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ICTC 2025

THE 16th INTERNATIONAL CONFERENCE ON ICT CONVERGENCE

Final Program

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Message from the Chairs

With great pleasure, we would like to welcome you to the 16th International Conference on Information and Communication Technology Convergence (ICTC 2025) being held in Jeju Island, Korea. ICTC 2025 is the representative international conferences in the area of ICT convergence organized by the Korean Institute of Communications and Information Sciences (KICS) with technical co-sponsorship of IEEE Communication Society and IEICE Communications Society, and patronized by leading ICT companies, organizations, and government including Ministry of Science and ICT, ETRI, IITP, JTO, Samsung Electronics, LG Electronics. SK Telecom, LG U+, Huawei, and KT. ICTC 2025 features an extremely rich program with the main theme of "AI-native ICT Convergence for a sustainable future." The attendees will have the opportunity to associate with the world's most distinguished industry leaders, researchers, government officials, and academia professionals in the areas of next mobile networks, 6G issues and challenges, AI-based technologies for networking and communications, satellite communications, wireless communications, networks, machine learning, convergence, IoT, mobility, future ICT services and their enablers, computing-networking convergence, quantum and neural technology, and new ICT paradigms and concepts.

During ICTC 2025, distinguished keynote speeches will be delivered by highly prominent experts from Electronics and Telecommunications Research Institute (ETRI), Samsung Electronics, VIAVI Solutions, Massachusetts Institute of Technology, Khalifa University, Nokia Bell Labs, KT, and Qualcomm. The industrial experts of Huawei Korea, Erudio Bio, Inc., Id Quantique Ltd., IonQ, Mobilint, TU Berlin / Fraunhofer FOKUS, Nokia Korea, and Thales Alenia Space France will deliver their talks. Moreover, special experts of Yonsei University, KU Leuven, Incheon National University and Kangpole Co., Ltd., Manchester Met, Sungkyunkwan University, University of Calgary, Korea University, Singapore University of Technology and Design, DGIST, North Carolina State University, The Ohio State University, POSTECH, Imperial College London, SoftBank Corp., and Futurewei Technologies will give talks in different sessions.

The Technical Program is structured to five tracks: the Main Track, the Workshop Track, and three Special Tracks, namely AI, S6GC, and SCSS. In total, the program features 91 sessions encompassing 734 papers. These sessions include: 60 technical oral sessions, 4 industry sessions (with 8 invited talks), 13 special sessions (with 16 invited talks), 11 poster sessions, and 3 plenary sessions (with 8 plenary talks).

The program covers a broad range of topics concerning recent advances in information and communication technology convergence. Key areas of focus include: Artificial Intelligence, Wireless Networks, IoT, Convergence, Mobility, 6G fundamental technologies, 6G RAN, 6G Mobile Core, 6G Commercialization R&D, Computer Vision and Image Processing, Deep Learning Applications, AI

Message from the Chairs

communications and networks, AI/6G Convergence, Satellite Communications, Big Data, Cloud and Edge Computing, Military Informatics, Integrated Sensing and Communications, Quantum computing and communications, and Emerging Technologies.

We cordially invite you to join us in Jeju Island from October 14th to 17th for this premier ICT event. We sincerely look forward to your participation in ICTC 2025!

Jun Heo
President of KICS

Seung-Hoon Hwang
Vice President of KICS

Yongsoon Baek
Organizing Committee Chair

Byonghyo Shim
Technical Program Chair

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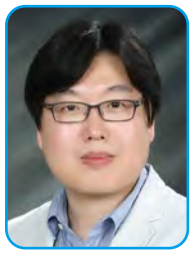


In-Ho Lee
SCSS Special Track Technical Program Chair

Sungtek Kahng
SCSS Special Track Technical Program Chair

Program at a Glance

October 14th (Tuesday)

Room	Crystal 1	Crystal 2	Crystal 3	Charlotte	Pearl	Ruby	Emerald	Foyer
12:00~17:00	Registration							
13:10~14:40 (90min)	SPC Special Session I: 6G Radio Technologies Chair: Dr. Jungsook Bae (ETRI, Korea) • **Invited Talk 1:** Chan-Byoung Chae, Underwood Distinguished Professor, Yonsei University, "The Tri-hybrid MIMO Architecture: From Theory to Prototype" • **Invited Talk 2:** Sofie Pollin, Professor, Ku Luven, "Massive Data-driven Integrated Communication and Sensing"	A01 Wireless Communications 1 Yonggang Kim (Kongju National Univ.)	B01 [AIPC] Vision-Language and Generative AI for Perception Joongheon Kim (Korea Univ.)	C01 Special Session on Korea University WDM QKD Sunghyun Bae (Sejong Univ.)	D01 Junior Faculty Session In-tae Hwang (Chonnam National Univ.)	E01 Workshop on 6G Radio & Link Adaptation Sang-Woon Jeon (Hanyang Univ.)	F01 Machine Learning 1 Hyejin S. Kim (ETRI)	P01 [AIPC] Interactive Session 1 Youn Kyu Lee (Chung-Ang Univ.)
14:40~15:00	Coffee Break							
15:00~16:30 (90min)	Plenary Session I: Opening Ceremony and Keynote Speeches (Crystal 1) Chair: Prof. Byonghyo Shim (Seoul National University, Korea, TPC Chair of ICTC 2025) • **Opening Address:** Prof. Jun Heo, President of KICS • **Congratulatory Address:** Prof. Yukitoshi Sanada, President of IEICE-CS • **Keynote Speech 1:** Myuhng Joo Kim, Executive Director, Korea AISI (AI Safety Institute), "AI Safety Ecosystem for Successful AI Transition and Sustainable Growth" • **Keynote Speech 2:** Joonsuk Kim, Executive Vice President, Samsung Electronics, "In-House Edge AI: Redefining Connectivity for the Hyper-Personalized Future"							
16:30~16:50	Coffee Break							
16:50~18:20 (90min)	SPC Special Session II: Non-Terrestrial Networks Chair: Prof. Hyowoon Seo (Sungkyunkwan Univ., Korea) • **Invited Talk 3:** Sungtek Kahng, Professor and CEO, Incheon National University and Kangpole Co., Ltd., "Satellite Non-Terrestrial Networks: past present and future challenges" • **Invited Talk 4:** Aryan Kaushik, Associate Professor, Manchester Met, UK, "6G Non-Terrestrial Networks for Ubiquitous Connectivity" • **Invited Talk 5:** Riccardo De Gaudenzi, Freelance consultant, "Satellite Non-Terrestrial Networks: past present and future challenges"	A02 Wireless Communications 2 Jihoon Moon (Seoul National Univ.)	B02 [AIPC] Explainable Language AI Seungcheol Oh (Korea Univ.)	C02 ICTC Workshop on Intelligent 6G Systems Hoon Lee (UNIST)	D02 ICT workshop of big data, CPs, and 5G&6G communication networks (IWBCN) I Woongsoo Na (Kongju National Univ.)	E02 ICTC Workshop on Wireless Application Seung-Hoon Hwang (Dongguk Univ.)	F02 ICT Convergence 1 Seunghyun Park (Hansung Univ.)	P02 [Main Track] Interactive Session 2 Woo Sungpil (Hanbat National Univ.)

October 15th (Wednesday)

Room	Crystal 1	Crystal 2	Crystal 3	Charlotte	Pearl	Ruby	Emerald	Foyer
08:00~17:00	Registration							
08:30~10:00 (90min)	SPC Special Session III: 6G Radio Techologies Chair: Prof. Wonjae Shin (Korea Univ., Korea) • **Invited Talk 6:** Kaewon Choi, Professor, "Fundamentals and Trends of Integrated Sensing and Communication (ISAC) Technologies for 6G" • **Invited Talk 7:** Hatem-Abou Zeid, Professor, University of Calgary, "6G Foundation Models: The Next Frontier for AI-Native Networks"	A03 Machine Learning 2 Insoo Sohn (Dongguk Univ.)	B03 [AIPC] AI-Driven Resource Optimization and Time-Series Forecasting Soyi Jung (Ajou Univ.)	C03 ICTC Workshop on Artificial Intelligence and Applications (IWAIA) Md. Abdul Latif Sarker (Kyungpook National Univ.)	D03 ICTC Workshop on Open AI-RAN (IWORAN) I DongKu Kim (Yonsei Univ.)	E03 ICTC Workshop on 3D communication networks (IW3DCN) Jihwan Choi (KAIST)	F03 [S6GC]NTN Junhwan Lee (ETRI)	P03 [AIPC] Interactive Session 3 Hyosu Kim (Chung-Ang Univ.)
10:00~10:20	Coffee Break							
10:20~11:50 (90min)	SPC Special Session IV: 6G AI-native Networks Chair: Prof.Namyoon Lee (POSTECH, Korea) • **Invited Talk 8:** Tony Quek, Associate Provost and Professor, Singapore University of Technology and Design, "From Theory to Practice in 6G AI-Native Network" • **Invited Talk 9:** Joongheon Kim, Associate Professor, Korea University, "Quantum Machine Learning: Algorithms and ICT Convergence Applications"	A04 Wireless Communications 3 Hyun Jong Yang (Seoul National Univ.)	B04 [AIPC] AI for Networks and Autonomous Systems Soyi Jung (Ajou Univ.)	C04 ICTC Workshop on Artificial Intelligence and Applications (IWAIA) II MyungSun Baek (Sejong Univ.)	D04 ICT workshop of big data, CPs, and 5G&6G communication networks (IWBCN) II Laihyuk Park (Seoul National Univ. of Science and Technology)	E04 ICTC Special Session on Network Softwarization Sangheon Pack (Korea Univ.)	F04 [S6GC]Korea Telco 6G Jungsook Bae (ETRI)	P04 [S6GC] Interactive Session 4 Hewon Cho (ETRI), Mingun Kim (ETRI)

Program at a Glance

October 15th (Wednesday)

Room	Crystal 1	Crystal 2	Crystal 3	Charlotte	Pearl	Ruby	Emerald	Foyer
11:50~13:10	Lunch							
13:10~14:40 (90min)	**Industrial Session I** Chair: Prof. Hyosoo Kim (Chung-Ang Univ., Korea) • **Invited Talk 1:** Yun Hong Ju, Executive Solution Manager, Huawei Korea, "Mobile AI Era, Building Intelligent Connection to Enable AI Everywhere" • **Invited Talk 2:** Sunghee Yun, Co-Founder & CTO, Erudio Bio, Inc., "Convergent AI Innovation - From Protein Folding Breakthroughs to Agentic AI for Sustainable Future"	**A05** **Network & Systems 1** Junsu Kim (Tech Univ. of Korea)	**B05** **[AIPC] Generative AI and LLMs** Yeonwoong Kyung (Seoul National Univ. of Science and Technology)	**C05** **Workshop on Core Networks, NWDAF & Slicing** Hyeonho Noh (Hanbat National Univ.)	**D05** **ICT workshop of big data, CPs, and 5G&6G communication networks (IWBCN) III** Sungrae Cho (Chung-Ang Univ.)	**E05** **ICTC Workshop on Intelligent Secure Underwater Communications (IWISUC)** Namyoon Lee (POSTECH)	**F05** **[S6GC]Opening Ceremony** Hyowoon Seo (Sunggunkwan Univ.)	**P05** **[Main Track] Interactive Session 5** Sang-Hyo Kim (Sungkyunkwan Univ.)
14:40~15:00	Coffee Break							
15:00~16:30 (90min)	**Plenary Session II: Keynote Speeches (Crystal 1)** Chair: Dr. Namseok Ko (ETRI, Korea) • **Keynote Speech 3:** Sameh Yamany, SVP and Chief Technology Officer, VIAVI Solutions, "6G Digital Twin: The AI revolution for innovative 6G applications" • **Keynote Speech 4:** Moe Z. Win, Robert R. Taylor Professor, Massachusetts Institute of Technology (MIT), "Quantum Nexus for Sensing, Communication, Control, and Computing" • **Keynote Speech 5:** Mérouane Debbah, Professor, Director of the KU 6G Center, Khalifa University, "Pioneering Intelligent Connectivity for the Future of Generative AI"							
16:30~17:30	**Best Paper Award (Photo Zone)**							
17:30~19:30 (120min)	**Banquet (Crystal 1, 2, 3)** • **Welcome Address:** Dr. Yongsoon Baek, OC Chair of ICTC 2025 • **TPC Report:** Prof. Byunghyo Shim, TPC Chair of ICTC 2025 • **Awards Ceremony** • **Banquet Performance** (Atila Jun)							

October 16th (Thursday)

Room	Crystal 1	Crystal 2	Crystal 3	Charlotte	Pearl	Ruby	Emerald	Foyer
08:00~17:00	**Registration**							
08:30~10:00 (90min)	**SPC Special Session V: Connected Robots** Chair: Prof. Howon Lee (Ajou Univ., Korea) • **Invited Talk 10:** Ji-Woong Choi, Professor, DGIST, "Future in-vehicle networking (IVN) technologies for connected and autonomous driving" • **Invited Talk 11:** Ismail Guvenc, Professor, North Carolina State University, "AERPAW and Its Digital Twin for Supporting AI Research with Autonomous Vehicle Networks" • **Invited Talk 12:** Aylin Yener, Roy and Lois Chope Professor, The Ohio State University, "Connecting with Purpose for 6G and Beyond"	**A06** **Machine Learning 3** Intae Hwang (Chonnam National Univ.)	**B06** **[AIPC] AI and Quantum Approaches for Communication** Soohyun Park (Sookmyung Women's Univ.)	**C06** **[S6GC]Mobile Core** Yeonwoong Kyung (Seoul National Univ. of Science and Technology)	**D06** **ICTC Workshop on Super connected and collaborated unmanned autonomous mobility (IWSUMIMIT)** JungWoo Sohn (Kumoh National Institute of Technology)	**E06** **Workshop on AI for Sensing, Vision & Edge** Simeon Okechukwu Ajakwe (Kumoh National Institute of Technology)	**F06** **[SCSS] Technical Session 1** In-Ho Lee (Hankyong National Univ.)	**P06** **[Main Track] Interactive Session 6** Seungnyun Kim (MIT)
10:00~10:20	Coffee Break							
10:20~11:50 (90min)	**Industrial Session II** Chair: Dr. Younghee Kim (NIA, Korea) • **Invited Talk 3:** Sangyun Uhm, CEO, Id Quantique Ltd., "Building Quantum-Resilient Networks with Quantum-Safe Technologies" • **Invited Talk 4:** Philip Farah, VP, IonQ, "Quantum Computing Meets Networking: The Infrastructure of a Quantum-Enabled Economy"	**A07** **Network & Systems 2** Jaehoon Paul Jeong (Sungkyunkwan Univ.)	**B07** **[AIPC] (6G Global ITRC) 6G and AI** Kyoungjae Lee (Chung-Ang Univ.)	**C07** **[S6GC]Radio and Components** Jung Hwan Hwang (ETRI)	**D07** **ICTC Workshop on Hanyang Univ Beyond-G Center** Hyeong-Gun Joo (Hanyang Univ.)	**E07** **ICTC Workshop on intelligent mobility system and security (IWIMISS)** Jiwoong Choi (DGIST)	**F07** **[SCSS] Opening Ceremony & Keynotes** Sungtek Kahng (Incheon National Univ.)	**P07** **[S6GC] Interactive Session 7** Heechul Yang (Chungnam National Univ.), Nam I Kim (ETRI)
11:50~13:10	Lunch							

Program at a Glance

October 16th (Thursday)

Room	Crystal 1	Crystal 2	Crystal 3	Charlotte	Pearl	Ruby	Emerald	Foyer
13:10~14:40 (90min)	**Plenary Session III: Keynote Speeches (Crystal 1)** Chair: Prof. Seung-Hoon Hwang (Dongguk University, Korea) • **Keynote Speech 6:** John Smee, Senior Vice President, Qualcomm, "Designing 6G: Pioneering Intelligent Connectivity for Tomorrow" • **Keynote Speech 7:** Kyung-A Yoon, SVP, Head of Agentic AI Lab, KT, "From Architecture to Application : The Rise of AI Agents" • **Keynote Speech 8:** Harish Viswanathan, BL fellow, Head of Radio Systems Research, Nokia Bell Labs, "Future of Mobile: Extreme Connectivity, AI-Native and Beyond Communications"							
14:40~15:00	Coffee Break							
15:00~16:30 (90min)	**SPC Special Session VI: 6G Technologies: AI & Semantic Communications** Chair: Yongjune Kim (POSTECH, Korea) • **Invited Talk 13:** Yo-Seb Jeon, Associate Professor, POSTECH, "Towards Realizing Digital Semantic Communications: Challenges and Potential Solutions" • **Invited Talk 14:** Deniz Gündüz, Professor, Imperial College London, "Pragmatic Communications"	**A08** **Machine Learning 4** Taesoo Jun (Kumoh National Institute of Technology)	**B08** **Network & Systems 3** Junseon Kim (The Catholic Univ. of Korea)	**C08** **[S6GC]RAN** YoungJo Ko (ETRI)	**D08** **Special Session on Korea University Quantum Internet** Youngchai Ko (Korea Univ.)	**E08** **Special Session on 6H Next-Generation Mobile Communications** Een-Kee Hong (Kyung Hee Univ.)	**F08** **[SCSS] Technical Session 2** Pansoo Kim (ETRI)	**P08** **[SCSS] Interactive Session 8** Heejung Yu (Korea Univ.), Sunghwan Cho (Korea Military Academy)
16:30~16:50	Coffee Break							
16:50~18:20 (90min)	**Industrial Session III** Chair: Prof. Bang Chul Jeong (Ajou Univ., Korea) • **Invited Talk 5:** Dongjoo Shin, CEO, Mobilint, "Key Enabler of the AI Era: AI Chips as Infrastructure" • **Invited Talk 6:** Thomas Magedanz, University Professor, TU Berlin / Fraunhofer FOKUS, "Open 6G Research Infrastructures and Toolkits enabling an 'Open 6G for all'"	**A09** **Network & Systems 4** Yo-Seb Jeon (POSTECH)	**B09** **Security 1** Jeong Seon Yeom (Hankyong National Univ.)	**C09** **ICTC Workshop on 6G Core Network** Yun Won Chung (Soongsil University)	**D09** **ICTC Workshop on Next Generation Channel Coding and Its Applications (IWNGCCA)** Sang-Hyo Kim (Sungkyunkwan Univ.)	**E09** **ICTC Workshop on 6G RI with AI** Kyunghan Lee (Seoul National Univ.)	**F09** **ICTC Workshop on ETRI Human Understanding AI Paper Challenge (IWETRIAI)** Hyun-Tae Jeong (ETRI)	**P09** **[Main Track] Interactive Session 9** Taesoo Jun (Kumoh National Institute of Technology)

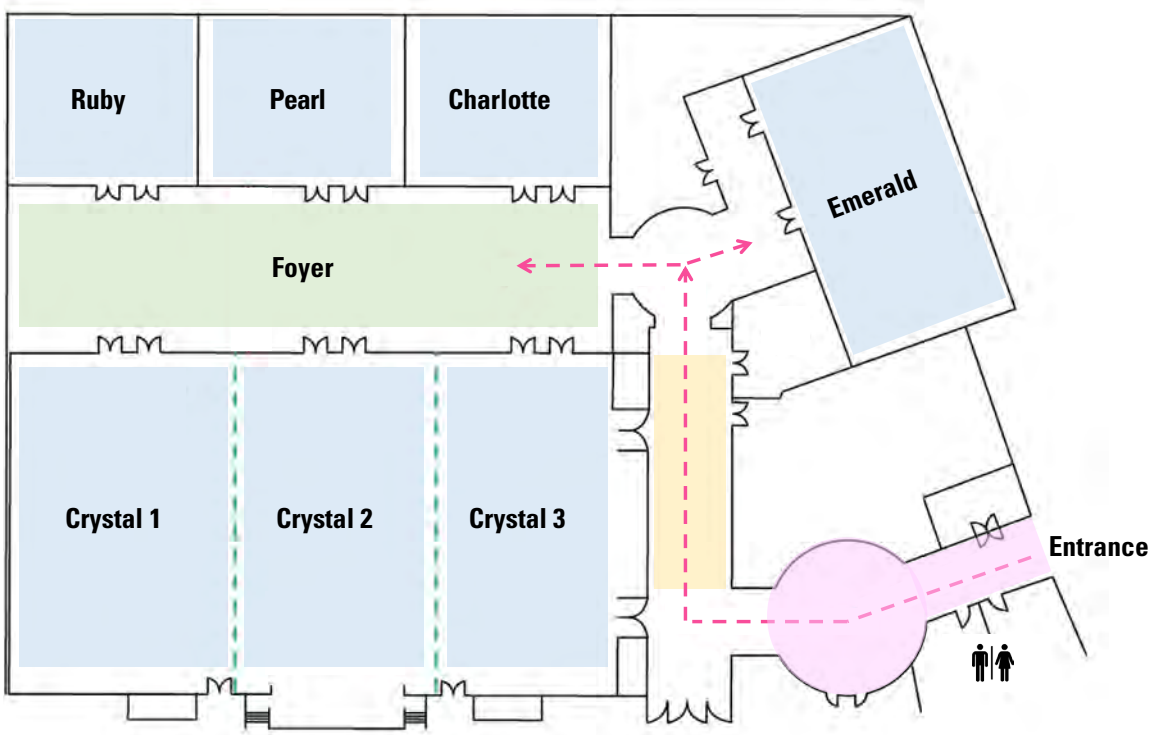
October 17th (Friday)

Room	Crystal 1	Crystal 2	Crystal 3	Charlotte	Pearl	Ruby	Emerald	Foyer
08:00~17:00	**Registration**							
08:30~10:00 (90min)	**SPC Special Session VII: Telco Cloud Networks** Chair: Prof. Howon Lee (Ajou Univ., Korea) • **Invited Talk 15:** Satoru Matsushima, Technical Meister, SoftBank Corp., "Transforming Mobile Networks with Internet-Architecture Principles: SRv6 Mobile User Plane for Scalable 5G & Edge Innovation" • **Invited Talk 16:** Linda Dunbar, Distinguished Engineer, Futurewei Technologies, "AI-Native Networking: Enabling Scalable and Secure Edge Intelligence through Cloud-Network Convergence"	**A10** **Machine Learning 5** Jae Min Lee (Kumoh National Institute of Technology)	**B10** **[AIPC] Secure and Explainable AI Systems** Dongwan Kim (Dong-A Univ.)	**C10** **Shaping the Future of 6G: Innovation, Intelligence, and Sustainability** Namseok Ko (ETRI)	**D10** **Workshop on Security, Zero-Trust & Privacy** Oluleke Babayomi (Kumoh National Institute of Technology)	**E10** **ICTC Workshop on Efficient Simulation Technologies for Data Center Workloads (IWESTDW)** Seokhun Jeon (KETI)	**F10** **[SCSS] Technical Session 3** Wonjae Shin (Korea Univ.)	**P10** **[SCSS] Interactive Session 10** Dong-Hyun Jung (Soongsil Univ.), Do-Yup Kim (Incheon National Univ.)
10:00~10:20	Coffee Break							
10:20~11:50 (90min)	**Industrial Session IV** Chair: Prof. Hyowon Kim (Chungnam Univ., Korea) • **Invited Talk 7:** James Hyochan Han, CTO, Nokia Korea, "AI Native Mobile communication vision and trends" • **Invited Talk 8:** Nicholas Chuberre, 5G Solution Line Manager, Thales Alenia Space France, "A satellite network component for the 6G network"	**A11** **Wireless Communications 4** Jeong Seon Yeom (Hankyong National Univ.)	**B11** **ICT Convergence 2** Seyeon Kim (Korea Univ.)	**C11** **AI for 6G and Beyond: Intelligent Networks and Digital Twin Synergies** Dr. Luís Cordeiro	**D11** **ICTC Workshop on Semantic Communication** Yo-Seb Jeon (POSTECH)	**E11** **ICTC Workshop on Information and Communication Strategic Technology for Industry Convergence (IWICST)** Wooyong Lee (ETRI)	**F11** **[SCSS] Special Session on Ajou 6GRC/RRC** Jae-Hyun Kim (Ajou Univ.)	**P11** **[Main Track] Interactive Session 11** Seungnyun Kim (MIT)

Session Room Locations

Lotte Hotel Jeju

Banquet Building 6F



Registration
Exhibition Booth
Oral
Poster

Plenary Sessions

October 14th (Tuesday), 2025

Plenary Session I : Opening Ceremony and Keynote Speeches

15:00~16:30 | Crystal 1

Chair: Prof. Byonghyo Shim (Seoul National University, Korea)

Time	Title	Invited Speakers
15:00~15:45	AI Safety Ecosystem for Successful AI Transition and Sustainable Growth	Myungjoo Kim, Executive Director, Korea AISI (AI Safety Institute)
15:45~16:30	In-House Edge AI: Redefining Connectivity for the Hyper-Personalized Future	Joonsuk Kim, Executive Vice President, Samsung Electronics

Keynote Speech 1 : AI Safety Ecosystem for Successful AI Transition and Sustainable Growth

Dr. Myuhng Joo Kim, Executive Director, Korea AISI (AI Safety Institute)

Abstract:

To ensure a successful AI transformation (AX) across our society and to promote sustainable growth for the future, an "AI Safety Ecosystem" must be intentionally designed and built from the very beginning. This involves a comprehensive process, starting with the identification of potential risks inherent in AI models and systems, followed by risk assessment, and the development of national-level response strategies, including mitigation measures. This presentation introduces approaches to address these challenges effectively, with a particular focus on fostering international cooperation. It also examines Korea's strategy for building its AI Safety Ecosystem, highlighting the role of the Korea AI Safety Institute (AISI) as defined in the AI Framework Act, which will take effect in January next year.

Biography:

Myuhng Joo Kim served as a professor at the Department of Intelligent Information Security at Seoul Women's University for 30 years and now serves as the founding executive director of the AI Safety Institute (AISI), established in November 2024. Although his academic background is in computer engineering, he has long been an advocate for information security and digital ethics. In 2022, through his book "AI Has No Conscience", he introduced AI ethics for users, developers, and business leaders alike. He received the Presidential Commendation for his contribution to developing and presenting Korea's first AI ethics charter, the Seoul PACT. He is actively involved as an expert at the OECD Global Partnership on AI (GPAI), President of the International Association for AI Ethics (IAAE), Vice President of the Korea Copyright Commission, and a member of the AI Committee of the Supreme Court of Korea.

Keynote Speech 2 : In-House Edge AI: Redefining Connectivity for the Hyper-Personalized Future

Dr. Joonsuk Kim, Executive Vice President, Samsung Electronics

Abstract:

The rapid evolution of Artificial Intelligence, particularly the drive towards on-device intelligence, presents both unprecedented opportunities and significant challenges. While processing power continues to accelerate, the inherent limitations of portable devices—spanning power consumption, battery life, and physical form factors—suggest that a fully on-device AI paradigm faces substantial hurdles in the immediate future. This necessitates a strategic pivot towards edge computing, specifically focusing on in-house edge devices that prioritize user privacy and control.

Concurrently, global demographic shifts, especially the increase in household units even as population growth moderates, signal a transition from a purely personal computing era to one centered on the 'family' or 'household' as the primary unit of digital

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interaction. This trend fuels a growing demand for localized, privacy-centric AI solutions that operate within the confines of a home or small group, enabling personalized training and data management under the user's direct control. We emphasize the critical role of pervasive IoT (Internet of Things) technologies in this evolving landscape.
This keynote will explore the emergence of this In-House Edge AI paradigm, where light, portable devices primarily serve as interfaces, while intensive AI training and complex computations occur on dedicated, privacy-enhanced in-house hubs. This architecture not only addresses the practical constraints of on-device AI but also profoundly redefines the role of communication. We will highlight the decisive importance of robust and secure Peer-to-Peer (P2P) communication within this localized ecosystem. Specifically, we will delve into how the convergence of advancements in cellular communication towards 6G, next-generation Wi-Fi (e.g., Wi-Fi 7 and Wi-Fi 8), Bluetooth, and GNSS technologies will enable the seamless, high-bandwidth, and low-latency interactions crucial for the widespread adoption of In-House Edge AI. As a leader in Communication Processor development, Samsung S.LSI is at the forefront of innovating these essential technologies, shaping a future where intelligent connectivity delivers unparalleled convenience and privacy within every home.

Biography:
Joonsuk Kim (Senior Member, IEEE) received the B.S. degree from Seoul National University, Seoul, South Korea, and the M.S. and Ph.D. degrees from Stanford University, Stanford, CA, USA. He is one of the core engineers who designed 802.11a/b/g/n/ac chips for Broadcom, San Jose, CA, USA, to be the number one leading company in the WLAN market. After working as a Senior Principal Scientist in Broadcom, he joined Apple as a Senior Principal Architect and is currently with Samsung Electronics, Hwaseong, South Korea, as the Executive Vice President, leading the Communication Processor Division covering Wi-Fi, Bluetooth, GNSS, UWB, Radar and LTE/5G Cellular. He has authored more than 120 technical papers/contributions to IEEE and more than 140 issued patents on these topics. His major research interests are in the areas of wireless networks with MIMO techniques, including STBC, SIC, MU-MIMO, beamforming with/without channel information, and system-level optimization of wireless networks. Dr. Kim had served as the Adhoc Chair for IEEE 802.11n, the Vice-Chair for IEEE 802.11ac Task Group and the Board of Director in Wi-Fi Alliance (WFA).

October 15th (Wednesday), 2025

Plenary Session II : Keynote Speeches

15:00~16:30 | Crystal 1

Chair: Dr. Namseok Ko (ETRI, Korea)

Time	Title	Invited Speakers
15:00~15:30	6G Digital Twin: The AI revolution for innovative 6G applications	Sameh M. Yamany, SVP and Chief Technology Officer, VIAVI Solutions
15:30~16:00	Quantum Nexus for Sensing, Communication, Control, and Computing	Moe Z. Win, Robert R. Taylor Professor, Massachusetts Institute of Technology (MIT)
16:00~16:30	Pioneering Intelligent Connectivity for the Future of Generative AI	Mérouane Debbah, Professor, Director of the KU 6G Center, Khalifa University

Keynote Speech 3 : 6G Digital Twin: The AI revolution for innovative 6G applications

Dr. Sameh Yamany, SVP and Chief Technology Officer, VIAVI Solutions

Abstract:
As the telecommunications industry advances toward 6G, the need for a robust, intelligent, and adaptive simulation framework has become paramount. VIAVI's 6G Digital Twin represents a groundbreaking leap in enabling innovative AI-driven simulation and use case analysis across 5G Advanced, Non-Terrestrial Networks (NTN), Open

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RAN, AI-RAN, and future 6G architectures. By creating a high-fidelity virtual replica of real-world network environments, the VIAVI 6G Digital Twin integrates advanced telemetry, synthetic data generation, and machine learning engines to allow researchers, vendors, and operators to rapidly model, test, and optimize next-generation use cases—ranging from ultra-reliable low-latency communications and AI-powered orchestration to space-based networks and distributed intelligence. This digital twin environment supports full-stack emulation of RAN and core functionalities, enabling seamless collaboration across ecosystem partners while ensuring security, performance, and interoperability validation at scale. The 6G Digital twin platform accelerates innovation cycles, reduces the cost and risk of deploying new technologies, and helps shape the foundational intelligence layer needed for autonomous and self-evolving 6G

Biography:

Sameh Yamany is a visionary technology leader and the current Chief Technology Officer at VIAVI Solutions, where he drives global innovation across 5G/6G, AI, quantum communications, and advanced network testing. With over 25 years of transformative impact, Sameh has led the development of pioneering technologies that span telecom, biomedical engineering, AI, and cloud automation—consistently translating deep R&D into billion-dollar products. Before VIAVI, Sameh served as CEO of Trendium, where he redefined customer analytics in telecom, leading to a successful acquisition. He also held key leadership roles at Tektronix Communications and served as a computer science professor earlier in his career.

Keynote Speech 4 : Quantum Nexus for Sensing, Communication, Control, and Computing

Prof. Moe Z. Win, Robert R. Taylor Professor, Massachusetts Institute of Technology (MIT)

Abstract:

Recent advancements in quantum information science are poised to unleash new sensing, communication, control, and computing (SC3) capabilities. Synergies in SC3 promise the development of next-generation networks with unprecedented performance. For instance, (i) control of statistical information empowers practical quantum inference, (ii) quantum ranging and synchronization facilitate networked sensing, and (iii) remote entanglement establishment enables quantum telecomputation. Quantum Nexus unifies SC3 and provides key insights into the systematic design of quantum information technologies. Quantum Nexus has led to new theories and methodologies for, among others, quantum localization; quantum state design and discrimination; quantum information control; and concealed quantum telecomputation. This talk will introduce Quantum Nexus for SC3 and highlight key areas of research.

Biography:

Moe Win is the Robert R. Taylor Professor at the Massachusetts Institute of Technology (MIT) and the founding director of the Quantum neXus Laboratory. Prior to joining MIT, he was with AT&T Research Laboratories and the NASA Jet Propulsion Laboratory. His research encompasses theoretical foundations, algorithm design, and network experimentation for a broad range of real-world problems. His current research topics include network localization and navigation, network interference exploitation, and quantum information science. Professor Win has served the IEEE Communications Society as an elected Member-at-Large on the Board of Governors, as elected Chair of the Radio Communications Committee, and as an IEEE Distinguished Lecturer. He was honored with two IEEE Technical Field Awards: the IEEE Kiyo Tomiyasu Award and the IEEE Eric E. Sumner Award. His publications, co-authored with students and colleagues, have received several awards. Other recognitions include the MIT Frank E. Perkins Award, MIT Everett Moore Baker Award, the IEEE Vehicular Technology Society James Evans Avant Garde Award, the IEEE Communications Society Edwin H. Armstrong Achievement Award, the Cristoforo Colombo International Prize for Communications, the Copernicus Fellowship and the Laurea Honoris Causa from the Università degli Studi di Ferrara, and the U.S. Presidential Early Career Award for Scientists and Engineers. Professor Win is elected Fellow of the AAAS, the EURASIP, the IEEE, and the IET.

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Keynote Speech 5 : Pioneering Intelligent Connectivity for the Future of Generative AI

Prof. Mérouane Debbah, Professor, Director of the KU 6G Center, Khalifa University

Abstract:
As telecommunications evolves into the backbone of global digital transformation, the integration of Generative AI stands at the forefront of this revolution. In this talk, we will explore how TelecomGPT redefines the way we approach intelligent connectivity. From enhancing customer service to optimizing network performance, Generative AI is bridging the gap between vast datasets and actionable insights. We will address in particular the broader implications of Generative AI in telecommunications, from transforming operational efficiency to enabling the 6G era of distributed, low-latency AI.

Biography:
Mérouane Debbah is Professor at Khalifa University of Science and Technology in Abu Dhabi and founding Director of the KU 6G Research Center. He is a frequent keynote speaker at international events in the field of telecommunication and AI. His research has been lying at the interface of fundamental mathematics, algorithms, statistics, information and communication sciences with a special focus on random matrix theory and learning algorithms. In the Communication field, he has been at the heart of the development of small cells (4G), Massive MIMO (5G) and Large Intelligent Surfaces (6G) technologies. In the AI field, he is known for his work on Large Language Models, distributed AI systems for networks and semantic communications. He received multiple prestigious distinctions, prizes and best paper awards (more than 50 IEEE best paper awards) for his contributions to both fields and according to research.com is ranked as the best scientist in France in the field of Electronics and Electrical Engineering. He is an IEEE Fellow, a WWRF Fellow, a Eurasip Fellow, an AAIA Fellow, an Institut Louis Bachelier Fellow, an AIIA Fellow and a Membre émérite SEE. He is actually chair of the IEEE Large Generative AI Models in Telecom (GenAINet) Emerging Technology Initiative and a member of the Marconi Prize Selection Advisory Committee.

October 16th (Thursday), 2025

Plenary Session III : Keynote Speeches

13:10~14:40 | Crystal 1

Chair: Prof. Seunghoon Hwang (Dongguk University, Korea)

Time	Title	Invited Speakers
13:10~13:40	Designing 6G: Pioneering Intelligent Connectivity for Tomorrow	John Smee, Senior Vice President, Qualcomm
13:40~14:10	From Architecture to Application : The Rise of AI Agents	Kyung-A Yoon, SVP, Head of Agentic AI Lab, KT
14:10~14:40	Future of Mobile: Extreme Connectivity, AI-Native and Beyond Communications	Harish Viswanathan, Head of Radio Systems Research, Nokia Bell Labs

Keynote Speech 6 : Designing 6G: Pioneering Intelligent Connectivity for Tomorrow

John Smee, Senior Vice President, Qualcomm

Abstract:
6G is being designed to bring technical innovations enabling new user experiences that range from immersive communications to smarter AI-enabled applications. 6G represents more than an incremental advance. It presents an opportunity to reimagine mobile connectivity from the ground up. With a focus on ubiquitous intelligent

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connectivity, 6G innovation will be driven by key technology vectors such as AI-native wireless end-end design and the continued digital-physical convergence. The transition to 6G will revolutionize network architecture and radio access, delivering improved efficiency, scalability, and agility in services. Today, Qualcomm Technologies is spearheading a smarter and more scalable foundation that builds on the strengths of 5G Advanced. Please join this keynote to learn more about our vision and the key enabling technologies for 6G.

Biography:

John Smee is Senior Vice President of Engineering and Global Head of Wireless Research at Qualcomm. He oversees all 5G/6G and Wi-Fi R&D projects including systems design, standards contributions, and advanced radio, hardware, and software research testbeds and technology trials with industry partners. He joined Qualcomm in 2000, holds over 200 U.S. Patents, and has focused on the innovation and commercial launches of wireless communications across 5G NR, 4G LTE, 3G CDMA, and IEEE 802.11.
He also leads Qualcomm's companywide academic collaboration program across AI, augmented/virtual reality, automotive, IOT, security, semiconductor, and wireless. John was chosen to participate in the National Academy of Engineering Frontiers of Engineering program and served on the National Academy of Medicine Committee on Emerging Science, Technology, and Innovation. He received his Ph.D. in electrical engineering from Princeton University and also holds an M.A. from Princeton and an M.Sc. and B.Sc. from Queen's University.

Keynote Speech 7 : From Architecture to Application : The Rise of AI Agents

Dr. Kyung-A Yoon, SVP, Head of Agentic AI Lab, KT

Abstract:

AI agents refer to systems or programs that autonomously perform tasks on behalf of users or other systems, while designing their own workflows and utilizing available tools. These agents go beyond natural language processing to include a wide range of capabilities such as decision-making, problem-solving, interaction with external environments, and real-world task execution.
The advancement of AI agents has been accelerated by recent breakthroughs in large language models (LLMs), which provide the foundation for more sophisticated reasoning capabilities. The key difference between AI agents and traditional AI systems lies in their architecture and operational mechanisms. While conventional systems operate based on predefined parameters and explicit instructions, AI agents function as a layer on top of language models, exhibiting greater autonomy in goal-oriented behavior. This architecture enables agents to decompose complex problems into sub-tasks, reason based on available information, utilize appropriate tools, maintain context during interactions, and continuously learn from feedback.
AI agents have evolved into various types depending on their cognitive capabilities and modes of operation, and their adoption is now expanding rapidly across industrial domains.
In this presentation, we will explore the latest trends in AI agent technology, architecture, and evaluation methods, and share real-world application cases, including those from KT.

