)**

09:00 – 09:30

Coffee/Tea and Pastry

9:40 ~ 11:00

Oral Session 7A  
Wireless and  
Communications  
Networks V

Oral Session 7B  
6G, 5G, PS-LTE,  
LTE-R, LTE-  
Advanced

Poster Session 4

Closing

\* Tentative Schedule, Subject to change

**Wednesday, July 5 1:30 - 2:50**

## **Session 1A: Wireless and Communication Networks I**

***A Cluster-Based OFDMA MAC Protocol Using Carrier-Sensing Scheme for IEEE 802.11ax WLANs***

Yen-Da Chen (Lunghwa University of Science and Technology, Taiwan); Jia-Wei Lin, Mu-Hua Hsueh and Kuei-Ping Shih (Tamkang University, Taiwan)

***Federated Learning-Based Joint Radar-Communication mmWave Beamtracking with Imperfect CSI for V2X Communications***

Sanjay Bhardwaj (Kumoh National Institute of Technology & ICT Convergence Research Center, Korea (South)); Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

***Optimal Adaptation of 3D Beamformers in UAV Networks***

Kasun Prabhath (UNM, USA); Sudharman K Jayaweera (University of New Mexico & Bluecom Systems, USA)

***Cooperative Beam Selection Based Fingerprint Database Using User Types in Unmanned Aerial Vehicle Supported Systems***

Yuna Sim, Seungseok Sin and Jihun Cho (Chonnam National University, Korea (South)); Kyunam Kim (Alps Electric Korea Company Limited, Korea (South)); Sangmi Moon (Korea Nazarene University, Korea (South)); Intae Hwang (Chonnam National University, Korea (South))

## **Session 1B: AI/Machine Learning Applications I**

***Real-Time Pill Identification with Prescription Confirmation Using Deep Learning on Embedded System***

Roy Chaoming Hsu (National Chiayi University, Taiwan)

***Transmit Antenna Selection Using CNN-Based Multiclass Classification with Linear Interpolation of Wideband Channels***

Jaehong Kim and Jingon Joung (Chung-Ang University, Korea (South)); Eui-Rim Jeong (Hanbat National University, Korea (South))

***Indoor Scene Recognition Using ARM-Based MobileNets Architectures***

Wei-Lung Mao, Sung-Hua Chen, Yu-Tang Huang and Yao-Teng Yang (National Yunlin University of Science and Technology, Taiwan); Po-Heng Bone Chou (Research Center for Information Technology Innovation (CITI), Academia Sinica)

***Efficient Malware Classification with Spiking Neural Networks: A Case Study on N-BaloT Dataset***

Yee Loo Foo, Muhammad Umair and Wooi Haw Tan (Multimedia University, Malaysia)

## **Session 1C: Future Internet and Networks**

***A New Low-Rate DoS Attack Method Robust to Timing Skew for TCP Short Transfers***

Ryuku Hisasue, Hiroshi Inamura and Shigemi Ishida (Future University Hakodate, Japan)

***Coverage Probability Analysis of LEO Satellite Communication Systems with Directional Beamforming***

Gyulim Kim (Tech University of Korea, Korea (South)); Lee Sangcheol (University of Wireless Communication & TUKorea, Korea (South)); Hyeongyong Lim (Agency for Defense Development, Korea (South)); Bang Chul Jung (Chungnam National University, Korea (South)); Seong Ho Chae (Tech University of Korea, Korea (South))

***A New Congestion-Based Congestion Control for Low Latency and Low Packet Drop Rate***

Satoshi Utsumi (Fukushima University, Japan); Go Hasegawa (Tohoku University, Japan)

***D-MPQUIC: Optimizing Loss Detection in High RTT Variation Networks***

Min-Ki Kim and You-Ze Cho (Kyungpook National University, Korea (South))

**Wednesday, July 5 3:00 - 4:20**

## **Session 2A: Wireless and Communication Networks II**

***A Classification of Cross-Layer Optimization Approaches in LoRaWAN for Internet of Things***

Carl Christian A Chaguile and Melchizedek Alipio (De La Salle University, Philippines); Miroslav Bures (Czech Technical University in Prague, Czech Republic)

***Age-Of-Information Aware Intelligent MAC for Congestion Control in NR-V2X***

Malik Muhammad Saad, Muhammad Ashar Tariq, Junho Seo, Mahnoor Ajmal and Dongkyun Kim (Kyungpook National University, Korea (South))

***Partial-Information Multiple Access Protocol for Orthogonal Transmissions***

Alberto Rech, Stefano Tomasin and Lorenzo Vangelista (University of Padova, Italy); Cristina Emilia Costa (CNIT, Italy)

***Unscented Kalman Filter-Based Beam Tracking in NR MIMO System Using Hybrid Beamforming***

Seungseok Sin, Yuna Sim and Jihun Cho (Chonnam National University, Korea (South)); Kyunam Kim (Alps Electric Korea Company Limited, Korea (South)); Sangmi Moon (Korea Nazarene University, Korea (South)); Intae Hwang (Chonnam National University, Korea (South))

## **Session 2B: AI/Machine Learning Applications II**

***Uplink Time Constrained Federated Learning over Wireless Networks***

Ji Ho Choi and Dong In Kim (Sungkyunkwan University (SKKU), Korea (South))

***Ingredient Detection, Title and Recipe Retrieval from Food Images***

Snigdha Sinha, Bhavikha Chopra, Mahendra N and Gitika Jain (PES University, India); Natarajan S (VTU, India)

***Various Object Trackers for UAV Chasing of Counter UAV Systems***

Kyubin Kim (Chungang University, Korea (South)); Jaehong Kim, Han-Gyeol Lee and Jingon Joung (Chung-Ang University, Korea (South))

***Deep Learning-Based Network Slice Recognition***

Harun Ur Rashid and Seong-Ho Jeong (Hankuk University of Foreign Studies, Korea (South))

## **Session 2C: Security and Network Management**

***Here Comes SAID: A SOME/IP Attention-Based Mechanism for Intrusion Detection***

Natasha Alkhatib (Institut Polytechnique de Paris, France); Hadi Ghauch (Royal Institute of Technology (KTH), Sweden); Jean-Luc Danger (Telecom Paris, France); Maria Mushtaq (Assistant Professor, France)

***A Lightweight Seamless Authentication Scheme for Edge-Assisted IoV Networks***

Seunghwan Son, Myeonghyun Kim and YoungHo Park (Kyungpook National University, Korea (South))

***Traffic Characterization to Provide Trust for Internet of Things Devices***

Evandro Luiz Cardoso Macedo and Luis Felipe M. de Moraes (Federal University of Rio de Janeiro (UFRJ), Brazil)

***How Reliable are the Deep Learning-Based Anomaly Detectors? A Comprehensive Reliability Analysis of Autoencoder-Based Anomaly Detectors***

Manzoor Hussain, Jae-Won Suh, Bo-Seok Seo and Jang-Eui Hong (Chungbuk National University, Korea (South))

**Wednesday, July 5 4:50 - 6:10**

**Session 3A: Mobile and Vehicular Networks, Autonomous Vehicles**

*Proposal of Enhanced Cell Range Expansion for Heterogeneous Mobile Networks*

Kentaro Yoda and Hiroyuki Otsuka (Kogakuin University, Japan)

*Mitigating Packet Collisions by Predicting Collective Perception Message Transmissions in Cellular V2X Environment*

Songmu Heo and Hyogon Kim (Korea University, Korea (South))

*Plenary Autonomous Intersection Management Protocol for Heterogeneous Connected Vehicles*

Ashkan Gholamhosseinian (Technische Universität Ilmenau, Germany); Jochen Seitz (Technische Universität Ilmenau, Germany)

*Application of Multi-Hop Time Synchronization on a Network of AUVs Performing Lawn Mower Trajectory*

Ansa Shermin S and Sarang Dhongdi (Dept. of EEE, BITS Pilani K K Birla Goa Campus, Goa, India)

**Session 3B: Ubiquitous Computing and Sensor Networks**

*Dynamic Programming-Based Antenna Resource Allocation Algorithm for Wireless Powered Sensor Networks*

Mingfu Li, Guan-Yu Lu and Cheng-Bin Yao (Chang Gung University, Taiwan)

*Low Collision Random Access in Underwater Acoustic Sensor Network for Harbor Surveillance*

Sangman Han, Kwangyoung Chae and Hojun Lee (Hoseo University, Korea (South))

*Read-Rate Improvement in 920MHz RFID System with Circular-Polarized 2D Beam Scan R/W Antenna*

Yasushi Yamao and Sora Funayama (The University of Electro-Communications, Japan)

*Performance Verification of the Digital Archive Subsystem for Digital Twin-Based Disaster Management Platform*

Kisook Chung (ETRI, Korea (South))

**Session 3C: WLAN, WPAN, WBAN**

*Joint Optimization of Channel Allocation and AP Selection for WLAN with Multi-Priority Transmissions*

Xinwei Chen, Xiaofeng Zhong and Shidong Zhou (Tsinghua University, China); Jie Wei (Beijing Jiaotong University, China)

*Experimental Study of Data Network in Confined Space of Vessel: Opportunities and Challenges*

Woo-Sung Jung and Tae Hyun Yoon (ETRI, Korea (South)); Daeseung Yoo (Electronics and Telecommunications Research Institute, Korea (South))

*Throughput Satisfaction-Based Multi-Priority Channel Allocation with Channel-Switching for WiFi*

Xinwei Chen, Xiaofeng Zhong and Shidong Zhou (Tsinghua University, China); Jie Wei (Beijing Jiaotong University, China)

*Interference Cancellation in RIS-Assisted FD Relay Transmission*

Donghyeon Kim (AI and Robotics Tech Lab, Korea (South)); Wooyeol Choi and Chanjun Chun (Chosun University, Korea (South)); Yohan Kim (Dongseo University, Korea (South)); Yonggang Kim (Kongju National University, Korea (South))

**Thursday, July 6 1:30 - 2:50**

**Session 4A: Wireless and Communication Networks III**

***Performance Analysis According to Segment Length and Buffer Length in Adaptive Video Streaming***

Joon-Young Jung (ETRI, Korea (South))

***Joint Impact of Limited Fronthaul and Pilot Length on Payload Data Rate of Cell-Free Massive MIMO***

Sangwon Jo, Daesung Yu and Seok-Hwan Park (Jeonbuk National University, Korea (South))

***Multi-Tag Selection for IRS-Assisted Ambient Backscatter Communication Networks***

Jeong Woo Yoon, Junsu Kim and Su Min Kim (Tech University of Korea, Korea (South))

***Exploiting Impact of Eavesdropping Attacks on Secrecy Performance in WPT-Based Secure Multi-Hop Transmission***

Kyusung Shim (Hankyong National University, Korea (South)); Beongku An (Hongik University, Korea (South))

**Session 4B: e-Health**

***Recurrence Plot Based Person Identification with ECG Using CNN Model***

Yeong Jun Jeon, Cheolhwan Lee and Soon Ju Kang (Kyungpook National University, Korea (South))