Biography:

Dr. Kyung-A Yoon is the Senior Vice President and Head of the Agentic AI Lab at KT, where she leads the development of AI agents and core technologies. She also serves as a member of the National Strategic Technology Special Committee under the Ministry of Science and ICT of Korea. Her current focus includes open-model-based Korean-contextualized AI, industry-specific sLM, Retrieve-Augmented Generation (RAG), and agent orchestrator technologies. Based on these capabilities, she spearheads the development of KT's key customer-facing agents, including the Media Agent for Genie TV (GiGA Genie). Dr. Yoon previously held positions at SK Telecom, Samsung SDS, and Hyundai Card, building extensive expertise in the areas of AI, cloud computing, and big data. She is passionate about using advanced AI technologies to solve real-world problems and fostering a society where humans and AI can coexist harmoniously.

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Keynote Speech 8 : Future of Mobile: Extreme Connectivity, AI-Native and Beyond Communications

Dr. Harish Viswanathan, Head, Radio Systems Research, Nokia Bell Labs

Abstract:

With the start of standardization of 6G being imminent, the shape that future mobile networks will take is becoming increasingly clearer. We begin with an overview of the current industry trends and future human needs that are driving the contours of the next generation of mobile networks. We will then describe the technologies that will be at the foundation of the three main themes, namely extreme connectivity, AI-native, and integrated sensing and communications that are likely to characterize future mobile networks. Extreme connectivity in new spectrum bands will rely on advances in massive MIMO enabling its evolution to extreme MIMO. We will discuss new MIMO technologies such as reconfigurable metasurfaces and dense antenna arrays. Pervasive use of AI techniques across the layers of the protocol stack with a solid management framework will pave the way for AI-native networks. We will present various applications of AI to the physical and medium access layers and semantic communications will be discussed. Integrating sensing into communications coupled with an API exposure framework will offer new opportunities for monetization. We will discuss the various opportunities and challenges across these novel technologies.

Biography:

Dr. Harish Viswanathan is Head of Radio Systems Research Lab at Nokia Bell Labs. He received the B. Tech. degree from the Department of Electrical Engineering, Indian Institute of Technology Madras, Chennai, India and the M.S. and Ph.D. degrees from the School of Electrical Engineering, Cornell University, Ithaca, NY. Since joining Bell Labs in October 1997, he has worked extensively on wireless research ranging from physical layer to network architecture and protocols including multiple antenna technology for cellular wireless networks, multi-hop relays, network optimization, network architecture, and IoT communications. He has published extensively with over 150 publications. From 2007 to 2015, Harish was in the Corp CTO organization, where as a CTO Partner he advised the Corporate CTO on Technology Strategy through in-depth analysis of emerging technology and market needs. He is a Fellow of the IEEE and a Bell Labs Fellow. He received the 2023 Edison Patent Award from the R&D Council of New Jersey.

Industrial Sessions

October 15th (Wednesday), 2025

Industrial Session I

13:10~14:40 | Crystal 1

Chair: Prof. Hyosoo Kim (Chung-Ang University, Korea)

Time	Title	Invited Speakers
13:10~13:55	Mobile AI Era, Building Intelligent Connection to enable AI Everywhere	Yun Hong Ju, Executive Solution Manager, Huawei Korea
13:55~14:40	Convergent AI Innovation - From Protein Folding Breakthroughs to Agentic AI for Sustainable Future	Sunghee Yun, Co-Founder & CTO, Erudio Bio, Inc.

Invited Talk 1 : Mobile AI Era, Building Intelligent Connection to enable AI Everywhere

Mr. Yun Hong Ju, Executive Solution Manager, Huawei Korea

Abstract:

Currently, AI technology is presenting a new milestone in the development of all industries. In addition, it is very important to provide a stable and excellent communication environment for applying AI to all industries. In a new mobile environment, changes are approaching in various fields of society beyond each individual's life through AI.

It is positioned 5.5G as a strategic transitional technology to overcome the limitations of existing 5G and enable next-generation services. With significant improvements in speed, latency, and connection density, 5.5G provides the necessary infrastructure for mobile AI technologies to operate reliably. As AI becomes a core technology in areas such as autonomous driving, smart manufacturing, and digital healthcare, the importance of high-speed, high-capacity networks capable of supporting real-time applications is rapidly growing. A communication infrastructure that can quickly collect and process large volumes of AI data is essential, and 5.5G is emerging as the key solution to meet these demands. Huawei is leading the commercialization of 5.5G, working with industry partners to develop tailored solutions across various sectors. In this context, 5.5G is more than just a network upgrade—it acts as a critical catalyst for the mobile AI era and sets the direction for future communication services.

Biography:

Mr. Yun Hong Ju is currently serving as Director of MSSD at Huawei Korea, and is a seasoned expert in the telecommunications and ICT industry with nearly 20 years of experience. Since joining Huawei Korea in 2014, he has been working as a Wireless Solution Manager, providing technical sales support and consulting services to Korean Carriers.

Throughout his career at Huawei, Mr. Yun has played a key role in delivering Huawei's wireless network solutions to the Korean market, offering tailored technical proposals and strategic insights to help upgrade and optimize network infrastructure. He has also been instrumental in building strong, trust-based relationships with key enterprise clients, contributing significantly to Huawei's growth and presence in Korea.

Before joining Huawei, he worked at Ericsson-LG from 2007 to 2014 as a research engineer, where he gained solid technical foundations and hands-on experience in wireless communication technologies. This period laid the groundwork for his continued success in the field.

With a well-rounded skill set that includes deep technical knowledge, strong communication with clients, leadership, and a keen understanding of market dynamics, Mr. Yun is recognized both within and outside the organization as a reliable and forward-thinking leader. He continues to pursue innovation and growth, staying aligned with evolving technology trends and customer needs in the ever-changing ICT landscape.

Industrial Sessions

Invited Talk 2 : Convergent AI Innovation - From Protein Folding Breakthroughs to Agentic AI for Sustainable Future

Dr. Sunghee Yun, Co-Founder & CTO, Erudio Bio, Inc.

Abstract:

The remarkable success of AI in solving previously intractable scientific problems, epitomized by AlphaFold's protein structure prediction breakthrough, signals a fundamental shift in how we approach complex challenges across domains. This presentation explores how the algorithmic foundations and methodologies that revolutionized protein folding are now being translated to address sustainability challenges in industrial and societal contexts. We examine how deep learning architectures, once specialized for specific domains, are evolving into more versatile, agentic systems capable of autonomous decision-making and problem-solving. Drawing parallels between biological systems and industrial applications, we demonstrate how convergent innovation—the cross-pollination of AI approaches between seemingly disparate fields—creates unique opportunities for sustainable development. The emergence of Agentic AI, systems that independently pursue goals with domain knowledge and contextual awareness, represents the next frontier in this evolution. Through case studies spanning biotech, industrial manufacturing, and environmental management, we illustrate how this convergence is creating AI systems that not only optimize for efficiency but actively contribute to building a more sustainable future across the entire ICT ecosystem.

Biography:

Sunghee Yun is a distinguished technology leader and AI pioneer currently serving as Co-founder & CTO of Erudio Bio, Inc., Advisor and Evangelist at CryptoLab, Inc., and Chief Business Development Officer at WeStory.ai. His extensive experience in semiconductor and AI technologies includes notable contributions at Samsung Semiconductor, where he developed AI and optimization tools for chip design and manufacturing, followed by impactful work at Amazon.com where his innovations led to a $200M revenue increase through the Amazon Mobile Shopping App. He holds BS degree in Electrical Engineering from Seoul National University and MS & Ph.D. degrees from Stanford University under Prof. Stephen P. Boyd, the world's singular authority on convex optimization. Sunghee's expertise spans agentic AI, large language models (LLMs), and multimodal generative AI (genAI), while serving in active roles as an Adjunct Professor at Sogang University, Advisory Professor at DGIST, and Global Advisory Board Member for Innovative Future Brain-Inspired Intelligence System Semiconductor at Sogang University, alongside his fellowship at KFAS-Salzburg Global Leadership Initiative.

Industrial Sessions

October 16th (Thursday), 2025

Industrial Session II

10:20~11:50 | Crystal 1

Chair: Dr. Younghee Kim (NIA, Korea)

Time	Title	Invited Speakers
10:20~11:05	Building Quantum-Resilient Networks with Quantum-Safe Technologies	Sangyun Uhm, CEO, Id Quantique Ltd.
11:05~11:50	Quantum Computing Meets Networking: The Infrastructure of a Quantum-Enabled Economy	Philip Farah, VP, Sales and Strategic Partnerships, IonQ

Invited Talk 3 : Building Quantum-Resilient Networks with Quantum-Safe Technologies

Mr. Sangyun Uhm, CEO, Id Quantique Ltd.

Abstract:

As quantum computing advances, the threat to classical cryptographic systems becomes imminent. This presentation by ID Quantique outlines real-world strategies to safeguard critical infrastructure using quantum-safe technologies. It introduces a dual approach combining Post-Quantum Cryptography (PQC) and Quantum Key Distribution (QKD), enabling defense-in-depth against both current and future cyber threats.

The telecom company showcases Nationwide Quantum-Safe Network, designed to protect financial institutions, healthcare systems, and national data infrastructure. This end-to-end solution leverages QRNG, QKD, and PQC to deliver trusted security from the network to the application layer.

The presentation highlights phased enterprise adoption strategies, pilot programs, and collaborations with industry and government stakeholders. It also emphasizes the importance of cryptographic agility, ecosystem partnerships, and long-term preparedness.

With regulatory momentum and national initiatives accelerating, the session underscores the urgency for enterprises and governments to begin their quantum-safe migration today—before quantum attacks

Biography:

Mr. Sangyun Uhm is the CEO of ID Quantique Korea and a leading figure in the field of quantum-safe security. With over 25 years of experience in the IT & Security industry, he has played a pivotal role in advancing quantum technologies in South Korea.

He led the development and commercialization of quantum random number generator (QRNG) chips, notably implemented in the Galaxy Quantum smartphone series. Under his leadership, Korea successfully deployed over 2,000 km of quantum key distribution (QKD) networks, establishing a robust foundation for secure communications. Notably, his team achieved the world's first national security certification for QKD technology, positioning Korea at the forefront of quantum security innovation.

In addition to his work at IDQ, He also serves as a government advisor, contributing to national strategies on quantum technology and helping shape long-term policy directions. He actively promotes international collaboration and workforce development to strengthen the global quantum ecosystem. Through industry partnerships, public-private initiatives, and participation in key quantum missions, he continues to drive Korea's leadership in quantum communication and cybersecurity. His work bridges cutting-edge research with commercial implementation, helping ensure that quantum technologies are ready for real-world deployment in critical infrastructure and beyond.

Industrial Sessions

Invited Talk 4 : Quantum Computing Meets Networking: The Infrastructure of a Quantum-Enabled Economy

Mr. Philip Farah, VP, Sales and Strategic Partnerships, IonQ

Abstract:

The intersection of quantum computing and quantum networking is paving the way for a transformative quantum-enabled economy.

IonQ, a recognized leader in quantum innovation, is uniquely positioned at this convergence, bringing together capabilities across quantum computing, secure quantum networking (through IDQuantique, Qubitekk, and lightsynq), and satellite communications (via Capella Space).

In this session, we will explore how these technologies are unlocking powerful new use cases—from ultra-secure communications using quantum key distribution (QKD) to distributed and blind quantum computing, quantum sensor-to-quantum computer pipelines, quantum time synchronization, and quantum-enhanced satellite image processing. These advancements not only promise breakthroughs in cybersecurity, computing, and sensing, but also redefine the infrastructure needed for a resilient and intelligent digital economy.

We will share IonQ's real-world initiatives, research initiatives and collaborations that are actively shaping these next-generation capabilities, offering insights into how academic institutions, enterprises and governments can harness this evolving ecosystem.

Biography:

Philip Farah is the Vice President of Sales and Strategic Partnerships at IonQ, where he leads business expansion and partnership initiatives across Enterprise, State, Local and Education (SLED), and Cloud Service Provider (CSP) sectors in the U.S., South Korea, and the GCC region. With a career spanning strategic and technical leadership roles, Philip brings a wealth of experience in driving growth and innovation.

Before joining IonQ, he directed Services and Engineering Sales for Global Enterprise Accounts at Worldwide Technology, a prominent systems integrator and IT infrastructure solutions provider. His earlier roles include senior leadership positions at Gartner as a Senior Managing Partner in Financial Services, and at Cisco Systems where he led the Global FSI Innovation Strategy practice. He also served as Head of Recoveries Analytics at Capital One Financial.

Philip began his career in the U.S. as a consultant at McKinsey & Company, advising top industry executives on strategic technology investments aligned with business growth. A recognized thought leader, he has authored influential articles on the future of banking, payments, and transformative technologies, featured in major outlets such as American Banker, Wall Street & Technology, and Bloomberg BusinessWeek

Industrial Session III

16:50~18:20 | Crystal 1

Chair: Prof. Bang Chul Jeong (Ajou University, Korea)

Time	Title	Invited Speakers
16:50~17:35	Key Enabler of the AI Era: AI Chips as Infrastructure	Dongjoo Shin, CEO, Mobilint
17:35~18:20	Open 6G Research Infrastructures and Toolkits enabling an "Open 6G for all"	Thomas Magedanz, University Professor, TU Berlin / Fraunhofer FOKUS

Invited Talk 5 : Key Enabler of the AI Era: AI Chips as Infrastructure

Dr. Dongjoo Shin, CEO, Mobilint

Abstract:

As the demand for AI computing rapidly increases, GPU-based systems are facing limitations due to their high cost and high power consumption. To address this, there is a growing need for new solutions built around NPUs (Neural Processing Units), which offer much lower cost and power usage. This presentation

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will explain why AI semiconductors are becoming essential infrastructure in the AI era. It will cover key trends in the global AI chip market and examine the current status and strengths of South Korea's technologies in this field. The talk will also introduce Mobilint's NPU-based AI semiconductors, focusing on their main technical features and how they are being used in real-world applications such as robotics, smart factories, and edge AI devices.

Biography:

Dr. Dongjoo Shin is the CEO of Mobilint Inc. and a joint appointment professor at KAIST, affiliated with the School of Electrical and Electronic Engineering and the Graduate School of AI Semiconductor. He received his B.S., M.S., and Ph.D. in Electrical and Electronic Engineering from KAIST. His current research interests span semiconductor systems for AI, intelligent edge computing, and next-generation communication technologies. In addition to his academic and industrial leadership, Dr. Shin serves as an expert member of the Presidential Advisory Council on Science and Technology in South Korea. He is actively involved in bridging cutting-edge research with real-world innovation.

Invited Talk 6 : Open 6G Research Infrastructures and Toolkits enabling an "Open 6G for all"

Prof. Thomas Magedanz, University Professor, TU Berlin / Fraunhofer FOKUS

Abstract:

This talk is focusing on how to build reasonable open, modular 6G-ready testbeds for enabling early hands on 6G research and development around the globe. Prof Magedanz will motivate the key technology enablers for a realistic end 2 end 6G infrastructure and outline the current international state of play in building up 6G-ready testbeds. In this context he will introduce the related "OPEN research infrastructures and toolkits for 6G (OpenRIT 6G)" initiative (https://openrit-6g.org/) creating an international platform for the exchange of ideas, concepts, experiences, and related toolkits to build a foundation for a the "Open 6G for all" vision! The talk will also outline as practical examples the development roadmap for the Fraunhofer FOKUS Open5GCore toolkit (www.open5GCore.org) for enabling upcoming 6G-ready testbeds but also introduces the radically new FOKUS Open 6G Core toolkit (https://www.open6gcore.org/). In addition, we will introduce the TU Berlin driven open source initiative "Open6Gnet.org" (www.open6Gnet.org). All these toolkits are forming an important foundation in current German and European 6G flagship projects, such as the BMBF Open6GHub (https://www.open6ghub.de/en/) and European 6G-Sandbox Project (https://6g-sandbox.eu/).

On the background:

6G is targeted for global deployment in 2030 and global 6G research is in full swing in order to develop the needed experts and technologies around the globe. After five years of international 6G research it becomes clearer what 6G might be as 3GPP standardization started. This talk will focus on the 6G architecture and the software side as it seems very likely, that 6G will become an optimized 5G. The reason behind is that in regard to massive 5G rollouts it seems unrealistic to replace these new global deployments by another new infrastructure, particularly as sustainability is one of the most important key 6G drivers. Thus there will be some disruptive local greenfield 6G deployments, e.g. in private/enterprise contexts, and practical use case driven upgrades in nationwide operator networks from 2030 onwards.

Biography:

Thomas Magedanz (PhD) has been professor at the Technische Universität Berlin, Germany, leading the chair for next generation networks (www.tu.berlin/en/av) since 2004. In addition, since 2003 he has been Director of the Business Unit Software-based Networks (NGNI) at the Fraunhofer Institute for Open Communication Systems FOKUS (www.fokus.fraunhofer.de/ngni) in Berlin. For more than 35 years Prof. Magedanz has been a globally recognized ICT expert, working in the convergence field of telecommunications, Internet and information technologies.. He is an open networking pioneer and the creator of many open technology testbeds and related software toolkits such as the Fraunhofer 5G Playground (www.5G-Playground.org) which is based on the Open5GCore software toolkit (www.open5Gcore.org).

His current research is targeting the 5G evolution to 6G, including Core-RAN integration (including AI RAN integration), Satellite/Non-terrestrial Networks and 5G/6G integration, as well as AI/ML based 5G/6G network control and management. In this context he developed the first 6G core network prototype (https://www.open6gcore.org/). Since 2023 he also leading a new international Open Research Infrastructures and Toolkits for 6G initiative (https://openrit-6g.org/), which should enable 5G and 6G researchers around the globe to build an open 6G for all.

Industrial Sessions

October 17th (Friday), 2025

Industrial Session IV

10:20~11:50 | Crystal 1

Chair: Prof. Hyowon Kim (Chungnam University, Korea)

Time	Title	Invited Speakers
10:20~11:05	AI Native Mobile communication vision and trends	James Hyochan Han, CTO, Nokia Korea
11:05~11:50	A satellite network component for the 6G network	Nicholas Chuberre, 5G Solution Line Manager, Thales Alenia Space France

Invited Talk 7 : AI Native Mobile communication vision and trends

Mr. James Hyochan Han, CTO, Nokia Korea

Abstract:

The evolution of AI-RAN (Artificial Intelligence in Radio Access Networks) is driven by the need for enhanced network efficiency, adaptability, and user experience in increasingly complex mobile environments. The vision for AI-RAN encompasses the integration of AI technologies to optimize resource allocation, automate network management, and predict user demands, thereby reducing operational costs and improving service quality. By leveraging machine learning algorithms and real-time data analytics, AI-RAN aims to create self-organizing networks capable of dynamic adjustments to traffic patterns and environmental changes, ultimately paving the way for more resilient and intelligent communication systems.

Biography:

Has over 30 years of experience in the telecommunications industry, working with operators, domestic manufacturers, and global suppliers. His career spans roles such as software developer, system integration engineer, project manager, solution manager, business strategist, and CTO. He has been instrumental in the introduction of various generations of mobile communication technologies in Korea, including 3G, LTE, and 5G. He has led strategic initiatives, developed customer relationships, and driven business growth, notably achieving significant market penetration and revenue milestones for Nokia in Korea. His leadership has been pivotal in establishing Nokia's presence in the Korean telecommunications market.

Invited Talk 8 : A satellite network component for the 6G network

Mr. Nicolas Chuberre, 5G Solution Line Manager, Thales Alenia Space France

Abstract:

This presentation proposes an original concept for the satellite network component of 6G mobile system.
It includes use case description, architecture (GSO + NGSO), sizing and radio protocol features. Part of this presentation has been carried out as part of the Horizon Europe 6G-NTN collaborative research project.

Biography:

Nicolas CHUBERRE graduated in 1988 from “Ecole Supérieure d’Ingénieur en Electronique et Electrotechnique” in Paris. Previously with Nokia & Alcatel Mobile phones to design signal processing algorithms, Medium Access Control protocols and test tools for 2G cellular handsets & systems assembly, he joined Thales Alenia Space to manage the development of satellite payload equipment and the design of advanced Satellite Communication Systems (GEO and Non GEO). He has successfully initiated and led several European collaborative research projects in FP6, FP7, H2020, Horizon Europe as well as ESA ARTES context. Nicolas has published several papers on innovative Satellite System concepts and co authored a book ” 5G Non-Terrestrial Networks: Technologies, Standards, and System Design”. Currently he is defining and developing Satellite Solutions for 5G and 6G systems. In addition, he is the lead representative of Thales in 3GPP TSG RAN where he is the rapporteur of the standardisation on the integration of satellite in 5G since 2017 (https://www.3gpp.org/news-events/partners-news/2254-ntn_rel17). He also chairs since 2006 the Satellite Communication and Navigation working group at ETSI (www.etsi.org). He is the technical manager of the Horizon Europe research project “6G-NTN” (https://www.6g-ntn.eu/). Last, he chairs the NTN forum (https://connectivity.esa.int/nonterrestrial-networks-ntn-forum).

SPC Special Sessions

October 14th (Tuesday), 2025

SPC Special Session I: 6G Radio Technologies

13:10~14:40 | Crystal 1

Chair: Dr. Jungsook Bae (ETRI, Korea)

Time	Title	Invited Speakers
13:10~14:40	The Tri-hybrid MIMO Architecture: From Theory to Prototype	Chan-Byoung Chae, Underwood Distinguished Professor, Yonsei University
	Massive Data-driven Integrated Communication and Sensing	Sofie Pollin, Professor, KU Leuven

Invited Talk 1 : The Tri-hybrid MIMO Architecture: From Theory to Prototype

Prof. Chan-Byoung Chae, Underwood Distinguished Professor, Yonsei University

Abstract:

MIMO (multiple-input multiple-output) technology has greatly improved data rates and how efficiently we use the wireless spectrum. But as we add more antennas and move to higher frequencies, issues like power consumption and hardware complexity start to become major challenges. In this talk, I will introduce a new design called the tri-hybrid MIMO architecture. This approach combines digital and analog beamforming with energy-efficient reconfigurable antennas. I will first explain what reconfigurable antennas are and why they are useful. Then, I will describe the tri-hybrid system and show how it helps reduce power use and improve performance. I will also share an early prototype of this design that uses dynamic metasurface antennas as an example. Finally, I will also talk about what challenges remain—like how to design these arrays and how to fine-tune antenna settings. This new architecture opens up exciting research opportunities that bring together electromagnetics, circuits, and signal processing in future wireless systems.

Biography:

Dr. Chae is an Underwood Distinguished Professor at Yonsei University, Korea. Before joining Yonsei, he was with Bell Laboratories, NJ, USA (2009- 2011) and Harvard University, MA, USA (2008-2009. He received his Ph.D. degree in ECE from UT Austin, USA in 2008. Prior to joining UT, he was with the Telecommunications R&D Center, Samsung Electronics, Korea (2001-2005). Dr. Chae was a recipient of the KICS Haedong Scholar Award in 2023, the CES Innovation Awards in 2023, four best demo awards from the IEEE ICC (2022), IEEE WCNC (2020), IEEE DySPAN (2018), IEEE INFOCOM (2015), the Best Young Engineer Award from the National Academy of Engineering of Korea in 2019, the IEEE/KICS JCN Best Paper Award in 2018, the IEIE/IEEE Joint Award in 2014, the IEEE SPMag Best Paper Award in 2013, the IEEE ComSoc AP Outstanding Young Researcher Award in 2012, and the IEEE VTS Dan. E. Noble Fellowship Award in 2008.

He has held several editorial positions, including EiC of the IEEE T-MBMC, Senior Editor of the IEEE WCL, and Editor of the IEEE CommMag, IEEE TWC. He was an IEEE ComSoc Distinguished Lecturer (2020-2023) and is an IEEE VTS Distinguished Lecturer (2024-2025).

Invited Talk 2 : 6G Massive Data-driven Integrated Communication and Sensing

Prof. Sofie Pollin, Professor, KU Leuven

Abstract:

Integrated Sensing and Communication (ISAC) is a cornerstone of 6G networks, promising to enhance both spectrum efficiency and situational awareness. This talk explores a massive, data-driven approach to ISAC, leveraging dense antenna arrays, cell-free architectures, and machine learning to unlock fine-grained location awareness and environment mapping. We present a spectrum of integration levels—from implicit sensing through beamforming, to explicit localization using model- and data-driven techniques such as AoA learning and ML-MUSIC. Using a

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massive MIMO testbed, we demonstrate coherent near-field radar sensing capabilities, highlighting the role of array resolution and bandwidth in achieving high accuracy. Experimental results show sub-meter bistatic range and sub-m/s Doppler resolution. Furthermore, we explore frictionless reproducibility in AI for ISAC, emphasizing the need for robust datasets, automated labeling, and synchronized, calibrated deployments. Applications discussed include human presence detection, respiration sensing, and passive indoor tracking. Ultimately, we argue that ISAC is not just a feature, but a rethinking of wireless systems as distributed sensor networks. This transformation challenges us to bridge the gap between simulation and measurement, and between communication and perception, laying the foundation for intelligent, context-aware 6G infrastructures.

Biography:
Sofie Pollin (SMIEEE) is a full professor at KU Leuven focusing on wireless communication systems. She obtained her PhD from KU Leuven in 2006 (with honors). She had a research position with UC Berkeley from 2006-2008, as a BAEF and Marie Curie Fellow. From 2008-2012 she was senior researcher at imec, where shis is now still a principal member of technical staff. Her research centers around wireless networks that require networks that are ever more dense, heterogeneous, battery powered, and spectrum constrained. Her research interests are cell-free networks, integrated communication and sensing, and non-terrestrial networks. She is member of the Executive Editorial Committee for IEEE TWC and Associate Editor for IEEE TMC. She is the publication and special issue officer for the Aerial Communications Emerging Technology Initiative (AC-ETI). She was a TPC co-chair the 4th and 5th IEEE Joint Communication and Sensing (JC&S) Symposium, TPC co-chair of the 2024 EuCNC, symposium co-chair of Globecom 2021 (Communication Theory), Globecom 2022 (SAC AC), ICC 2024 (Communication Theory), PIMRC 2024, WCNC 2022, DySPAN 2015, and was involved in the organization of ICC 2020, DySPAN 2017, ISWCS 2015, CCNC 2016 and ACM Mobicom 2023. She has received ICC 2024 and EuCNC 2024 best paper awards.

SPC Special Session II: Non-Terrestrial Networks

16:50~18:20 | Crystal 1

Chair: Prof. Hyowoon Seo (Sungkyunkwan University, Korea)

Time	Title	Invited Speakers
16:50~18:20	Points Overlooked in Theories for LEO Satellite Communication and How to Make it Real	Sungtek Kahng, Professor and CEO, Incheon National University and Kangpole Co., Ltd.
	6G Non-Terrestrial Networks for Ubiquitous Connectivity	Aryan Kaushik, Associate Professor, Manchester Met, UK
	Satellite Non-Terrestrial Networks: past present and future challenges	Riccardo De Gaudenzi, Freelance consultant

Invited Talk 3 : Points Overlooked in Theories for LEO Satellite Communication and How to Make it Real

Prof. Sungtek Kahng, Professor and CEO, Incheon National University and Kangpole Co., Ltd.

Abstract:
Mobile industry is buzzing with expectations and activities of figuring out how to build wireless networks proper for communicating with LEO satellites and operate the services. From a circuit and antenna system supplier's perspectives, it is an audacious project. Similar to how LTE service developers and carriers might feel on the moment they heard the 5G mobile era being planned and looming, as for the 6G thing involving the flying vehicles, its working in a full fledge is doubted by far. Theoretical assumptions and mathematical derivations in the studies of vehicular communication e.g. modulation schemes, handovers, resource allocation, loading-off, bandwidth and so on cannot be taken into real communication as is. There exist gaps between communication theories and system implementation. Also, it takes prototyping long to be the basis of commercial mobile services. In this talk, the elements of NTN are revisited and what communication theoreticians mustn't miss in making 6G communication work is suggested to bridge the gap, based on Radio and Satellite Communication R&D projects of Kangpole's and Incheon U.'s ITRC.

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Biography:

Prof. Sungtek Kahng received his Ph.D. degree from Hanyang University, Seoul, with a specialty in Radio Science and Engineering. Upon graduation, he was with the Electronics and Telecommunication Research Institute(briefly, ETRI), and developed the communication payloads of two GEO satellites and RF circuits and antennas for wireless communication equipment for years. From March of 2004 on, he has been with Incheon national university laboriously teaching and training ICT and EE majors on understanding and designing circuits and systems. Simultaneously, he is the CEO of Kangpole Co., Ltd. advising mobile phone makers and display makers on small antennas and providing high and low-frequency components and antennas for ETRI, KARI, and defense systems incorporations. Also, he is the director of the government-funded ITRC on LEO Satellite communication with 5G ground networks in the era of 6G mobile services.

Invited Talk 4 : 6G Non-Terrestrial Networks for Ubiquitous Connectivity

Prof. Aryan Kaushik, Associate Professor, Manchester Met, UK

Abstract:

Prof. Kaushik will present on the wireless evolution towards latest IMT-2030/6G framework, trends, challenges, standardization aspects, new spectrum opportunities, and related use cases. In particular we will discuss about achieving the "ubiquitous" 6G services for connecting the unconnected through utilization of non-terrestrial networks (NTN), and effective integration of terrestrial networks with NTN, along with key synergies of NTN with key 6G technologies such as integrated sensing and communications, improving energy efficiency and minimizing latency using artificial intelligence (AI)/machine learning (ML) such as deep reinforcement learning and federated learning, semantic communications, electromagnetic signal and information theory (ESIT), etc., leading to 6G innovation beyond just communications. These synergies also lead to vital use cases such as for public safety, mission-critical services, and 6G-empowered robotics.

Biography:

Prof. Aryan Kaushik is currently an Associate Professor at Manchester Met, UK, since 2024. Previously he has been with University of Sussex (2021-24), University College London (2020-21), University of Edinburgh (2015-19), Hong Kong University of Science and Technology (2014-15), and held visiting appointments at Imperial College London (2019-20), University of Bologna (2024), University of Luxembourg (2018), Athena RC (2020), and Beihang University (2017-19, 2022). He has been External Assessor (Academic Promotion) at University of Hertfordshire (2025), External Assessor at University of Mauritius (2025), External PhD Examiner internationally such as at NIT Jalandhar (2025) and Universidad Carlos III de Madrid (2023). He has been an Invited Panel Member at the UK Engineering and Physical Sciences Research Council (EPSRC) ICT Prioritisation Panel in 2023, UK EPSRC Proposals Reviewer since 2023, French National Research Agency (ANR) Proposal Reviewer in 2025, Core Member of the IEEE P1955 Standard on 6G-Empowering Robotics, Chair of IEEE ComSoc ETI on ESIT, Co-Chair of IEEE SIG on AITNTN, Founding Member of the IEEE SIG on FAS, Elections Committee Member for the IEEE ComSoc UK & Ireland Chapter, Editor of 5 books by Elsevier and Wiley on variety of topics such as ISAC, NTN, ESIT, Intelligent Metasurfaces and Digital Twins/Imaging, and several journals such as IEEE Transactions on Communications, IEEE Transactions on Mobile Computing, IEEE Communications Surveys and Tutorials, IEEE OJCOMS (Best Editor Award 2024 and 2023), IEEE Communications Letters (Exemplary Editor 2024 and 2023), IEEE IoT Magazine, IEEE CTN, and several special issues such as in IEEE Wireless Communications, IEEE Network, etc. He is also the host of the IEEE Communications Society Technology News Podcasts Series. He has been invited/keynote and tutorial speaker for 110+ academic and industry events, and conferences globally such as at IEEE ICC 2024-25, IEEE GLOBECOM 2023-24, etc., and chairing in Organizing and Technical Program Committees of 14+ flagship IEEE conferences such as IEEE ICC 2024-26, etc., and has been General Chair of 30+ workshops and special sessions such as at IEEE ICC 2024-25, IEEE GLOBECOM 2023-25, etc.

Invited Talk 5 : Satellite Non-Terrestrial Networks: past present and future challenges

Dr. Riccardo De Gaudenzi, Freelance consultant

Abstract:

Satellite networks have played a key role in supporting the creation of global communication networks, video transmission, and completing terrestrial networks for uncovered areas. Although the greatest commercial

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success has been in the field of transmission and professional applications, there is growing interest and investment related to the provision of complementary fixed broadband and narrowband services via satellite. This presentation will provide an overview of the evolution of satellite communication systems and technological trends covering the different commercial applications. Starting with the most important satellite applications, market aspects, system architectures and key technologies, the following satellite communication systems will be covered: Non-geostationary narrowband mobile constellation systems and related challenges (Iridium, Globalstar, AST Mobile, Apple, Beidou 3, Lynk, Starlink). Geostationary mobile satellite communication systems (Inmarsat, Thuraya, Solaris/Echostar, Inmarsat Global Xpress) High-capacity geostationary satellite communication systems and related challenges (Eutelsat Konnect VHTS, Viasat 2-3, Jupiter 3) Non-geostationary broadband (mega) constellation systems and related challenges (SES O3B, OneWeb, Space X Starlink, Amazon Kuiper) Some insights will be provided to illustrate the lessons learned and key challenges ahead.

Biography:

Riccardo De Gaudenzi (Fellow IEEE) received his Doctor Engineer degree (cum Laude) in electronic engineering from the University of Pisa, Italy in 1985, a PhD from the Technical University of Delft, The Netherlands in 1999 and a Communication Engineering Master Degree ad honorem from University of Parma in 2021. He is currently a freelance consultant and University lecturer. In 1988, he joined ESA's Research and Technology Centre (ESTEC), Noordwijk, The Netherlands where he has been covering several technical and managerial positions inside the Directorate of Technology, Engineering and Quality. As last position, he has been the Head of the ESA's Electrical Department from 2018 until December 2023. He actively contributed to the development and the demonstration of the ETSI S-UMTS Family A, S-MIM, DVB-S2, DVB-S2X, DVB-RCS2 and DVB-SH standards. He has published more than 140 scientific papers and owns more than 30 patents. He is co-recipient of the 2003 and 2008 Jack Neubauer Memorial Award Best Paper from the IEEE Vehicular Technology Society. He has been awarded the American Institute of Aeronautics and Astronautics (AIAA) 2022 Aerospace Communications Award.

October 15th (Wednesday), 2025

SPC Special Session III: 6G Radio Techologies

08:30~10:00 | Crystal 1

Chair: Prof. Wonjae Shin (Korea University, Korea)

Time	Title	Invited Speakers
08:30~10:00	Fundamentals and Trends of Integrated Sensing and Communication (ISAC) Technologies for 6G	Kaewon Choi, Professor, Sungkyunkwan University
	6G Foundation Models: The Next Frontier for AI-Native Networks	Hatem Abou-Zeid, Associate Professor, University of Calgary

Invited Talk 6 : Fundamentals and Trends of Integrated Sensing and Communication (ISAC) Technologies for 6G

Prof. Kaewon Choi, Professor, Sungkyunkwan University

Abstract:

Integrated Sensing and Communication (ISAC) is an emerging key technology for next-generation 6G networks that combines radar and RF-based positioning technologies with wireless communication into a unified system. This talk will begin by introducing the fundamental concepts and global research trends of ISAC. It will then delve into the theoretical foundations of ISAC, with a particular focus on OFDM-based radar systems that serve as the backbone of ISAC, along with their associated signal processing techniques. Furthermore, we will explore practical implementations and experimental systems that integrate OFDM-based communication and radar, and discuss the potential of combining ISAC with artificial intelligence technologies.

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Biography:
Kae Won Choi received his B.S. in Civil, Urban, and Geosystem Engineering and his M.S. and Ph.D. in Electrical Engineering and Computer Science from Seoul National University in 2001, 2003, and 2007, respectively. He began his professional career at Samsung Electronics in the Telecommunication Business Division from 2008 to 2009. He then worked as a Postdoctoral Researcher at the University of Manitoba, Canada, from 2009 to 2010. From 2010 to 2016, he served as an Assistant Professor in the Department of Computer Science and Engineering at Seoul National University of Science and Technology. Since 2016, he has been a faculty member at Sungkyunkwan University, where he is currently a Professor in the College of Information and Communication Engineering. His research interests span machine learning, integrated sensing and communication (ISAC), reconfigurable intelligent surfaces, radar signal processing, RF energy transfer, cellular communication, and radio resource management.

Invited Talk 7 : 6G Foundation Models: The Next Frontier for AI-Native Networks

Dr. Hatem Abou-Zeid, Associate Professor, University of Calgary

Abstract:
Artificial intelligence capabilities are envisioned to transform the design and operation of 6G networks. While research efforts have demonstrated the potential of AI for wireless, the lack of generalization and the need for tailored AI models per wireless task have challenged their practical adoption in real-world networks. In this talk, we will discuss the emerging paradigm of foundational models and strategies toward achieving such models in the wireless context. By leveraging their ability to generalize across tasks with minimal labeled data, we can greatly reduce the need for costly data collection and model retraining. This makes it possible to build advanced AI systems at scale and at low cost.
The talk will provide concrete examples of building multi-task foundational models using pre-training and self-supervised approaches for wireless signals. We will present a suite of methods to effectively represent wireless data into embeddings that achieve generalizability and robustness - key requirements for the development of foundational AI models. The techniques presented will provide a guide to researchers and practitioners to design generalizable multi-task AI methods that are suited for practical deployment. Finally, the talk will conclude with a discussion on exciting future research directions toward foundational AI models for 6G networks.

Biography:
Hatem Abou-Zeid is a Schulich Industry Chair in Artificial Intelligence (AI) for 6G and an Associate Professor at the Department of Electrical and Software Engineering, University of Calgary. His research expertise is in advanced AI techniques for AI-Native 6G and his team pioneered the development of foundation models for real-world wireless sensing, localization, and communication and raw IQ signals.
Prior to joining the University of Calgary, Dr. Abou-Zeid was at Ericsson Canada as a 5G Senior Systems Designer contributing to algorithms and IP for Radio Access Network (RAN) intelligence. He is the co-inventor of 20 patent filings and 100+ journal and conference publications in many of the leading venues for wireless communications research. Several wireless access algorithms that he co-invented and co-developed are deployed in 5G networks worldwide. He has been invited to present 10+ tutorials and talks at international venues on foundation models and trustworthy AI for 6G. His record spans several prestigious accolades including two Best Paper Awards, Software Engineering Professor of the Year, Schulich Graduate Supervision Award, and multiple Research Excellence Awards.

SPC Special Session IV: 6G AI-native Networks

10:20~11:50 | Crystal 1

Chair: Prof.Namyoon Lee (POSTECH, Korea)

Time	Title	Invited Speakers
10:20~11:50	From Theory to Practice in 6G AI-Native Network	Tony Quek, Associate Provost and Professor, Singapore University of Technology and Design
	Quantum Machine Learning: Algorithms and ICT Convergence Applications	Joongheon Kim, Associate Professor, Korea University

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Invited Talk 8 : From Theory to Practice in 6G AI-Native Network

Prof. Tony Quek, Associate Provost and Professor, Singapore University of Technology and Design

Abstract:

With the advances in big data computing technology, AI already shows promising potentials in wireless industry, and we expect it will play an even more crucial role in 6G wireless networks. On the other hand, there is a future trend to explore the concurrent use of converged computer-and-communications infrastructure to run RAN and AI and Generative AI workloads, enhancing platform utilization and creating new monetization opportunities. Lastly, it is crucial to understand the radio interface requirements for running AI and Generative AI applications across consumer, enterprise, and government sectors. In this talk, we will first look at the theory aspect of an AI-native network through distributed learning and semantic communications. Next, we proceed to explore the practice aspect in implementing an Ai-native network through the concept of AI-RAN and explains how it can transform future networks with AI. In conclusion, we will also share some of our work through Singapore's Future Communications Research and Development Programme (FCP).

Biography:

Tony Quek received the B.E. and M.E. degrees in Electrical and Electronics Engineering from Tokyo Institute of Technology, respectively. At MIT, he earned the Ph.D. in Electrical Engineering and Computer Science. Currently, he is the Associate Provost (AI & Digital Innovation) and Cheng Tsang Man Chair Professor with Singapore University of Technology and Design. He also serves as the Director of the Future Communications R&D Programme, and the ST Engineering Distinguished Professor. His current research topics include wireless communications and networking, network intelligence, non-terrestrial networks, open radio access network, and 6G. He received the 2008 Philip Yeo Prize for Outstanding Achievement in Research, the 2012 IEEE William R. Bennett Prize, the 2016 IEEE Signal Processing Society Young Author Best Paper Award, the 2017 CTTC Early Achievement Award, the 2017 IEEE ComSoc AP Outstanding Paper Award, the 2020 IEEE Communications Society Young Author Best Paper Award, the 2020 IEEE Stephen O. Rice Prize, the 2020 Nokia Visiting Professorship, the 2022 IEEE Signal Processing Society Best Paper Award, the 2024 IIT Bombay International Award For Excellence in Research in Engineering and Technology, and the IEEE Communications Society WTC Recognition Award 2024. He is an IEEE Fellow, a WWRF Fellow, and a Fellow of the Academy of Engineering Singapore.

Invited Talk 9 : Quantum Machine Learning: Algorithms and ICT Convergence Applications

Dr. Joongheon Kim, Associate Professor, Korea University

Abstract:

In this presentation, the basic architectures and algorithms of quantum neural networks (QNN) and quantum machine learning (QML) will be introduced. After the introduction, the key characteristics and advantages will be discussed further. Based on the QNN/QML advantages, various applications such as mobility control, large-scale scheduling, finance, and medicine, will be introduced. Finally, this presentation will be concluded with deep-dive discussions for potential research directions.

Biography:

Joongheon Kim has been with Korea University, Seoul, Korea, since 2019, where he is currently an associate professor at the School of Electrical Engineering. He received B.S. and M.S. degrees from Korea University, Seoul, Korea, in 2004 and 2006; and the Ph.D. degree from the University of Southern California (USC), Los Angeles, CA, USA, in 2014. Before joining Korea University, he was with LG Electronics (Seoul, Korea), Intel Corporation (A, USA), Chung-Ang University (Seoul, Korea). He serves as editor for IEEE Communications Surveys and Tutorials, IEEE Transactions on Vehicular Technology, and IEEE Internet of Things Journal. He was a recipient of Annenberg Graduate Fellowship with his Ph.D. admission from USC (2009), Intel Corporation Next Generation and Standards (NGS) Division Recognition Award (2015), IEEE Systems Journal Best Paper Award (2020), IEEE ComSoc Multimedia Communications Technical Committee (MMTC) Outstanding Young Researcher Award (2020), and IEEE ComSoc MMTC Best Journal Paper Award (2021).

SPC Special Sessions

October 16th (Thursday), 2025

SPC Special Session V: Connected Robots

08:30~10:00 | Crystal 1

Chair: Prof. Howon Lee (Ajou University, Korea)

Time	Title	Invited Speakers
08:30~10:00	Future in-vehicle networking (IVN) technologies for connected and autonomous driving	Ji-Woong Choi, Professor, DGIST
	AERPAW and Its Digital Twin for Supporting AI Research with Autonomous Vehicle Networks	Ismail Guvenc, Professor, North Carolina State University
	Connecting with Purpose for 6G and Beyond	Aylin Yener, Roy and Lois Chope Professor, The Ohio State University

Invited Talk 10 : Future in-vehicle networking (IVN) technologies for connected and autonomous driving

Prof. Ji-Woong Choi, Professor, DGIST

Abstract:

Various in-vehicle networks (IVNs) are used in connected and autonomous vehicles. Conventional IVNs like CAN, CAN-FD, LIN, and FlexRay offer only a few Mbps transmission speeds, which isn't enough for the high-speed, low-latency communication needed by numerous sensors and controllers. To overcome these limitations, newer IVN technologies such as automotive Ethernet and SerDes have been deployed. This talk will begin by explaining conventional IVNs, then move on to recent IVN technologies, including our latest findings on future IVNs.

Biography:

Ji-Woong Choi received the B.S., M.S., and Ph.D. degrees from Seoul National University (SNU), Seoul, South Korea, in 1998, 2000, and 2004, respectively, all in Electrical Engineering. From 2005 to 2007, he was a Postdoctoral Visiting Scholar in Stanford University, USA. From 2007 to 2010, he was with Marvell Semiconductor, USA, as a Staff Systems Engineer for next-generation wireless communication systems. Since 2010, he has been with Department of Electrical Engineering and Computer Science, Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, South Korea, as a Full Professor, and also working as Director of Brain Engineering Convergence Research Center, DGIST. His research interests include communication theory and signal processing, and related applications such as vehicular and robotic communications, biomedical signal processing/machine learning applications, and brain–machine/computer interface (BMI/BCI). He is Editor of Journal of Communications and Networks (JCN) and IEEE Transactions on Molecular, Biological, and Multi-Scale Communications (TMBMC).

Invited Talk 11 : AERPAW and Its Digital Twin for Supporting AI Research with Autonomous Vehicle Networks

Prof. Ismail Guvenc, Professor, North Carolina State University

Abstract:

This talk will first overview the NSF Aerial Experimentation and Research Platform on Advanced Wireless (AERPAW), an outdoor infrastructure supporting research and experimentation with software-defined radios and unmanned aerial vehicles (UAV). We will discuss the significance of AERPAW's digital twin to support remote development and testing of artificial intelligence (AI) aided solutions for UAV trajectory optimization and wireless parameter adaptation. We will provide various research examples conducted over the NSF AERPAW platform, including 3D spectrum measurements and sharing, propagation modeling, wireless localization, and Kriging-based spectrum interpolation. We will also show a brief real-time demo on how any researcher can access AERPAW's portal to initiate and develop an experiment.

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Biography:

Ismail Guvenc is a Professor at the Department of Electrical and Computer Engineering at NC State University. His recent research interests include 5G/6G wireless networks, digital twins, UAV communications, and millimeter/terahertz wireless systems. He has published nearly 400 conference/journal papers and book chapters, several standardization contributions, four books, and over 30 U.S. patents. Dr. Guvenc is the PI and the director for the NSF AERPAW project and a site director for the NSF BWAC I/UCRC center. He is an IEEE Fellow, a senior member of the National Academy of Inventors, and recipient of several awards, including NC State COE Alcoa Distinguished Engineering Research Award (2023), NC State Faculty Scholar Award (2021), R. Ray Bennett Faculty Fellow Award (2019), FIU COE Faculty Research Award (2016), NSF CAREER Award (2015), Ralph E. Powe Junior Faculty Award (2014), and USF Outstanding Dissertation Award (2006).

Invited Talk 12 : Connecting with Purpose for 6G and Beyond

Dr. Aylin Yener, Roy and Lois Chope Professor, The Ohio State University

Abstract:

6G and beyond systems will continue to rely heavily on ubiquitous wireless connectivity. Different than the generations that came before, next generation systems will need to cater to applications that demand more than just faster rates. The increasingly capable wireless edge consisting of multifunctional devices will aid in the paradigm shift where networked communication occurs to realize, support or improve a functionality in addition to reliably communicating digital messages. Catalyzed by the AI revolution, the next wireless revolution thus promises to bring to life integrated designs fueled by the edge.

This talk will delve into the new paradigm of connecting with purpose, where the wireless edge devices communicate (collectively) to support a goal such as designing a learning system or accomplishing a learning task. The talk will provide a summary of our recent contributions in this paradigm. In particular, we will demonstrate, with relevant theory and applications to use cases, the design of semantic networks and task-oriented communications, and wireless edge networks that improve distributed AI. We will conclude with future directions in connecting with purpose that promises to deliver the next wireless revolution.

Biography:

Aylin Yener holds the Roy and Lois Chope Chair in Engineering at The Ohio State University with Professorship appointments at the Departments of Electrical and Computer Engineering, Computer Science and Engineering, and Integrated Systems Engineering. Prior to joining the faculty at Ohio State in 2020, she was a Distinguished Professor of Electrical Engineering and Dean's Fellow at Penn State where she started as an assistant professor in 2002. Her expertise is in wireless communications, information theory and learning, with recent focus on various pillars of 6G including new advances in physical layer designs, edge learning/computing, system design for confluence of sensing, communications, computing and learning, energy conscious networked systems, and security and privacy. She received several technical recognitions including the 2025 IEEE Information Theory Society Joy Thomas Paper Award, 2020 IEEE Communication Theory Technical Achievement Award, 2019 IEEE Communication Society Best Tutorial Paper award and 2014 IEEE Communication Society Marconi Prize Paper Award. She was a distinguished lecturer for the IEEE Communications, Information Theory and Vehicular Technology societies. She is a fellow of AAAS, the IEEE, AAIA, and is an elected member of The Science Academy of Turkey.

Yener has volunteered for IEEE Technical Activities since the beginning of her career in various positions including conferences and editorial service for IEEE Communications, Information Theory, Signal Processing and Vehicular Technology Societies. She has extensively volunteered for the IEEE Information Theory Society in leadership posts and served as its president in 2020.

She is the Editor-in-Chief of IEEE Transactions on Green Communications and Networking which is a joint publication of the Communications, Signal Processing and Vehicular Technology societies. Yener is presently serving on the IEEE Board of Directors as the director of Division IX which includes seven societies.

SPC Special Sessions

SPC Special Session VI: 6G Technologies: AI & Semantic Communications

15:00~16:30 | Crystal 1

Chair: Prof. Yongjune Kim (POSTECH, Korea)

Time	Title	Invited Speakers
15:00~16:30	Towards Realizing Digital Semantic Communications: Challenges and Potential Solutions	Yo-Seb Jeon, Associate Professor, POSTECH
	Pragmatic Communications	Deniz Gündüz, Professor, Imperial College London

Invited Talk 13 : Towards Realizing Digital Semantic Communications: Challenges and Potential Solutions

Prof. Yo-Seb Jeon, Associate Professor, POSTECH

Abstract:

Semantic communication has recently emerged as a promising paradigm capable of surpassing the fundamental limits of traditional Shannon theory-based communication systems. This talk addresses the key challenges involved in implementing semantic communication while maintaining compatibility with conventional digital communication systems. We further explore two potential solutions to this problem: a channel-adaptive semantic communication framework and a Transformer-based semantic communication design. Finally, we discuss possible future directions for the evolution of semantic communication technologies.

Biography:

Yo-Seb Jeon received the B.S. (Top Hons.) and Ph.D. degrees in the Department of Electrical Engineering from Pohang University of Science and Technology (POSTECH), Pohang, South Korea, in 2012 and 2016, respectively. From September 2016 to August 2018, he was a Postdoctoral Research Associate at POSTECH. From September 2018 to January 2020, he was a Postdoctoral Research Fellow in the Department of Electrical Engineering at Princeton University. Since 2020, he has been on the faculty at POSTECH, where he is currently an Associate Professor in the Department of Electrical Engineering. Since 2024, he is an Associate Editor for IEEE Wireless Communications Letters and an Editor for Journal of Communications and Networks. His research interests include the areas of wireless communications, distributed AI, and AI/ML for wireless communications.

Invited Talk 14 : Pragmatic Communications

Dr. Deniz Gündüz, Professor, Imperial College London

Abstract:

Pragmatic communications is an emerging communication paradigm, in which the goal of the transmitter is to help the receiver to take the right actions at the right time to maximize a shared reward function over a certain time horizon. The transmitted signal and its impact on the receiver depends on the environment state (or, the noisy observations thereof). In this talk, I will first show how this formulation unifies and generalizes many well-studied communication problems, including source coding, channel coding, joint source-channel coding, as well as those aiming to optimize age of information or other similar metrics. I will then show some recent results for various novel pragmatic communication problems, and highlight some open problems.

Biography:

Deniz Gündüz is a Professor of Information Processing in the Electrical and Electronic Engineering Department at Imperial College London, UK, where he also serves as the deputy head of the Intelligent Systems and Networks Group. He is a Fellow of the IEEE, and an elected member of the IEEE Signal Processing for Communications and Networking (SPCOM) and Machine Learning for Signal Processing (MLSP) Technical Committees. He serves as an area editor for the IEEE Transactions on Information Theory.

SPC Special Sessions

He is the recipient of the IEEE Communications Society - Communication Theory Technical Committee (CTTC) Early Achievement Award in 2017, Starting (2016), Consolidator (2022) and Proof-of-Concept (2023) Grants of the European Research Council (ERC), and has co-authored several award-winning papers, most recently the IEEE Communications Society - Young Author Best Paper Award (2022), and IEEE International Conference on Communications Best Paper Award (2023). He received the Imperial College London - President's Award for Excellence in Research Supervision in 2023.

October 17th (Friday), 2025

SPC Special Session VII: Telco Cloud Networks

08:30~10:00 | Crystal 1

Chair: Prof. Hyowoon Seo (Sungkyunkwan University, Korea)

Time	Title	Invited Speakers
08:30~10:00	Transforming Mobile Networks with Internet-Architecture Principles: SRv6 Mobile User Plane for Scalable 5G & Edge Innovation	Satoru Matsushima, Technical Meister, SoftBank Corp.
	AI-Native Networking: Enabling Scalable and Secure Edge Intelligence through Cloud-Network Convergence	Linda Dunbar, Distinguished Engineer, Futurewei Technologies

Invited Talk 15 : Transforming Mobile Networks with Internet-Architecture Principles: SRv6 Mobile User Plane for Scalable 5G & Edge Innovation

Mr. Satoru Matsushima, Technical Meister, SoftBank Corp.

Abstract:

5G was launched with bold promises of ultra-low latency, pervasive edge intelligence, and service-specific network slices. In practice, today's mobile user plane still inherits a circuit-style GTP tunnel model that inflates state in UPFs, limits service agility, and drives CAPEX/OPEX. This talk introduces the Segment Routing IPv6 Mobile User Plane (SRv6 MUP) - an implementation of IETF MUP architecture with SRv6 that transforms 5G sessions to IP routing. By replacing per-bearer tunnels with unique segment identifiers, SRv6 MUP collapses control-plane complexity, enables end-to-end slicing, and seamlessly extends routing intelligence to Multi-Access Edge Computing (MEC) sites. Field trials in Japan have already demonstrated reducing end-to-end latency for remote musical ensembles and real-time AI dash-cam analytics over commercial 4/5G networks. The presentation will:

Trace architectural tensions between Telco and Internet models;
Explain SRv6 MUP design, BGP-MUP, and pluggable 3GPP inter-working;
Share quantitative results from nationwide trials;
Discuss cost, scalability, and standardisation status at IETF/3GPP;
Outline a roadmap toward application-aware, seamless access to MEC.
Attendees will gain a concrete blueprint for evolving existing 5G deployments into an open, service-driven platform capable of supporting the next decade of edge-native innovation.

Biography:

Satoru Matsushima is Technical Meister at SoftBank Corp., Tokyo. Since 1999, he has led design and deployment of BGP/MPLS VPNs, distributed IX, and multicast services. Since 2008, his work has focused on IPv4/IPv6 coexistence, later contributing to the MAP standardization, achieving IETF standardization in 2015 and advancing IPv6 adoption in Japan. Since 2016, he has researched SRv6 for 5G mobile backhaul, culminating in its IETF standardization in 2020. In 2021, he proposed the SRv6 MUP architecture to enhance 5G user plane efficiency, furthering his work with SoftBank 5G. He has served as SoftBank Technical Meister and as a 3GPP CT WG4 rapporteur since 2018, and as co-chair of the IETF Distributed Mobility Management Working Group since 2019.

SPC Special Sessions

Invited Talk 16 : AI-Native Networking: Enabling Scalable and Secure Edge Intelligence through Cloud-Network Convergence

Ms. Linda Dunbar, Distinguished Engineer, Futurewei Technologies

Abstract:

As AI services move closer to the edge, traditional network and cloud boundaries must evolve to support dynamic, latency-sensitive, and scalable deployments. This talk explores a practical framework for AI-native networking that enables sustainable and efficient service delivery through deeper convergence between cloud orchestration and programmable network infrastructure.

The presentation highlights recent advances in standardizing interfaces and protocols that bridge cloud platforms (like Kubernetes) with real-time network telemetry and control. Key topics include:

- Dynamic AI workload placement based on end-to-end network performance
- BGP extensions for 5G edge service metadata, enabling intelligent routing decisions
- Lightweight authentication mechanisms for scalable and secure SD-WAN services across heterogeneous underlays

These innovations are grounded in active work at the IETF and demonstrate how open, standards-based architectures can empower AI-native ICT systems to operate with greater agility, reliability, and security.

Attendees will gain insights into emerging tools and practices for aligning cloud and network operations to support AI at scale—an essential step toward realizing the promise of sustainable, AI-native service infrastructures.

Biography:

Linda Dunbar is a Distinguished Engineer at Futurewei Technologies, where she leads innovation in networking, security, and cloud-edge integration. With over two decades of experience, she has been instrumental in developing scalable solutions for 5G edge computing, SD-WAN security, and dynamic AI workload placement across hybrid cloud environments. Her work focuses on bridging telecom infrastructure with cloud orchestration platforms to enable AI-native service delivery and policy-aware transport.

Linda has contributed extensively to IETF standardization efforts. She chairs initiatives such as Computing-Aware Networking and Interface to Network Security Functions (I2NSF), and has authored key drafts including BGP extensions for 5G edge service metadata and lightweight authentication for IPsec in SD-WAN. Her recent work addresses real-time coordination between cloud and network domains using standardized YANG models and BGP signaling to optimize service placement and data exchange.

A prolific inventor, she holds over 50 U.S. patents and has received multiple industry accolades, including the ONUG Innovation Award. Linda is a frequent speaker at global conferences such as MPLS/SDN/NFV Congress, NANOG, and ONUG, and is recognized for her ability to translate complex technologies into practical, operator-ready solutions. She holds an M.S. in Computer Science from the University of Maryland.

ICTC 2025 Special Track: AI

October 14th (Tuesday)	
13:10~14:40 (90min)"	Crystal 3
	Vision-Language and Generative AI for Perception
	Foyer
	Interactive Session 1
14:40~15:00	Coffee Break
15:00~16:30	Plenary Session I: Opening Ceremony and Keynote Speeches (Crystal 1)
16:30~16:50	Coffee Break
16:50~18:20 (90min)	Crystal 3
	Explainable Language AI
October 15th (Wednesday)	
08:30~10:00 (90min)	Crystal 3
	AI-Driven Resource Optimization and Time-Series Forecasting
	Foyer
	Interactive Session 3
10:00~10:20	Coffee Break
10:20~11:50 (90min)	Crystal 3
	AI for Networks and Autonomous Systems
11:50~13:10	Lunch
13:10~14:40 (90min)	Crystal 3
	Generative AI and LLMs
October 16th (Thursday)	
08:30~10:00 (90min)	Crystal 3
	AI and Quantum Approaches for Communication
10:00~10:20	Coffee Break
10:20~11:50 (90min)	Crystal 3
	(6G Global ITRC) 6G and AI
October 17th (Friday)	
08:30~10:00 (90min)	Crystal 3
	Secure and Explainable AI Systems

ICTC 2025 Special Track: S6GC

ICTC 2025 Special Track: S6GC	
October 15th (Wednesday)	
08:30~10:00 (90min)	**Emerald**
	F03 [S6GC]NTN Chair: Junhwan Lee (ETRI)
	Prof. Namyoon Lee, Professor, POSTECH, "Space-Time Beamforming for Satellite Communications: Enabling Extremely Narrow Beams"
	Prof. Changhee Lee, Assistant Professor, Korea University, "A Tutorial on ML for Next-Generation LEO Satellite Communications"
10:00~10:20	Coffee Break
10:20~11:50 (90min)	**Emerald**
	F04 [S6GC]Korea Telco 6G Chair: Jungsook Bae (ETRI)
	Dr. Jehoon Cho, Team Leader, LG Uplus, "The Vision of LG Uplus: Exploring 6G and AI for Future Networks"
	Mr. Chungwoo Hwang, Principal Research Engineer & ICT Standard Maestro, KT Corp., "KT's perspectives on 6G RAN for Future Networks"
	Dr. Dongwook Kim, Team Leader, SK Telecom, "The path to Telco AI Infra & 6G Evolution"
	Foyer
	P04 [S6GC] Interactive Session 4 Chair: Hewon Cho (ETRI), Mingun Kim (ETRI)
11:50~13:10	Lunch
13:10~14:40 (90min)	**Emerald**
	F05 [S6GC]Opening Ceremony Chair: Hyowoon Seo (Sunggunkwan University)
	Prof. Akihiro NAKAO, Professor, Graduate School of Engineering, "Shaping Resilient and Sustainable AI-Native Cyber Infrastructure"
	Prof. KyungHi Chang, EC Chair / Professor, 6G Forum / Inha University, "AI-Native 6G: Towards AI-Agentic Network Intelligence"
October 16th (Thursday)	
08:30~10:00 (90min)	**Charlotte**
	C06 [S6GC]Mobile Core Chair: Yeonwoong Kyung (Seoul National Univ. of Science and Technology)
	Dr. Haneul Ko, Associate Professor, Kyung Hee University, "Agentic AI-based Mobile Network Management for 6G"
10:00~10:20	Coffee Break
10:20~11:50 (90min)	**Charlotte**
	C07 [S6GC]Radio and Components Chair: Jung Hwan Hwang(ETRI)
	Dr. Dong-Seok Kim, Senior Researcher, Korea Atomic Energy Research Institute, "Space radiation effects in GaN-based devices"
	Foyer
	P07 [S6GC] Interactive Session 7 Chair: Heechul Yang (Chungnam National University), Nam I Kim (ETRI)
11:50~13:10	Lunch
13:10~14:40 (90min)	**ICTC Keynote Speeches**
14:40~15:00	Coffee Break
15:00~16:30 (90min)	**Charlotte**
	C08 [S6GC]RAN Chair: YoungJo Ko (ETRI)
	Prof. Hyun Jong Yang, Associate Professor, Seoul National University, "AI-RAN and the Future of Resource Management"

ICTC 2025 Special Track: S6GC

October 15th (Wednesday)

S6GC General Session I: Invited Talks 1

08:30~10:00 | Emerald

Chair: Junhwan Lee (ETRI)

Space-Time Beamforming for Satellite Communications: Enabling Extremely Narrow Beams

Prof. Namyoon Lee, Professor, POSTECH

Abstract:

Inter-beam interference is a central challenge in low-Earth-orbit (LEO) satellite communications, driven by dense constellations with overlapping beams and aggressive frequency reuse. We introduce space–time beamforming, a paradigm that exploits the composite space–time channel vector—parameterized by angle of arrival (AoA) and relative Doppler—to jointly optimize beamforming between a moving satellite and a ground user. By synthesizing a virtual array-of-subarrays across successive transmissions, the method effectively expands the aperture and forms ultra-narrow beams, sharply suppressing leakage to neighboring users. This spatial selectivity comes with a controllable rate trade-off due to temporal repetition. In this talk, I will present the principles of space–time beamforming and show, through analysis and simulation, how it mitigates inter-beam interference in dense LEO downlinks and enables robust Direct-to-Cell satellite communications.

Biography:

Namyoon Lee (Senior Member, IEEE) received his Ph.D. degree from The University of Texas at Austin in 2014. He was with the Communications and Network Research Group at Samsung Advanced Institute of Technology, South Korea, from 2008 to 2011, and later worked at Wireless Communications Research, Intel Labs, Santa Clara, CA, USA, from 2015 to 2016. He has been Professor at Pohang University of Science and Technology (POSTECH) since 2016. His research interests include communications theory, with a focus on advanced multi-antenna communications and error-correction coding technologies. Dr. Lee has received several prestigious awards, including the 2016 IEEE ComSoc Asia-Pacific Outstanding Young Researcher Award, the 2020 IEEE Best Young Professional Award (Outstanding Nominee), the 2021 IEEE-IEIE Joint Award for Young Engineer and Scientist, and the 2021 KICS Haedong Young Engineering Researcher Award. He has actively contributed to IEEE journals and conferences, serving as an Associate Editor for IEEE Communications Letters from 2018 to 2020 and IEEE Transactions on Vehicular Technology from 2021 to 2023. He was also a Guest Editor for IEEE Communications Magazine in the Special Issue on Near-Field MIMO Technologies Toward 6G. Since 2021, he has been an Associate Editor for IEEE Transactions on Wireless Communications and IEEE Transactions on Communications.

S6GC General Session I: Invited Talks 2

A Tutorial on ML for Next-Generation LEO Satellite Communications

Prof. Changhee Lee, Assistant Professor, Korea University

Abstract:

Low Earth Orbit (LEO) satellite mega-constellations are revolutionizing global connectivity, yet their operational environment is defined by unprecedented challenges: extreme mobility, dynamic network topologies, frequent handovers, and variable link quality. Traditional network management paradigms are ill-equipped to handle this complexity at scale. This tutorial provides an expert-level overview of how Machine Learning (ML) are being harnessed to create next-generation LEO satellite communications. We will begin by dissecting the core challenges of LEO communications. The tutorial will then delve into three critical pillars of ML application: 1) Time-Series Forecasting for proactive resource management, 2) Anomaly Detection for ensuring operational resilience, and 3) Explainable AI (XAI) for building human trust in autonomous network operations.

Biography:

Changhee Lee is a machine learning and deep learning expert with a research focus on time-series analysis, particularly

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performance improvement and interpretable AI for generating actionable insights. He is an Assistant Professor at Korea University, where he leads the Actionable Intelligence Lab, conducting research on integrating multimodal data, developing individualized models of care through prognostic and causal inference, extracting scientific knowledge from data, interpreting black-box machine learning models, and scaling advanced ML methods for real-world impact. His work has been published in top-tier AI venues, including NeurIPS, ICML, ICLR, and AISTATS. Before joining Korea University, he was an Assistant Professor in the Department of Artificial Intelligence at Chung-Ang University. He earned his Ph.D. from the University of California, Los Angeles.

Special Session - Korea Telco 6G

10:20~11:50 | Emerald

Chair: Jungsook Bae (ETRI)

The Vision of LG Uplus: Exploring 6G and AI for Future Networks

Dr. Jehoon Cho, Team Leader, LG Uplus

Abstract:

This presentation outlines LG Uplus's vision for the evolution of mobile networks, focusing on 6G and AI technologies. It highlights the goals of LG Uplus's 6G vision and the transformative role of AI in enhancing network performance and efficiency. By sharing its innovative approach, LG Uplus aims to provide insights into the future of mobile communications and the convergence of 6G and AI.

Biography:

Jehoon Cho is currently the Head of the Access Advanced Technology Team at LG Uplus. After earning a Ph.D. in mobile communications, he has been actively conducting research on future network technologies related to access, driving innovation in next-generation communication systems.

KT's perspectives on 6G RAN for Future Networks

Mr. Chungwoo Hwang, Principal Research Engineer & ICT Standard Maestro, KT Corp.

Abstract:

As 6G standardization has already begin, this presentation highlights operator's vision and considerations for 6G RAN. KT believes that there are technologies which can overcome the issues we had with 5G/5G-Advanced and simplifying options will be the key to success for future networks.

Biography:

More than 20 years of industry experience as Radio Access Network (RAN) research, spectrum standardization and strategy expert as the head of 3GPP delegation for KT's 3GPP RAN Plenary. Proven track record of successful standard development and actual implementation leading to successful commercialization serving 19.8 million+ subscribers. Active standards contributor authoring hundreds of standardization contributions in various standard bodies (3GPP, WiMAX Forum, ITU, GSMA, etc.) influencing telecommunication market to bring technologies into the reality. A motivated leader with experience of WiMAX Forum SPWG Chair and 3GPP RAN4 rapporteurs of various spectrum work items and study items building consensus from various stakeholders. Passionate about driving innovation and leading the strategic direction of WiMAX/LTE/LTE-Advanced/5G/5G-Advanced and 6G to achieve business goals.

The path to Telco AI Infra & 6G Evolution

Dr. Dongwook Kim, Team Leader, SK Telecom

Abstract:

Telco AI infrastructure for the 6G era serves as the foundation for ultra-broadband, low latency networks and intelligent services. This presentation outlines AI-native architecture, intelligent network automation, and infrastructure evolution strategies for 6G services, while sharing SK Telecom's R&D initiatives and global collaboration plans.

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Biography:
Dr. Dongwook Kim is team leader of '6G Development' team in Infra Tech Office at SK Telecom, while leading the R&D for 6G and AI technologies including 5G/6G Cellular Communications, NTN (satellites/aerial networks), ISAC, V2X, future Communications, and network AI technologies. His primary interests are focused on developing essential 6G cellular, NTN, ISAC comm. technologies and network for AI technologies for network monetization. In particular, he has been a senior manager leading the 5G NR technology development, especially LTE-NR dual connectivity transmission scheme, SRS-based beamforming, and etc. And, he has served as a board alternative member of NGMN Alliance from 2017 to 2021. Prior to joining the SK Telecom, he has been working for 8 years in Network Business Division of Samsung Electronics as Principal Engineer and he has developed key features for LTE systems such as mobility-related functions and enhanced MAC scheduling algorithms. He has received Ph. D. degree in KAIST in South Korea.

ICTC 2025 Special Track: S6GC - Keynote 1

13:10~14:40 | Emerald

Chair: Hyowoon Seo (Sunggunkwan University)

Shaping Resilient and Sustainable AI-Native Cyber Infrastructure

Prof. Akihiro NAKAO, Professor, Graduate School of Engineering

Abstract:
Japan is advancing Beyond 5G/6G by positioning communication networks as critical cyber infrastructure that ensures resilient access to AI computing for future society. The XG Mobile Promotion Forum (XGMF) brings together industry, academia, and government, forging global partnerships while driving both "AI for networks" and "networks for AI." Backed by Japan's national Beyond 5G/6G strategy, these initiatives emphasize large-scale R&D, open testbeds, and early standardization. In parallel, the University of Tokyo's NakaoLab is pioneering AI-native mobile infrastructure, with research on cross-layer AI harmonization, RAN–Core convergence, and non-terrestrial networks (NTN). Flagship collaborations such as ASPIRE and 6G MIRAI-HARMONY showcase international testbeds and AI-driven architectures. This keynote highlights our leadership in defining resilient and sustainable AI-native next-generation cyber infrastructure, integrating connectivity, computing, and intelligence to support society's future needs.

Biography:
Akihiro Nakao received his B.S. (1991) in Physics, M.E. (1994) in Information Engineering from the University of Tokyo. After working at the IBM Austin Research Laboratory in Texas and the IBM Tokyo Research Laboratory, he earned both his M.S. and Ph.D. degrees in Computer Science from Princeton University. In 2005, he was appointed as Associate Professor, and in February 2014, as Professor in Applied Computer Science, at Interfaculty Initiative in Information Studies, Graduate School of Interdisciplinary Information Studies, the University of Tokyo. Since 2020, he has been a special adviser to the President of the University of Tokyo (-present). In April 2021, he has moved to School of Engineering, the University of Tokyo (-present), and since then he has been serving as Director, Collaborative Research Institute for NGCI, (Next-Generation Cyber Infrastructure), the University of Tokyo (-present). In 2024, he was appointed Co-Chair of XGMF (XG Mobile Promotion Forum) (-present). His research interests lie in information science and information and communication.

ICTC 2025 Special Track: S6GC - Keynote 2

AI-Native 6G: Towards AI-Agentic Network Intelligence

Prof. KyungHi Chang, EC Chair / Professor, 6G Forum / Inha University

Abstract:
This presentation provides an update on the 6G Forum's activities and summarizes key outcomes from the 3GPP 6G Workshop held in March. It also outlines Korea's national R&D strategies aligned with the ITU-R 6G framework, with a focus on recent advances in AI-native networking. AI is evolving from an assistive

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function to a fully embedded capability across mobile networks, enabling autonomous, closed-loop control in the RAN, core, and management domains. In 3GPP, Release 18 introduces AI/ML features in the physical layer (e.g., CSI estimation, beamforming), while 6G is expected to integrate AI as a fundamental design principle for intent-based and self-optimizing operations. At the air interface, AI improves CQI estimation and beam tracking under mobility, and supports positioning using signal features—though challenges remain in dynamic or sparse environments. Within the RAN, AI enables energy-efficient gNB activation, load balancing, and mobility prediction, each with trade-offs in latency, coverage, and reliability. Network analytics functions such as NWDAF and MDAF support real-time, cross-domain insights through standardized interfaces, driving proactive network control. Additionally, AI-agentic architectures, integrating modular agents and centralized analytics, enable context-aware, policy-driven RAN optimization and showcase the potential of AI-native mobile networks.

Biography:

KYUNGHI CHANG received the B.S. and M.S. degrees in electronics engineering from Yonsei University, Seoul, Korea, in 1985 and 1987, respectively, and the Ph.D. degree in electrical engineering from Texas A&M University, College Station, TX, USA, in 1992. From 1989 to 1990, he was with the Samsung Advanced Institute of Technology (SAIT) as a member of the research staff. From 1992 to 2003, he was with the Electronics and Telecommunications Research Institute (ETRI) as a Principal Member of the technical staff & Team Leader. He is currently with the Electrical and Computer Engineering Department, Inha University.
He was a recipient of the Haedong Academic Awards, in 2010, MSIT Minister's Commendation and KICS Fellow in 2020, and Presidential Commendation, in 2021. He is currently a Chairman of 6G Forum, Executive Committee, and Chairman of Technology Committee for National Integrated Public Network. He has served as a Vice President at the KICS from 2017 till 2023.

October 16th (Thursday)

S6GC General Session I: Invited Talks 3

08:30~10:00 | Charlotte

Chair: Yeonwoong Kyung (Seoul National Univ. of Science and Technology)

Agentic AI-based Mobile Network Management for 6G

Dr. Haneul Ko, Kyung Hee University, Associate Professor

Abstract:

With the emergence of 6G, there is growing interest in leveraging Agentic AI for autonomous and intelligent network management. In this talk, I introduce the concept of Agentic AI-based mobile network management for 6G. I also provide an overview of recent studies on LLM-based mobile network optimization and management. To evaluate the effectiveness of Agentic AI, I introduce a dedicated testbed. On this testbed, I present a representative network function (NF) scaling use case where multiple AI agents coordinate to monitor traffic patterns, predict future demand, and determine optimal scaling actions in real time.

Biography:

Haneul Ko is an Associate Professor in the Department of Electronic Engineering at Kyung Hee University, Korea. He received his B.S. and Ph.D. degrees in Electrical Engineering from Korea University in 2011 and 2016, respectively. He received the IEEE ComSoc APB Outstanding Young Researcher Award (2022) and the KICS Haedong Young Engineer Award (2023). His research interests include 5G/6G networks, network automation, mobile cloud computing, and SDN/NFV.

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S6GC General Session I: Invited Talks 4

10:20~11:50 | Charlotte

Chair: Jung Hwan Hwang (ETRI)

Space radiation effects in GaN-based devices

Dr. Dong-Seok Kim, Senior Researcher, Korea Atomic Energy Research Institute

Abstract:

GaN-based devices are attractive as a component of radiation-hardened applications due to higher atomic displacement threshold energy. Because protons are abundant in space, the proton irradiation effects of AlGaN/GaN HEMTs were studied by many research groups, however, most researches were focused on the difference in performance before and after proton irradiation. To accurately evaluate the space radiation effects of electronics operating in space radiation environments, the real-time effects on AlGaN/GaN HEMTs should be studied under operating bias conditions. Therefore, we investigated the synergy effect between biasing and proton fluence, as well as, real-time drain and gate current of devices under different bias conditions during irradiating 100 MeV protons.

Biography:

Dong-Seok Kim was received the B.S., the M.S., and the Ph.D degrees in electronics engineering from Kyungpook National University (KNU), Republic of Korea, in 2008, 2010, and 2015, respectively. His doctoral research concerned the growth of III-nitride epitaxial structure and the fabrication of GaN-based devices. He is currently a senior researcher of Korea Atomic Energy Research Institute (KAERI). His current research is focused on the radiation effect on semiconductor devices such as HEMT, MOSFET, TFT, etc., and the radiation-utilized applications such as nuclear battery and sensors.

S6GC General Session I: Invited Talks 5

15:00~16:30 | Charlotte

Chair: YoungJo Ko (ETRI)

AI-RAN and the Future of Resource Management

Prof. Hyun Jong Yang, Associate Professor, Seoul National University

Abstract:

The rapid evolution of wireless communications has led to increasing demands for intelligent, adaptive, and efficient resource allocation. Recently, the concept of AI-RAN has emerged as a key enabler for addressing these challenges. By integrating machine learning and AI-driven optimization into wireless systems, AI-RAN enables dynamic spectrum management, energy-efficient operations, and user-centric resource allocation. This talk will introduce recent trends in AI-RAN-based resource management, highlighting state-of-the-art approaches, current challenges, and future research directions that are shaping the next generation of wireless communications.