***Smart Health Care Management System Diagnosis of Lungs Cancer***

Ahed Ahed Abugabah (Zayed University, United Arab Emirates); Farah Shahid (University of Agriculture, United Arab Emirates); Amjad Alafeef (Ministry Of Culture, United Arab Emirates & Amman, Jordan); Rizwan Khan (Zhejiang Normal University, China)

***A Study on Reducing Skin Irritation in Multi-Channel TES for Painless Force Feedback***

Jin-Woo Yu, Bomin Kim and Jinmo Kim (DGIST, Korea (South)); Han-Joon Kim (Kumoh National Institute of Technology, Korea (South)); Ji-Woong Choi (DGIST, Korea (South))

***Effect of En-Route Reassignment of Hospitals for Ambulances***

Junghoon Lee (Jeju University, Korea (South))

**Poster Session 1**

***Power Efficient Long Range IoT Communication of Wireless PPM System in ISM Band***

Md. Moklesur Rahman and Heung-Gyoon Ryu (Chungbuk National University, Korea (South))

***MICO: Multi-Agent Reinforcement Learning with Information-Based Curiosity-Driven Optimization***

Devarani Devi Ningombam (National Institute of Technology (NIT), Patna, India)

***Building a Metaverse for Transportation Systems: A Brief Review***

Judith Nkechinyere Njoku, Cosmas Ifeanyi Nwakanma and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

***Fast Locking Dual Band PLL for NB-IoT with QPSK Modulation***

Jaehyung Jung (Sungkyunkwan University & SKAIChips, Korea (South)); Kang-Yoon Lee (SKAIChips)

***Interference-Limited Multiuser Photon-Counting Channel with Incomplete Information: A Bayesian Game Approach for Optimum Transmission***

Sudhanshu Arya (Stevens Institute of Technology, USA & Pukyong National University, USA); Yeonho Chung (Pukyong National University, Korea (South)); Francisco Lopez Hernandez (CeDINt-UPM, Spain)

***Authentication and Access Control in Cloud-Based Systems***

Rajeshwari Gadathas Krishna Babu (Grisebachstrasse 7 Lutterterrasse & Sartorius Stedim Biotech)



GmbH, Germany); Aytaj Badirova (Georg-August-Universität Göttingen, Germany); Faraz Fatemi Moghaddam (GWDG - Georg-August-Universität Göttingen, Germany); Philipp Wieder (GWDG, Germany); Ramin Yahyapour (GWDG - University Göttingen, Germany)

***The Design of Medical Healthcare Digital Twin Reference Platform***

KangYoon Lee (Gachon University, Korea (South))

***Smart Block-Based Route Guidance Technology for the Visually Impaired***

Jong Gyu Hwang (Korea Railroad Research Institute, Korea (South))

***A Study on Safety Verification Methods and Procedures for Self-Driving Demonstration***

Daekug Lee, Dong Hoon Lee and Choong-Ho Cho (Korea University, Korea (South)); Eun Young Cho (DSC Regional Innovation Platform, Korea (South))

***Smart Healthcare Solution Using Digital Twin and IoT for Diabetic Retinopathy***

Kapil Sharma, Yashasvi Chahal and Ritika Tokas (Delhi Technological University, India)

***Bluetooth Low Energy-Based Adaptive Scheme for IoT Services***

Byeong-hee Roh, Gaoyang Shan and Geunkyung Choi (Ajou University, Korea (South))

***Service-Based Optimal Group Resource Allocation Strategy***

Chaeyeon Cha and Hyunggon Park (Ewha Womans University, Korea (South))

***Design and Implementation of a Low-Area Reconfigurable and Synthesizable Digital Loop Filter for ADPLL***

Nabeel Ahmad and Kang-Yoon Lee (Sungkyunkwan University, Korea (South))

***A Location Estimation Algorithm Combined with TDOA and TOA Considering Repeaters***

Seul-Bi Jeon, Heui-Seon Park, Tae-Ho Jo and Suk-seung Hwang (Chosun University, Korea (South))

***Cloud Native Architecture of Network Quality Characteristic Analysis System in Wired and Wireless Convergence Network*** □

Hyun-Soon Nam (Electrics and Telecommunications Research Institute, Korea (South)); Jin-Kyu Choi (ETRI, Korea (South)); Jongkuk Lee (Electronics and Telecommunications Research Institute, Korea (South)); HeaSook Park (ETRI, Korea (South))

***AUV-Aided Isolated Sub-Network Prevention for Underwater Wireless Sensor Networks***

Chandra Sukanya Nandyala (Kyungpook National University, Korea (South)); Ethungshan Shitiri (Universitat Politècnica de Catalunya, Spain); Ho-Shin Cho (Kyungpook National University, Korea (South))

***Real-Time Video-Based Point Cloud Encoding System on a Distributed Platform***

Yura Kim and Yonghwan Kim (Korea Electronics Technology Institute, Korea (South))

***ERT-Based Fetus Monitoring System Using Wearable Conductive Fabrics***

Anil Kumar Khambampati, Felipe Alberto S Sanchez, Minho Jeon and Kyung Youn Kim (Jeju National University, Korea (South))

***Streaming via SDN: Resource Forecasting for Video Streaming in a Software-Defined Network***

Syed Muhammad Ammar Hassan Bukhari, Afaq Muhammad and Wang-Cheol Song (Jeju National University, Korea (South))

***Development of Edge Camera System for Vehicle Detection System Using Local AI Optimizer Based on Minimum Network Resource***