Biography:

Dr. Hyun Jong Yang is an associate professor in the department of electrical and computer engineering, Seoul National University (SNU), Seoul, Korea. He received the B.S. degree in electrical engineering from Korea Advanced Institute of Science and Technology (KAIST), Korea, in 2004, and the M.S. and Ph.D. degrees in electrical engineering from KAIST, in 2006 and 2010, respectively. From Aug. 2010 to Aug. 2011, he was a research fellow at Korea Research Institute of Ships & Ocean Engineering (KRISO), Korea. From Oct. 2011 to Oct. 2012, he worked as a post-doctoral researcher in the Electrical Engineering Department, Stanford University, Stanford, CA. From Oct. 2012 to Aug. 2013, he was a Staff II Systems Design Engineer, Broadcom Corporation, Sunnyvale, CA, where he developed physical-layer algorithms for LTE-A MIMO receivers. In addition, he was a delegate of Broadcom in 3GPP RAN1 standard meetings. From Sept. 2013 to July 2020, he was an assistant/associate professor in the School of Electrical and Computer Engineering, UNIST, Korea. From July 2020 to Aug. 2024, he was an associate professor in the department of electrical engineering, Pohang University of Science and Technology (POSTECH), Pohang, Korea. Since Sept. 2024, he has been an associate professor in the department of electrical and computer engineering, Seoul National University (SNU), Seoul, Korea.

ICTC 2025 Special Track: SCSS

ICTC 2025 Special Track: SCSS	
October 16th (Thursday)	
08:30~10:00 (90min)	**Emerald**
	F06 [SCSS] Technical Session 1 Chair: In-Ho Lee (Hankyong National University)
	Dr. Byeongpyo Jeong, Senior Researcher, Space Communication Systems Laboratory, Wireless Network Research Center, NICT, JAPAN, "R&D Activity on Space Communication Technologies and Disaster Response using Satellite Communications in NICT"
10:00~10:20	Coffee Break
10:20~11:50 (90min)	**Emerald**
	F07 [SCSS] Opening Ceremony & Keynotes Chair: Sungtek Kahng (Incheon National University)
	Prof. Alessandro Vanelli-Coralli, Ph.D., University of Bologna, Italy, Senior Scientist - ETH Zurich, Switzerland, "Exploring the Future of Non-Terrestrial Networks: Challenges and Innovations for 6G NTN"
	Dr. Andrea Munari, Senior Researcher, Institute of Communications and Navigation, German Aerospace Center (DLR), German, "assive IoT Connectivity over NTN: Challenges, Solutions, and 3GPP Perspectives"
11:50~13:10	Lunch
13:10~14:40 (90min)	**ICTC Keynote Speeches**
14:40~15:00	Coffee Break
15:00~16:30 (90min)	**Emerald**
	F08 [SCSS] Technical Session 2 Chair: Pansoo Kim (ETRI)
	Dr. Taneli Riihonen, Associate Professor, Tampere University, Tampere, Finland, "Stochastic Modelling and Analysis of Satellite Mega-Constellation"
	Foyer
	P08 [SCSS] Interactive Session 8 Chair: Heejung Yu (Korea University), Sunghwan Cho (Korea Military Academy)
October 17th (Friday)	
08:30~10:00 (90min)	**Emerald**
	F10 [SCSS] Technical Session 3 Chair: Wonjae Shin (Korea University)
	Foyer
	P10 [SCSS] Interactive Session 10 Chair: Dong-Hyun Jung (Soongsil University), Do-Yup Kim (Incheon National University)
10:00~10:20	Coffee Break
10:20~11:50 (90min)	**Emerald**
	F11 [SCSS] Special Session on Ajou 6GRC/RRC Chair: Jae-Hyun Kim (Ajou University)

ICTC 2025 Special Track: SCSS

October 16th (Thursday)

ICTC 2025 Special Track: SCSS - Invited Talk 1

08:30~10:00 | Emerald

Chair: In-Ho Lee (Hankyong National University)

R&D Activity on Space Communication Technologies and Disaster Response using Satellite Communications in NICT

Dr. Byeongpyo Jeong, Senior Researcher, Space Communication Systems Laboratory, Wireless Network Research Center, NICT, JAPAN

Abstract:
Non-Terrestrial Networks (NTN) based on mega-constellations, such as the Low Earth Orbit (LEO), are being developed to provide communication services to areas such as the sea, mountainous areas, and the sky, which cannot be covered by Terrestrial Networks (TN). NTN is expected to build emergency networks and provide backup lines in case of large-scale disaster because of its advantage of being disaster resistant. In this talk, the research and development activity on Space Communication Technologies and Disaster Response using Satellite Communications in National Institute of Information and Communications Technology (NICT) will be introduced.

Biography:
After completing a doctoral course, Byeongpyo Jeong worked for National Research Institute of Fire and Disaster and joined in NICT in 2012. He is engaged in research on disaster response application using satellite communications. Ph.D. (Engineering).

ICTC 2025 Special Track: SCSS - Keynote 1

10:20~11:50 | Emerald

Chair: Sungtek Kahng (Incheon National University)

Exploring the Future of Non-Terrestrial Networks: Challenges and Innovations for 6G NTN

Prof. Alessandro Vanelli-Coralli, Ph.D., University of Bologna, Italy, Senior Scientist - ETH Zurich, Switzerland

Abstract:
Following their inclusion in the 5G architecture defined by the 3GPP Release 17 and the announcement of several related commercial initiatives, Non-Terrestrial Networks (NTNs) have emerged from their traditional niche to become a fundamental topic of connectivity for the global academic and industry communities. While the initial inclusion of NTNs in the global 5G architecture was primarily aimed at minimizing the impact of the necessary air interface adaptation for the satellite environment, and 5G-Advanced, has focused on the integration of terrestrial and non-terrestrial networks, the evolution toward 6G aims for their native inclusion for delivering enhanced performance for the identified key use cases. In this talk, after a short overview of the path that brought SatCom to NTN, we build on the newly proposed system architectures for the 3D Multilayered Architecture to explore the evolutionary and revolutionary paths of the design of the 6G NTN air interface, highlighting and discussing key research challenges for the native integration of terrestrial and non-terrestrial networks.

Biography:
Alessandro Vanelli-Coralli received the Dr. Ing. degree in Electronics Engineering and the Ph.D. degree in Electronics and Computer Science from the University of Bologna, Italy, in 1991 and 1996, respectively, where he is currently a Full Professor. Since 2022, he has also been a Senior Scientist at ETH Zurich. In 2003 and 2005, he was a Visiting Scientist at Qualcomm Inc. in San Diego, CA, USA. He participates in national and international research projects on wireless and satellite communication systems and has served as Project Coordinator and Scientific Responsible for several European Space Agency and European Commission-funded projects,

ICTC 2025 Special Track: SCSS

including the ongoing 6G-NTN project. He has led the Vision and Research Strategy task force of the NetworldEurope SatCom Working Group and is currently a member of the Steering Board of the European Space Agency NTN Forum. Dr. Vanelli-Coralli serves as the University delegate to ETSI, 3GPP, and 6G-IA and has served on the organizing committees of scientific conferences. He has received several Best Paper Awards and is the recipient of the 2019 IEEE Satellite Communications Technical Recognition Award.

ICTC 2025 Special Track: SCSS - Keynote 2

Massive IoT Connectivity over NTN: Challenges, Solutions, and 3GPP Perspectives

Dr. Andrea Munari, Senior Researcher, Institute of Communications and Navigation, German Aerospace Center (DLR), German

Abstract:
IoT connectivity via non-terrestrial networks (NTN) is expected to be a key enabler in future 6G systems, supporting a wide range of applications including environmental monitoring, asset tracking, and smart infrastructure. These scenarios involve massive numbers of low-power, low-complexity devices generating sporadic uplink traffic, which poses significant challenges for traditional protocol designs that rely on grant-based mechanisms. As a result, there is growing interest in grant-free paradigms and in designing lightweight, modern protocols rooted in the principles of random access. In this talk, we explore some of the most promising approaches emerging in this space, including developments inspired by unsourced massive random access. We also provide an overview of ongoing efforts within 3GPP standardization, with a particular focus on NTN IoT features introduced in Release 19 and prospective directions for future releases. Finally, we touch on open challenges and opportunities for future research in protocol design for IoT over NTN.

Biography:
Andrea Munari received the Ph.D. in telecommunications engineering from the University of Padova, Padua, Italy, in 2010. From 2007 to 2010, he was with IBM Research in Zurich, Switzerland. In 2011, he joined the Corporation Research and Development Division, Qualcomm Inc., San Diego, CA, US. He is currently with the Institute of Communications and Navigation, German Aerospace Center (DLR), Wessling, Germany. From 2014 to 2018, he held a Senior Researcher and a Lecturer position at the RWTH Aachen University, Germany. His main research interests are in the area of wireless communications, with special focus on Internet of things and satellite communications.

15:00~16:30 | Emerald

Chair: Pansoo Kim (ETRI)

ICTC 2025 Special Track: SCSS - Invited Talk 2

Stochastic Modelling and Analysis of Satellite Mega-Constellation

Dr. Taneli Riihonen, Associate Professor, Tampere University, Tampere, Finland

Abstract:
In the 2020s, three-dimensional stochastic geometry on spherical surfaces/volumes manifested itself as a fundamental alternative to orbital simulations for analyzing massive satellite constellations of the 6G era. The approach models satellites, ground stations, and terminals as random point processes, which allows for expressing theoretical performance metrics that statistically represent all possible network realizations that may occur when Earth rotates and non-geostationary satellites orbit around it. This invited talk offers a tutorial on how to adopt the approach for the modelling and analysis of satellite mega-constellations, an overview of the first five years' major advances, and visions for the next research steps.

Biography:
Taneli Riihonen (Senior Member, IEEE) received his D.Sc. degree in electrical engineering (with honors) from Aalto University, Helsinki, Finland, in 2014 and completed his postdoctoral phase at Columbia University, New York, USA. He is now an Associate Professor at Tampere University, Finland. He received the Finnish technical sector's award for the best doctoral dissertation of the year and won the EDA Defence Innovation Prize 2020. His research is focused on physical-layer analysis, link-layer techniques and signal processing for all kinds of radio systems from consumer and commercial domains to defense and security with current interest in the evolution of 6G.

Junior Faculty Session

October 15th (Wednesday)		
Room	**Pearl**	
	Chair: Intae Hwang (Chonnam National University)	
13:10~14:40	**A Novel Hedonic Coalition Formation Game for Spectrum Shared Communication in CBRS Band**	**Dr. Dongsup Jin (University of Ulsan)**
	Lightweight and Versatile Secure Aggregation in Federated Learning	**Prof. Jinhyun So (DGIST)**
	Tensor-Based Channel Estimation Considering Beam Squint Effects in LEO Satellite Communications	**Prof. Kyungrak Son (Hankuk University of Foreign Studies)**
	A Novel Hedonic Coalition Formation Game for Spectrum Shared Communication in CBRS Band	**Dr. Jun-Bae Seo (Gyeongsang National University)**

Text Watermarking for Large Language Models: Recent Advances and Challenges

Dr. Dongsup Jin, Assistant Professor, University of Ulsan

Abstract:

The rapid advancement of generative AI has made it increasingly difficult to distinguish between human-written and AI-generated text, raising new concerns about attribution and accountability. Text watermarking has emerged as a promising approach, where subtle statistical or cryptographic signals are embedded into the token sequence of large language models (LLMs), enabling post-hoc verification. Recent studies have explored various strategies such as Green/Red list token partitioning, hash-based seeding, and error-correcting code (ECC)-inspired encoding schemes. These approaches are being actively evaluated in terms of robustness, detection accuracy, and resistance to adversarial attacks. This talk will provide an overview of publicly available watermarking methods for LLMs and discuss how they can contribute to AI-generated content detection, copyright protection, and the development of digital trust frameworks.

Biography:

DONGSUP JIN received the undergraduate degree and Ph. D. degree in electrical and information engineering from Seoul National University, Seoul, Korea, in 2006, and 2013, respectively. He has worked as a researcher in signal processing and AI fields at Samsung Electronics and LG AI Research, accumulating experience in data science
and AI-related projects. Since 2023, he has been serving as an assistant professor in the Department of ICT Convergence at Ulsan University. His research interests include communication systems utilizing deep learning technique, and security for AI.

Lightweight and Versatile Secure Aggregation in Federated Learning

Prof. Jinhyun So, Assistant Professor, DGIST

Abstract:

Secure model aggregation is a key component of federated learning (FL) that aims at protecting the privacy of each user's individual model while allowing for their global aggregation. Existing secure aggregation protocols rely on secret sharing of the random-seeds used for mask generations at the users. The complexity of such approaches, however, grows substantially with the number of participating users, which is a main bottleneck of scaling to large number of users. In this talk, I will introduce a lightweight and versatile secure aggregation protocol which overcomes the bottleneck as well as can be extended to various scenarios such as asynchronous FL and verifiable FL.

Biography:

Jinhyun So is an Assistant Professor in the Department of Electrical Engineering and Computer Science (EECS) at Daegu Gyeongbuk Institute of Science & Technology (DGIST) in South Korea, working as a faculty member of DGIST Distributed Artificial Intelligence Lab. His research interests lie broadly in distributed/federated learning, edge/on-device AI, and personalized/trustworthy AI.

Junior Faculty Session

He received my B.S and M.S degrees in Electrical Engineering from KAIST, South Korea, and received Ph.D. degree in Electrical and Computer Engineering from University of Southern California under the supervision of Prof. Salman Avestimehr. He was a Ph.D Research Intern at Microsoft Research, Redmond in 2021, and a Staff Research Engineer at Samsung Cellular & Multimedia Labs, San Diego in 2022-2024.

Tensor-Based Channel Estimation Considering Beam Squint Effects in LEO Satellite Communications

Prof. Kyungrak Son, Assistant Professor, Hankuk University of Foreign Studies

Abstract:
In this presentation, we propose a tensor-based channel estimation framework for beam squint-aware low Earth orbit (LEO) downlink communication. We demonstrate that downlink signals received at a ground station from multiple LEO satellites can be represented as a structured tensor. Based on this representation, the channel estimation problem is formulated as a tensor decomposition problem to mitigate beam squint effects and inter-satellite interference. To solve this, we propose constrained versions of CANDECOMP/PARAFAC (CP) and Tucker decompositions which incorporate additional constraints, such as a power constraint, not considered in the standard versions. We validate the proposed methods through numerical simulations.

Biography:
Kyungrak Son received the B.S. degree from the Department of Electrical Engineering and double majored Mathematical Sciences, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea, in 2014, and the M.S. and Ph.D. degrees from from the School of Electrical Engineering, KAIST, in 2016 and 2021, respectively. From Sep. 2021 to Aug. 2023, he was a postdoctoral researcher at Seoul National University, Seoul, South Korea. Currently, from Sep. 2023, he is an assistant professor at the Department of Information Communications Engineering, Hankuk University of Foreign Studies (HUFS), Yongin, South Korea. His research interests include wireless communications, coding/ information theory, signal processing, applications of discrete mathematics, abstract algebra in various information systems.

A Novel Hedonic Coalition Formation Game for Spectrum Shared Communication in CBRS Band

Dr. Jun-Bae Seo, Professor, Gyeongsang National University

Abstract:
Citizen Broadband Radio Service (CBRS) uses the spectrum of the 3.5 GHz band. It allows general authorized access (GAA) users to access the spectrum through the spectrum access system (SAS) while ensuring no interference with incumbent users and priority access license (PAL) holders. This work proposes a novel channel allocation scheme for GAA users, implemented through the SAS. The proposed schemes are based on a cooperative game-theoretic approach called the hedonic coalition formation (HCF) game and genetic algorithm (GA). In the former, each coalition represents a group of users sharing the same channel within the 3.5 GHz band, whereas the coalitions are formed to minimize cochannel interference (CCI). In the latter, GA is utilized to find a suboptimal channel allocation. This work demonstrates the effectiveness of the proposed schemes in comparison with Approach 1 in the standard.

Biography:
He received the BS and M. Sc. degrees in applied electronics from Korea University, Korea, in 2000 and 2003, respectively, and the Ph.D. degree from the University of British Columbia (UBC), Canada, in 2012. He was also a postdoctoral fellow with UBC until 2014. From 2015 to Aug. 2019, he was an assistant professor with the Indian Institute of Technology Delhi, New Delhi, India. Since Sep. 2020, he has been with the Department of Artificial Intelligence and Information Engineering, Gyeongsang National University, Korea. He served as an Associate Editor for IEEE Communications Letters from 2016 to 2021, and now serves as an Editor for IEEE Transactions on Communications.
His research interests include stochastic modeling and optimizing queueing systems, and game theory with applications to wireless mobile and computer communications networks.

Technical Paper Sessions

October 14th (Tuesday), 2025

A01 Wireless Communications 1

Oct. 14, 13:10~14:40 | Crystal 2

Chair : Yonggang Kim (Kongju National Univ.)

A01-1 Performance Comparison of ML-based Throughput Prediction Mechanisms in 5G Networks
Islam Md. Monirul (Hankuk University of Foreign Studies & South Korea, Korea (South)); Kamrul Hasan and Seong Ho Jeong (Hankuk University of Foreign Studies, Korea (South))

A01-2 Transformer-Based Channel Prediction for Orientation-Aware Beamforming
Yunhwa Shin (Kyungpook National University, Korea (South)); Sangwoo Shin (Kyungpook National University, Korea (South) & WCSL, Korea (South)); Jeongsik Choi (Kyungpook National University, Korea (South))

A01-3 Echo-aware Transformer-based Predictive Beamforming in Bistatic Integrated Sensing and Communication Systems
Seokjun Park and Jinseok Choi (Korea Advanced Institute of Science and Technology, Korea (South))

A01-4 Multipath-Aware Hybrid Beamforming in Upper Mid-Band via Lightweight Neural Network
Hyeongjun Kim, Hyung Joon Cho and Byonghyo Shim (Seoul National University, Korea (South))

A01-5 UNFL: Lightweight U-Net-Based Framework for Heterogeneous Federated Learning
Beomseok Seo, Minjung Kim and JaeYeon Park (Dankook University, Korea (South))

A01-6 Effective Container Allocation Strategies for Multi-Yard Inland Container Depots
Junghyun Lee and Hyeonseok Seo (KAIST, Korea (South)); Jun Kyun Choi (Korea Advanced Institute of Science and Technology (KAIST), Korea (South)); Jaeeun Park and Jaewon Jang (KAIST, Korea (South)); Gyeong Ho Lee (Sejong University, Korea (South)); Merve Gozde Sayin (TAV Technologies, Turkey)

B01 [AIPC] Vision-Language and Generative AI for Perception

Oct. 14, 13:10~14:40 | Crystal 3

Chair : Joongheon Kim (Korea Univ.)

B01-1 AI Vision Module for Defect Identification in Manufacturing Process
Hyunju Oh (Gumi Electronics & Information Technology Research Institute, Korea (South) & GERI, Korea (South)); Wan-jin Ko (Gumi Electronics and Information Technology Research Institute, Korea (South))

B01-2 Optimizing Object Detection with Multispectral RGB/IR Fusion
Sofia M Palomino Chamizo (Korea (South)); Daeyoung Kim (KAIST, Korea (South))

B01-3 Top-Down Data Generation Using Vision-Language Models for Object Detection in Constrained Battlefield Environments
Yerin Kim (University of Science and Technology (UST), Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); Jaeuk Baek (ETRI, Korea (South)); Donggyu Choi and Chang Eun Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

B01-4 Development of mask guided visual effect generation with generative AI
Ilhong Shin and Jeong-Woo Son (ETRI, Korea (South))

Technical Paper Sessions

B01-5 **A Synthetic Depth Maps Creation Mechanism based on RGB images for Object Distance Estimation**
Misbah Bibi (Jeju National University, Korea (South)); Jaehong Kim (Dongguk University, Korea (South)); Muhammad Faseeh (Jeju National University, Korea (South))

B01-6 **Temporal Prompting with Vision-Language Models for Consistent Video Scene Graph Generation**
Dohyeong Lee (University of Science and Technology, Korea (South) & Electronics and Telecommunications Research Institute, Korea (South))

B01-7 **Accelerated Training-Free Character-Consistent Text-to-Image Generation Framework**
Doyun Kwon, Geonoh Nam, Mingyoo Song and Hanul Kim (Seoul National University of Science and Technology, Korea (South))

C01 Special Session on Korea University WDM QKD

Oct. 14, 13:10~14:40 | Charlotte

Chair : Sunghyun Bae (Sejong Univ.)

C01-1 **Experimental Channel Modeling of Atmospheric Turbulence in FSO Channels**
Tae-In Oh (Korea University, Korea (South)); Byungju Lim (Pukyong National University, Korea (South)); Young-Chai Ko (Korea University, Korea (South))

C01-2 **Investigation into Improvement of Quantum Channel Filtering Performance for QKD-over DWDM Systems**
Namwook Joe, Taeho Woo and Ju Han Lee (University of Seoul, Korea (South))

C01-3 **Improving the performance of practical wavelength-multiplexed decoy-state quantum key distribution with advantage distillation technology**
Bumil Kim and Jun Heo (Korea University, Korea (South))

C01-4 **Basis Remapping for Passive Discrete-Modulated Continuous-Variable Quantum Key Distribution**
Jihee Jung and Seungho Yoon (Korea University, Korea (South))

C01-5 **Enhancing QKD Raw Key Acquisition via Laser Source Selection and Interferometer Delay Optimization**
Hyelyn Kwak and Jun Heo (Korea University, Korea (South))

C01-6 **Fractional Bandwidth Effects on Performance of Frequency-Upconverted CV-QKD**
Jaehyeok Han (Sejong University & Korea Institute of Science and Technology (KIST), Korea (South)); Donghyeok Lee (Sejong University, Korea (South)); Yong-Su Kim (Korea Institute of Science and Technology, Korea (South)); Sunghyun Bae (Sejong University, Korea (South))

C01-7 **Dynamic polarzation controller for detecting PDM signals in a WDM channel**
Seungho Yoon (Korea University, Korea (South)); Sunghyun Bae (Sejong University, Korea (South)); Jun Heo (Korea University, Korea (South))

C01-8 **Analysis of Fisher Information for Intensity-Product-Based Optical Sensing**
Sangbae Kim (Gwangju Institute of Science and Technology, Korea (South)); Kwang-Seok Noh (QSIMPLUS Co Ltd, Korea (South)); Byoung Seung Ham (Gwangju Institute of Science and Technology, Korea (South))

Technical Paper Sessions

E01 Workshop on 6G Radio & Link Adaptation

Oct. 14, 13:10~14:40 | Ruby

Chair : Sang-Woon Jeon (Hanyang Univ.)

E01-1 TransFL: Selective Transformer Layer Sharing for Efficient Federated Learning
Soojin Kim, Minjung Kim and JaeYeon Park (Dankook University, Korea (South))

E01-2 Superlet-MAE: Self-Supervised Masked Autoencoding for Sleep Staging Using Single-Channel EEG
Jeong-Yun Cha, Choel-Hui Lee, Hakseung Kim and Dong-Joo Kim (Korea University, Korea (South))

E01-3 Generalized Self-Play Reinforcement Learning for Othello under Dynamic Board Constraints
Byeongchang Kim (Gwangju Institute of Science and Technology, Korea (South) & Intelligent Information Systems Laboratory, Korea (South)); Yeaeun Lee (Gwangju Institute of Sciecnce Technology, Korea (South) & GIST, Korea (South)); Euiseok Hwang (Gwangju Institute of Science and Technology, Korea (South))

E01-4 AMVS: Automated Mapping of Vulnerabilities to Security Standards in Military Software
Sungjae Choi (Chungnam National University, Korea (South) & 최성재, Korea (South))

E01-5 Industrial Anomaly Detection Under Background Clutter A Foreground Extraction Study with RGB and 3D Data
Gibeom Kim (University of Science & Technology, Korea (South)); Hyejin S. Kim (ETRI & UST, Korea (South))

F01 Machine Learning 1

Oct. 14, 13:10~14:40 | Emerald

Chair : Hyejin S. Kim (ETRI)

F01-1 Comparative Study of Convolution Methods on Embedded AI Platforms for Inference Efficiency
Moo-seop Kim and YoungMi Song (Electronics and Telecommunications Research Institute, Korea (South)); Chi Yoon Jeong (Electronics and Telecommunications Research Institute & University of Science and Technology, Korea (South)); SuGil Choi (ETRI, Korea (South))

F01-2 Search Tree Pruning in Monotonic Planning Domains for Efficient Heuristic Search
Joonmyun Cho (ETRI, Korea (South))

F01-3 Adaptive Decoding of Turbo Product Codes Using Soft Information
Jaeyong Son (SK Hynix, Republic of Korea)

F01-4 Tackling Traveling Salesman Problems with a Cluster-Based Quantum-Classical Optimization
Saweed Hussain and Hoon Ryu (Kumoh National Institute of Technology, Korea (South))

F01-5 Empirical Satellite Spectrum Occupancy Modeling and Testbed in the L-Band
Michael Aygur, Sithamparanathan Kandeepan, Fernando Moya Caceres and Akram Al-Hourani (RMIT University, Australia); Bo Li, Sam Reisenfeld and Ediz Cetin (Macquarie University, Australia); Mark Bowyer (Airbus Defence and Space Ltd, United Kingdom (Great Britain))

Technical Paper Sessions

P01 [AIPC] Interactive Session 1

Oct. 14, 13:10~14:40 | Foyer

Chair : Youn Kyu Lee (Chung-Ang Univ.)

P01-1 A Subgrouping Method for Ultra-Low Power Consumption of IoT Devices in Wireless Environments
MinSuk Choi, Sujung Ha and Jaedeok Lim (ETRI, Korea (South))

P01-2 Design of a Progressive MAC for Drone RC Data Protection
Joungil Yun (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Seungyong Yoon (ETRI, Korea (South)); Byoungkoo Kim (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Daewon Kim (Electronics and Telecommunications Research Institute, Korea (South)); Yousung Kang (ETRI, Korea (South))

P01-3 Balancing Fidelity and Efficiency for Efficient Automatic Text-to-3D Asset Generation Pipelines
Nayeon Kim (Electronics and Telecommunications Research Institute, Korea (South)); Wonjoo Park (ETRI, Korea (South))

P01-4 RobustMark: Robust and Invisible Watermarking via Bit Distribution Balancing
Geunwoo Oh (Korea Electronics Technology Institute (KETI), Korea (South)); Choong Sang Cho (Korea Electronic Technology Institute (KETI), Korea (South)); Guisik Kim (Korea Electronics Technology Institute, Korea (South))

P01-5 Joint Fidelity and Entropy-Based Quantum Federated Aggregation
Seok Bin Son and Joongheon Kim (Korea University, Korea (South))

P01-6 Exposed Notification-based Rate Adaptation in 5G-Advanced Networks
Yeunwoong Kyung (Seoul National University of Science and Technology, Korea (South)); Jaehwan Lee and Seungmin Oh (Kongju National University, Korea (South))

P01-7 Adjustable Tactile Sensor Orientation in a Wearable Two-Finger Gripper for ICT-Integrated HumanRobot Object Characterization
Chang-Beom Kim (Electronics and Telecommunications Research Institute, Korea (South)); Young-Sung Son and Hyonyoung Han (ETRI, Korea (South))

P01-8 An Integrated Network-Computing Load Balancing Simulator for VEC-Assisted Autonomous Vehicles
Jeongho Kwak (Korea University, Korea (South)); Jeonghwan Kim (DGIST, Korea (South))

P01-9 Network-Level Detection of Visual Data Exfiltration in Camera-Equipped Service Devices
Hyeyoung An (Electronics and Telecommunications Research Institute, Korea (South)); Jun Hee Park (ETRI, Korea (South))

P01-10 Design for Performance Assurance of Industrial Robot Manipulation Data Construction Tools
Young-Sung Son and Hyonyoung Han (ETRI, Korea (South)); Byeonghun Park and An-Young Lee (SN Co, Korea (South)); Jun Hee Park (ETRI, Korea (South))

P01-11 Toward Optimal Positioning Network Planning via NeRF2-based Digital Twin
Joonhoe Koo and Seung-Woo Ko (Inha University, Korea (South))

P01-12 Kinematic-Aware Joint Weighting for Robotic Manipulation Learning
Yoosung Bae (Electronics and Telecommunications Research Institute, Korea (South)); Jun Hee Park and Hyonyoung Han (ETRI, Korea (South))

P01-13 Generative Adversarial Soft Actor-Critic
Hyo-Seok Hwang (Korea University, Korea (South)); Yoojoong Kim (The Catholic University of Korea, Korea (South)); Junhee Seok (Korea University, Korea (South))

Technical Paper Sessions

P01-14 Graph Learning for Multi-RIS assisted Wireless Network
Byungju Lim (Pukyong National University, Korea (South)); Joongheon Kim (Korea University, Korea (South))

P01-15 GNN-Based Proactive xApp Conflict Mitigation in O-RAN
Minhyeok Kim (Kyunghee University, Korea (South)); HanJun Lee (Kyung Hee University, Korea (South)); Youbin Han (Kyunghee University, Korea (South)); JunHyung Sim (Kyunghee University, Korea (South) & Other, Korea (South)); Haneul Ko (Kyung Hee University, Korea (South))

P01-16 Introduction to Quantum Generation Model
Emily Jimin Roh and Joongheon Kim (Korea University, Korea (South))

P01-17 Fully-Distributed Fairness-Aware Federated Learning
Chaemoon Im and Joongheon Kim (Korea University, Korea (South))

P01-18 EQuaTE: Efficient Quantum Train Engine Design and Demonstration for Dynamic Software Analysis
Hyunsoo Lee (Korea University, Korea (South)); Soohyun Park (Sookmyung Women's University, Korea (South)); Joongheon Kim (Korea University, Korea (South))

P01-19 TFSNet: EEG-based Emotion Recognition using Temporal and Frequency-Spatial Feature
Yeryeong Lee and Hyeryung Jang (Dongguk University, Korea (South))

P01-20 Enhancing the Blood Cells Image Detection using YOLO, CNN, IOU and improving accuracy results using KNN
Melisa Krisnawati (Dongseo University, Korea (South))

P01-21 MEDIATOR: Enhancing Medical Diagnosis via Gated Distillation and Decoupled Learning
Kyuan Oh, SungUk Lee and Mina Hwang (Chung-Ang University, Korea (South)); Hee Won Yang (Chung-Ang Universaity, Korea (South)); Kiseong Lee (Chung-Ang University, Korea (South))

P01-22 Flow Matching-based Trajectory Generation for Intelligent and Reliable Motion Control in End-to-End Autonomous Driving
Yeryeong Cho (Korea Univerisy, Korea (South)); Soohyun Park (Sookmyung Women's University, Korea (South)); Joongheon Kim (Korea University, Korea (South))

P01-23 Vision Transformer for Sequence-to-Action Networks in Autonomous Driving Control
Emily Jimin Roh, Tae hoon Lee and Joongheon Kim (Korea University, Korea (South))

P01-24 Trends in Multi-modal Large Language Models for 3D Point Cloud Understanding
Seok Bin Son (Korea University, Korea (South)); Soohyun Park (Sookmyung Women's University, Korea (South)); Joongheon Kim (Korea University, Korea (South))

P01-25 Toward Energy-Efficient Transformers: Recent Trends in Optimization Techniques
Jaehyun Chung, Seungcheol Oh and Joongheon Kim (Korea University, Korea (South))

P01-26 Antenna Selection Optimization in Polarization Reconfigurable MIMO System
Seungcheol Oh, Taewoo Park and Joongheon Kim (Korea University, Korea (South))

P01-27 Reinforcement Learning for Semiconductor Wafer Scheduling
Hyojun Ahn, Tae hoon Lee and Joongheon Kim (Korea University, Korea (South))

P01-28 Efficient Biomedical Time-series Contrastive Learning: Revisiting Taylor Expansion in Loss Optimization
Yunho Jeong, Chanyu Moon, Jinmo Kim and Ji-Woong Choi (DGIST, Korea (South))

Technical Paper Sessions

P01-29 Federated Agentic Learning with Adaptive Privacy for Cardiovascular Anomaly Detection at the Edge
Josiah Isong (Nigerian Institute of Medical Research, Nigeria); Victor Ikenna Kanu, Simeon Okechukwu Ajakwe and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

P01-30 Multi-Agent Cooperation via Graph Convolutional Reinforcement Learning
Chaemoon Im (Korea University, Korea (South)); Jaeyoung Choe (University Undergraduate, Korea (South) & Korea University, Korea (South)); Joongheon Kim (Korea University, Korea (South))

P01-31 Prompt Disambiguation for Text-to-Image Generation
Woojin Na, Minjun Kang and Hyung Il Koo (Ajou University, Korea (South))

P01-32 Design and Development of a Post-Processing Automation System to Improve Quality Consistency in Additive Manufacturing
Min-Gi Kim and Chang-Beom Kim (Electronics and Telecommunications Research Institute, Korea (South)); Eun Seo Lee (ETRI, Korea (South)); Hyun-Chul Kang and Jiyeon Son (Electronics and Telecommunications Research Institute, Korea (South))

P01-33 Efficient Channel Attention-Enhanced ResNet Variants for EOG-Based Reading Classification
YoungMi Song and Moo-seop Kim (Electronics and Telecommunications Research Institute, Korea (South)); SuGil Choi (ETRI, Korea (South)); SungJun Wang (Electronics and Telecommunications Research Institute, Korea (South)); Chi Yoon Jeong (Electronics and Telecommunications Research Institute & University of Science and Technology, Korea (South))

P01-34 Non-Intrusive Estimation of Household Behavioral Lifestyle Using Smart Meter Time-Interval Aggregation Algorithms
YouHee Choi (ETRI, Korea (South))

P01-35 LPIPS-Based Visual Quality Inspection for Irregular-Shaped Products in Additive Manufacturing Post-Processing
Hyun-Chul Kang, Chang-Beom Kim and Min-Gi Kim (Electronics and Telecommunications Research Institute, Korea (South)); Eun Seo Lee (ETRI, Korea (South)); Jiyeon Son (Electronics and Telecommunications Research Institute, Korea (South))

A02 Wireless Communications 2

Oct. 14, 16:50~18:20 | Crystal 2

Chair : Jihoon Moon (Seoul National Univ.)

A02-1 A Heterogeneous Multi-device System for Synchronous Signal Capture and Processing
Alexander Kroh, Vu Hoang Thang Chau, Duc Dung Vu and Ediz Cetin (Macquarie University, Australia)

A02-2 OCC Performance Optimization Based on the Variation of Camera and LED Parameters
Kazi Afra Nawer (North Western University, Khulna, Bangladesh & Khulna University of Engineering & Technology, Bangladesh); Mostafa Zaman Chowdhury (Khulna University of Enginnering & Technology, Bangladesh); Yeong Min Jang (Kookmin University, Korea (South))

A02-3 Interpretable Detection of Encrypted Traffic Using SHAP-Based Feature Attribution
Jiwon Suh (Sungkyunkwan University, Korea (South)); Juwon Hong (SungKyunKwan University, Korea (South)); Mose Gu and Jaehoon Jeong (Sungkyunkwan University, Korea (South))

A02-4 Asynchronous Federated Learning for Intrusion Detection Systems
Giwon Sur and Seunghyun Yoon (Korea Institute of Energy Technology, Korea (South)); Hyuk Lim (Korea Institute of Energy Technology (KENTECH), Korea (South))

A02-5 Security Analysis of the SEAT Authentication Protocol for Maritime Traffic Management
Nai-Wei Lo and Cih-Sheng Li (National Taiwan University of Science and Technology, Taiwan)

Technical Paper Sessions

B02 [AIPC] Explainable Language AI

Oct. 14, 16:50~18:20 | Crystal 3

Chair : Seungcheol Oh (Korea Univ.)

B02-1 Hybrid Algorithm for Software Cost Estimation Based on Combination of Greedy Algorithm and Machine Learning
Zulkefli Bin Mansor (Universiti Kebangsaan Malaysia, Malaysia); Li Qi Zhen (University Kebangsaan Malaysia, Malaysia)

B02-2 Condition-Aware Cultural Heritage Recommender System Using Knowledge Graph
Yeana Cha, Yoojin Kim and Jaeseung Kim (Konkuk University, Korea (South)); Jiwon Lee (Electronics and Telecommunications Research Institute, Korea (South)); Hwijae Son (Konkuk University, Korea (South))

B02-3 Completing Cultural Heritage Knowledge Graphs Using GraIL-Based Inductive Reasoning
Jaeyun Han and Jaeseung Kim (Konkuk University, Korea (South)); Jiwon Lee (Electronics and Telecommunications Research Institute, Korea (South)); Hwijae Son (Konkuk University, Korea (South))

B02-4 Progressive Vocabulary Learning via Pareto-Optimal Clustering
Deepika Verma (Kyungpook National University, Korea (South)); Daison Darlan (Kyungpook National University, Daegu, Korea (South)); Rammohan Mallipeddi (Kyungpook National University, Korea (South))

B02-5 Policy-based Word Subset Selection for Explaining Black-Box Language Models
Minyoung Hwang, SeokHyun Lee and Changhee Lee (Korea University, Korea (South))

C02 ICTC Workshop on Intelligent 6G Systems

Oct. 14, 16:50~18:20 | Charlotte

Chair : Hoon Lee (UNIST)

C02-1 Semantic Cell-Free MIMO Communication Networks
Doyun Lee (UNIST, Korea (South)); Hoon Lee (Ulsan National Institute Science and Technology, Korea (South))

C02-2 Swin-Transformer Based Hierarchical Modulation for Robust Broadcast
Jaein Lee (Seoul National University, Korea (South)); Wonjae Shin (Korea University, Korea (South)); Jungwoo Lee (Seoul National University, Korea (South))

C02-3 On the Impact of Training Mismatch in Deep-Learning-Based Channel Denoising
Sungyoung Ha and Yo-Seb Jeon (POSTECH, Korea (South))

C02-4 Latency Minimization for Split Federated Learning in Resource-Constrained MEC Networks
Yujin Hong, Gusun Joung and Inkyu Lee (Korea University, Korea (South))

C02-5 Deep Learning Architectures for Activity Detection in GF-SCMA: From Extraction to Iteration
Metasebia D. Gemeda (Korea University, Korea (South)); Minsig Han (Samsung Research, Korea (South)); Ameha Tsegaye Abebe (Samsung Electronics, Korea (South)); Chung G. Kang (Korea University, Korea (South))

C02-6 A Digital Twin Simulator for Physics-Inspired AI in 6G Wireless Networks
Seung Hyun Oh, Wookjin Lee, Youngjin Song, Jungbum Lee, Gun Kim and Sang Hyun Lee (Korea University, Korea (South))

Technical Paper Sessions

D02 ICT workshop of big data, CPs, and 5G&6G communication networks (IWBCN) I

Oct. 14, 16:50~18:20 | Pearl

Chair : Woongsoo Na (Kongju National Univ.)