Yun-Won Choi (Electronics & Telecommunications Research Institute, Korea (South)); Jang Woon Baek (Electronics and Telecommunications Research Institute, Korea (South)); Jinhong Kim (ETRI, Korea (South)); Lee Joon-Goo (Electronics and Telecommunications Research Institute, Korea (South))

***Smart Tourism Chatbot System Using Multi-Domain Tourism Information DST***

Jeong Woo Jwa (Jeju National University, Korea (South))

***Parallel Network Assisted Calibrated Beam Training for mmWave Communication Systems***

Jihyung Kim (ETRI, Korea (South)); Soyoung Yoo and Junghyun Kim (Sejong University, Korea (South))

***Voice AI IoT Model for Rescue Operations Among First Responders for Disaster Management***

Swarnamouli Majumdar (University of Massachusetts Lowell, USA); Sonny Kirkley and Mayur Srivastava (Indiana University, USA)

***5G Network Simulator for Network Caching***

Dongju Kim, Joonyoung Lim and Younghwan Yoo (Pusan National University, Korea (South))

***An Improved Residual Frequency Synchronization Method for Wireless Communication System***

Yong-An Jung, Sang-Bong Byun, Dong-Cheul Han, Soo-Hyun Cho and Sung-hun Lee (Gumi Electronics & Information Technology Research Institute, Korea (South)); Jaeuk Kwon (Gumi Electronics and Information Technology Research Institute, Korea (South))

***DeepASD: Facial Image Analysis for Autism Spectrum Diagnosis via Explainable Artificial Intelligence***

Hyebin Kang, Minuk Yang and Geun-Hyeong Kim (Chungbuk National University Hospital, Korea (South)); Tae-Soo Lee (Chungbuk National University, Korea (South)); Seung Park (Chungbuk National University Hospital, Korea (South))

## Thursday, July 6 3:00 - 4:20

### Session 5A: Wireless and Communication Networks IV

***A Novel Approach to Collision Avoidance in LoRa Networks***

Rao Muzamal Liaqat, Philip Branch and Jason But (Swinburne University of Technology, Australia)

***Scattering Matrix Design of Reconfigurable Intelligent Surface Based on Group Connected Impedance Network in MU-MIMO System***

Min-A Kim, Seung-Geun Yoo, Hyoung-Do Kim, Kyeong-Ho Shin and Hyoung-Kyu Song (Sejong University, Korea (South))

***NGUB: Novel Greedy Algorithms for User and Beam Selection in mmWave Networks***

Santosh Singh (Indian Institute of Technology (IIT) Bombay, India); Satyabrata Sahu, Ayushi Thawait and Prasanna Chaporkar (IIT Bombay, India); Gaurav S. Kasbekar (Indian Institute of Technology, Bombay, India)

***Applications of Deep Learning and Deep Reinforcement Learning in 6G Networks***

Tri-Hai Nguyen, Heejae Park, Kihyun Seol, Seonghyeon So and Laihyuk Park (Seoul National University of Science and Technology, Korea (South))

### Session 5B: IoT

***Privacy and Social Aware Hybrid Successive Relaying with Mixed Trustworthy Untrustworthy D2D Helpers***

Jie Wei (Beijing Jiaotong University, China); Jianjing Wei (Beijing Jiaoda Signal Technology Co Ltd, China); Shaoling Hu and Wei Chen (Tsinghua University, China)

***A Scheduling Method for Reducing Latency in Wi-SUN FAN Networks***

Hee-Jun Lee and Sang-Hwa Chung (Pusan National University, Korea (South))

***Composite Hazard Analysis of System of Systems for Mixed-Traffic Automation in Underground Mine*** □

Nazakat Ali and Sasikumar Punnekkat (Mälardalens University, Sweden)

***Signal of Opportunity Based TDOA Positioning Using Analog TV Signals***

Khaled Walid Elgammal (Istanbul Medipol University, Turkey); Berke Can Turan (Sivas University of Science and Technology, Turkey); Oğuz Bedir (Istanbul Medipol University, Turkey); Hasari Celebi (Gebze Technical University, Turkey); Mehmet Kemal Ozdemir (Istanbul Medipol University, Turkey)

### Poster Session 2

***An Efficient Microservices Architecture for MLOps***

Seol Roh (Kyung Hee University, Korea (South)); Ki-Moon Jeong and HyeYoung Cho (Korea Institute of Science and Technology Information, Korea (South)); Eui-Nam Huh (Kyung Hee University, Korea (South))

***Permanence Based Hidden Community and Graph Recovery in Social Networks***

Jaeyoung Choi (Gachon University, Korea (South))

***Self-Defined Protocols for Ubiquitous Networks***

Ichiro Satoh (National Institute of Informatics, Japan)

***Reduction of Beam Pointing Error on Free Space Optical Communication Links Using Tree Based Machine Learning Multi-Output Regression Model***

Nilesh Maharjan and Byung Wook Kim (Changwon National University, Korea (South))

***A Study on the Private 5G Frequency Allocation Process Using NFT Based on Smart Contract***

Won Seok Yoo and Won Cheol Lee (Soongsil University, Korea (South))

***Authorization and Interoperability in Access Control Systems***

Rajeshwari Gadathas Krishna Babu (Grisebachstrasse 7 Lutterterrasse & Sartorius Stedim Biotech GmbH, Germany); Aytaj Badirova (Georg-August-Universität Göttingen, Germany); Faraz Fatemi Moghaddam (GWDG - Georg-August-Universität Göttingen, Germany); Philipp Wieder (GWDG, Germany); Ramin Yahyapour (GWDG - University Göttingen, Germany)