D02-1 Cost-Efficient Non-Binary LDPC Decoder using Column-Layered Decoding Algorithm
Jeongwon Choe and Youngjoo Lee (KAIST, Korea (South))

D02-2 Semantic-Aware Adaptive Bitrate Streaming Based on Task-Relevant Chunk Importance
Jihoon Lim (Korea University, Korea (South)); Jaewook Lee (Pukyong National University, Korea (South)); Goeun Park, Dongkyun Ryoo, Subin Han and Sangheon Pack (Korea University, Korea (South))

D02-3 2-Bit Dual-Polarized Reprogrammable Metasurface for Reliable Millimeter-Wave Links
Minjae Lee (Chung-Ang University, Korea (South)); Duc Anh Pham (University of Illinois at Chicago, USA); Sungjoon Lim (Chung-Ang University, Korea (South))

D02-4 Research Trends in AI-Based Resource Optimization in Integrated Air-Ground Networks in the 6G Era
Minjae Go, Woongsoo Na and Gunhee Kim (Kongju National University, Korea (South))

D02-5 RIS-Assisted Fluid Antenna System for Enhanced Spectral Efficiency and Security in 6G Networks
Md Mahdir Mim and Wooyeol Choi (Chung-Ang University, Korea (South))

D02-6 Classifying Touch Locations on the Body Using Two Wristbands
Suhyeon Shin and Hyosu Kim (Chung-Ang University, Korea (South))

D02-7 Acoustic-to-Magnetic Near-Field Communication
Euije Lee and Hyosu Kim (Chung-Ang University, Korea (South))

D02-8 MoKI: 3D-Printable Modular Keyboard Interface
Seunghun Chae (Chung-Ang, Korea (South)); Hyosu Kim (Chung-Ang University, Korea (South))

D02-9 Parallel Tensor-Train Decomposition on GPU
Kiet Tuan Pham and Jinsung Kim (Chung-Ang University, Korea (South))

D02-10 Construction of an LLM-Driven Baseball Play-by-Play Semantic Parser
Eui-Jin Kim (Chung-Ang University, Korea (South)); Minhyeok Choi (Chung-Ang University, Korea (South) & 중앙대학교, Korea (South)); Minju Kim and Mucheol Kim (Chung-Ang University, Korea (South))

D02-11 LLR-Driven Rate-Profiling for Polarization-Adjusted Convolutional Codes under Small-List SCL Decoding
YeSeong Shin and Jeong Woo Lee (Chung-Ang University, Korea (South))

D02-12 A Survey on Digital Twin-Assisted Task Offloading in Remote IoT Networks
Wondmagegn Ayalneh Bitew (Chung-Ang University, Korea (South)); Tam Dinh Ton That (Chung Ang University, Korea (South)); Thwe Thwe Win, Dongwook Won and Sungrae Cho (Chung-Ang University, Korea (South))

D02-13 Integrated Sensing and Communications (ISAC) for 6G: Foundations, Architectures, and Standards-Aligned Prototyping
Anh-Tien Tran, Thanh Thien-An Dang and Chunghyun Lee (Chung-Ang University, Korea (South)); Nhu-Ngoc Dao (Sejong University, Korea (South)); Sungrae Cho (Chung-Ang University, Korea (South))

D02-14 A Survey on Reinforcement Learning Routing Algorithm Research in Delay/Disruption Tolerant Network
Gahyun Kim, Chihyun Song and Sungrae Cho (Chung-Ang University, Korea (South))

Technical Paper Sessions

D02-15 A Survey on Near-Field Communication Systems: Channel Estimation, Beam Alignment, CSI Feedback
Chihyun Song, Junsuk Oh, Jaemin Kim, Gahyun Kim and Sungrae Cho (Chung-Ang University, Korea (South))

D02-16 A Review on Sum-Rate Maximization Techniques in SIMO-RSMA System with DRL Approach: Research Challenges and Future Trends
Dang Huy Mac (Chung-Ang University, Korea (South)); Kiet Nguyen Tuan Tran (Chung Ang University, Korea (South)); Dongwook Won and Sungrae Cho (Chung-Ang University, Korea (South))

E02 ICTC Workshop on Wireless Application

Oct. 14, 16:50~18:20 | Ruby

Chair : Seung-Hoon Hwang (Dongguk Univ.)

E02-1 Comparison of RIS-Assisted and DF Relay-Assisted NOMA Communication Systems
Jiaqi Li and Seung-Hoon Hwang (Dongguk University, Korea (South))

E02-2 Applications of Artificial Intelligence in Art and Design: A Comprehensive Review
Shuzhi Liu (Qilu Normal University, China & School of Physical and Electronics Engineering, China); Wenye Liu (Shandong University of Engineering and Vocational Technology, China)

E02-3 The Convergence of AI and Low-Altitude Economy
Shuzhi Liu (Qilu Normal University, China & School of Physical and Electronics Engineering, China); Zhongyi Wang and Yusen Liu (Qilu Normal University, China)

E02-4 The Convergence of UAV D2X Communication and Intelligent Networking
Shuzhi Liu (Qilu Normal University, China & School of Physical and Electronics Engineering, China); Zhongyi Wang and Yusen Liu (Qilu Normal University, China)

E02-5 Experimental Study on mmWave FMCW Radar for Detecting Objects beyond Transparent Barriers
Dongrak Choi and Saewoong Bahk (Seoul National University, Korea (South))

E02-6 Blockchain Assisted Small Language Agent Model for Denial-of-Service Attack Detection in IoV
Mohtasin Golam (Kumoh National Institute of Technology & IT Convergence, Korea (South)); Jae-Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

F02 ICT Convergence 1

Oct. 14, 16:50~18:20 | Emerald

Chair : Seunghyun Park (Hansung Univ.)

F02-1 The Transformer Oil Dissolved Gas Prediction Method Based on Multivariate Variable-Weighting Mechanism
Ye Zhu and Zhengqin Zhou (Wuhan NARI Co Ltd. State Grid Electric Power Research Institute, China); Yi Yang (State Grid Shandong Electric Power Research Institute, China); Hao Zhan and Mengqi Li (Wuhan NARI Co Ltd. State Grid Electric Power Research Institute, China); Wen Zhou (Nanjing, China)

F02-2 An Anomaly Diagnosis and Prediction Method for Dissolved Gases in Transformer Oil Based on Multi-Expert Learning
Xu Yang and Ye Zhu (Wuhan NARI Co Ltd. State Grid Electric Power Research Institute, China); Fengda Zhang (State Grid Shandong Electric Power Research Institute, China); Zhengqin Zhou, Mengqi Li and Ziqiu Luo (Wuhan NARI Co Ltd. State Grid Electric Power Research Institute, China)

Technical Paper Sessions

F02-3 **An Improved Time Synchronization Scheme Using Timestamp-Free Mechanism for 5G-Advanced Networks**
Heng Wang, Wenjun Zhang, Yuxi Deng and Xiaojiang Liu (Chongqing University of Posts and Telecommunications, China)

F02-4 **Rethinking BiLSTM Superiority under Severe Data Heterogeneity in Federated Load Forecasting**
Adah Lubwama Nanteza, Love Allen Chijioke Ahakonye, Dong Seong Kim and Jae Min Lee (Kumoh National Institute of Technology, Korea (South))

F02-5 **PureAjo: A P2P Blockchain-Based Insurance Platform**
Anthony Uchenna Eneh, Love Allen Chijioke Ahakonye, Jae Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

F02-6 **Study on Digital Twin for Heart Healthcare and Its Application for AI Healthcare**
Jung Hwan Hwang and Kwang-Jae Lee (Electronics and Telecommunications Research Institute, Korea (South))

F02-7 **Comparison of Time-Series Foundation Models on power plant emission data**
Sangjoon Lee (Electronics and Telecommunications Research Institute, Korea (South)); Seok-Kap Ko (ETRI, Korea (South))

P02 [Main Track] Interactive Session 2

Oct. 14, 16:50~18:20 | Foyer

Chair : Woo Sungpil (Hanbat National Univ.)

P02-1 **A Study on Secure Key Generation Methods Based on Multimodal Attributes in Wireless Communications**
Daewon Kim (Electronics and Telecommunications Research Institute, Korea (South)); Seungyong Yoon (ETRI, Korea (South)); Byoungkoo Kim (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Yousung Kang (ETRI, Korea (South))

P02-2 **Development of a path-following method combining AI and app**
Heonjong Yoo, Seong Gon Choi and Jihwan Jeong (Chungbuk National University, Korea (South)); Wonseok Choi (CBNU, Korea (South))

P02-3 **TIP-Sen: Text-to-Image Generation Pipeline for Korean Seniors with Senior-specific Adaptation and Prompt Assistant**
Wooseok Song (Electronics and Telecommunications Research Institute, Korea (South)); Ah Reum Oh (ETRI, South Korea, Korea (South)); Joongyong Choi (Electronics and Telecommunications Research Institute, Korea (South)); Hyunjoo Kim (ETRI, Korea (South))

P02-4 **Pose-based Human Behavior Detection for Real-time Security Surveillance**
Jua Park (Dongduk Women's University, Korea (South)); Jeongin Cho (Pukyong National University, Korea (South)); Soonchan Park (Jeonbuk National University, Korea (South)); Jun Seong Lee and Moonwook Ryu (ETRI, Korea (South))

P02-5 **TD-ORDERER: Transaction Dependency Orderer**
Kyuln Jhi (Incheon National University, Korea (South) & Korea, Korea (South)); Gi Seok Park (Incheon National University, Korea (South))

P02-6 **CARGO: Context-Aware Retrieval-Augmented Generation Compression Optimizer over 6G Links**
Younghwan Shin (Electronics and Telecommunications Research Institute, Korea (South)); Byunghyun Yoo and Jeongmin Yang (ETRI, Korea (South)); Cheol Ho Kim (Electronics and Telecommunications Research Institute, Korea (South)); Junghoon Lee (ETRI, Korea (South)); Euisok Chung, Hyun Woo Kim and Hwa Jeon Song (Electronics and Telecommunications Research Institute, Korea (South))

P02-7 **Occupant-aware Lighting Control Algorithm with Dynamic Retention Time**
Junhee Lee (Electronics and Telecommunications Research Institute, Korea (South)); Dae-Ho Kim (ETRI, Korea (South))

P02-8 **Efficient UAV Coverage Algorithms for Areas Requiring Heterogeneous Sensors**
Taravat Darbouei and Sanghwan Lee (Kookmin University, Korea (South))

Technical Paper Sessions

P02-9 Angle-of-Arrival Estimation via DAE-enhanced Soft-weighted Clustering
Seongyeol Park, Hanvit Kim and Sunwoo Kim (Hanyang University, Korea (South))

P02-10 A Maritime Loitering Behavior Analysis with Multi-Stage Framework based on Extended Kalman Filter and HDBSCAN
Tuan Manh Tao, Chan-Hyun Youn and Changha Lee (Korea Advanced Institute of Science and Technology, Korea (South)); Lam Thanh Tran and Aleksandr Ukhatov (KAIST, Korea (South))

P02-11 Partial-Chip Extensions of Single-Chip Erasure Decoding for Flexible Use of Redundancy
Gyuri Kim, Taeuk Ha, Sang-Hyo Kim and Jungrae Kim (Sungkyunkwan University, Korea (South)); Chanki Kim (Jeonbuk National University, Korea (South))

P02-12 Chipkill-Level ECC Using 4-Bit Symbol Reed-Solomon Codes for DDR5 DRAM
Taeuk Ha and Gyuri Kim (Sungkyunkwan University, Korea (South)); Chanki Kim (Jeonbuk National University, Korea (South)); Sang-Hyo Kim (Sungkyunkwan University, Korea (South))

P02-13 High-Performance and Secure Data Integrity Verification using ARM Pointer Authentication Code
Yeseul Choi (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); JaeHo Lee and Yun-kyung Lee (ETRI, Korea (South))

P02-14 Accelerating Multi-Channel Video Processing on Resource-Constrained Devices
Sungwon Do (ETRI, Korea (South)); Sungwoo Jun (University of Science & Technology & ETRI, Korea (South)); Ji Sung Lee (ETRI, Korea (South)); Chang Eun Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

P02-15 Metaverse Concert Platform for Live Performance and Large-Scale Audience Interaction
Kyung-Kyu Kang (ETRI, Korea (South)); Cho Rong Yu, Youn-Hee Gil and Il Kwon Jeong (Electronics and Telecommunications Research Institute, Korea (South))

P02-16 Accelerating CNN Inference on MCUs with Quantized Early-Exit Networks
Gunju Park, Seungtae Hong and Jeong-Si Kim (Electronics and Telecommunications Research Institute, Korea (South))

P02-17 Transformer-based Egocentric 3D Pose Estimation with Joint-Specific Weighted Average Pooling
Sungjin Hong (Electronics and Telecommunications Research Institute, Korea (South)); Hye-Sun Kim (ETRI, Korea (South)); Cho Rong Yu (Electronics and Telecommunications Research Institute, Korea (South))

P02-18 Parameter-Efficient Quantum Machine Learning for Multi-Class Brain Tumor Classification
Abdur Rahman and Tae-Hyong Kim (Kumoh National Institute of Technology, Korea (South))

P02-19 Stereo Vision-Based Skeleton Pose Estimation with Proximity Index for Environment
Sukwoo Jung, Youn-Sung Lee and JungWook Wee (Korea Electronics Technology Institute, Korea (South))

P02-20 Development of a video event detection system for complex situational awareness for intelligent urban safety control
SungSik Park (AIBLab, Korea (South)); Youngjun Choi and Jun Wook Lee (AIBlab, Korea (South))

P02-21 Development of Neural Network-Based Personalized Controller for Human Assistive Soft Exosuits
Ayoung Shin and Young-Jun Koo (Electronics and Telecommunications Research Institute, Korea (South)); Jeong-Woo Lee (ETRI, Korea (South)); SeongHo Lee (ETRI(Electronics and Telecommunications Research Institute), Korea (South)); Bumho Kim (ETRI, Korea (South))

P02-22 Urban Parking Availability Prediction through Temporal Sensitivity and Model Trade-off Analysis
Kyonghyun Park and Jiwoo Han (ETRI, Korea (South)); Yangkoo Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Daesub Yoon (Electronics and Telecommunications Research Institute, Korea (South))

Technical Paper Sessions

P02-23 GraphRAG-Based Question Answering for Battlefield Situation Analysis from Simulation Logs
Ji Sung Lee (ETRI, Korea (South)); Sungwoo Jun (University of Science & Technology & ETRI, Korea (South)); Sungwon Do (ETRI, Korea (South)); Chang Eun Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

P02-24 An Efficient Neural Scene Generation Pipeline for High-Quality XR Content
Hye-Sun Kim (ETRI, Korea (South)); Sungjin Hong, Cho Rong Yu and Youn-Hee Gil (Electronics and Telecommunications Research Institute, Korea (South))

P02-25 Toward Net-Zero: An Explainable AI-Blockchain Framework for Predictive and Auditable Carbon Capture and Storage
Ihunanya Udodiri Ajakwe, Victor Ikenna Kanu, Simeon Okechukwu Ajakwe and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

P02-26 Reinforcement Learning-Based Free Cooling Capacity Optimization for Pharmaceutical Cleanroom HVAC Systems
Joa Hyoung Lee, Hansol Shin, Chang-Won Lee and Yoonmee Doh (ETRI, Korea (South))

P02-27 Real-Time Boarding and Alighting Detection Using Observable Physical Events in CCTV Networks
InMoon Choi and Seon Ho Oh (Electronics and Telecommunications Research Institute, Korea (South)); Kyung Soo Lim (Electronics and Telecommunication Research Institute & ETRI, Korea (South))

P02-28 Design Framework for Intelligent Security Event Integration in 5G Private Networks
Taeuk Park (Gumi Electronics & Information Technology Research Institute, Korea (South) & Kumoh National Institute of Technology, Korea (South)); Mahn-suk Yoon (Gumi Electronics & Information Technology Research Institute, Korea (South) & 구미전자정보기술원, Korea (South)); Jaeuk Kwon (Gumi Electronics and Information Technology Research Institute, Korea (South))

October 15th (Wednesday), 2025

A03 Machine Learning 2

Oct. 15, 08:30~10:00 | Crystal 2

Chair : Insoo Sohn (Dongguk Univ.)

A03-1 AI-Native Graph Learning for IVUS: Clinical Topology-Aware Segmentation
Pusit Kulkasem, Benchaporn Jantarakongkul, Suwanna Rasmequan, Watcharaphong Yookwan, Athita Onuean and Krisana Chinnasarn (Burapha University, Thailand)

A03-2 Digital Skill Assessment and Personalized Course Recommendation for Sustainable Workforce Development
Athita Onuean (Burapha University, Thailand); Dhachayawat Pasomthrap (Green Hub Co., Ltd., Thailand); Chalitda Madhyamapurush (Electronic Transactions Development Agency, Thailand); Wittawas Pantumchinda (Burapha University, Thailand); Thatsanee Charoenporn (Musashino University, Japan); Uraiwan Buatoom (Burapha University Chanthaburi Campus, Thailand); Sirima Chinnasarn (Burapha University, Thailand); Amornrat Makbodee (Computer Center Burapha University, Thailand)

A03-3 Framework Design for Dynamic Urban Flood Risk Assessment Based on Extreme Rainfall
Byungjin Lee and Yoon-Seop Chang (Electronics and Telecommunications Research Institute, Korea (South))

A03-4 Smart Fault Detection in Electric Vehicles Using Battery and Motor Operation Data Driven Deep Learning
Yeaeun Lee (Gwangju Institute of Sciecnce Technology, Korea (South) & GIST, Korea (South)); Jin-Woo Lee (Gwangju Institute of Science and Technology (GIST), Korea (South)); Nagyeong Ham and Euiseok Hwang (Gwangju Institute of Science and Technology, Korea (South))

Technical Paper Sessions

A03-5 Real-Time ViTPose Deployment via Progressive GPU Integration of DARK Post-Processing
Seon Ho Oh and Sangwook Park (Electronics and Telecommunications Research Institute, Korea (South))

A03-6 Wave Direction Estimation from Optical Satellite Imagery Using Multi-Stage Gabor Filter
Waranrach Viriyavit, Komate Amphawan, Chanyut Lisawat and Kittipisut Chansri (Burapha University, Thailand); Somrudee Deepaisarn (Sirindhorn International Institute of Technology, Thammasat University, Thailand); Paweena Kanokhong (Thammasat University, Thailand); Chakapat Chokchaisiri (Sirindhorn International Institute of Technology, Thailand); Woramate Simrum and Akkharawoot Takhom (Thammasat University, Thailand); Phutphalla Kong (Cambodia Academy of Digital Technology Phnom Penh, Cambodia); Didin Agustian Permadi (Institut Teknologi Nasional Bandung, Indonesia); Sharifah Hafizah Syed Ariffin (Universiti Teknologi Malaysia, Malaysia); Surasak Boonkla (National Electronics and Computer Technology Center, Thailand); Kasom Galajit (NECTEC, National Science and Technology Development Agency, Thailand); Jessada Karnjana (National Electronics and Computer Technology Center, Thailand)

B03 [AIPC] AIDriven Resource Optimization and Time-Series Forecasting

Oct. 15, 08:30~10:00 | Crystal 3

Chair : Soyi Jung (Ajou Univ.)

B03-1 Multi-Output Forecasting of Electricity and Gas Fees: A Comparative Study of Deep Learning and Statistical Models
Nematullo Rahmatov (Jeonbuk National University, Korea (South)); Jinsol Kwon, Jonghyeon Bae, Hyerim Jeon, Jiwoong Jeon, Eunjeong Jo, Lee Dongkyu, Juyeol Park, Jiyeon Nam, Seongmin Roh and Hoki Baek (Kyungpook National University, Korea (South))

B03-2 DA-VAE: A Semi-Supervised Approach for Anomaly Detection in Microstructure Imaging
Lee Sungmin (GERI, Korea (South)); Park Dongyong (KITECH, Korea (South))

B03-3 A Two-Stage Framework for Time-series Clustering with Encoder-agnostic Compatibility
Hyuntae Kim (Electronics and Telecommunications Research Institute, Korea (South)); Eun Seo Lee (ETRI, Korea (South)); Hyun-Chul Kang and Jiyeon Son (Electronics and Telecommunications Research Institute, Korea (South))

B03-4 A Hierarchical Learning Approach for Optimal Resource Allocation Strategy for NTN-TN Coexistence Scenarios
Junyoung Kim, Jiseok Jang and Soyi Jung (Ajou University, Korea (South))

B03-5 Hybrid Policy Learning for Decentralized Uplink Spectrum and Power Management in ISTNs
Seoyeong Park and Soyi Jung (Ajou University, Korea (South))

B03-6 Data-Efficient Electricity Consumption Forecasting with a Tabular Foundation Model
Seeun Kim, Jungmin Lim, Jiyoon Byun, Jeongyeon Kim and Hanul Kim (Seoul National University of Science and Technology, Korea (South))

C03 ICTC Workshop on Artificial Intelligence and Applications (IWAIA)

Oct. 15, 08:30~10:00 | Charlotte

Chair : Md. Abdul Latif Sarker (Kyungpook National Univ.)

C03-1 Efficient Autonomous driving Implementing an NDT Score Prediction Model
Md. Abdul Latif Sarker, Dae Geun Kang and Dong Seog Han (Kyungpook National University, Korea (South))

C03-2 Cybersecurity in Digital Twins of Electric Vehicle's Lithium-Ion Batteries
Insoo Sohn (Dongguk University, Korea (South))

Technical Paper Sessions

C03-3 **Simple RL Survivors: A Benchmark Environment for Deep Reinforcement Learning in Survivors-like Games**
Seunghwan Lee (Korea University & Complex Data Analytics Lab, Korea (South)); Junhee Seok (Korea University, Korea (South))

C03-4 **Enhanced Duplicate Image Detection via Multi-Task Learning and Contrastive Features**
Jinhyuk Song (ETRI, Korea (South)); Yongseong Cho (Electronics and Telecommunications Research Institute, Korea (South))

D03 ICTC Workshop on Open AI-RAN (IWORAN) I

Oct. 15, 08:30~10:00 | Pearl

Chair : DongKu Kim (Yonsei Univ.)

D03-1 **Practical Survey on Deploying and Troubleshooting O-RAN SMO Systems: Case Study and Lessons Learned**
Juhee Shin, Hyun-Min Yoo and Een-Kee Hong (Kyunghee University, Korea (South))

D03-2 **Budget Allocation in Multi-Task Hyperparameter Optimization**
Yeonwoo Cho and Jonghyeon Won (Yonsei University, Korea (South)); Hyun-Suk Lee (Sejong University, Korea (South)); Jang-Won Lee (Yonsei University, Korea (South))

D03-3 **Energy Efficiency Optimization for Open RAN System: Architecture and Research Trends**
Seongryool Wee, Heejae Park, SeungYeop Song and Laihyuk Park (Seoul National University of Science and Technology, Korea (South))

D03-4 **Supervised Learning of RLC Mode Switching Policy under QoE Constraints in 5G**
Nam-I Kim (Electronics and Telecommunications Research Institute, Korea (South)); Jeehyeon Na (ETRI, Korea (South))

D03-5 **MAC-SCH-Level Traffic Analysis for Energy Saving in 5G/Pre-6G gNBs**
Minsoo Jeong (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Kyung Sook Kim and Jeehyeon Na (ETRI, Korea (South))

D03-6 **A Framework for AI-Based Large-Scale Time-Series Anomaly Detection in 5G Core Networks**
Yeon-Jea Cho, Hong-Jae Lee and A-Sol Choi (Korea Telecom, Korea (South)); Do-Young Kwak (KT corp., Korea (South)); Jemin Chung (Korea Telecom, Korea (South))

D03-7 **AI-based Pilotless Communication: Experimental Validation via Channel Emulation and Indoor Over-the-air Testing**
Kyungpil Lee, Sangmin Jung, Giwan Choi, Dongwook Kim and Takki Yu (SK Telecom, Korea (South)); Dani Korpi (Nokia Bell Labs, Finland); Jaime J. L. Quispe (Nokia Bell Labs, Germany); Hiroto Yamamoto and Daisei Uchida (NTT Corporation, Japan); Huiling Jiang (NTT DOCOMO, INC., Japan); Satoshi Suyama (NTT DOCOMO, INC, Japan)

E03 ICTC Workshop on 3D communication networks (IW3DCN)

Oct. 15, 08:30~10:00 | Ruby

Chair : Jihwan Choi (KAIST)

E03-1 **Multi-channel free-space optical communication using a frequency comb with amplitude noise compensation**
Hyeokin Kang, Taewon Kim, Jaeyoon Kim, Guseon Kang, Gibeen Gu and Young-Jin Kim (KAIST, Korea (South))

E03-2 **1U-Scale Deployable Mesh Reflector Antenna for GNSS-RO CubeSat**
Gagyeong Park, Dong-Wook Yang, Min-Woo Oh and Dae-Young Lee (Korea Advanced Institute of Science and Technology, Korea (South))

Technical Paper Sessions

E03-3 **A Scalable Multicontroller SDN Framework for LEO Mega-Constellation via Topology Virtualization**
Inyoung Choi, Seonghoon Kim and Jihwan P Choi (Korea Advanced Institute of Science and Technology, Korea (South))

E03-4 **Analysis of Residual Ionospheric Errors in GNSS-RO Bending Angles Using Ray Tracing**
Jihyeok Park, Jaehee Chang, Kiyoung Sun and Jiyun Lee (KAIST, Korea (South))

E03-5 **Grid-based Beam Allocation for Acquisition of Elliptical Uncertainty Area**
JaeHun Jang, Hyungjun Kim and Hyosang Yoon (KAIST, Korea (South))

E03-6 **Plasma plume simulation of an atomic oxygen-fed ion thruster in very-low-earth-orbit**
Geonwoong Moon and Eunji Jun (Korea Advanced Institute of Science and Technology, Korea (South))

F03 [S6GC]NTN

Oct. 15, 08:30~10:00 | Emerald

Chair : Junhwan Lee (ETRI)

F03-1 **Analysis of Open-Loop Timing Advance Errors in LEO Satellite Communications**
Sunghoon Shim and Haejoon Jung (Kyung Hee University, Korea (South)); In-Ho Lee (Hankyong National University, Korea (South))

F03-2 **A Multi-Modal Simulator for Aerial Communication with Applications to Beam Search**
Jinho Kwon, Jihyeok Jung, Jeongwon Jeon and Song Noh (Incheon National University, Korea (South))

P03 [AIPC] Interactive Session 3

Oct. 15, 08:30~10:00 | Foyer

Chair : Hyosu Kim (Chung-Ang Univ.)

P03-1 **Indoor Positioning Using Wi-Fi RSSI based on LSTM-RF Combined Model**
Jinlong Li, Hwang Jun Gyu and JoonGoo Park (Kyungpook National University, Korea (South))

P03-2 **A Deep Dive into KoMaP for Accelerating AI-Based Material Development**
Kang-Il Choi (Electronics Telecommunications Research Institute, Korea (South)); Hyun Jong Kim and YoHan Choi (ETRI, Korea (South)); Su-young Chi (Electronics and Telecommunications Research Institute, Korea (South))

P03-3 **Semantics-Native Communication via Contextual Reasoning**
Hyowoon Seo (Sungkyunkwan University, Korea (South))

P03-4 **Bayesian Inverse Contextual Reasoning for Heterogeneous Semantics-Native Communication**
Hyowoon Seo (Sungkyunkwan University, Korea (South))

P03-5 **Learning Resilient Representations for Digital Semantic Communication: An Information-Theoretic Approach**
Wonjung Kim and Jaein Lee (Seoul National University, Korea (South)); Wonjae Shin (Korea University, Korea (South)); Jungwoo Lee (Seoul National University, Korea (South))

P03-6 **INSHAPE: Instance-wise Shapelets for Interpretable Time Series Classification**
Seongjun Lee, SeokHyun Lee and Changhee Lee (Korea University, Korea (South))

P03-7 **A Practical Framework for Interference Modeling and Approximation Methods in Integrated TN-NTN Systems**
Jiseok Jang, Junyoung Kim and Soyi Jung (Ajou University, Korea (South))

Technical Paper Sessions

P03-8 LLM-Driven Dynamic Reward Shaping for Cooperative Multi-Agent Excavation
Minsoo Kim and Soyi Jung (Ajou University, Korea (South))

P03-9 Multi-Head Attention Enhanced GAIL for Excavation Trajectory Generation
Junhyung Cho, Mingyu Shin and Soyi Jung (Ajou University, Korea (South))

P03-10 Signal Presence Detection for Spectrum Sensing Using YOLOv8
Deuk-Han Lee, Geun-Won Choi, Jae Hyeon Lee and Eui-Rim Jeong (Hanbat National University, Korea (South))

P03-11 Efficient Resource and Power Control in Dynamic ISTNs: A Hierarchical MADRL Approach
Seoyeong Park, Junyoung Kim and Soyi Jung (Ajou University, Korea (South))

P03-12 Comparative Analysis of Wi-SUN Communication Performance Across Transmission Schemes and Frequency Bands
Hyunho Son and Soyi Jung (Ajou University, Korea (South))

P03-13 Gait-Focused Pose Estimation Using Consumer-Grade IMUs with Phase-Aware Loss Design
Yunseong Hong (Chung-Ang University & HCSLAB, Korea (South)); Youngeun Jun and Hyosu Kim (Chung-Ang University, Korea (South))

P03-14 Autonomous Excavation Planning via Hierarchical Learning Framework
Mingyu Shin, Junhyung Cho and Soyi Jung (Ajou University, Korea (South))

P03-15 Intent-Based Adversarial Attacks against Unlearned Text-to-image Generation Models
Hyun Jun Yook, Ga San Jhun, Jae Hyun Cho and Min Jeon (Chung-Ang University, Korea (South)); Donghyun Kim (Korea University, Korea (South)); Tae Hyung Kim (Hongik University, Korea (South)); Youn Kyu Lee (Chung-Ang University, Korea (South))

P03-16 Decision Transformer Meets Flow Matching for Offline Reinforcement Learning
Asel Nurlanbek kyzy, Chang-Hun Ji, Min-Jun Kim and Youn-Hee Han (Korea University of Technology and Education, Korea (South))

P03-17 Development and Validation of a Machine Learning Prediction Model for Cases and Severity of Dengue Infection in Indonesia
Beti Ernawati Dewi, Aisya Alma Asmiranti Kartika and Annisa Tsamara Faridah (Universitas Indonesia, Indonesia); Muhammad Farrel E (University of Indonesia, Indonesia); Alif Muhammad Hafizh, Vania Chrysilla and Josh Frederich (Universitas Indonesia, Indonesia); Asik Surya (Ministry of Health of Republic, Indonesia); Desfalina Aryani (Ministry of Health of Republic Indonesia, Indonesia)

P03-18 AI-Driven Automatic Side Mirror Adjustment to Address Left-Side Blind Spots in Right Turns
Hyeonsu Kim, Jiwon Lee, Yeonsu Jeong, Seungjun Oh, Sumin Kim and Minseok Choi (Kyung Hee University, Korea (South))

P03-19 Scene Matching-Assisted Adaptive Control of Autonomous Vehicles in CARLA Simulator
Yeonsu Jeong, Jiwon Lee and Minseok Choi (Kyung Hee University, Korea (South))

P03-20 Artificial Intelligence-Enabled ISAC in 6G Radio Access Networks: A Brief Survey
Abdulahi Abiodun Badrudeen (Hanyang University, Korea (South) & Federal Polytechnic Ede, Nigeria); Mohsin Ali, Yekaterina Kim and Sunwoo Kim (Hanyang University, Korea (South))

P03-21 Tunneling Effect of quantization-based optimization
Jinwuk Seok (Electronics and Telecommunication Research Institute, Korea (South)); Chang-Sik Cho (ETRI & (Electronics and Telecommunications Research Institute), Korea (South))

P03-22 Rethinking GAN-Augmented Data: A Case Study on Leaf-GAN for Tomato Leaf Disease Classification
Prudhvi Sai Mandalapu, Adeyinka P Adedigba and Rammohan Mallipeddi (Kyungpook National University, Korea (South))

Technical Paper Sessions

P03-23 Recent Research on Cloud-Edge Computing for LLM
Heejae Park, SeungYeop Song, Seongryool Wee and Laihyuk Park (Seoul National University of Science and Technology, Korea (South))

P03-24 BEV-ConvFusion: An Efficient 2D Fusion Framework for Real-Time Autonomous Perception
Kyuan Oh, Jae-Young Yang, Minseong Kang and Kiseong Lee (Chung-Ang University, Korea (South))

P03-25 Evaluating the Impact of Audio Quality on STT in Unstable Network Conditions
Donghyeok An (Changwon National University, Korea (South)); Seungwoo Hong (Convergence Networking Research Team/ ETRI, Korea (South)); Jaeik Kim (Changwon National University, Korea (South))

P03-26 Adversarial Object-Aware Steering Attacks for Autonomous Driving Systems
Min Jeon, Hyun Jun Yook and Bo Woon Jeong (Chung-Ang University, Korea (South)); So Hyun Kang (Chung-Ang University); Youn Kyu Lee (Chung-Ang University, Korea (South))

P03-27 Making Pose Representations More Expressive and Disentangled via Residual Vector Quantization
Sukhyun Jeong (Kwangwoon University, Korea (South)); Hong-Gi Shin (School of Robotics, Kwangwoon University, Korea (South)); Yong-Hoon Choi (Kwangwoon University, Korea (South))

P03-28 Attention Mechanism in Neural Flow Models for Imbalanced ECG Beat Classification
Sungpil Woo (Hanbat National University, Korea (South))

P03-29 A ZSM-Based Security Framework for Real-Time Traffic Analysis in Local 5G networks
Mahn-suk Yoon (Gumi Electronics & Information Technology Research Institute, Korea (South) & 구미전자정보기술원, Korea (South))

P03-30 Cooperative Uplink Power Control for Multi-Cell Networks Using Multi-Agent Deep Reinforcement Learning
Joon-Young Park, Jeongyeop You and Young-Chai Ko (Korea University, Korea (South))

P03-31 Cartesian Coordinate Information based FSM PAT in FSO Communications
Hong-Seol Cha and Young-Chai Ko (Korea University, Korea (South))

A04 Wireless Communications 3

Oct. 15, 10:20~11:50 | Crystal 2

Chair : Hyun Jong Yang (Seoul National Univ.)

A04-1 Regularizing Neural Networks for BEV Semantic Segmentation via Inter-class Hierarchy and Spatially-aware Weight Adjustment
Jeongbin Hong (University of Science and Technology, Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); Dooseop Choi (Electronics and Telecommunications Research Institute, Korea (South)); Muhammad Atta ur Rahman (University of Scince and Technology, South Korea, Korea (South)); KyoungHwan An (ETRI, Korea (South)); Kyoung-Wook Min (ETRI & Chungnam National University, Korea (South))

A04-2 Generative High-Magnification Image Synthesis for EUV Mask Inspection
Hyejin S. Kim (ETRI & UST, Korea (South)); Seongjin Choi (FST, Korea (South))

A04-3 IoT-Enabled Smart Light Management System for Enhancing Layer Quail Farming Efficiency
Norrarat Wattanamongkhol (Burapha University, Thailand)

A04-4 Comparative Analysis of Time Series Forecasting Methods for Dengue Fever in Thailand's EEC Zone
Kittisak Onuean (Burapha University Sakaeo Campus, Thailand); Insung Ahn (Korea Institute of Science and Technology Information, Korea (South)); Thanin Methiyothin (Burapha University, Thailand)

Technical Paper Sessions

A04-5 Optical Handwritten Exam Answer Recognition using Intensely Learned Model
Watcharaphong Yookwan, Jiranun Sangrueng and Athita Onuean (Burapha University, Thailand); Annupan Rodtook (Faculty of Science, Ramkhamheang University, Thailand); Krisana Chinnasarn (Burapha University, Thailand)

B04 [AIPC] AI for Networks and Autonomous Systems

Oct. 15, 10:20~11:50 | Crystal 3

Chair : Soyi Jung (Ajou Univ.)

B04-1 Attention-Augmented Policy Optimization for Sensor-Aware Coordination in Heterogeneous Multi-Agent Exploration
Jaewoo Cho and Soyi Jung (Ajou University, Korea (South))

B04-2 A Survey on Flow Matching for Robotic Trajectory Generation and Control
Junhyung Cho, Minsoo Kim and Soyi Jung (Ajou University, Korea (South))

B04-3 Hierarchical RL-Based Multi-Layer Routing in Integrated TN-NTN Networks
Jiseok Jang and Soyi Jung (Ajou University, Korea (South))

B04-4 A Tree-based Scalable Behavior Task Planning Framework for Autonomous Systems
Mingyu Shin and Soyi Jung (Ajou University, Korea (South))

B04-5 Forging Agentic AI: A Comprehensive Survey on the Symbiotic Convergence of Large Language Models and Reinforcement Learning
Minsoo Kim (Ajou University, Korea (South)); Joongheon Kim (Korea University, Korea (South)); Soyi Jung (Ajou University, Korea (South))

B04-6 Reinforcement Learning-Based Correction of Indoor Path Loss Models for Wi-SUN Sub-GHz Communications
Hyunho Son and Soyi Jung (Ajou University, Korea (South))

B04-7 Multi-Agent Reinforcement Learning for Control of Heterogeneous AMRs in Smart Factories
Jongin Lee and Soyi Jung (Ajou University, Korea (South))

C04 ICTC Workshop on Artificial Intelligence and Applications (IWAIA) II

Oct. 15, 10:20~11:50 | Charlotte

Chair : MyungSun Baek (Sejong Univ.)