***A Deep Learning-Based Spectral Efficiency Maximization in Multiple Users Multiple STAR-RISs Massive MIMO-NOMA Networks***

Ridho Hendra Yoga Perdana (Hongik University, Korea (South)); Toan-Van Nguyen (International University-VNU-HCM, Vietnam); Beongku An (Hongik University, Korea (South))

***On the Security of PACMAN: Privacy-Preserving Authentication Scheme for Managing Cyberwin-Based 6G Networking***

Myeonghyun Kim, Seunghwan Son and YoungHo Park (Kyungpook National University, Korea (South)); Kil-Houm Park (Kyungpook National University, Daegu, Korea, Korea (South))

***MCS Selection Based on Convolutional Neural Network in Mobile Communication Environments***

Eui-Rim Jeong, Jeong Eun Oh and A-Min Jo (Hanbat National University, Korea (South))

***A Study on the Production Management System for Analyzing Operator Errors and Manufacturing Data in the Assembly Process***

Sung-hun Lee, Yong-An Jung, Sang-Bong Byun, Dong-Cheul Han and Soo-Hyun Cho (Gumi Electronics & Information Technology Research Institute, Korea (South))

***Development of an Intelligent IoT Platform for PV Power Plant Monitoring and Control***

Ida Bagus Krishna Yoga Utama, Duc Hoang Tran and Muhammad Miftah Faridh (Kookmin University, Korea (South)); ByungDeok Chung (ENS. Co. Ltd., Korea (South)); Yeong Min Jang (Kookmin University, Korea (South))

***A Review on Multimodal Fusion Method for Gesture Recognition***

Dong Jae Lee (University MS Class & Kookmin University, Korea (South)); Sunwoong Choi (Kookmin University, Korea (South))

***A 1.4mW Sigma Delta ADC with Configurable Filter for Sensor Applications***

Mounika Phanidarapu, YoungGun Pu and Kang-Yoon Lee (Sungkyunkwan University, Korea (South))

***Adversarial Attack of ML-Based Intrusion Detection System on In-Vehicle System Using GAN***

Eunseong Seo, Jeongeun Kim, Wook Lee and Junhee Seok (Korea University, Korea (South))

***Challenges in Promoting IoT Ecosystem for a Government***

Wasinee Noonpakdee (Thammasat University, Thailand)

***CTC: Content-Aware Tailoring of Adaptive Video Streaming Using Multi-Head Critic Network***

Wangyu Choi and Jongwon Yoon (Hanyang University, Korea (South))

***A Study on Latency Prediction in 5G Network***

Seunghan Choi (Electronics and Telecommunications Research Institute, Korea (South)); Changki Kim (ETRI, Korea (South))

***Phase Noise Estimation in Full-Duplex Orthogonal Frequency Division Multiplexing Systems***

Fan-Shuo Tseng and Tsang-Yi Wang (National Sun Yat-sen University, Taiwan); Chun-Tao Lin (National Taipei University of Technology, Taiwan); Chun-Cheng Su (National Sun Yat-sen University, Taiwan)

***Link-Level Performance Evaluation of Sidelink Synchronization Signal Block for 5G V2X***

Daegun Jang, Subin Jo, Gayeon Kim, Jeonghoon Bae, Taejun Choi and Taehyoung Kim (Soonchunhyang University, Korea (South))

***Implementation of WebRTC-Based Hybrid Transmission System for 3D Visualization***

JungWook Wee, Minju Cho and Youn-Sung Lee (Korea Electronics Technology Institute, Korea (South))

***Performance of Double Reconfigurable Intelligent Surface Assisted Communication System***

Seung-Geun Yoo, Min-A Kim, Jin-Woo Kim, Sang-Wook Park and Hyoung-Kyu Song (Sejong University, Korea (South))

***Design of a FHIR Interface for Wearable Healthcare Devices***

Junghoon Lee (Jeju University, Korea (South))

***Soft-Error Injection System for Processor on FPGA Platform***

Jeahack Lee, Byung-Soo Kim, Kim Hyeonseong, Sihyeong Park and Hong Yun Pyo (Korea Electronics Technology Institute, Korea (South)); Seokhun Jeon (KETI, Korea (South))

***A 316.5nA Quiescent Current of DC-DC Converter with 92.8% Peak Efficiency for a IoT Application***

Juwon Oh (Sungkyunkwan University, Korea (South)); Jong Wan JO (University of Sungkyunkwan, Korea (South)); YeongHun Kim (Sungkyunkwan University, Korea (South)); Sung Jae Lee (SungKyunKwan University & SKAICHIPS Company, Korea (South)); YoungGun Pu (Sungkyunkwan University, Korea (South))

***VTD-XML Parsing Performance Optimization Based on Helper Thread Sampling Prefetching***

Jianxun Zhang, J. Zhang (Tianjin University of Technology and Education, China)

***GAN-Based Image-To-Image Translation of Fundus Photography: Topcon to Eidon***

Jaehan Joo (Pusan National University, Korea (South)); Jeongbin Seo (PUSAN National University, Korea (South)); Geonho Choi and Suk Chan Kim (Pusan National University, Korea (South))

## **Thursday, July 6 4:50 - 6:10**

### **Session 6A: Machine Learning and Computational Intelligence**

***In Search of Distance Functions That Improve Autoencoder Performance for Intrusion Detection***

Rémi Bouchayer and Jae Yun Jun Kim (ECE Paris, France); Hakima Chaouchi (Telecom Sud Paris-Institut Mines Telecom & CNRS SAMOVAR, France); Philippe Millet (Nexter Systems, France)

***A Robust Aggregation Approach for Heterogeneous Federated Learning***

Dost Muhammad Saqib Bhatti and Haewoon Nam (Hanyang University, Korea (South))

***A Hybrid System for Myocardial Infarction Classification with Derived Vectorcardiography***

Wen-Whei Chang (National Yang Ming Chiao Tung University, Taiwan)

***A Design of Lightweight Convolutional Neural Network Accelerator for IoT Devices***

Yeon-Seob Song and Kang-Yoon Lee (Sungkyunkwan University, Korea (South))

### **Session 6B: Computer Vision Applications**

***Deep Learning-Based Traffic Sign Identification Using Multi-Scale Feature Fusion***

Nikesh Devkota and Byung Wook Kim (Changwon National University, Korea (South))

***Smart Application for Real Time Detection: An Improved Lightweight Detector for Real-Time Vehicle Detection***

Ala Alsanabani (Xidian University, unknown); Ahed Abugabah (Zayed University, United Arab Emirates); Licheng Jiao (Xidian University, China)

***Depth-Aware Feature Pyramid Network for Semantic Segmentation***

Taehyeon Kim, Se-Ho Park and Kyung-Taek Lee (Korea Electronics Technology Institute, Korea (South))

***Traffic Accident Detection and Classification in Videos Based on Deep Network Features***

Zain Ul Arifeen, Jang-Eui Hong, Bo-Seok Seo and Jae-Won Suh (Chungbuk National University, Korea (South))

## Poster Session 3

***A Design of Phase Shifting Phase Locked Loop with Dual Loop Structure for Beamforming Application***

Nahyun Kim and KangYoon Lee (SKAIChips, Korea (South))

***Analysis on the CCI from PS-LTE and LTE-Railway: Arises During the LTE-Railway Osong Test Line***

Yongsoo Song (Korea Railroad Research Institute, Korea (South))

***Fairness-Aware Data Offloading in Wireless Body Area Networks with QoS Constraint***

Tri Gia Nguyen (FPT University, Vietnam); Amit Samanta (University of Utah, USA)

***Design of Lighting Data Platform for Realization of Natural Light Reproducing Lighting***

SeungTaek Oh, YangSoo Kim and JaeHyun Lim (Kongju National University, Korea (South))

***MDRM Pattern: Relational Heterogeneous Metadata Management Patterns in a Microservice Environment***

Dongmin Kim and Jaegi Son (Korea Electronics Technology Institute, Korea (South))

***ADMM-Based Channel Estimation Methods for Millimeter Wave MIMO System***

Prateek Saurabh Srivastav (Pukyong National University, Busan, South Korea, Korea (South)); Hoon Lee (Pukyong National University, Korea (South))

***A Novel LLR Scaling Factor Selection Using LDL Bayes Classifier***

Seunghun Yu (Samsung Electronics, Korea (South)); Kwon. Y Park (Samsung Electronics Co., Ltd., Korea (South)); Jongmin Cho and Kyusuk Mo (Samsung Electronics, Korea (South)); Si Chang No (Samsung, Korea (South)); Min-ho Shin (Samsung Electronics, Korea (South))

***Channel Learning Based Relay Selection in Underwater Acoustic Sensor Network***

SeungHwan Seol, Yongcheol Kim, Bonggyu Park and Jaehak Chung (Inha University, Korea (South))

***NAPA: The Model Compression with Knowledge Distillation for Mobile Edge Computing Devices***

Hyeon Ki Jo (ICNS Lab & Kyung Hee Uni, Korea (South)); Yuri Seo and Eui-Nam Huh (Kyung Hee University, Korea (South))

***System Design for Determining the Optimal Pig Shipping Time Using Prediction Model***

Jinwook Jang, Jong Hee Lee and Gi Pou Nam (Agricultural Cooperative Univ, Korea (South)); Sung Ho Lee (Hohyun, Korea (South))

***Deep Learning Based RS-OFDM Scheme Considering Mobility Environment for Optical Camera Communication System***

Huy Nguyen (Kookmin University, Korea (South)); ByungDeok Chung (ENS. Co. Ltd., Korea (South)); Yeong Min Jang (Kookmin University, Korea (South))

***Topology Control of an Unmanned Aerial Vehicle in 3D Network***

Sang-Chul Kim and Jabborov Akmaljon (Kookmin University, Korea (South))

***Federated Learning Using Blockchain-Based Marketplace***

Boyun Eom, Sunhwan Lim, Young-Ho Suh and Sungpil Woo (ETRI, Korea (South)); Chan-Won Park



(Electronics and Telecommunications Research Institute, Korea (South))

***Toward a Dynamic Tasks Offloading and Resource Allocation for the Metaverse in In-Network Computing***

Ibrahim Aliyu, Seungmin Oh, Sangwon Oh, Hyeju Shin, Kwang-moo Chung and Tai-Won Um (Chonnam National University, Korea (South)); Young-Ae Jung (Sun Moon University, Korea (South)); Minsoo Hanh (Astana IT University, Kazakhstan); Jinsul Kim (Chonnam National University, Korea (South))

***Provision of Defense 5G Mobile Communication Services Using Commercial Radio Access Network and Wireless Backhaul***

Jin-Kyu Choi (ETRI, Korea (South)); Hyun-Soon Nam (Electrics and Telecommunications Research Institute, Korea (South)); Jongkuk Lee (Electronics and Telecommunications Research Institute, Korea (South)); HeaSook Park (ETRI, Korea (South))

***Delay in Underwater Acoustic Networks***

Andrej Stefanov (IBU Skopje, Macedonia, the former Yugoslav Republic of)