C04-1 Lightweight MLP-Based Operator for Real-Time Voxel-Based 3D Object Detection
George Albert Bitwire, Samuel Kakuba and Dong Seog Han (Kyungpook National University, Korea (South))

C04-2 Assessing Large Vision Models with GPT-5 for Advancing Zero-Shot Capabilities
Junyeong Lee (Kyungpook National University, Korea (South) & IT University, Korea (South)); Gyeong Hee Jung and Dong Seog Han (Kyungpook National University, Korea (South))

C04-3 A Two-Stage Deep Learning-based Framework for High-Accuracy Network Intrusion Detection
Myung-Sun Baek (Sejong University, Korea (South)); Yong-An Jung (Gumi Electronics & Information Technology Research Institute, Korea (South)); Hyoung-Kyu Song (Sejong University, Korea (South))

C04-4 A Study on Homogeneous Cooling Control of Multi-Channel Battery Modules Based on Reinforcement Learning
HyeongKyu Jin (Chungnam University, Korea (South) & SCS Inc, Korea (South)); Jaejeung Kim (Chungnam National University, Korea (South)); Yoonjeong Min and Taeyun Park (SCS Inc, Korea (South))

Technical Paper Sessions

C04-5 **Analyzing the Superiority of Logit Standardization in Knowledge Distillation for Efficient Deployment in AAM Environments**
Gwonhan Mun (Electrionics and Telecommunications Research Institute, Korea (South)); Daeho Kim (Korea (South))

C04-6 **Inferring Hierarchical Structures in Human Networks Using an Unsupervised Learning Framework with Multi-Layer Networks**
Yeri Gu (UniSoul Friends. Co., Ltd., Korea (South)); Jion Kim and Byeongkwan Woo (Hallym University, Korea (South)); Myung-Sun Baek (Sejong University, Korea (South))

C04-7 **Ontology-Driven LLM Service Protocol for HPC Platforms: Design for Workflow Interoperability and Provenance-Aware Automation**
Yejin Kwon and Jeongcheol Lee (Korea Institute of Science and Technology Information, Korea (South)); Young B Park (Dankook University, Korea (South))

D04 ICT workshop of big data, CPs, and 5G&6G communication networks (IWBCN) II

Oct. 15, 10:20~11:50 | Pearl

Chair : Laihyuk Park (Seoul National Univ. of Science and Technology)

D04-1 **Secure and Covert Fluid Antenna-Aided Multiple Access for Massive IoT in 5G Networks**
Md Mahdir Mim and Wooyeol Choi (Chung-Ang University, Korea (South))

D04-2 **Recent Communication Technologies for QoS Maintenance in V2V Communications**
Chang Gyo Jeong and Woongsoo Na (Kongju National University, Korea (South))

D04-3 **6G-Enabled Digital Twin Framework for Real-Time Cyber-Physical Systems**
Vaskar Chakma and Wooyeol Choi (Chung-Ang University, Korea (South))

D04-4 **LiDAR-Based Vehicle Density Estimation: A Survey of Spatiotemporal Occupancy Prediction**
SoHee Moon (Kongju National University, Korea (South)); Mirim Lee (Sungkyunkwan University, Korea (South)); Woongsoo Na (Kongju National University, Korea (South))

D04-5 **Dynamic Reference Update Framework for Vision-Language Tracking**
Young Seon Kim (Chung-Ang University, Korea (South))

D04-6 **A Comparative Performance Analysis of SpMM Kernels based on Sparse Matrix Characteristics**
Junhyeong Park and Jinsung Kim (Chung-Ang University, Korea (South))

D04-7 **Performance Evaluation of Sparse Matrix-Matrix Multiplication Kernels Using a Hierarchical Roofline Model**
Inseo Kim and Jinsung Kim (Chung-Ang University, Korea (South))

D04-8 **Relevance-Guided Retrieval under Continually Expanding Knowledge Bases**
Hyundong Jin, Heayoun Choi and Eunwoo Kim (Chung-Ang University, Korea (South))

D04-9 **A Survey on Rate-Splitting Multiple Access: Challenges and Future Directions**
Tam Dinh Ton That (Chung Ang University, Korea (South)); Wondmagegn Ayalneh Bitew, Thanh Thien-An Dang, Juyoung Kim and Sungrae Cho (Chung-Ang University, Korea (South))

D04-10 **Anomaly Detection of AGV Communication Failures in Factory Wi-Fi Network**
Sunwoo Bang (Chung-Ang University, Korea (South)); Jae Hong Shin (Hyundai Motor Company, Korea (South)); Jeongyeup Paek (Chung-Ang University, Korea (South))

Technical Paper Sessions

D04-11 Industrial Wi-Fi Traffic Forecasting Using Diverse Time-Series Models
Minjun Choi (Chung-Ang University, Korea (South)); Jae Hong Shin (Hyundai Motor Company, Korea (South)); Jeongyeup Paek (Chung-Ang University, Korea (South))

D04-12 Deep Reinforcement Learning for Adaptive Bitrate Streaming over Wireless Networks: Advances, Challenges, and Open-Source Simulation
Thanh Thien-An Dang and Anh-Tien Tran (Chung-Ang University, Korea (South)); Nhu-Ngoc Dao (Sejong University, Korea (South)); Sungrae Cho (Chung-Ang University, Korea (South))

D04-13 Learning to Optimize: Unrolling-based Approach for 6G Wireless Networks
The Vi Nguyen, Thi My Tuyen Nguyen, Chihyun Song and Sungrae Cho (Chung-Ang University, Korea (South))

D04-14 Integrating Optimization and Reinforcement Learning for Optimal Design in 6G Wireless Networks
Thi My Tuyen Nguyen, The Vi Nguyen, Junsuk Oh and Sungrae Cho (Chung-Ang University, Korea (South))

E04 ICTC Special Session on Network Softwarization

Oct. 15, 10:20~11:50 | Ruby

Chair : Sangheon Pack (Korea Univ.)

E04-1 Standardization Review on ATSSS
Yeunwoong Kyung (Seoul National University of Science and Technology, Korea (South)); Jaewook Lee (Pukyong National University, Korea (South)); Haneul Ko (Kyung Hee University, Korea (South)); Seungmin Oh and Jaehwan Lee (Kongju National University, Korea (South))

E04-2 Converged RAN-CN Intelligence for Next-Generation Mobile Networks: A Conditional Handover Case Study
Seonbin Lee (Kyunghee University, Korea (South)); Haneul Ko (Kyung Hee University, Korea (South)); Yeunwoong Kyung (Seoul National University of Science and Technology, Korea (South))

E04-3 Implementation of a Converged Transport and Core Network Testbed for 6G
Jaewook Lee, Hyeongjun Jeon, Daehyeon Nam and Sanghui Lee (Pukyong National University, Korea (South))

E04-4 Real-Time Drift Detection on P4-Programmable Switch
Sanghoon Lee, Haeun Kim, Heewon Kim, Chanbin Bae, Dongkyun Ryoo and Sangheon Pack (Korea University, Korea (South))

E04-5 Freshness-Aware Adaptive Early Reporting for Timely In-Band Network Telemetry Collection
Haeun Kim, Sanghoon Lee, Jihoon Lim, Heewon Kim, Chanbin Bae and Sangheon Pack (Korea University, Korea (South))

P04 [S6GC] Interactive Session 4

Oct. 15, 10:20~11:50 | Foyer

Chair : Hewon Cho (ETRI), Mingun Kim (ETRI)

P04-1 Anomaly Detection for Multi-Region Radio Noise Measurement Data
Youngkeun Yoon (Electronics and Telecommunications Research Institute, Korea (South)); Heon-Jin Hong and Ho Kyung Son (ETRI, Korea (South))

P04-2 AI-Guided Lightweight Selective Encryption Framework for NAL-Based Video Streams in Real-Time Systems
Yong-Kyun Kim and Geon woo Kim (Electronics and Telecommunications Research Institute, Korea (South))

Technical Paper Sessions

P04-3 **HyLME: Language Model Embeddings with Knowledge Distillation for Robust Predictive Maintenance under Missing Sensor Data**
Ju-Young Kim, Ji-Hong Park and Gun-Woo Kim (Gyeongsang National University, Korea (South))

P04-4 **Detection of PUCCH Format 0 and Performance Analysis for 5G NR Systems**
Seongjin Ahn and JunHwan Lee (ETRI, Korea (South))

P04-5 **Velocity-Aware Handover Optimization Based on O-RAN Architecture**
Donghun Lee and Jeehyeon Na (ETRI, Korea (South))

P04-6 **A Survey of Open-Source Simulators for Information-Centric Networking**
Sae Hyong Park, Seungjae Shin, Byungchan Kim and Sung-tae Hong (Electronics and Telecommunications Research Institute, Korea (South)); Tae-Yeon Kim (ETRI, Korea (South))

P04-7 **Performance Analysis of SRv6 Forwarding for 6G Mobile User Plane**
Jongseok Lee (Electronics and Telecommunications Research Institute, Korea (South)); Sunjin Kim and Namseok Ko (ETRI, Korea (South))

P04-8 **A YANG Data Model for External Event-driven Network Traffic Volume Prediction**
Hongseok Jeon (Electronics and Telecommunications Research Institute, Korea (South)); Seunghyun Yoon (Electronics and Telecommunications Research Institute(ETRI), Korea (South))

P04-9 **Performance Analysis of Multi-Cell 5G PHY Layer Processing Based on NVIDIA Aerial CUDA-Accelerated RAN with GPU MPS Resource Allocation**
Kakyeom Jeon (Electronics and Telecommunications Research Institute, Korea (South)); Jeehyeon Na (ETRI, Korea (South)); Nam-I Kim (Electronics and Telecommunications Research Institute, Korea (South))

P04-10 **Low Noise Amplifier MMIC Design for ISAC Using 0.2 um GaN HEMT Technology**
YounSub Noh (ETRI, Korea (South)); Hyung-Seok Lee and Sung-Bum Bae (Electronics and Telecommunications Research Institute, Korea (South)); ByoungChul Jun and JiHun Kwon (WAVICE, Korea (South))

P04-11 **High-Reliability and Low-Latency Mobility Based on Integrated Operation of CHO/CPCA and LTM**
Sunmi Jun, Yong Seouk Choi and Heesang Chung (ETRI, Korea (South))

P04-12 **Seeing the Future (Phase I): AI-Based Measurement Prediction for Reliable High-Capacity Vehicular Connectivity in Road-Embedded Mobile Networks**
SoonGi Park (Electronics and Telecommunications Research Institute, Korea (South)); Junsik Kim and Kwang-Seon Kim (ETRI, Korea (South)); Young-Jo Ko (Electronics and Telecommunications Research Institute, Korea (South))

P04-13 **Development of PDCP-UL protocol stack supporting 5G NR base station**
Hyun-Yong Hwang (ETRI, Korea (South))

P04-14 **On the Effects of Information-Bit Puncturing in Short-Length 5G NR LDPC Codes**
Jungim Kim (Electronics and Telecommunications Research Institute, Korea (South))

P04-15 **Efficient RIS Beamforming via Top-K Codebook Pre-selection and Phase Polishing**
Jihyung Kim (ETRI, Korea (South)); Jaeho Lee and Jinkyu Kang (Myongji University, Korea (South))

P04-16 **Adaptive PDCP Duplication for Reliability Enhancement**
Junsik Kim (ETRI, Korea (South))

P04-17 **Opportunistic Resource Scheduling for Multibeam Satellite Communications**
Jongseo Lee, Seonho Jang, Hongjae Jeong and Minchae Jung (Sejong University, Korea (South))

Technical Paper Sessions

P04-18 EAM-integrated DBR-LD Using Self-Aligned Metal Contact Method
Taein Kang (Electronics and Telecommunications Research Institute, Korea (South)); Chul Wook Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Oh Kee Kwon and Kyuho Kim (Electronics and Telecommunications Research Institute, Korea (South))

P04-19 Performance Evaluation of Deep Learning-Based CSI Feedback in FDD Massive MIMO
Bora Yoon and Junghyun Kim (Sejong University, Korea (South)); Dukhyun You and JunHwan Lee (ETRI, Korea (South))

P04-20 Latency Analysis of LDPC Kernel Launch Modes in cuPHY PUSCH Multi-Pipe Processing
Cho Hyebin (Electronics and Telecommunications Research Institute, Korea (South)); Jeehyeon Na (ETRI, Korea (South)); Nam-I Kim (Electronics and Telecommunications Research Institute, Korea (South))

P04-21 A Ka-Band Variable-Gain Phase Shifter for 6G NTN with LEO Satellites
Mingyu Lee, Wonseob Lee, Hyeonwon Song and Hyungju Kim (Chonnam National University, Korea (South)); Seunghyun Jang (ETRI, Korea (South)); Hui Dong Lee (Electonics and Telecommunications Research Institute, Korea (South)); Bonghyuk Park (ETRI, Korea (South)); Seungchan Lee and Jinseok Park (Chonnam National University, Korea (South))

P04-22 Vision Transformer-based High Precision Semantic Segmentation for Radio SLAM
Seungwoo Baek, Nakyung Lee and Sunwoo Kim (Hanyang University, Korea (South))

P04-23 Enhancing Network Log Clustering through Fourier Transform-Based Embeddings
Junghoon Lee (Chonnam National University, Korea (South) & Chonnam University, Korea (South)); Jihoon Lee, Jaeho Song and Jaehyung Park (Chonnam National University, Korea (South)); Minsoo Hanh (Astana IT University, Kazakhstan); Jinsul Kim (Chonnam National University, Korea (South))

P04-24 A Study on Programmable Resource Management Infrastructure Technology with Guaranteed Application Performance
Byeongok Kwak (ETRI, Korea (South)); Seungwoo Hong (Convergence Networking Research Team/ETRI, Korea (South))

P04-25 Angle-Only Outdoor Localization at 3.5/7.5 GHz Using NVIDIA Sionna RT
Byungchan Kim and Sung-tae Hong (Electronics and Telecommunications Research Institute, Korea (South))

P04-26 Self-Powered Betavoltaic Cell Design for Enabling Long-Term Power in Space
Jaewon Park (Electronics and Telecommunications Research Institute, Korea (South))

P04-27 Effect of Interface Reflections on Upward Transmittance of InP-based Grating Couplers
Young Sun Moon (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Taehyun Park and Oh Kee Kwon (Electronics and Telecommunications Research Institute, Korea (South))

P04-28 Generative AI for DTN Initialization: High-Fidelity Time-Series Network Data Synthesis via Denoising Diffusion Models
Sangwon Oh, Seungmin Oh and Juhyeon Noh (Chonnam National University, Korea (South)); Minsoo Hanh (Astana IT University, Kazakhstan); Jaehyung Park and Jinsul Kim (Chonnam National University, Korea (South))

P04-29 AI-Enhanced Dynamic Spectrum Allocation with Reinforcement Learning and Nash Bargaining for 6G THz Networks
Nurzati Iwani Othman (Asia Pacific University of Technology and Innovation, Malaysia); Athirah Mohd Ramly (University of East London, United Kingdom (Great Britain)); Nurul Ainaa Muhamad Shaari and Rina Azlin Razali (Asia Pacific University of Technology and Innovation, Malaysia); Sofia Pinardi (Universitas Muhammadiyah PD Hamka, Indonesia)

P04-30 A Study on RIS-Aided Integrated Sensing and Communication Systems
Seon-Ae Kim (Electrics and Telecommunications Research Institute, Korea (South)); Heesang Chung (ETRI, Korea (South))

Technical Paper Sessions

P04-31 **Understanding the Primary Synchronization Signals in 3GPP Cellular Networks**
Byung-Jae Kwak, Jinkyeong Kim and Chanho Yoon (ETRI, Korea (South)); Jungho Myung and Young-Jo Ko (Electronics and Telecommunications Research Institute, Korea (South))

P04-32 **1Tb/s Intradyne Coherent Receiver for Optical Fiber Transmission over 100km**
Jong-Hoi Kim (Electronics and Telecommunications Research Institute, Korea (South))

A05 Network & Systems 1

Oct. 15, 13:10~14:40 | Crystal 2

Chair : Junsu Kim (Tech Univ. of Korea)

A05-1 **Privacy-Preserving Anomaly Detection in Smart Cities Leveraging Federated Learning**
Boyun Eom (ETRI, Korea (South)); Dong-Hwan Park (Electronics and Telecommunications Research Institute, Korea (South))

A05-2 **Predicting Slowly-Varying Mean and Variance in Gaussian-Type Time-Series: A Comprehensive Deep-Learning Benchmark**
Soonyong Song (ETRI, Korea (South))

A05-3 **A Precise Classification of Medical Images with a Cost-Efficient Quantum-Classical Hybrid Neural Network**
Tanvir Hasan (Kumoh National Institute of Technology, Gumi, Republic of Korea, Korea (South)); Hoon Ryu (Kumoh National Institute of Technology, Korea (South))

A05-4 **Graph Neural Network-Based Prediction of Cyber Threats Using IDS Logs**
Hyejin Kim (Korea Institute of Energy Technology, Korea (South)); Hyunseo Doo (Kangwon National University, Korea (South)); Seunghyun Yoon (Korea Institute of Energy Technology, Korea (South)); Hyuk Lim (Korea Institute of Energy Technology (KENTECH), Korea (South))

A05-5 **Active Indoor Situational Awareness Through LED Lighting Systems**
Shalini Madhumali Lanka Virindu Panikkiyalage, Juha Häkkinen, Pekka Sangi and Marcos Katz (University of Oulu, Finland)

A05-6 **A Modular Domain-Aware Neural Network Architecture for Power Amplifier Linearization**
Lotta Rantala (Nokia Solutions and Networks, Finland); Arne Fischer-Bühner (Nokia Bell Labs, Belgium); Alberto Brihuega (Nokia Solutions and Networks, Finland); Sasan Sharifipour and Praneeth Susarla (University of Oulu, Finland); Miguel Bordallo Lopez (University of Oulu, Finland & VTT Technical Research Centre of Finland Ltd., Finland); Constantino Alvarez Casado (University of Oulu, Finland)

B05 [AIPC] Generative AI and LLMs

Oct. 15, 13:10~14:40 | Crystal 3

Chair : Yeonwoong Kyung (Seoul National Univ. of Science and Technology)

B05-1 **Beyond Full Fine-Tuning: Parameter-Efficient Adaptation for Large-Scale Natural Language Generation**
Emily Jimin Roh (Korea University, Korea (South)); Soohyun Park (Sookmyung Women's University, Korea (South)); Joongheon Kim (Korea University, Korea (South))

B05-2 **Perception to Action with Vision-Language-Action Models for Fast and Reliable Decision Making in Dynamic Environments**
Yeryeong Cho (Korea Univerisy, Korea (South)); Jaeyoung Choe (University Undergraduate, Korea (South) & Korea University, Korea (South)); Joongheon Kim (Korea University, Korea (South))

Technical Paper Sessions

B05-3 **Large Language Models for Task Automation: A Comprehensive Review of Techniques and Implementation Challenges**
Jaehyun Chung (Korea University, Korea (South)); Minji Lee (University of Korea, Korea (South)); Joongheon Kim (Korea University, Korea (South))

B05-4 **Augmented State Neural-Transition Extended Kalman Filter**
Seungcheol Oh, Seonggyu Jung and Joongheon Kim (Korea University, Korea (South))

B05-5 **Carbon-Aware Energy-Efficient Aerial Mobility Control via Large Language Models**
Hyojun Ahn, Tae hoon Lee and Joongheon Kim (Korea University, Korea (South))

B05-6 **Leverage Noise Coupling in Generative AI models for Robotic Actions**
Jun Hee Park (ETRI, Korea (South)); Yoosung Bae (Electronics and Telecommunications Research Institute, Korea (South)); Hyeyoung AN (Post Doctorials, Korea (South))

B05-7 **Generative AI-based Offline Reinforcement Learning for Trajectory Planning**
Chaemoon Im, Bohyeon Kim and Joongheon Kim (Korea University, Korea (South))

B05-8 **Mamba2 Meets Silence: Robust Vocal Source Separation for Sparse Regions**
Eui-Yeon Kim and Yong-Hoon Choi (Kwangwoon University, Korea (South))

C05 Workshop on Core Networks, NWDAF & Slicing

Oct. 15, 13:10~14:40 | Charlotte

Chair : Hyeonho Noh (Hanbat National Univ.)

C05-1 **Zone-based Physics-Informed Neural Network (Z-PINN) for Addressing Data Scarcity in Ceramic Sintering Processes**
Seungwan Woo (University of Science and Technology (UST), Korea (South)); Hyun-Woo Oh (Electronics & Telecommunications Research Institute, Korea (South))

C05-2 **A Survey of Object-Detection Datasets Applied to Defense Environments**
Youjeong Jeong and Seungil Noh (Defense Agency for Technology and Quality, Korea (South))

C05-3 **Study on Co-simulation of Heterogeneous Simulators Using Functional Mock-up Interface and Open-Source Toolchains**
Jeongsik Kim (ETRI, Korea (South)); Daeseung Yoo (Electronics and Telecommunications Research Institute, Korea (South)); Woo-Sung Jung (ETRI, Korea (South)); Ho-Min Park (Electronics and Telecommunications Research Institute, Korea (South))

C05-4 **Lightweight Hybrid Network Intrusion Detection Method based on AutoEncoder-XGBoost**
Wonseok Choi (CBNU, Korea (South)); Seong Gon Choi and Bum Su Kim (Chungbuk National University, Korea (South))

C05-5 **Adaptive Contrastive Learning framework for Real-World Applications with Class Imbalance**
Hyeonseok Seo and Junghyun Lee (KAIST, Korea (South)); Jun Kyun Choi (Korea Advanced Institute of Science and Technology (KAIST), Korea (South)); Chanhyung Lee (KAIST, Korea (South)); Hyunseo Park (Korea Advanced Institute of Science and Technology (KAIST), Korea (South)); Ismail Uzun (Inosens, Turkey)

C05-6 **Data Quality Analysis Framework for Defense Objective Detection Systems**
Seungil Noh, Eunjin Choi and Jeongho Lee (Defense Agency for Technology and Quality, Korea (South))

Technical Paper Sessions

D05 ICT workshop of big data, CPs, and 5G&6G communication networks (IWBCN) III

Oct. 15, 13:10~14:40 | Pearl

Chair : Sungrae Cho (Chung-Ang Univ.)

D05-1 Diagnosing AGV Wi-Fi Disconnection via dmesg Logs: A Real-World Factory Case Study
Suhwan Bae (Chung-Ang University, Korea (South)); Jae Hong Shin (Hyundai Motor Company, Korea (South)); Jeongyeup Paek (Chung-Ang University, Korea (South))

D05-2 Task Offloading in Open RAN: Deployment Scenarios, Research Trends
Heejae Park, Seongryool Wee, SeungYeop Song and Laihyuk Park (Seoul National University of Science and Technology, Korea (South))

D05-3 Large Language Model for 5G Network: Architecture and Research Trends
Seongryool Wee, Heejae Park, SeungYeop Song and Laihyuk Park (Seoul National University of Science and Technology, Korea (South))

D05-4 O-RAN enabled V2X Communications: Use Case and Research Trend
SeungYeop Song, Heejae Park and Seongryool Wee (Seoul National University of Science and Technology, Korea (South)); Won Seok Choi and Kyungmo Sung (TTA, Korea (South)); Laihyuk Park (Seoul National University of Science and Technology, Korea (South))

D05-5 GNN Unlearning Reality Checklist (GURC): A Standard for Robust, Reproducible, and Privacy-Safe Evaluation
Imran Ahsan (Chung Ang University, Korea (South)); Hyunwook Yu and Mucheol Kim (Chung-Ang University, Korea (South))

D05-6 DRL-based Sum-Rate Maximization for RSMA in RIS-Aided Cognitive Satellite-Aerial Networks
Kyoungdeok Mun and Jeong Woo Lee (Chung-Ang University, Korea (South))

D05-7 Future Prospects On OTFS-Based Integrated Sensing and Communication
Kiet Nguyen Tuan Tran (Chung Ang University, Korea (South)); Dang Huy Mac, Dongwook Won and Sungrae Cho (Chung-Ang University, Korea (South))

D05-8 Machine Unlearning for Pathological Image Classification Models
Min Jun Kim (Chung-Ang Uiversity, Korea (South)); Jae Hyun Cho, Hyun Jun Yook, Young Seon Kim, Su Yeon Kim and Youn Kyu Lee (Chung-Ang University, Korea (South))

D05-9 Behind the Curtains of VLM: Analyzing the Influence of Background Knowledge
Ga San Jhun and Hyun Jun Yook (Chung-Ang University, Korea (South)); Min Kyu Choi (Kyonggi University, Korea (South)); Joongheon Kim (Korea University, Korea (South)); Youn Kyu Lee (Chung-Ang University, Korea (South))

D05-10 A Comparative Study of Sequence Length in Sequential Recommender Systems
Hyonjun Kang (Chung Ang University, Korea (South)); Hyunwook Yu, TaeYoung Choe and Mucheol Kim (Chung-Ang University, Korea (South))

D05-11 Stable Diffusion-based Wireless Image Reconstruction over Noisy Channels
Mahelet Kumelachew Assefa and Seong Ho Jeong (Hankuk University of Foreign Studies, Korea (South))

D05-12 A Brief Survey of Two Recent Polynomial Commitment Schemes from Lattices
Minuk Ban and Hyung Tae Lee (Chung-Ang University, Korea (South))

D05-13 Investigating the Effects of Negative Sampling in Knowledge Graph Completion
Sooho Moon (Chung-Ang University, Korea (South)); Yunyong Ko (Chung-Ang University, Korea (South) & CAU, Korea (South))

Technical Paper Sessions

D05-14 An Empirical Analysis of Score Mapping in Time-Series Anomaly Detection
Saejoon Park and Gyuwon Lee (Chung-Ang University, Korea (South)); Yunyong Ko (Chung-Ang University, Korea (South) & CAU, Korea (South))

D05-15 LiDAR Reflection Recovery via Shadow Boxing
Kyungmin Kim and Jeongyeup Paek (Chung-Ang University, Korea (South))

E05 ICTC Workshop on Intelligent Secure Underwater Communications (IWISUC)

Oct. 15, 13:10~14:40 | Ruby

Chair : Namyoon Lee (POSTECH)

E05-1 State-Pruning and Likelihood Learning Network for Reduced Complexity BCJR Algorithm in Underwater Acoustic Channels
Sehyeon Kim (Korea Advanced Institute of Science and Technology, Korea (South)); Mintaek Oh (KAIST, Korea (South)); Jinseok Choi (Korea Advanced Institute of Science and Technology, Korea (South)); Jeongwoo Park and Jeonghun Park (Yonsei University, Korea (South))

E05-2 Data-Augmentation-Aided Detection for MIMO Systems under Hardware Impairments
Yujin Kang and Yo-Seb Jeon (POSTECH, Korea (South))

E05-3 A Unified Simulation Framework for Underwater Acoustic Communications with a Physics-Seeded Channel, BOSS Coding, and Attention-Aided Estimation
Jeongwoo Park and Jeonghun Park (Yonsei University, Korea (South)); Sehyeon Kim and Jinseok Choi (Korea Advanced Institute of Science and Technology, Korea (South))

E05-4 Securing Underwater Acoustic Networks: A Role of Physical Layer Authentication
Jiwon Kim and Jemin Lee (Yonsei University, Korea (South))

E05-5 Complexity Analysis of MIMO-OFDM Receivers for Underwater Acoustic Communications
Chanhee Lee (POSTECH, Korea (South)); Soonhyun Kwon (KAIST, Korea (South)); Sangbu Yun (POSTECH, Korea (South)); Youngjoo Lee (KAIST, Korea (South))

E05-6 Rate-Matching Deep Polar Codes via Polar Coded Extension
Geon Choi and Namyoon Lee (POSTECH, Korea (South))

P05 [Main Track] Interactive Session 5

Oct. 15, 13:10~14:40 | Foyer

Chair : Sang-Hyo Kim (Sungkyunkwan Univ.)

P05-1 Digital Twin-based Sim2Real Framework for Real-Time Robotic Task Evaluation
Yoo Ho Son (Electronics and Telecommunications Research Institute, Korea (South)); Hyonyoung Han and Eun Seo Lee (ETRI, Korea (South)); Kang-Woo Lee (Electronics and Telecommunications Research Institute, Korea (South))

P05-2 Latent Pyramid Guidance for Training-Free Diffusion Style Transfer
Dae-Young Song and Jung-Jae Yu (ETRI, Korea (South))

P05-3 Generative AI-based VFX Production Pipeline
Jung-Jae Yu, Soonchul Jung and Dae-Young Song (ETRI, Korea (South))

Technical Paper Sessions

P05-4 Semi-Automated Generation of Object Mask Annotations from Bounding Box Labels Using SAM with Domain-Aware Geometric Constraints
SungWon Moon (ETRI, Korea (South)); Jiwon Lee (Electronics and Telecommunications Research Institute, Korea (South)); Jung Soo Lee, Do-Won Nam and Seungjae Lee (ETRI, Korea (South))

P05-5 Robust Artwork Recognition on Mobile Devices: A Comparative Analysis of Preprocessing for Image Retrieval
Jiwon Lee (Electronics and Telecommunications Research Institute, Korea (South)); SungWon Moon and Jung-Jae Yu (ETRI, Korea (South))

P05-6 Performance Analysis of Deep Learning-Based Direction Finding in the High-Frequency Band
Suna Choi (ETRI, Korea (South)); Gwangmoon Park and Kanghee Kim (Electronics and Telecommunications Research Institute, Korea (South))

P05-7 A Reexamination of Nonlinearity Models in Digital Self-Interference Cancellation for Full-Duplex Communication
Hyoungsoo Lim (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Jung Hwan Hwang (Electronics and Telecommunications Research Institute, Korea (South))

P05-8 Encrypted Network Traffic Feature Extraction for Application Classification
Yangseo Choi (Electronics and Telecommunications Research Institute, Korea (South)); Ki-Jong Koo (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Daesung Moon (ETRI, Korea (South)); Jaehak Yu (Electronics and Telecommunications Research Institute, Korea (South))

P05-9 A Target-Aware Neural Network Inference Template Code Generation Technique for the TANGO Framework
Jaebok Park and KyungHee Lee (ETRI, Korea (South)); Chang-Sik Cho (ETRI & (Electronics and Telecommunications Research Institute), Korea (South))

P05-10 A Study on the Development of a Radio Interference Analysis System for UAM Services
Cheol-Ho Shin and Ho Kyung Son (ETRI, Korea (South))

P05-11 Enhanced OFDM Signal Detection via Hybrid MMSE and Deep Neural Network Architecture
Muhammad Usman, Iqra Hameed and Md Habibur Rahman (Sejong University, Korea (South)); Mohammad Abrar Shakil Sejan (Sejong University, Seoul, South Korea, Korea (South)); Md Abdul Aziz and Hyoung-Kyu Song (Sejong University, Korea (South))

P05-12 Performance Analysis of Lightweight Object Detection Networks on On-Device NPU for Security-Critical Industrial Applications
Hyunwoo Kim (Electronics and Telecommunications Research Institute, Korea (South)); SungJae Yoon (ETRI, Korea (South)); Munyoung Lee (Electronics and Telecommunications Research Institute, Korea (South)); Seung Hyub Jeon (ETRI, Korea (South)); ShinYuk Kang (Electronics and Telecommunications Research Institute, Korea (South)); Kyu Sung Lee (ETRI, Korea (South))

P05-13 Optimizing Free Cooling Operation in GMP Regulated Pharmaceutical Cleanroom HVAC Systems via Transformer Attention-Aligned RL
Joa Hyoung Lee, Hansol Shin, Chang-Won Lee and Yoonmee Doh (ETRI, Korea (South))

P05-14 Service-oriented Study on Slot-level Metadata Derived from Multimodal Analysis
Hyun-Jeong Yim (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

P05-15 Automated Unauthorized Banner Detection System
Sanghyun Park and Hyung Il Koo (Ajou University, Korea (South))

Technical Paper Sessions

P05-16 RL-Based Adaptive Scheduling for Full-Duplex Multi-Hop FSOC under Blocking Events in Smart Semiconductor Manufacturing
Siwoong Park, Ji-Soo Shin and Chan IL Yeo (Electronics and Telecommunications Research Institute, Korea (South))

P05-17 A Proposal of a Standardized Architecture of Manufacturing Data Trading platform
Yoonsook Hwang (Intelligent Robotics Research Division, ETRI, Korea (South)); Tae Hyun Yoon (ETRI, Korea (South)); Dongkoo Shon (Electronics and Telecommunications Research Institute, Korea (South)); Yongkil Kim (BP&Solution, Korea (South)); Woong Cho (Kangwon National University, Korea (South)); Daeseung Yoo (Electronics and Telecommunications Research Institute, Korea (South))

P05-18 The Effect of a Wearable Suit on Compensation of Gait Impairments by Musculoskeletal Weakness: A Simulation Study
Young-Jun Koo and Ayoung Shin (Electronics and Telecommunications Research Institute, Korea (South)); Jeong-Woo Lee (ETRI, Korea (South)); SeongHo Lee (ETRI(Electronics and Telecommunications Research Institute), Korea (South)); Bumho Kim (ETRI, Korea (South))

P05-19 Cognitive Response Prediction System for Universal XR Metaverse Games
Jongsung Kim (Electronics and Telecommunications Research Instititue, Korea (South))

P05-20 Energy Savings Analysis of Automated Chilled Water Supply Pump Control in HPF Process
Taehyung Kim, Jinsoo Han and Wan-Ki Park (ETRI, Korea (South))

P05-21 VetChain-RAG: A PureChain-Enhanced RAG Framework for Veterinary Diagnosis
Raneem Khafagy, Paul Angelo Oroceo, Dong Seong Kim and Jae Min Lee (Kumoh National Institute of Technology, Korea (South))

P05-22 An Efficient Modality Fusion Framework for Driver Cognitive Load Classification
Sumin Park (Sungkyunkwan University, Korea (South)); SungJun Wang (Electronics and Telecommunications Research Institute, Korea (South)); Chi Yoon Jeong (Electronics and Telecommunications Research Institute & University of Science and Technology, Korea (South))

P05-23 Federated Anomaly Detection and Mitigation for EV Charging Forecasting Under Cyberattacks
Oluleke Babayomi and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

P05-24 Field-aware Factorization Machines for Item Recommendation in Multiplayer Online Battle Arena Games
Hyeong-Gyu Jang (University of Science and Technology, Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); Sang-Kwang Lee (Electronics and Telecommunications Research Institute, Korea (South))

P05-25 A MARL-based Approach for Distributed FSOC Scheduling in Smart Semiconductor Manufacturing
Siwoong Park, Ji-Soo Shin and Chan IL Yeo (Electronics and Telecommunications Research Institute, Korea (South))

P05-26 A Study on Quality Check of Optical Satellite Images Based on Browser-Level Imagery
Song Ran Kim (Korea Aerospace Research Institute, Korea (South)); Min-a Kim (KARI, Korea (South))

P05-27 A Semi-Supervised Learning Framework for Employee Performance Evaluation using Group-based Features
SeungChan Jeon and Jangkyum Kim (Sejong University, Korea (South))

P05-28 Exploring Policy Distillation for Vision-Language-Action Generalist Robotic Policies
Ingook Jang (Electronics and Telecommunications Research Institute, Korea (South)); Samyeul Noh (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Seonghyun Kim (Electronics and Telecommunications Research Institute, Korea (South))

Technical Paper Sessions

P05-29 Knowledge Graph-Based Online Learning Platform for 3D Asset Retrieval
Kisuk Lee, Director (ETRI, Korea (South)); Soo-Hyung Lee (Electronics and Telecommunications Research Institute, Korea (South))

P05-30 A Generative AI Approach for Image Augmentation and Applications in Industrial Imaging
Munyoung Lee, Eun-Hee Kim and Hyunwoo Kim (Electronics and Telecommunications Research Institute, Korea (South)); Kyu Sung Lee (ETRI, Korea (South))

P05-31 Hi-DARTS: Hierarchical Dynamically Adapting Reinforcement Trading System
Hoon Sagong (Hongik University, Korea (South)); Heesu Kim (Sungkyunkwan University, Korea (South)); Hanbeen Hong (Hankuk University of Foreign Studies, Korea (South))

P05-32 High-Gain and Better Power-Handling Array Antenna for Satellites for Military Communication
Woogon Kim, Seongbu Seo and Hongsik Park (Incheon National University, Korea (South)); Sung-Uk Kim (Incheon National University, Korea (South), Korea (South)); Jinwoo Bae and Sungtek Kahng (Incheon National University, Korea (South))

P05-33 Analysis of measurement-free fault-tolerant surface code at the circuit level
Gunsik Min and Jun Heo (Korea University, Korea (South))

P05-34 An RFSoC-based ISAC Prototype for Real-Time AI-based Human Activity Recognition
Sangwoo Shin (Kyungpook National University, Korea (South) & WCSL, Korea (South)); Yunhwa Shin and Jeongsik Choi (Kyungpook National University, Korea (South))

P05-35 Probing the Limits of Algorithmic Reasoning in Transformers: A Case Study on Addition
Soonchul Jung (ETRI, Korea (South)); Jae Woo Kim and Jin-Seo Kim (Electronics and Telecommunications Research Institute, Korea (South))

P05-36 Addressing Sparse Rewards in Visual Reinforcement Learning via Balanced Online-Offline Sampling Under Scarce Demonstrations
Samyeul Noh (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Seonghyun Kim and Ingook Jang (Electronics and Telecommunications Research Institute, Korea (South))

P05-37 Survey of π_0, π_0-FAST, and $\pi_{0.5}$: Vision-Language-Action Models in the Physical AI Framework
Seonghyun Kim (Electronics and Telecommunications Research Institute, Korea (South)); Samyeul Noh (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Ingook Jang (Electronics and Telecommunications Research Institute, Korea (South))

October 16th (Thursday), 2025

A06 Machine Learning 3

Oct. 16, 08:30~10:00 | Crystal 2

Chair : Intae Hwang (Chonnam National Univ.)

A06-1 Converging Computer Vision and Deep Learning for Adaptive Printing on Irregular 3D Surfaces
Matteo Zenadocchio and Graziano Battisti (University of L'Aquila, Italy); Andrea Marotta (University of L'Aquila, Italy & WEST Aquila SRL, Italy); Vincenzo Di Nino (Carvin Engineering Srl, Italy); Guido De Vincentiis (Muchcolours SRL, Italy); Augusto Rabuffo (Muchcolours srl, Italy)

A06-2 Q-Learning Based Adaptive Modulation and Coding for Throughput Maximization in Dynamic Wireless Environments
Wei Shun Liao and Akihiro Nakao (The University of Tokyo, Japan)

Technical Paper Sessions

A06-3 A Survey of Model Inversion Attacks on Image Domain
Changjin Kim, Chanwoo Hwang, Sunpill Kim and Jae Hong Seo (Hanyang University, Korea (South))

A06-4 I Understand Understand You: A Reliable Multi-Agent Facilitator for Reducing Communication Breakdowns
Onyedikachukwu Tochukwu Mba, Love Allen Chijioke Ahakonye, Jae Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

A06-5 Design and Implementation of a MobileNet-Based YOLO Object Detection Model for Resource-Constrained Devices
Seungtae Hong, Gunju Park and Jeong-Si Kim (Electronics and Telecommunications Research Institute, Korea (South))

A06-6 Enhancing Lightweight IRSR Models via Knowledge Distillation with Structural and Spectral Losses
SeungSoo Han, Dongnyeok Choi, Deukhwa Kim, Jeonghun Kim and Seunghoon Shin (Funzin, Korea (South))

A06-7 Development of FTM Automatic Measurement System for Indoor Location
Takashi Ookawahara and Yudai Sunagozaka (National Institute of Technology, Toyama College, Japan); Rei Hirata and Atsushi Koizumi (National Institute of Technology, Toyama College); Koki Nakamura (Mitsubishi Electric Corp., Japan); Takenori Sumi (Mitsubishi Electric Corporation, Japan); Yukimasa Nagai (Mitsubishi Electric Corp., Japan); Hiroshi Oguma (National Institute of Technology, Toyama College, Japan)

B06 [AIPC] AI and Quantum Approaches for Communication

Oct. 16, 08:30~10:00 | Crystal 3

Chair : Soohyun Park (Sookmyung Women's Univ.)