***Overcoming Wireless Channel Modeling and Relay Signal Selection via Artificial Intelligence Techniques in the 5G and Beyond***

Saud Alhajaj Aldossari (Vice Dean of Engineering College, Saudi Arabia & PSA University, Saudi Arabia); Abdallah Aldosary (Prince Sattam bin Abdulaziz University, Saudi Arabia); Kwang-Cheng Chen (University of South Florida, USA)

***DNN-Based CSI-RS Port Virtualization Matrix Design in Massive MIMO System***

Dongheon Lee (Yonsei, Korea (South)); Seongyeop Joung (School of Electrical and Electronic Engineering, Yonsei University, Korea (South)); Sooyong Choi (Yonsei University, Korea (South))

***CNN-Based DMRS Pattern Optimization for 5G Vehicle-To-Everything Communications***

Gayeon Kim, Taejun Choi, Jeonghoon Bae, Daegun Jang and Taehyoung Kim (Soonchunhyang University, Korea (South))

***Radio Sensor Detection of Interference to Satellite Earth Station in Frequency Spectrum Sharing***

Takatoshi Obata and Osamu Takyu (Shinshu University, Japan)

***Channel Estimation with DnCNN in Massive MISO LEO Satellite Systems***

Min Jeong Kang (Hankuk University of Foreign Studies, Korea (South)); Seong Ho Chae (Tech University of Korea, Korea (South)); Jung Hoon Lee (Hankuk University of Foreign Studies, Korea (South))

***Towards Enhancing Cyber Security Awareness Using Gamification Escape Room***

Basil Y Alothman (Kuwait College of Science and Technology (KCST), Kuwait); Khaznah Al-Khulifa, Reem Al-Shammari and Chibli C. Joumaa (Kuwait College of Science and Technology, Kuwait); Murad Khan (Kyungpook National University & Sarhad University of Science and Technology, Korea (South))

***Power Control Scheme for NOMA Random Access with Imperfect SIC***

Seok-Ju Byun and Ye Hoon Lee (Seoul National University of Science and Technology, Korea (South))

***Study on the Vulnerability of Video Retargeting Method for Generated Videos by Deep Learning Model***

Aro Kim, Dong-hwi Kim and Sang-hyo Park (Kyungpook National University, Korea (South))

***Structured Medical Dataset Analysis Tool Based on ChatGPT***

JinCheol Park (Chungbuk National University Hospital, Korea (South)); Ja-Hyun Nam and Jee-Woo Choi (Mediv Corp., Korea (South)); Yong-Goo Shin (Korea University, Korea (South)); Seung Park (Chungbuk National University Hospital, Korea (South))

***Design of Precision Medicine Web-Service Platform Towards Health Care Digital Twin***

Shivani Sanjay Kolekar, Chen Haoyu and Kyungbaek Kim (Chonnam National University, Korea (South))

**Friday, July 7 9:40 - 11:00**

**Session 7A: Wireless and Communications Networks V**

***Route Planning of Fixed-Wing Unmanned Aerial Vehicles for Maritime Communication Coverage***

Jingwei Li, Xiaofeng Zhong and Shidong Zhou (Tsinghua University, China); Xuemeng Gong and Jie Wei (Beijing Jiaotong University, China)

***Optimization of Degree Distribution for Layer-Aligned Multipriority Rateless Codes Based on Safety Criteria of Ripple***

Lien-En Hung, Chun-Kuan Lee and Hsu-Feng Hsiao (National Yang Ming Chiao Tung University, Taiwan)

***Broadcasting in Chains of Rings***

Narek Hovhannisyian, Hovhannes A Harutyunyan and Edward Maraachlian (Concordia University, Canada)

***A Dynamic Reinforcement Learning Scheme for UAV-Based Joint Communication and Radar Systems***

Soo Yeon Woo, Su Min Kim and Junsu Kim (Tech University of Korea, Korea (South))

## **Session 7B: 6G, 5G, PS-LTE, LTE-R, LTE-Advanced**

***Efficient Throughput Degradation Prediction in Telco Networks Using Anomaly Detection***

Rajiv Ranjan Sinha, Satish K Kolli, Sumit Soman and Koti Prasanna Maddala (Ericsson, India)

***On the Optimization of User Allocation in Heterogeneous 5G Networks Using DUDe Techniques***

Konstantinos Tsachrelis (University of Patras, Greece); Apostolos Gkamas (University Ecclesiastical Academy of Athens); Chrysostomos Athanasios Katsigiannis, Christos J Bouras and Vasileios Kokkinos (University of Patras, Greece); Philippos Pouyioutas (University of Nicosia, Cyprus)

***Lightweight AP Selection Algorithm for Uniform Quality Everywhere in Cell-Free Massive MIMO***

Akio Ikami, Yu Tsukamoto, Naoki Aihara, Takahide Murakami and Hiroyuki Shinbo (KDDI Research, Inc., Japan)

***Self-Similarity of Traffic Within a 5G Standalone Network***

Bryan Martin, Jacob G Snyder and Chad A Bollmann (Naval Postgraduate School, USA)

## **Poster Session 4**

***5G URLLC Evolving Towards 6G: Research Directions and Vision***

Gweondo Jo and JaeSheung Shin (ETRI, Korea (South)); Sung-Min Oh (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

***A Survey of Deep/Machine Learning in Maritime Communications***

Shrutika Sinha (Kookmin University, Seoul, South Korea, Korea (South)); Soo-Hyun Park (Kookmin University, Korea (South)); Soo Yeon Kwon (Korea Maritime Transportation Safety Authority, Korea (South))

***Image Reconstruction Based on Deep Learning for Industrial Defect Detection***

Ning Zhang (YD AI Solution Institute, Korea(South)); Seong-Geun Kwon (Kyungll University, Korea (South)); Ryong Jong Choi (YD AI Solution Institute, Korea (South))

***Development of Edge AI Device Platform for Application Developer***

SungJae Yoon and Seung Hyub Jeon (ETRI, Korea (South))

***Design and Implementation of Autonomous Collaboration Service Between IoT Using Distributed Platform***

Chang Su Lee (KOREA Univ, Korea (South)); U Seok Ji (RIWHA Networks co., Korea (South)); Mi Hyang Jeon (RIWHA Network co., Korea (South))

***Selective TSCH Autonomous Cell Scheduling Techniques Depending on the Power Supply***

Jeongbae Park and Sang-Hwa Chung (Pusan National University, Korea (South))

***Airy YOLOv5 for Disabled Sign Detection***

Akhrorjon Akhmadjon Ugli Rakhmonov and Barathi Subramanian (Kyungpook National University,

Korea (South)); Taehun Kim (Dipvision Corporation, Korea (South)); Jeonghong Kim (Kyungpook National University, Korea (South))

***Extended U-Net for Satellite Image Semantic Segmentation***

Jin Won Jung and Yoan Shin (Soongsil University, Korea (South))

***Relay Communication with Phase Dithering and Intentional Delay in SC-FDE Systems***

Eui-Rim Jeong, Min-A Lee and Yu-ra Heo (Hanbat National University, Korea (South)); Oh Hyuk Jun (Kwangwoon University, Korea (South))

***Low-Complexity Optimization for Two-User Uplink NOMA Empowered by a Large Intelligent Reflecting Surface***

Luiggi Cantos and Yun Hee Kim (Kyung Hee University, Korea (South))

***Low-Complexity Anomaly Detection Method Based on Feature Importance Using Shapley Value***

JooHong Rhee and Hyunggon Park (Ewha Womans University, Korea (South))

***DopeNet: Range-Doppler Radar-Based UAV Detection Using Convolutional Neural Network***

Ali Aouto, Taesoo Jun, Jae Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

***Computational Complexity Analysis of Beamspace Transformation for Dual Array Antennas***

Tae-yun Kim and Suk-seung Hwang (Chosun University, Korea (South))

***Design of a Fault Detection Circuit for One-Time Programmable Memories for Reducing Time***

Hye Hyun Lee and Kang-Yoon Lee (Sungkyunkwan University, Korea (South))

***A Solar Tracking System Using Feedback Controller and State Estimation Filter***

Pyung Soo Kim and Su Yeol Kim (Tech University of Korea, Korea (South))

***The Role of Microservices in the Internet of Things: Applications, Challenges, and Research Opportunities***

Md. Delwar Hossain, Tangina Sultana, Ga-Won Lee and Eui-Nam Huh (Kyung Hee University, Korea (South))

***Credit Card Default Prediction by Using Heterogeneous Ensemble***

Wook Lee (Korea University, Korea (South)); Sangmin Lee (Kwangwoon University, Korea (South)); Junhee Seok (Korea University, Korea (South))

***Deep Learning Image Analysis System on Embedded Platform***

Hyok Song, In Kyu Choi and Min-Soo Ko (Korea Electronics Technology Institute, Korea (South)); Jisang Yoo (Kwangwoon University, Korea (South))

***Noise-Robust Pipe Wall-Thinning Detection System Using Deep Learning***

Jae Han Park (Kumoh National Institute of Technology, Korea (South)); Hun Yun and Jae Seong Im (KEPCO Engineering & Construction, Korea (South)); Munkyu Choi and Soo Young Shin (Kumoh National Institute of Technology, Korea (South))

***Efficient Design and Implementation Method to Reduce NR-Based gNB Transmitter Development Time***

Chan-Bok Jeong (Electronics and Telecommunications Research Institute (ETRI) & Chungbuk National University, Korea (South)); Hyungsik Ju (ETRI, Korea (South)); Youngil Jeon and Moon-Sik Lee (Electronics and Telecommunications Research Institute, Korea (South))

***SWIPT-Based Routing Protocol for Lifetime Extension of Wireless Sensor Networks***

Gyoungmin Been, Su Min Kim and Junsu Kim (Tech University of Korea, Korea (South))

***A Study on Indoor Positioning Algorithm Using a Decision Tree Model in UWB Environment***

Ho Chul Lee and Dong Myung Lee (Tongmyong University, Korea (South))

***Determination of ICT Technology Prioritization to Vitalize the e-Healthcare Industry***

Geunhye Song (Electronics and Telecommunications Research Institute, Korea (South)); Eok-soo Han



(ETRI, Korea (South)); Hongil Lee (IPI Inc., Korea (South)); Sojin Yu (Korea Intellectual Property Strategy Agency, Korea (South))

***A Study on Asset Identification in Smart Buildings Automation Systems***

Minsu Park and Seong-je Cho (Dankook University, Korea (South)); Hongeun Kim (Dongkuk University, Korea (South))

***Performance Evaluation of Transport Protocols and Roadmap to a High-Performance Transport Design for Immersive Applications***

Inayat Ali (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

***Predicting Heart Failure Prognosis Using Deep Learning Based on FT-Transformer***

Geunho Kim, Minuk Yang, Geun-Hyeong Kim and Seonghwan Eom (Chungbuk National University Hospital, Korea (South)); Tae-Soo Lee (Chungbuk National University, Korea (South)); Seung Park (Chungbuk National University Hospital, Korea (South))