B06-1 PQCIF: Post-Quantum Cryptography Integration Framework for Securing Blockchain-enabled Internet of Medical Things
Yujin Lee and Hoh Peter In (Korea University, Korea (South)); Mpyana Mwamba Merlec (Korea University, Korea (South) & Université Nouveaux Horizons (UNH), Congo (Democratic Republic, Zaire)); Sami Souihi (FRANCE, France); Jin Woo Jung (Korea University, Korea (South))

B06-2 Image Generation Over Multi-Hop MIMO Networks
Junhwa Jeon (Ulsan National Institute of Science and Technology, Korea (South)); Doyun Lee (UNIST, Korea (South)); Hoon Lee (Ulsan National Institute Science and Technology, Korea (South))

B06-3 UNet Based Deep Learning for Interferometric SAR Phase Unwrapping
Jeungwoo Ham (Hanyang University, Korea (South)), Yifang Shi (Hangzhou Dianzi University, China), Haewoon Nam (Hanyang University, Korea (South))

B06-4 Entanglement-aware Quantum Error Mitigation for Complex Quantum Circuits
Su Yeon Kim, Ga San Jhun and Yae Jin Kwon (Chung-Ang University, Korea (South)); Joongheon Kim (Korea University, Korea (South)); Youn Kyu Lee (Chung-Ang University, Korea (South))

B06-5 Quantum CNN-GCN-Based Road Hazard Detection with Lyapunov Optimized Control
Juhui Heo and Soohyun Park (Sookmyung Women's University, Korea (South))

B06-6 Stability-Aware UAV Trajectory Planning with Sub-Path Decomposition via Diffusion-Reinforced Decision Making
Minjoo Kim and Soohyun Park (Sookmyung Women's University, Korea (South))

Technical Paper Sessions

C06 [S6GC]Mobile Core

Oct. 16, 08:30~10:00 | Charlotte

Chair : Yeonwoong Kyung (Seoul National Univ. of Science and Technology)

C06-1 Open5GLoS: Scalable Cloud-Native Architecture for Open-Source 5G Core Networks
Quang-Huy Tran (University of Science and Technology, Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); Quang Tung Thai and Namseok Ko (ETRI, Korea (South))

C06-2 A Study on 6G Architecture for Unified UE Context Management
HyoChan Bang (ETRI, Korea (South)); Myung-Eun Kim (Electronics and Telecommunications Research Institute, Korea (South)); Namseok Ko (ETRI, Korea (South))

C06-3 Global Collaborative Research on 6GARROW: 6G AI-Native Integrated RAN-Core Networks
Doyoung Lee (Electronics and Telecommunications Research Institute, Korea (South)); Tae-Yeon Kim (ETRI, Korea (South))

C06-4 Experimental Validation of On-Time Forwarding in Long-Haul Optical Networks for 6G Services
Chang Ho Choi, Yeoncheol Ryoo and Woo Young Choi (ETRI, Korea (South)); Ho Geon Kim (Electronics and Telecommunication Reserch Institute, Korea (South)); Kang TaeKyu (ETRI, Korea (South)); Taesik Cheung (Electronics and Telecommunications Research Institute, Korea (South))

D06 ICTC Workshop on Super connected and collaborated unmanned autonomous mobility (IWSUMIMIT)

Oct. 16, 08:30~10:00 | Pearl

Chair : JungWoo Sohn (Kumoh National Institute of Technology)

D06-1 A GNN based Reinforcement Learning Framework for Abnormal IoT Communication Detection in 5G mMTC Networks
Taeuk Park (Gumi Electronics & Information Technology Research Institute, Korea (South) & Kumoh National Institute of Technology, Korea (South)); Mahn-suk Yoon (Gumi Electronics & Information Technology Research Institute, Korea (South) & 구미전자정보기술원, Korea (South)); Jaeuk Kwon (Gumi Electronics and Information Technology Research Institute, Korea (South)); Soo Young Shin (Kumoh National Institute of Technology, Korea (South))

D06-2 VISTA-SLAM: An Edge-Ready Benchmark Vision for Energy, Bandwidth, and Instance-Persistent Multi-Robot Mapping
Michael C Akor and Heoncheol Lee (Kumoh National Institute of Technology, Korea (South))

D06-3 A Static Object Tracking System for Enhanced SLAM Performance in Dynamic Environments
Huidong Kim and Moses Oche Oluma (Kumoh National Institute of Technology, Korea (South)); SeungHwan Lee (Kumoh National Institute of Technology, Republic of Korea, Korea (South))

D06-4 A Mobile Robot for Extreme Environments with Wireless Teleoperation and Autonomous Environmental Perception
Beomseok Kim, Hyunbin Park, Junyeop Jung, Seunghyeok Kim, Chanmin Woo and Baeksuk Chu (Kumoh National Institute of Technology, Korea (South))

D06-5 Force-Aware Robotic Manipulation via Haptic-Guided Inverse Reinforcement Learning
Jung Woo Sohn and Do-Gyeong Yuk (Kumoh National Institute of Technology, Korea (South))

Technical Paper Sessions

E06 Workshop on AI for Sensing, Vision & Edge

Oct. 16, 08:30~10:00 | Ruby

Chair : Simeon Okechukwu Ajakwe (Kumoh National Institute of Technology)

E06-1 Ergonomic Multimodal Data Collection System for Versatile Robot Manipulation Tasks
Hyonyoung Han (ETRI, Korea (South)); Chang-Beom Kim (Electronics and Telecommunications Research Institute, Korea (South)); Jun Hee Park (ETRI, Korea (South))

E06-2 A Data-Driven Framework for Comprehensive Workplace Performance Evaluation
Jaewoong Lee (Sejong, Korea (South)); Jangkyum Kim (Sejong University, Korea (South))

E06-3 PureProt: An AI-Blockchain Enabled Virtual Screening Platform for Drug Discovery
Victor Ikenna Kanu, Simeon Okechukwu Ajakwe and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

E06-4 3D Avatar Control by Inferring User Intensions from Impaired Actions for Barrier-free XR Contents
Jongsung Kim (Electronics and Telecommunications Research Instititue, Korea (South))

E06-5 ProvAuditChain: A Gas-Efficient On-Chain Provenance Framework for AI-Driven Smart Contract Audits
George Chidera Akor, Love Allen Chijioke Ahakonye, Jae Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

E06-6 Attribute-Guided and Hybrid Approaches for Interpretable 3D Object Retrieval
Juwon Lee (ETRI, Korea (South)); Suwoong Lee (Electronics and Telecommunications Research Institute, Korea (South)); Seungjae Lee (ETRI, Korea (South))

F06 [SCSS] Technical Session 1

Oct. 16, 08:30~10:00 | Emerald

Chair : In-Ho Lee (Hankyong National Univ.)

F06-1 Performance Evaluation of Grouping-based Feeder Link Switch Over for LEO Satellites
Won-Jae Lee (ETRI, Korea (South)); Sung-Min Oh (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

F06-2 Stochastic Analysis of LEO Satellite Backhaul Connectivity over Great-Circle Airline Routes
Fatemeh Rafiei Maleki, Ayush Kumar Dwivedi and Taneli Riihonen (Tampere University, Finland)

F06-3 OTFS downlink synchronization for 6G NTN
Carla Amatetti (University of Bologna, Italy); Pansoo Kim (ETRI, Korea (South)); Jae-young Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); JoonGyu Ryu (ETRI, Korea (South)); Alessandro Vanelli-Coralli (University of Bologna, Italy)

P06 [Main Track] Interactive Session 6

Oct. 16, 08:30~10:00 | Foyer

Chair : Seungnyun Kim (MIT)

P06-1 Development of a rinsing-efficiency sensor to reduce washing water use and energy consumption in dyeing plants
Jeong In Lee, Jinsoo Han and Wan-Ki Park (ETRI, Korea (South))

P06-2 Integrated Handover Simulation Framework for Non-Terrestrial Network
Jin Young Kang (Semicolon, Korea (South)); Lee Kyungrak and JoonGyu Ryu (ETRI, Korea (South))

Technical Paper Sessions

P06-3 **Digital Twin-Driven Federated Learning for Intrusion Detection under Simulated Adversarial Conditions**
Kanita Jerin Tanha, Md Mahinur Alam and Taesoo Jun (Kumoh National Institute of Technology, Korea (South))

P06-4 **Digital Twin-Driven Semi-Supervised Knowledge Distillation for HMC Monitoring on Edge Device**
Taesoo Jun, Kanita Jerin Tanha and Md Mahinur Alam (Kumoh National Institute of Technology, Korea (South))

P06-5 **Privacy Secure Service Architecture with Blockchain in Smart Home**
Chang-Sic Choi, Tai Yeon Ku and Wan-Ki Park (ETRI, Korea (South))

P06-6 **Edge AI and Cloud-Integrated Framework for Real-Time Harmful Drone Detection and Neutralization**
Odinachi Udemezuo Nwankwo (Kumoh National Institute of Technology, Korea (South)); Hope Leticia Nakayiza (Kumoh National Institute of Technology, Gumi, Korea (South)); Simeon Okechukwu Ajakwe, Dong Seong Kim and Jae Min Lee (Kumoh National Institute of Technology, Korea (South))

P06-7 **LYRICS: Line-by-Line Lyric Generation with Joint Control of Syllables, Context, and Rhyme**
Seoyeon Ko, Hyunseo Kim, Seoyeong Hwang, Jihyun Yu, Jeonghyun Kim, Hyunsoo Cho and Junhyug Noh (Ewha Womans University, Korea (South))

P06-8 **Conversational AI-Powered Multi-Agent System for Mobile Application Accessibility Compliance: A RAG-Enhanced Pipeline Design**
Nayeon Kim and Byungjun Bae (Electronics and Telecommunications Research Institute, Korea (South))

P06-9 **Action Model-Based Natural Language Control System for Digital Twins**
Younghwan Jeong, Won Gi Choi, Taemin Hwang, Jinyoung Lee and Sang-Shin Lee (Korea Electronics Technology Institute, Korea (South))

P06-10 **A Denoising Convolutional Autoencoder for Robust DoA Estimation in Low-SNR Radar Environments**
Xuan-Toan Dang, Joon-soo Eom and Oh-Soon Shin (Soongsil University, Korea (South))

P06-11 **Impact of Traffic Density on Reinforcement Learning-Based Autonomous Driving**
Sang Hyeon Park, Solomon Oladayo Ajani and Rammohan Mallipeddi (Kyungpook National University, Korea (South))

P06-12 **QuantumShield V2X: A Continuous-Variable Quantum Key Distribution Framework for Eavesdropping-Resistant V2X Communications**
Collins Izuchukwu Okafor, Love Allen Chijioke Ahakonye, Dong Seong Kim and Jae Min Lee (Kumoh National Institute of Technology, Korea (South))

P06-13 **Scalable and Efficient PureChain-Based Federated Learning for Intelligent Transportation Systems**
Miraculous Udurume, Love Allen Chijioke Ahakonye, Jae Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

P06-14 **Performance of TFDOA Convergence Algorithm to Improve the Efficiency of Jamming Signal Location Estimation**
Chung Sup Kim (ETRI, Korea (South))

P06-15 **LSTM-Based Destination Prediction Method Using Location Information and Temporal Characteristics**
Jihwan Jeong (Chungbuk National University, Korea (South)); Wonseok Choi (CBNU, Korea (South)); Seong Gon Choi (Chungbuk University, Korea (South))

P06-16 **Enabling Indoor Autonomous Vehicle Navigation through HCMI Map Construction Using Spatial Data Cubes**
Sangsu Kim, Junhee Go, Hee Tac Jung, Ji-Yeon Kang and Seung Jae Lee (ICTWAY, Korea (South))

Technical Paper Sessions

P06-17 UAV-BS Assisted User Localization Considering Bearing Observability in mmWave Systems
Juhyung Lee (ROKAF, Korea (South) & Ajou University, Korea (South)); Jiyoon Noh and Dongmin Kim (ROKAF & Ajou University, Korea (South)); Jae Sung Lim (Ajou University, Korea (South))

P06-18 Localization Performance Analysis of UAV-based Integrated Sensing and Communication System
Dongmin Kim and Jiyoon Noh (ROKAF & Ajou University, Korea (South)); Juhyung Lee (ROKAF, Korea (South) & Ajou University, Korea (South)); Jae Sung Lim (Ajou University, Korea (South))

P06-19 Scalable Sliding Resource Allocation in C-V2X Mode-3 with Multi-Agent Reinforcement Learning
Moin Ali (Tech University of korea, Korea (South)); Su Min Kim and Junsu Kim (Tech University of Korea, Korea (South))

P06-20 USD-Based 3D Model Database and Spatial Configuration Technologies for Digital Twins
Myeongseop Kim and JungWook Wee (Korea Electronics Technology Institute, Korea (South))

P06-21 Enhancing Wi-Fi RSSI-Based Indoor Positioning with a Covariance-Weighted Distance Metric
Youngjin Lee (University of Science and Technology, Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); Hansol Park (University of Science and Technology (UST), Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); DukKyun Woo (ETRI, Korea (South)); Jaejun Yoo (Electronics and Telecommunication Research Institute, Korea (South))

P06-22 Federated Learning and Lightweight Blockchain for Resilient UAV Communication Against PNT and Model Poisoning Attacks
Dong Seong Kim and Simeon Okechukwu Ajakwe (Kumoh National Institute of Technology, Korea (South))

P06-23 AI-vOLT: Multi-Stage Agentic Translation from Operator Intent to Executable PON Procedures
Chansung Park (ETRI, Korea (South)); YongWook Ra (Electronics and Telecommunications Research Institute, Korea (South)); Hwan Seok Chung (ETRI, Korea (South))

P06-24 Edge-Based Multimodal Crowd Monitoring System for Outdoor Environments
Taemin Hwang, Won Gi Choi, Sohyeon Kim, Jinyoung Lee and Younghwan Jeong (Korea Electronics Technology Institute, Korea (South)); Minjoon Kim (School of Electrical and Computer Engineering University of Seoul, Korea (South))

P06-25 Quantum-Enhanced Edge Intelligence: Bridging Quantum Computing and Distributed AI
Hoa Tran-Dang (Kumoh National Institute of Technology, Korea (South) & IT Convergence Engineering, Korea (South)); Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

P06-26 Toward Heterogeneity-Aware Striping in Lustre
Sooyoung Lim, Jaegi Son and Dongmin Kim (Korea Electronics Technology Institute, Korea (South))

P06-27 Multi-Stage Intrusion Detection System for 5G Security Resilience
Hyun Jin Kim, Jung Tae Kim and Jisoo Shin (Electronics and Telecommunications Research Institute, Korea (South)); Yongyoon Shin (ETRI, Korea (South)); HoonKi Lee (Electronics & Telecommunications Research Institute, Korea (South))

P06-28 Multi-Object Count Estimation in OFDM Radar Systems Using YOLOv8 Based on Subcarrier Sparsity
Euna Ko, Soyeon Jeon and Eui-Rim Jeong (Hanbat National University, Korea (South))

P06-29 Development of Small Data-Based Mathematical Models for Industrial AI Applications
Ji-yong Hwang (Electronics and Telecommunications Research Institute, Korea (South)); Hyun-Woo Oh (Electronics & Telecommunications Research Institute, Korea (South))

P06-30 A COLREG-compliant Local Path Planning for Unmanned Surface Vehicle
Jiwoo Jung (Donnguk University, Korea (South)); Jinwoo Choi (KRISO, Korea (South)); Seungbeom Seo and Yu-Cheol Lee (Dongguk University, Korea (South))

Technical Paper Sessions

A07 Network & Systems 2

Oct. 16, 10:20~11:50 | Crystal 2

Chair : Jaehoon Paul Jeong (Sungkyunkwan Univ.)

A07-1 NWDAF Implementation: Network Function Load Analytics in 5G Core Network
Vinh Quang Tran (VIETTEL Group & VHT Company, Vietnam); Bach Tuan Phan (Mobile Switching Technologies Center & Viettel High Technology Corporation, Vie, USA); Diep Pham Quang (Mobile Switching Technologies Center & Viettel High Technology Corporation, Vietnam)

A07-2 An On-Device System for Analyzing Chat Conversations
Sunghee Lee (Electronics and Telecommunications Research Institute, Korea (South)); Jonghwan Kim (ETRI, Korea (South)); Byungjun Bae (Electronics and Telecommunications Research Institute, Korea (South))

A07-3 Design and Implementation of a HOE-Based Variable-Focus Light Field AR HUD Optical System
Jaegwan Choi (GERI, Korea (South) & Gumi Electronics & Information Technology Research Institute, Korea (South))

A07-4 Experimental Results for Indoor Positioning Based on Wi-Fi FTM and RSSI
Koki Nakamura (Mitsubishi Electric Corp., Japan); Takashi Ookawahara, Yudai Sunagozaka, Rei Hirata and Atsushi Koizumi (National Institute of Technology, Toyama College, Japan); Takenori Sumi (Mitsubishi Electric Corporation, Japan); Jianlin Guo (Mitsubishi Electric Research Laboratories, USA); Yukimasa Nagai (Mitsubishi Electric Corp., Japan); Hiroshi Oguma (National Institute of Technology, Toyama College, Japan)

A07-5 Dynamic active period control in heterogeneous wireless sensor networks
Yusaku Harada and Nobuyoshi Komuro (Chiba University, Japan)

B07 [AIPC] (6G Global ITRC) 6G and AI

Oct. 16, 10:20~11:50 | Crystal 3

Chair : Kyoungjae Lee (Chung-Ang Univ.)

B07-1 Hybrid Quantum-Classical Generative Adversarial Network for Patch-Based Image Generation
Jen-Sheng Tsai and Li-Yin Cai (National University of Kaohsiung, Taiwan)

B07-2 Secrecy Enhancement and Distributed Architectures in LEO Satellite Networks: A Survey on AN-Assisted Scheduling and SUSDA Design
Md Sakil Hasan, Md Gulam Ishak and Jihwan Moon (Hanbat National University, Korea (South))

B07-3 AI/ML-Driven Predictive Mobility Management in 3GPP: Technical Insights and Standardization Trends
Wonho Lee, HeeJu Chae, Inkyu Bang, Eunkyung Kim, Taehoon Kim and Gosan Noh (Hanbat National University, Korea (South))

B07-4 Performance Enhancement Technique for Traffic Sign Recognition using Combining Label Smoothing and Focal Loss
Hyunseo Jeong and Eunkyung Kim (Hanbat National University, Korea (South))

B07-5 ACKurate-DQN: Adaptive Throughput-Based Congestion Control Using Deep Reinforcement Learning
HeeJu Chae (Hanbat National University, Korea (South)); Wan-Seon Lim (Electronics and Telecommunications Research Institute, Korea (South)); Gosan Noh and Eunkyung Kim (Hanbat National University, Korea (South))

Technical Paper Sessions

B07-6 **Performance Analysis of RSMA-Based MU-MISO LEO Satellite Downlink System with Imperfect CSI**
Seonghyun Kim, Kun Ju Kim, Suho Shin and Kyoung-Jae Lee (Hanbat National University, Korea (South))

B07-7 **NTN Evolution in 3GPP 5G Advanced**
Kun Ju Kim, Seonghyun Kim, Md Sakil Hasan, Refat Khan, Md Gulam Ishak, Jihwan Moon, Kyoung-Jae Lee and Gosan Noh (Hanbat National University, Korea (South))

B07-8 **A Survey on 5G NR Sub-band Full Duplex**
Richmond Odarkwei Cleland (Hanbat National University, Korea (South) & Hnu, Ghana); Lois Oforiwaa Anokye (Hanbat National University, Korea (South)); Yangho Park (Chung-Ang University, Korea (South)); Gosan Noh (Hanbat National University, Korea (South)); Kyoung-Jae Lee (Chung-Ang University, Korea (South))

B07-9 **A Study on Non-Invasive Malware Detection Using Electromagnetic Radiation Monitoring**
Young-Bae Jung, Gyeongdeok Ju and Patrick Danuor (Hanbat National University, Korea (South)); KIM Yongmyeong (Hanbat, Korea (South)); Mun-Cheol Lim (Hanbat National University, Korea (South))

C07 [S6GC]Radio and Components

Oct. 16, 10:20~11:50 | Charlotte

Chair : Jung Hwan Hwang (ETRI)

C07-1 **Enhanced Thermal Performance of RF Amplifiers via Manifold Microchannel with Porous Structure**
Minsoo Kang (Electronics and Telecommunications Research Institute, Korea (South)); Hyun-Wook Jung and Seong-Il Kim (ETRI, Korea (South)); Sangmin Lee and Haecheon Kim (Chung-Ang University, Korea (South)); Ho-Kyun Ahn and Dong-Min Kang (ETRI, Korea (South)); Hyoungsoon Lee (Chung-Ang University, Korea (South))

C07-2 **RF Self-Interference Cancellation Circuits for Advanced Duplex Systems**
Gisung Yang and Hwan-Jae Cho (Yonsei University, Korea (South)); Sangwook Kim (Yonsei University, Seoul, Korea (South)); Byung-Wook Min (Yonsei University, Korea (South))

C07-3 **A High-Gain MIMO Lens Antenna with Meta-Transmissive Surface for Dual Circular Polarization Conversion in 6G Terrestrial, Airborne, and Non-Terrestrial Communication Networks**
Muhammad Hussain (Electronics and Telecommunication Research Institute (ETRI), 34129, Daejeon, South Korea); Jaeseong Kim (Electronics and Telecommunications Research Institute & Korea University, Korea (South)); Hyunjong Choi (Korea University, Korea (South)); Minhyup Song (Electronics and Telecommunications Research Institute, Korea (South))

C07-4 **A 46-GHz DFB+R Laser Utilizing Detuned-Loading and Photon-Photon Resonance Effects for 6G Data Center Networks**
Younghoon Kim (Electronics and Telecommunications Research Institute, Korea (South)); Young-Tak Han (ETRI, Korea (South)); Seok-Jun Yun (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Sang-Ho Park (ETRI, Korea (South)); Dong-Hun Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

C07-5 **Space radiation effects in GaN-based devices**
DongSeok Kim and Jeongtae Kim (Korea Atomic Energy Research Institute, Korea (South)); SungJae Chang (Electronics and Telecommunications Research Institute, Korea (South))

Technical Paper Sessions

D07 ICTC Workshop on Hanyang Univ Beyond-G Center

Oct. 16, 10:20~11:50 | Pearl

Chair : Hyeong-Gun Joo (Hanyang Univ.)

D07-1 Hybrid processing-in-memory architecture for sparse matrix-matrix multiplication
Kwangrae Kim and Ki-Seok Chung (Hanyang University, Korea (South))

D07-2 Blind Massive MIMO for Joint Multi-Cast Uni-Cast
Wonseok Choi, Jeongjae Lee and Songnam Hong (Hanyang University, Korea (South))

D07-3 Theoretical Analysis of the Operation of SiGe Low-Noise Amplifier
Jongho Lee (Hanyang University, Korea (South)); Gyungtae Ryu and Taeyeong Kim (Hanyang, Korea (South)); Hyoungsuk Yoo (Hanyang University, Korea (South)); Moon-Kyu Cho (Korea National University of Transportation, Korea (South)); Ickhyun Song (Hanyang University, Korea (South))

D07-4 Perfomance Analysis of Feedback Amplifiers Using Signal Flow Graph
Jiyong Chung (Hanyang University, Korea (South)); Ilho Myeong (Seoul National University, Korea (South)); Ickhyun Song (Hanyang University, Korea (South))

D07-5 Multi-Agent Deep Reinforcement Learning for QoS-Adaptive Decentralized Congestion Control in C-V2X Networks
SangBin Nam (Hanyang University, Korea (South)); TaeSik Nam (Yonsei University, Korea (South)); Han-Shin Jo (Hanyang University, Korea (South))

D07-6 A Secure and Efficient Implementation of the FALCON BaseSampler Against Side-Channel Attack
Hyunseo Choi, Jaesang Noh, SeungHwan Lee and Dong-Joon Shin (Hanyang University, Korea (South))

D07-7 Understanding Cross-Domain Robustness in LiDAR Semantic Segmentation
Yewon Song, Sumin Lee and Soonmin Hwang (Hanyang University, Korea (South))

D07-8 Experimental Validation of Clustering-based Multipath Component Classification with 28 GHz Indoor Measurements
Hyunsoo Lee, Adam P Dubs, Nakyung Lee and Sunwoo Kim (Hanyang University, Korea (South))

D07-9 On the Applicability of General LiDAR Registration to V2X Data Alignment
Kyungmin Kim (Hanyang University & IRCV Lab, Korea (South)); Soonmin Hwang (Hanyang University, Korea (South))

E07 ICTC Workshop on intelligent mobility system and security (IWIMISS)

Oct. 16, 10:20~11:50 | Ruby

Chair : Jiwoong Choi (DGIST)

E07-1 LLM-based Hybrid Intrusion Detection for Automotive Ethernet and In-Vehicle Networks
Joeun Kim (DGIST, Korea (South)); Young-Sik Kim (Daegu Gyeongbuk Institute of Science and Technology (DGIST), Korea (South))

E07-2 Toward Efficient Edge-Cloud Collaborative Speculative Decoding via Adaptive Draft
Pyeongjun Choi (DGIST, Korea (South)); Donghyeon Kim (Korea University, Korea (South)); Sihyeon Lee (Soongsil University, Korea (South)); Seyeon Kim and Jeongho Kwak (Korea University, Korea (South))

Technical Paper Sessions

E07-3 Vulnerability Analysis of Cross-Layer Attacks on ROS 2
Hyunho Ryu, Sanghoon Lee and Kyung-Joon Park (DGIST, Korea (South))

E07-4 Deep Reinforcement Learning Based Dynamic Link Selection for Per-Message QoS Satisfaction in Hybrid V2X
Dong-Hyeok Shin, Seungjae Lee and Han-Shin Jo (Hanyang University, Korea (South))

E07-5 CNN-LSTM-Based Intrusion Detection System with Robust Zero-Day Defense in Vehicular Network
Minsu Kim (Daegu Gyeongbuk Institute of Science & Technology (DGIST), Korea (South)); Taeyang Lee (Daegu Gyeongbuk Institute of Science & Technology, Korea (South)); Hanyoung Park (Daegu Gyeongbuk Institute of Science and Technology, Korea (South)); Ji-Woong Choi (DGIST, Korea (South))

E07-6 Load-Balancing Optimization under Network-Compute Congestion: An Analysis
Yongjae Jang and Hanyoung Park (Daegu Gyeongbuk Institute of Science and Technology, Korea (South)); Taeyang Lee (Daegu Gyeongbuk Institute of Science & Technology, Korea (South)); Ji-Woong Choi (DGIST, Korea (South))

P07 [S6GC] Interactive Session 7

Oct. 16, 10:20~11:50 | Foyer

Chair : National Univ.), Nam I Kim(ETRI)

P07-1 Development of a audio event detection system for complex situational awareness for intelligent urban safety control
Youngjun Choi (AIBlab, Korea (South)); SungSik Park (AIBLab, Korea (South)); Jun Wook Lee (AIBlab, Korea (South))

P07-2 Experimental Validation of Passive Reflecting Surface-Assisted mmWave WPT Systems
Jae Cheol Park (ETRI, Korea (South)); Jung Ick Moon (Electronics and Telecommunications Research Institute, Korea (South))

P07-3 Vector Quantization for Digital Semantic Communication
Jinsung Park and Yo-Seb Jeon (POSTECH, Korea (South))

P07-4 Traffic Demands Dynamics-Aware Multi-Beam Satellite Framework for 6G Networks
Yumi Kim and Haneul Ko (Kyung Hee University, Korea (South)); Jaewook Lee (Pukyong National University, Korea (South))

P07-5 Hydra Radio Access Network (Hydra-RAN): Multi-Functional Communications and Sensing Networks, Adaptive Time-To-Trigger Optimization
Rafid Abd (University of Yonsei, Korea (South)); Kwang Soon Kim (Yonsei University, Korea (South)); Somayeh Mohammady (Technological University Dublin, Ireland); Minji Phi (University of Yonsei, Korea (South))

P07-6 Hydra Radio Access Network (Hydra-RAN): Multi-Functional Communications and Sensing Networks: A Hierarchical Framework for Task Distribution
Rafid Abd (University of Yonsei, Korea (South)); Kwang Soon Kim (Yonsei University, Korea (South)); Masoud Ardakani (University of Alberta, Canada)

P07-7 Hydra Radio Access Network (Hydra-RAN): Multi-Functional Communications and Sensing Networks: Handover Collaborative
Rafid Abd (University of Yonsei, Korea (South)); Kwang Soon Kim (Yonsei University, Korea (South)); Daniel J. Findley (North Carolina State University, USA); Eui Whan Jin (Yonsei Univ, Korea (South))

P07-8 Hydra Radio Access Network (Hydra-RAN): Multi-Functional Communications and Sensing Networks: Adaptive UE Uplink Power Optimization
Rafid Abd (University of Yonsei, Korea (South)); Kwang Soon Kim (Yonsei University, Korea (South)); Somayeh Mohammady (Technological University Dublin, Ireland)

Technical Paper Sessions

P07-9 Self-Interference Cancellation Techniques for Full-Duplexing Mobile Communication Systems
Kwangjae Lim and Jung Hwan Hwang (Electronics and Telecommunications Research Institute, Korea (South))

P07-10 Deep learning-based correction technique for position estimation of UAV-RIS-based Non-Terrestrial Networks
Seungseok Sin (Chonnam National University, Korea (South)); Kyunam Kim (Alps Electric Korea Company Limited, Korea (South)); Huaping Liu (Oregon State University, USA); Sangmi Moon (Korea Nazarene University, Korea (South)); Chang-Gun Lee (Seoul National University, Korea (South)); Intae Hwang (Chonnam National University, Korea (South))

P07-11 Switching and offsetting scheme for distributed TRP/reader based Ambient IoT systems
Chanho Yoon and Byung-Jae Kwak (ETRI, Korea (South)); Woo Yong Lee (Electronics and Telecommunications Research Institute, Korea (South)); Jinkyeong Kim (ETRI, Korea (South)); Young-Jo Ko (Electronics and Telecommunications Research Institute, Korea (South))

P07-12 Beam Search Method for Active RIS
Manho Park (Electronics and Telecommunication Research Institute, Korea (South)); Heesang Chung (ETRI, Korea (South))

P07-13 Dual-Identifier Configuration for 5G LBO Roaming Using UERANSIM and open5GS
Miryong Park (ETRI, Korea (South)); HyunKyung Yoo (Electronics and Telecommunications Research Institute, Korea (South)); Namseok Ko (ETRI, Korea (South))

P07-14 Impact of Antenna Beamwidth and Obstructions on 400 GHz Inter-Rack THz Links
Jinhyung Oh (Electronics and Telecommunications Research Institute, Korea (South)); Jong Ho Kim (ETRI, Korea (South))

P07-15 Optimization of Annealing and Subsequent Processes for Improved Ohmic Contact Resistance in AlGaN/GaN HEMTs
Gyejung Lee, Junhyung Kim and Kyujun Cho (ETRI, Korea (South)); Jong Yul Park (Electronics and Telecommunications Research Institute, Korea (South)); Byoung-Gue Min (ETRI, Korea (South)); Junhyung Jeong and Hong-Gu Ji (Electronics and Telecommunications Research Institute, Korea (South)); Woojin Chang, Jong-Min Lee and Dong-Min Kang (ETRI, Korea (South))

P07-16 Performance Analysis of a Programmable Intelligent Mobile Core Network System for 6G
Sunjin Kim (ETRI, Korea (South)); Jongseok Lee (Electronics and Telecommunications Research Institute, Korea (South)); Namseok Ko (ETRI, Korea (South))

P07-17 Inter-Network Interference in Private 5G: An Empirical Study in Urban Environments
Hyeyeon Kwon (Electronics Telecommunications Research Imstitute, Korea (South)); Kyung-yul Cheon (ETRI(Electronics and Telecommunications Research Institute), Korea (South)); Kyung-Won Kim (ETRI, Korea (South)); Hyeonsik Yoon and Seung Keun Park (Electronics and Telecommunications Research Institute, Korea (South))

P07-18 Deep Learning Based Sensing Decision for Wireless Sensor Networks
Hewon Cho (Electronics and Telecommunications Research Institute, Korea (South)); Jungsook Bae (ETRI, Korea (South))

P07-19 Modulation of Ohmic Contact Formation in GaN HEMTs by Process-Dependent Thermal Transport Mechanisms
Junhyung Kim (ETRI, Korea (South)); Jong Yul Park (Electronics and Telecommunications Research Institute, Korea (South)); Kyujun Cho, Gyejung Lee and Byoung-Gue Min (ETRI, Korea (South)); Junhyung Jeong and Hong-Gu Ji (Electronics and Telecommunications Research Institute, Korea (South)); Woojin Chang, Jong-Min Lee and Dong-Min Kang (ETRI, Korea (South))

P07-20 Effect of Mesa-Diameter on the 3-dB Bandwidth Enhancement of an InGaAs Photodiode with Inductive Signal Electrode
Duk-Jun Kim, Seok-Jun Yun, Shinmo An, Dong-Hun Lee and Young-Tak Han (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

Technical Paper Sessions

P07-21 **Development of 100 Gbps per Wavelength InAlGaAs IA-EML with Selective Area Growth**
Seungchul Lee (Electronics and Telecommunications Research Institute, Korea (South)); Namje Kim (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Jun-Hwan Shin, Miran Park and O-Kyun Kown (Electronics and Telecommunications Research Institute, Korea (South))

P07-22 **Network Parameter Evaluations for Cellular-Connected UAV Communications**
Jieun Yu and Chungyong Lee (Yonsei University, Korea (South))

P07-23 **A Unified Control Architecture for Core-Transport Integration in 6G Networks**
Kyungsoo Kim and Namseok Ko (ETRI, Korea (South))

P07-24 **A Comparative Study of Channel Hardening Between Fixed-Position and Movable Antennas**
Suhwan Jang and Chungyong Lee (Yonsei University, Korea (South))

P07-25 **AI-Assisted Modem Implementation for Intelligent Wireless Access systems**
Yunjoo Kim (Electronics and Telecommunications Research Institute, Korea (South)); Jung-Bo Son (Next Generation Wireless LAN Research Team, ETRI, Korea (South)); Yuro Lee and Jungsook Bae (ETRI, Korea (South))

P07-26 **Design and Implementation of a Software Interface for an AI Modem**
Yunjoo Kim (Electronics and Telecommunications Research Institute, Korea (South)); Jung-Bo Son (Next Generation Wireless LAN Research Team, ETRI, Korea (South)); Yuro Lee and Jungsook Bae (ETRI, Korea (South))

P07-27 **Design of a quantum computing education program for high school students**
Jung In Choi (Changwon National University, Korea (South)); Hanjin Cho and Aeyoung Kim (Hanshin University, Korea (South))

P07-28 **Implementation of a Fallen Person Detector**
Junghak Kim (Electronics and Telecommunications Research Institute, Korea (South)); Geon Woo Kim (Electronics and Telecommuncations Research Institute, Korea (South))

A08 Machine Learning 4

Oct. 16, 15:00~16:30 | Crystal 2

Chair : Taesoo Jun (Kumoh National Institute of Technology)

A08-1 **Enhancing Disaster Response with Satellite-Based Alerts and LPWAN Distress Signaling**
Rahul Srivastava (Centre For Development of Telematics, India); Pramod Bhave (Senior Research Engineer, India)

A08-2 **Hierarchical Automatic Modulation Classification under Hardware and Channel Impairments**
Yunseol Cho, Hanvit Kim and Sunwoo Kim (Hanyang University, Korea (South))

A08-3 **Error Correction Scheme Using Single-Parity-Check Codes and Correlation Receiver Output Levels in Optical SIK DS-CDMA Communications**
Akio Tsuneda and Takumi Yoshikawa (Kumamoto University, Japan)

A08-4 **RIS Development and Design at Sub-6 GHz Band for Indoor Wireless Communication**
Ayan Saha, James Scott, Kamran Ghorbani, Wayne Rowe and Sithamparanathan Kandeepan (RMIT University, Australia)

A08-5 **Hierarchical Sparsity-Driven Optimization: A Deep Learning Framework for Antenna Thinning in 6G Massive MIMO Systems**
Samer Henry (University of Toronto, Canada); Ahmed AlSohaily (Visiting Researcher, Saudi Arabia); Elvino Silveira Sousa (University of Toronto, Canada)

Technical Paper Sessions

B08 Network & Systems 3

Oct. 16, 15:00~16:30 | Crystal 3

Chair : Junseon Kim (The Catholic Univ. of Korea)

B08-1 **Neuro-Symbolic AI for Real-Time, Explainable 6G Network Slice Optimization in Mission-Critical Environments**
Arunima Sharma (Universiti Putra Malaysia, Malaysia); Vaishali Babu (Vishwakarma University, India)

B08-2 **Survey on PAPR Reduction: from Signal Processing to Machine Learning-based Techniques**
Mingyu Park (Yonsei Univ, Korea (South)); Jinseok Choi (Korea Advanced Institute of Science and Technology, Korea (South))

B08-3 **Intelligent Channel State Information Feedback Using Variable-Rate Autoencoder**
Yubin Choi, Yunseo Nam and Saewoong Bahk (Seoul National University, Korea (South))

B08-4 **Towards Accurate Wi-Fi 6E-based Liquid Sensing in a Static Environment**
Sunkee Baik, Dongrak Choi and Saewoong Bahk (Seoul National University, Korea (South))

B08-5 **Accurate Approximation of Uplink Interference in a Cellular System**
Seonsik Min and Hichan Moon (Hanyang University, Korea (South))

B08-6 **The Relationship Between Elderly Speech Features in a Life-Logging Application and the Early Detection of Dementia**
Naoka Matsumura, Yuta Izutsu, Nobuyoshi Komuro, Natsuko Arimatsu, Aya Matsumura, Kota Toyama, Norimichi Tsumura, Mizuki Umehara and Ayumi Amemiya (Chiba University, Japan)

C08 [S6GC]RAN

Oct. 16, 15:00~16:30 | Charlotte

Chair : YoungJo Ko (ETRI)

C08-1 **Hydra Radio Access Network (Hydra-RAN): Multi-Functional Communications and Sensing Networks with Hydra Distributed Unit (H-DU) Scalability Optimization**
Rafid Abd (University of Yonsei, Korea (South)); Kwang Soon Kim (Yonsei University, Korea (South)); S.R. Mohandes (Aerospace and Civil Engineering, United Kingdom (Great Britain)); Hoang Thai Dinh (University of Technology Sydney (UTS), Australia)

C08-2 **Model Adaptation for Lifecycle Management in AI-native 5G/6G Networks**
Jewoo Go, Taeje Park and Wonjin Sung (Sogang University, Korea (South))

C08-3 **Towards Speed-Agnostic Time-Series Forecasting for Proactive Handover**
Junseo Lee (Korea University, Korea (South)); Suwan Yoon (Chung-Ang University, Korea (South)); Changhee Lee (Korea University, Korea (South))

C08-4 **Parameter-Efficient Transfer Learning for DNN-based Channel Estimation: Adapter vs LoRA Comparison**
JooWon Lee and KaeWon Choi (Sungkyunkwan University, Korea (South))

Technical Paper Sessions

D08 Special Session on Korea University Quantum Internet

Oct. 16, 15:00~16:30 | Pearl

Chair : Youngchai Ko (Korea Univ.)

D08-1 Autonomous Beam Pointing in FSO Using a Feature Tracking Algorithm
Jong-Min Kim (Korea University, Korea (South) & King Abdullah University of Science and Technology, Saudi Arabia); Ki-Hong Park (King Abdullah University of Science and Technology (KAUST), Saudi Arabia); Young-Chai Ko (Korea University, Korea (South)); Mohamed-Slim Alouini (King Abdullah University of Science and Technology (KAUST), Saudi Arabia)

D08-2 Ground-Truth-Free Estimation of Age of Incorrect Information in Semantic Communications
Dongkyun Ryoo, Goeun Park and Sangheon Pack (Korea University, Korea (South))

D08-3 A Method for Reducing the Number of Qubits in Logical Qubit Architecture
Yujin Kang, Youshin Chung, Sungyeon Kook and Jun Heo (Korea University, Korea (South))

D08-4 A Study on Multimodal UX Design Guidelines for Cognitive AI Agent Interaction
Hyegyo Lee (Korea University, Korea (South)); 도경 김 (고려대학교, Korea (South)); Jieun Lee (Korea University, Korea (South))

D08-5 Theoretical Investigation on Single Photon Generation Using Specialty fiber
Taeho Woo, Namwook Joe and Ju Han Lee (University of Seoul, Korea (South))

D08-6 Analysis of surface code structure for circuit level noise channel
Youshin Chung, Yujin Kang and Jun Heo (Korea University, Korea (South))

E08 Special Session on 6H Next- Generation Mobile Communications

Oct. 16, 15:00~16:30 | Ruby

Chair : Een-Kee Hong (Kyung Hee Univ.)

E08-1 DT-RAN: Enabling Next-Generation RAN Optimization and Control through Digital Twin-Based O-RAN
Jaehyung Choi (Kyunghee University, Korea (South) & Mobile Communication Lab, Korea (South)); Geon Kim and Een-Kee Hong (Kyunghee University, Korea (South))

E08-2 Design and implementation of an xApp integrating FlexRIC with the ns-O-RAN Framework
Taeil Jung (Kyung Hee University, Korea (South)); Jaehyung Choi (Kyunghee University, Korea (South) & Mobile Communication Lab, Korea (South)); Geon Kim and Een-Kee Hong (Kyunghee University, Korea (South))

E08-3 Parameter Design for Channel Knowledge Map Assisted Channel Estimation
Muhammad Awais and Yun Hee Kim (Kyung Hee University, Korea (South))

E08-4 Quantum Covert Communication with Quantum GUS States
Muhammad Shohibul Ulum, Saw Nang Paing and Hyundong Shin (Kyung Hee University, Korea (South))

E08-5 A Large-Scale End-to-End Wireless Network Simulation Framework with Ray Tracing-Based Channel Modeling
Yong Jun Noh and Kae Won Choi (Sungkyunkwan University, Korea (South))

E08-6 Joint Optimization of Computation Offloading, Model Caching and Exit Selection for DNN Inference Tasks
Tam Minh Nguyen (Soongsil University, South Korea); Myungsik Yoo (Soongsil University, Korea (South))

Technical Paper Sessions

F08 [SCSS] Technical Session 2

Oct. 16, 15:00~16:30 | Emerald

Chair : Pansoo Kim (ETRI)

F08-1 Design of Handover Protocol and Triggering Event in LEO Satellite Networks
Yonghwa Lee (Hanwha Systems, Korea (South))

F08-2 Active RIS-aided NOMA-ISAC Network Architecture for LEO Satellite Communications
Soumen Mondal (National Sun Yat-Sen University, Taiwan); Keshav Singh and Chih-Peng Li (National Sun Yat-sen University, Taiwan); Zhiguo Ding (University of Manchester, United Kingdom (Great Britain))

F08-3 A FPGA based Satellite Onboard High Speed Decoding Architecture for Internet of Vehicle
Kaishi Wang (Beijing University of Posts and Telecommunications, China); Weidong Wang (Beijing Unversity of Posts and Telecommunications, China); Xi Gong, Cheng Wang and Songsong Cai (Beijing University of Posts and Telecommunications, China)

F08-4 Q/V-Band Planar Array Antenna integrated with a Low cost 3D Printed Dielectric Polarizer and lens
Hakmin Lee, Seong-Mo Moon and Dong-pil Chang (ETRI, Korea (South))

P08 [SCSS] Interactive Session 8

Oct. 16, 15:00~16:30 | Foyer

Chair : Heejung Yu (Korea Univ.), Sunghwan Cho (Korea Military Academy)

P08-1 Enhancing Spectral Efficiency in Multi-Hop RIS-Assisted Massive MIMO Networks Using Joint Hop Selection and Phase Shift Optimization
Yushintia Pramitarini and Heejung Yu (Korea University, Korea (South))

P08-2 Software implementation of a real-time PUSCH Demodulator
Eun jeong Shin and Nam-il Kim (ETRI, Korea (South))

P08-3 Multi-Beam Management and Resource Allocation for LEO Satellite Communication Systems
Do-Hyun Kim (Hankyong National University, Korea (South)); Donghyeon Kim (Kyung Hee University, Korea (South)); In-Ho Lee (Hankyong National University, Korea (South))

P08-4 High-Gain Antenna of the Holographic-Surface Lens for LEO Satellites and its Extension to a UCA
Jinwoo Bae, Woogon Kim and Sanghyun Yun (Incheon National University, Korea (South)); Sejin Lee (Incheon National University, Korea (South), Korea (South)); Jaewon Koh and Sungtek Kahng (Incheon National University, Korea (South))

P08-5 Metamaterial Antenna of Direction-Finding and ISAC Helping FSO Comm. for Satellites' ISL
Hongsik Park, Woogon Kim, Sanghyun Yun, Jinwoo Bae, Jaewon Koh and Sungtek Kahng (Incheon National University, Korea (South))

P08-6 Efficient Satellite Federated Learning System via Heterogeneity-Aware Orchestration
Bohang Jiang (Korea University, Korea (South)); In Sop Cho and Min-Su Shin (ETRI, Korea (South)); Seung Jun Baek (Korea University, Korea (South))

P08-7 Joint Optimization of Transmit Power, CCA, and UAV Position in UAV-based Wi-Fi Networks: Hierarchical Q-learning Approach
YoungHoon Kim, Ji Min Park and Heejung Yu (Korea University, Korea (South))

Technical Paper Sessions

P08-8 Introduction of an Underexposed Image Enhancement Technique for Mura Compensation in Display Panel Manufacturing
Geon-Ho Park and Seung-Won Jung (Korea University, Korea (South))

P08-9 Transformation to the New Space Drives the Conventional Wireless Communication Devices to New Ones Working for Vhicles to Satellites
Dong Yun Kim, Woogon Kim, Sanghyun Yun, Jinwoo Bae, Jaewon Koh and Sungtek Kahng (Incheon National University, Korea (South))

P08-10 DQN-Based Scheduling Algorithm for Beam-Hopping LEO Satellite Communication Systems
Do-Hyun Kim (Hankyong National University, Korea (South)); Donghyeon Kim (Kyung Hee University, Korea (South)); In-Ho Lee (Hankyong National University, Korea (South))

P08-11 A Modeling Framework for GEO-LEO Hybrid Satellite Networks
Dong-Hyun Jung (Soongsil University, Korea (South)); Hongjae Nam (Purdue University, USA); Junil Choi (KAIST, Korea (South))

P08-12 Doppler Dilution of Precision Analysis for GNSS and Starlink LEO Satellite Positioning
Md. Ali Hasan, Sangmin Han and Wonjae Shin (Korea University, Korea (South))

P08-13 Coverage Enhancement via 3-D Spatial Beam Optimization of Urban UAV-BS
Bogyu Kwon, Yumin Joo, Jiwook Lee and Do-Yup Kim (Incheon National University, Korea (South))

P08-14 Performance Analysis of Phased Array Antennas for LEO Satellite Environments
In Sop Cho and JoonGyu Ryu (ETRI, Korea (South))

P08-15 Machine Learning Augmented OAM Mode Separation for Enhanced FSO Multiplexing
Jae Seong Hwang, Hyunchae Chun and Ji-Yung Lee (Incheon National University, Korea (South))

P08-16 Performance Analysis of DOA-Based Spoofing Detection Techniques in Non-Terrestrial Networks
Minkyu Oh and Bang Chul Jung (Ajou University, Korea (South))

P08-17 Optimization of Resource Allocation and Distortion Rate in IAB/O-RAN Based NTN
Junseok Lee and Heejung Yu (Korea University, Korea (South))

P08-18 Hierarchical Q-learning Based Slotted ALOHA Protocol with Transmit Power Control
Sangho Kim, Sungyun Oh and Heejung Yu (Korea University, Korea (South))

P08-19 Multiple UEs Initial Access Hardware Experiment
Sucheol Kim (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Gyeongrae Im (ETRI, Korea (South)); Hyunwoo Jung (University of Science and Technology, Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); JoonGyu Ryu (ETRI, Korea (South))

P08-20 Computation of Point-Ahead Angles Between Satellites for Laser Communication
Naeun Shin (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Kwon-Seob Lim (Electronics and Telecommunications Research Institute, Korea (South))

P08-21 Effective multiple access technique to support minimum data rate
Sucheol Kim (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Hyunwoo Jung (University of Science and Technology, Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); Gyeongrae Im and JoonGyu Ryu (ETRI, Korea (South))

P08-22 Software Implementation of a Real-Time 5G PDSCH Transmitter with Low-Level Optimization
Yongho Lee (Electronics and Telecommunications Research Institute, Korea (South)); Nam-il Kim (ETRI, Korea (South))

Technical Paper Sessions

P08-23 A Multi-connectivity Scheme for Service Continuity Between Terrestrial and Non-Terrestrial Networks
Hwang You-sun (ETRI, Korea (South)); Sung-Min Oh (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

P08-24 Capacity and Throughput Enhancements for Non-Terrestrial Networks
Dukhyun You and JunHwan Lee (ETRI, Korea (South)); Joonhyuk Kang (KAIST, Korea (South))

P08-25 A V-Band Four-Channel Beamforming Receiver IC for Very Low Earth Orbit Satellite Communication Systems
Jongho Yoo, Eun-Taek Sung, Junhan Lim, Seong-Mo Moon and Dong-pil Chang (ETRI, Korea (South))

P08-26 A V-Band Low-Noise Amplifier Using 0.13-μm SiGe BiCMOS for Very Low Earth Orbit Satellite Communications
Eun-Taek Sung, Jongho Yoo, Junhan Lim, Seong-Mo Moon and Dong-pil Chang (ETRI, Korea (South))

P08-27 Performance of PSS receiver with non-coherent combining
Jihoon Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Gun-Goo Lee (Electronics and Telecommunication Research Institute, Korea (South)); JoonGyu Ryu (ETRI, Korea (South))

P08-28 Channel-adaptive random access for LEO satellite communication
Jihoon Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Gun-Goo Lee (Electronics and Telecommunication Research Institute, Korea (South)); JoonGyu Ryu (ETRI, Korea (South))

P08-29 A Method to Enhance BOC Signal Reception Performance under Partial Band Interference
Donghoon Kang, Sanguk Lee and Yoola Hwang (ETRI, Korea (South))

P08-30 Study on the Relationship Between Gradual Timing Adjustment Rate and UE Velocity in LEO NTN
Yeongchae Noh (Korea Maritime and Ocean University, Korea (South)); Seokhyeon No (National Korea Maritime & Ocean University, Korea (South)); Min-gyu Kim and Jeongchang Kim (Korea Maritime and Ocean University, Korea (South)); Pansoo Kim (ETRI, Korea (South)); Jae-young Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

A09 Network & Systems 4

Oct. 16, 16:50~18:20 | Crystal 2

Chair : Yo-Seb Jeon (POSTECH)

A09-1 cnFlow: An eBPF-Driven Telemetry Framework for Cloud-Native Networks
Jisu Kim and Jaehyun Nam (Dankook University, Korea (South))

A09-2 Implementation of Wi-Fi NSTR MLO Coexisting with LTE-LAA via ns-3
Suhwan Jung and Seokwoo Choi (Ulsan National Institute of Science and Technology, Korea (South)); Youngkeun Yoon (Electronics and Telecommunications Research Institute, Korea (South)); Ho Kyung Son (ETRI, Korea (South)); Hyoil Kim (Ulsan National Institute of Science and Technology (UNIST), Korea (South))

A09-3 A Sequential VNF Deployment Mechanism for Privacy-Preserving Multi-Domain SFC Deployment
Arif Indra Irawan (Okayama University, Japan & Universitas Telkom, Indonesia); Yukinobu Fukushima, Hideyoshi Miura and Tokumi Yokohira (Okayama University, Japan)

A09-4 A Novel Radio Access Network Converged 6G Mobile Core Network Architecture
Myung-Eun Kim (Electronics and Telecommunications Research Institute, Korea (South)); HyoChan Bang and Namseok Ko (ETRI, Korea (South)); Marcos Katz (University of Oulu, Finland)

Technical Paper Sessions

A09-5 Vertical Beamwidth Optimization of 3D-BF Pico-BS in mmWave HetNets
Naoto Inagaki and Takatoshi Sugiyama (Kogakuin University, Japan)

A09-6 Mitigation method for random subdomain attacks to authoritative DNS servers by traffic control
Hikaru Ichise (Oita University, Japan); Yong Jin (Institute of Science Tokyo, Japan); Minoru Ikebe (Oita University, Japan); Katsuyoshi Iida (Hokkaido University, Japan)

A09-7 A Hyperloop Communication with Reconfigurable Intelligent Surfaces
Young-Seok Lee, Juyeong Baek and Bang Chul Jung (Ajou University, Korea (South))

B09 Security 1

Oct. 16, 16:50~18:20 | Crystal 3

Chair : Jeong Seon Yeom (Hankyong National Univ.)

B09-1 HAP-Assisted Disaster Relief Communication with AI-Driven Resource Allocation
Arunima Sharma (Universiti Putra Malaysia, Malaysia)

B09-2 MMEC: Using MoE Efficiently for Mobile Edge Computing
Sakhawat Hossan and Jing Deng (UNC Greensboro, USA)

B09-3 Range Ambiguity Resolution and DoA Estimation Enhancement in MIMO SC-FDMA Systems
Chanul Park, Seonmin Cho and Seongwook Lee (Chung-Ang University, Korea (South))

B09-4 Impact of Dispersion on OFDM Signals in Hyperloop Tubes
Jeongtak Kim (Ulsan National Institute of Science and Technology (UNIST), Korea (South)); Bang Chul Jung (Ajou University, Korea (South)); Hyoil Kim (Ulsan National Institute of Science and Technology (UNIST), Korea (South))

B09-5 Distributed Architecture for XL-Metasurface Beamforming
Kofi Anane Boateng (Seoul National University of Science and Technology, Korea (South)); Di Zhang (Sun Yat-sen University, China); Kyungchun Lee (Seoul National University of Science and Technology, Korea (South))

B09-6 Deep Learning-based ISI and ICI Suppression in OTFS-based ISAC Systems
Soyoon Park and Seongwook Lee (Chung-Ang University, Korea (South))

B09-7 Large Multimodal Model-based CSI Feedback
Seokhyun Jeong, Jihoon Moon, HoKyung Kim and Byonghyo Shim (Seoul National University, Korea (South))

C09 ICTC Workshop on 6G Core Network

Oct. 16, 16:50~18:20 | Charlotte

Chair : Yun Won Chung (Soongsil University)

C09-1 A Cooperative Multi Agent Framework for Dynamic NF Scaling in 6G Networks
Jaechan Lee (Kyung Hee University, Korea (South)); Youbin Han (Kyunghee University, Korea (South)); Yumi Kim and Haneul Ko (Kyung Hee University, Korea (South))

C09-2 Optimizing Service Segmentation with Aggregated Computing-Aware Traffic Steering Metrics
Kiem Nguyen Trung, Minh-Ngoc Tran and Young Han Kim (Soongsil University, Korea (South))

C09-3 A Manipulation Scheme of Intelligent Moving Objects through an AI-Driven Management Framework
Jisuk Chae, Mose Gu, Yoseop Joseph Ahn and Jiwon Suh (Sungkyunkwan University, Korea (South)); Jaewon Hwang, Jooseung Nam and Yeonjoo Lee (SungKyunKwan University, Korea (South)); Jaehoon Jeong (Sungkyunkwan University, Korea (South))

Technical Paper Sessions

C09-4 **Supporting Publish-Subscribe-based ICN in 5G Core Network**
Yun Won Chung (Soongsil University, Korea (South))

C09-5 **Transformer-based Multi-Task Learning for NWDAF**
Hyeonjae Jeong and Sangheon Pack (Korea University, Korea (South))

D09 ICTC Workshop on Next Generation Channel Coding and Its Applications (IWNGCCA)

Oct. 16, 16:50~18:20 | Pearl

Chair : Sang-Hyo Kim (Sungkyunkwan Univ.)

D09-1 **Pilot-Free Polar-Coded Communications for Short-Packet Transmission**
Geon Choi and Namyoon Lee (POSTECH, Korea (South))

D09-2 **Rethinking Inputs for Transformer-Based Channel Decoders: LLRs or Symbols?**
Jiwon Park, Taewoo Park and Yongjune Kim (Pohang University of Science and Technology (POSTECH), Korea (South))

D09-3 **Reinforcement Learning Methods for LDPC Codes**
Hee-Youl Kwak, Lee Ju Hyeong and Daeyoung Yun, 한 (University of Ulsan, Korea (South))

D09-4 **On Gaining Diversity with Polar Codes over Block Fading Channels**
Jisang Park, Hyosang Ju, Sang-Yoon Lee and Sang-Hyo Kim (Sungkyunkwan University, Korea (South))

D09-5 **Codebook Design for Wideband FDD Massive MIMO Hybrid Precoding**
Muhammad Salman Al Faruq, Danish Mehmood Mughal, Min Young Chung and Sang-Hyo Kim (Sungkyunkwan University, Korea (South))

E09 ICTC Workshop on 6G RI with AI

Oct. 16, 16:50~18:20 | Ruby

Chair : Kyunghan Lee (Seoul National Univ.)

E09-1 **AI-RAN Strategies of Leading Technology Companies: Platforms, Directions, and Collaborations**
Donghyeon Kim and Jeongho Kwak (Korea University, Korea (South))

E09-2 **On Designing a 6G Cellular Network Architecture for Application Performance Guarantee**
Junseon Kim (The Catholic University of Korea, Korea (South))

E09-3 **A Survey of Learning-Based Channel Decoders and Parallelization Strategies for AI-RAN**
Sojeong Park (POSTECH, Korea (South)); Hyun Jong Yang (Seoul National University, Korea (South))

E09-4 **LLM/SLM Selection in O-RAN MEC Network**
Seungmin Sim, Ling-Yan Bao and Jemin Lee (Yonsei University, Korea (South))

E09-5 **Enabling Low-Latency AI Service Delivery with AI-on-RAN**
Siyavushkhon Farrukhovich Kholmatov (KAIST, Korea (South)); Kyunghan Lee and Seongsik Cho (Seoul National University, Korea (South)); Song Chong (KAIST, Korea (South))

Technical Paper Sessions

F09 ICTC Workshop on ETRI Human Understanding AI Paper Challenge (IWETRIAI)

Oct. 16, 16:50~18:20 | Emerald

Chair : Hyun-Tae Jeong (ETRI)

F09-1 Understanding Human Daily Experience Through Continuous Sensing: ETRI Lifelog Dataset 2024
Se Won Oh, Hyuntae Jeong, Seungeun Chung, Jeong Mook Lim, Kyoung-Ju Noh, Sunkyung Lee and Gyuwon Jung (Electronics and Telecommunications Research Institute, Korea (South))

F09-2 Analysis of Sleep Indicators and State Determinants Using Machine Learning with Lifelog Data
Jun-Ho Park (Hanyang University, Korea (South)); Seung-Hyun Baek (Hanyang University ERICA, Korea (South))

F09-3 Subject-Adaptive Sparse Linear Models for Interpretable Personalized Health Prediction from Multimodal Lifelog Data
Dohyun Bu (Korea Advanced Institute of Science and Technology, Korea (South)); Jisoo Han, Soohwa Kwon and Yulim So (Sungkyunkwan University, Korea (South)); Jong-Seok Lee (Korea Advanced Institute of Science and Technology, Korea (South))

F09-4 A Hybrid Framework for Sleep Indicator Prediction: Target-Specific Modeling with Traditional Machine Learning and Cross-Attentive CNN
Suyeon Lee (Asan Medical Center, Korea (South)); MyungJoo Song (Independent Researcher, Korea (South)); Do Yeon Kim (Hanyang University, Korea (South))

F09-5 LOL: Learning with One Lightweight Sensor-Aware Predictive Model For Sleep Quality
Jahyeob Koo, Yongho Song and Jaehyeon Shim (Seoul National University of Science and Technology, Korea (South)); Soyeong Lee (Sungkyunkwan University, Korea (South)); Younghoon Lee (Seoul National University of Science and Technology, Korea (South))

F09-6 MIS-LSTM: Multichannel Image-Sequence LSTM for Sleep Quality and Stress Prediction
Seongwan Park and Jieun Woo (Sungkyunkwan University, Korea (South)); Siheon Yang (Yeungnam University, Korea (South))

F09-7 TabBoost: Combining Tree-Based and Attention-Based Models for Lifestyle Prediction
Hyegang Son (Korea University, Korea (South)); Hyungjun Baek (Hankuk University of Foreign Studies, Korea (South)); Young Geun Kim (Korea University, Korea (South))

F09-8 Hybrid VAE-SVM Framework for Improved Imbalanced Data Classification
Minsung Kim, Minseok Lee, Minyong Shin and Jimin Jeon (Hanbat National University, Korea (South)); Sooyeong Kwak (Hanbat University, Korea (South))

F09-9 Sleep Quality Prediction from Lifelog Data Using LLM-based Imputation
JongYeol Hyun (a Seoul School of Integrated Sciences & Technologies, Korea (South)); YuChul Byun (Sogang University Graduate School of AI SW, Korea (South)); Dongkeun Bak (Sungkyunkwan University, Korea (South))

F09-10 FSA-Net: FFT Based Self-Attention for Time Series Classification
Minhyeok Kim (University of Liverpool, United Kingdom (Great Britain)); Junseok Shim (LG Electronics, Korea (South))

F09-11 Explainable Time-Series Feature Engineering for Sleep Quality Prediction Using Lifelog Data
GwangSeop Lee, Sungmin Choi and JiYoung Woo (Soonchunhyang University, Korea (South))

F09-12 Context-Aware Dual-Stream Framework for Sleep Quality Prediction Using Multi-Modal Lifelog Data
Hoseong Kim (Seoul National University of Science and Technology (SeoulTech), Korea (South)); Sujin Kwon (Sungshin Women's University, Korea (South)); Seungsu Noh (Hanyang University, Korea (South)); Sein Cho and Beomseok Oh (Seoul National University of Science and Technology, Korea (South))

Technical Paper Sessions

P09 [Main Track] Interactive Session 9

Oct. 16, 16:50~18:20 | Foyer

Chair : Taesoo Jun (Kumoh National Institute of Technology)

P09-1 Indoor Localization of Unknown Wi-Fi Access Points with Directional Bias Compensation
Hansol Park (University of Science and Technology (UST), Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); Youngjin Lee (University of Science and Technology, Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); Jaejun Yoo (Electronics and Telecommunication Research Institute, Korea (South))

P09-2 Impact of Tube Curvature on Electromagnetic Propagation in the Hyperloop Tube
Younghoon Jung (UNIST, Korea (South)); Jeongtak Kim (Ulsan National Institute of Science and Technology (UNIST), Korea (South)); JaeGyeong Shin and EunMi Choi (UNIST, Korea (South)); Ki Jin Han (Dongguk University, Korea (South)); Hyoil Kim (Ulsan National Institute of Science and Technology (UNIST), Korea (South))

P09-3 WardrobeRL: Prompt-Aware Reinforcement Learning Based Top-Bottom Recommendation
Minseok Oh, Ungii Lee, Hyunmin Kim and Dooseok Lee (DGIST, Korea (South))

P09-4 MATDS: Multi-Agent Task Decomposition System based on LLMs
Joonyoung Jung (ETRI, Korea (South))

P09-5 Spectral Efficiency Maximization in Aerial STAR-RIS-Assisted Massive MIMO-RSMA Networks
Ridho Hendra Yoga Perdana and Taejoon Kim (Chungbuk National University, Korea (South))

P09-6 6G Wireless Access Protocol Development Using Intel DPDK for 50Gbps Throughput
Jung Pil Choi (Electronics and Telecommunications Research Institute, Korea (South)); Yong Seouk Choi and Heesang Chung (ETRI, Korea (South))

P09-7 The Use of Blockchain to Facilitate Ceasefire Agreements Enhanced with Military-Grade Communications
Ikechi Saviour Igboanusi and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

P09-8 MilChain: A Blockchain Network for Military Communication
Ikechi Saviour Igboanusi and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

P09-9 A Token-Based Handshake Protocol for Secure Offline Communication in Tactical MANETs
Hope Leticia Nakayiza (Kumoh National Institute of Technology, Gumi, Korea (South)); Love Allen Chijioke Ahakonye, Dong Seong Kim and Jae Min Lee (Kumoh National Institute of Technology, Korea (South))

P09-10 Vehicular Traffic Event Transmission Method Using IPv4 Option Field in V2I Local Networks
HyeonMuk Park (Chungbuk National University, Korea (South)); Wonseok Choi (CBNU, Korea (South)); Seong Gon Choi (Chungbuk University, Korea (South))

P09-11 KubeScribe: LLM-Driven Automation of Runtime Security Policies in Cloud-Native Environments
Jaeyoung Lee and Jaehyun Nam (Dankook University, Korea (South))

P09-12 An Analysis of Host Stack Overheads in Cloud Container Overlay Networking
Junsu Park and Jaehyun Hwang (Sungkyunkwan University, Korea (South))

P09-13 Throughput Maximization Using TDMA-based NOMA Slot Allocation for UAV-ISAC System
Seongjun Kim and Jae Sung Lim (Ajou University, Korea (South))

P09-14 Explainable AI-Driven Intrusion Detection System for UAV Networks Against Replay and DoS Attacks
Odinachi Udemezuo Nwankwo, Simeon Okechukwu Ajakwe, Dong Seong Kim and Jae Min Lee (Kumoh National Institute of Technology, Korea (South))

Technical Paper Sessions

P09-15 Distance-to-Target Dynamic Weighting for Robot Arm IK Networks
Rockwon Kim (ETRI, Korea (South))

P09-16 PureChain DBMS: A Zero-Gas Blockchain Database Management System with Adaptive Compression
Paul Angelo Oroceo (Kumoh National Instiutte of Technology, Korea (South)); Love Allen Chijioke Ahakonye, Jae Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

P09-17 T-TransNet: Ternary Attention Network for CSI Feedback in FDD Massive MIMO System
SeongJin Hwang, Seungmin Choi and Hyun Jong Yang (Seoul National University, Korea (South))

P09-18 Challenges and Research Directions in O-RAN Radio Resource Management
Byeongjin Kim and Minkwon Lee (Ulsan National Institute of Science and Technology, Korea (South)); Hyoil Kim (Ulsan National Institute of Science and Technology (UNIST), Korea (South))

P09-19 QKD-TLS Integration Model for End-to-End Secure Communication
Jeongyun Kim (ETRI, Korea (South))

P09-20 CtrlBench: Towards Accurate API-Level Benchmarking in 5G Core Control Plane
Chanuk Park and Jaehyun Nam (Dankook University, Korea (South))

P09-21 Mobility-Predictive Feature Extraction from 5GC, RAN, and Integrated Frameworks Using NetSim
Gwangun Yu (Kongju National University, Korea (South)); GilHan Choi (Kongju University, Korea (South)); Yonggang Kim (Kongju National University, Korea (South))

P09-22 On-Device Multimodal Drowsy Vehicle Driver Detection and Alerting System
Jong-Seok Yoon, Youhyeon Choi and Yiwen Shen (Ajou University, Korea (South))

P09-23 Quantum-Resilient Key and Identity Lifecycle Architecture for Lightweight IIoT Systems
Chimeremma Sandra Amadi and Taesoo Jun (Kumoh National Institute of Technology, Korea (South))

P09-24 Synergistic Blockchain and Zero Trust Framework for Securing Industrial IoT Against Cyber Threats
Hamza Ibrahim, Love Allen Chijioke Ahakonye, Jae Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

P09-25 Real-Time OcuSync Demodulator: A Software-Defined Radio Based Implementation
Hyungwoo Lee (Hanyang University, Korea (South)); Jinwoo Jeong, Isaac Sim, Sangbom Yun and Junghyun Seo (LIG Nex1, Korea (South)); Haewoon Nam (Hanyang University, Korea (South))

P09-26 A Case Study on the Software-Defined Manufacturing for AI-based Autonomous Manufacturing
Yeonggwang Oh and Dongkoo Shon (Electronics and Telecommunications Research Institute, Korea (South)); Tae Hyun Yoon, Hongkyw Choi and Woo-Sung Jung (ETRI, Korea (South)); Daeseung Yoo (Electronics and Telecommunications Research Institute, Korea (South))

P09-27 Development of a Teleoperation-Based Robotic Testbed to Enable Smart Operations on Legacy Electrical Distribution Panels
Jungi Lee and Seok-Kap Ko (ETRI, Korea (South))

P09-28 UAV Deployment Optimization for ISAC in Aerial GPS Denied Environments
Jimin Yang (Ajou University, Korea (South) & Republic of Korea AirForce, Korea (South)); Jae Sung Lim (Ajou University, Korea (South))

Technical Paper Sessions

October 17th (Friday), 2025

A10 Machine Learning 5

Oct. 17, 08:30~10:00 | Crystal 2

Chair : Jae Min Lee (Kumoh National Institute of Technology)

A10-1 GNNs-Based 3D Object Detection in Autonomous Driving: System and Empirical Evaluation
Thai Anh Vo (Phenikaa University, Vietnam); Lan Anh Nguyen (Chung-Ang University, Korea (South)); Son Trung Doan (Phenikaa University, Vietnam); Son Hong Ngo (Phenikaa University)

A10-2 Distance-Aware Single-Stage Detectors: Combining Detection with Object-Specific Distance Estimation
Jon Hernandez Aranda, Patrick Vibild and Daeyoung Kim (KAIST, Korea (South))

A10-3 Industrial Indoor Positioning: Large-Scale BLE and UWB Deployment Analysis
La-or Kovavisaruch, Kriangkrai Maneerat, Kamol Kaemarungsi, Taweesak Sanpechuda, Krisada Chinda, Thitipong Wongsatho and Sodsai Wisadsud (National Electronics and Computer Technology Center, Thailand); Tiwat Pongthavornkamol (National Science and Technology Development Agency, Thailand)

A10-4 Safety-Metric Based Emergency Braking System Considering Both Lead and Following Vehicles in a Multi-Agent Environment
Sunyub Park (Korea Intelligent Automotive Parts Promotion Institute, Korea (South)); Kyunghwan Jeong (KIAPI, Korea (South)); Myungsu Lee (Korea Intelligent Automotive Parts Promotion Institute, Korea (South) & Kyungpook National University, Korea (South)); Yun Ki Yoon (KIAPI, Korea (South)); Bong-Seob Kim (Korea Automotive Parts Promotion Institute, Korea (South)); Kyung Su Yun (KIAPI, Korea (South))

A10-5 Challenges in LiDAR-based Detection of High-Speed UAVs: Experimental Analysis
Deokjin Kim and Saewoong Bahk (Seoul National University, Korea (South))

A10-6 A Suspicious Transshipment Detection Framework with AIS Data Adaptive Reconstruction
Lam Thanh Tran (KAIST, Korea (South)); Tuan Manh Tao (Korea Advanced Institute of Science and Technology, Korea (South)); Quynh Anh Thi Mai (KAIST, Korea (South) & KAIST-EE, Korea (South)); Changha Lee (Korea Advanced Institute of Science and Technology, Korea (South)); Huong Thu Truong (Hanoi University of Science and Technology, Vietnam); Chan-Hyun Youn (Korea Advanced Institute of Science and Technology, Korea (South))

B10 [AIPC] Secure and Explainable AI Systems

Oct. 17, 08:30~10:00 | Crystal 3

Chair : Dongwan Kim (Dong-A Univ.)

B10-1 Vision-Language Model-Based Face Verification for Preventing Unauthorized Access
Junwoo Lim (University of Science and Technology, Korea (South))

B10-2 Advances in Logic Gate Networks: From Differentiable Relaxations to Convolutional Designs
An Taegun, Kim Dohun and Changhee Joo (Korea University, Korea (South))

B10-3 SecureDeBERTa-CNN: A Hybrid IDS for Binary Threat Classification
Muhammad Sanaullah and Dongsup Jin (University of Ulsan, Korea (South))

Technical Paper Sessions

B10-4 **Research Trends on XAI for Open RAN**
SeungYeop Song, Heejae Park, Seongryool Wee and Laihyuk Park (Seoul National University of Science and Technology, Korea (South))

B10-5 **Privacy-Preserving Transfer Learning using Learnable Encryption**
Ijaz Ahmad and Joongheon Kim (Korea University, Korea (South)); Seokjoo Shin (Chosun University, Korea (South))

B10-6 **RemoteCare: Secure and Explainable Dual-Task Health and Cyberattack Detection Framework for IoMT**
Chigozie Athanasius Nnadiekwe, Simeon Okechukwu Ajakwe, Jae Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

B10-7 **Unknown object detection by leveraging Segment Anything Model for labeling the OOD objects**
Seher Kanwal (UST, Korea (South)); Assefa Seyoum Wahd (University of Alberta, Canada); Seungsik Lee (Kookmin University, Korea (South)); Minsu Jang and Seung-Ik Lee (Electronics and Telecommunications Research Institute, Korea (South))

B10-8 **Latent Embedding-Based Isolation Forests for Out-of-Distribution Detection**
Chisom Michael Onyekwelu, Yooncheol Choi and Dongweon Yoon (Hanyang University, Korea (South))'

D10 Workshop on Security, Zero-Trust & Privacy

Oct. 17, 08:30~10:00 | Pearl

Chair : Oluleke Babayomi (Kumoh National Institute of Technology)

D10-1 **A Survey on Fuzzy Private Set Intersection Protocols**
Yunki Kim, Hyunjung Son, Seunghun Paik and Jae Hong Seo (Hanyang University, Korea (South))

D10-2 **On the Secure Connection Probability of Multi-Hop Relaying in Multi-Layer Networks**
Hyeonsu Lyu (POSTECH, Korea (South)); Yumin Kim and Hyun Jong Yang (Seoul National University, Korea (South))

D10-3 **Impact of Frame Duration on Cross-Channel Interference and Coexistence in IEEE 802.11bn NPCA**
Jisoo Lee and Taewon Song (Soonchunhyang University, Korea (South))

D10-4 **Comparative Study of Lattice-Based Post-Quantum Cryptography Algorithms from NIST and Korea**
Boyeon Song (Korea Institute of Science and Technology Information, Korea (South))

D10-5 **Revisiting the Unsafe GUTI Reallocation Practices in Commercial 5G Networks**
Dong Hyeok Kim and Min Suk Kang (KAIST, Korea (South))

D10-6 **5G Latency Analysis for Optimal TCP Cubic Congestion Control for 5G**
Junha Park (Seoul National University, Korea (South))

E10 ICTC Workshop on Efficient Simulation Technologies for Data Center Workloads (IWESTDW)

Oct. 17, 08:30~10:00 | Ruby

Chair : Seokhun Jeon (KETI)

E10-1 **Hop Doesn't Mean Hot: Node-Level Profiling for Graph-based Approximate Nearest Neighbor Search**
Eojin Na, Seoyoung Ko, Hyunjeong Shim, Wanju Doh and Jung Ho Ahn (Seoul National University, Korea (South))

E10-2 **A Survey on Lightweight Simulation Frameworks for Large-scale LLM Workloads**
Jinseop Im, Taekwon Lee, Jehyeon Bang and Minsoo Rhu (KAIST, Korea (South))

Technical Paper Sessions

E10-3 A Brief Survey of Processing-In-DRAM Simulators
Byung Ho Choi, Inseo Kim and Seon Wook Kim (Korea University, Korea (South))

E10-4 Improving Multi-tenant NPU Efficiency via Decoupled Tiling and Adaptive Memory Allocation
Sanghyeon Lee and Jaehyuk Huh (KAIST, Korea (South))

E10-5 Microarchitecture- and Concurrency-Aware Orchestration of FaaS Workloads
Subin Hwang, Dongjoon Kim, Wonho Cho and Won Woo Ro (Yonsei University, Korea (South))

E10-6 Extending gem5 for Accurate PCIe-Based Device Modeling in Heterogeneous Architectures
Seunghyun Song, Junehyuk Boo, Yeongwoo Jang, Daye Jung and Jangwoo Kim (Seoul National University, Korea (South))

E10-7 Latency-Aware Optimization Strategies for Efficient LLMs Serving on Heterogeneous Accelerators
Chaelyn Lee (Korea Electronics Technology Institute, Korea (South))

E10-8 Hybrid Simulator Infrastructure to Explore Scalable, Large-Scale Distributed Training Architectures
Gyeonggeun Jung, Hans Kasan and John Kim (KAIST, Korea (South))

F10 [SCSS] Technical Session 3

Oct. 17, 08:30~10:00 | Emerald

Chair : Wonjae Shin (Korea Univ.)

F10-1 DQN-Driven Beam-Hopping Pattern Optimization for LEO Satellite Communication Systems
Donghyeon Kim and Haejoon Jung (Kyung Hee University, Korea (South)); In-Ho Lee (Hankyong National University, Korea (South))

F10-2 Learning-Based Beam Placement for Rain Attenuation in Multi-Beam Satellite Communication Systems
Chahyeon Eom (ETRI, Korea (South)); Sung-Min Oh (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

F10-3 Rate-Splitting Approach for Integrated Satellite-Terrestrial Networks
Seongjun Kim (Electronics and Telecommunications Research Institute, Korea (South)); Minsu Kim (Saumsung Electronics, Korea (South)); Jemin Lee (Yonsei University, Korea (South))

F10-4 Strategic Role of LEO Satellites in the 6G Roadmap and Orbital Analysis
Gyu Seon Kim (Korea University, Korea (South)); In Sop Cho (ETRI, Korea (South)); Joongheon Kim (Korea University, Korea (South))

F10-5 Performance Analysis of Satellite Over-the-Air Computation under Channel Estimation Errors
Hyunwoo Jung (University of Science and Technology, Korea (South) & Electronics and Telecommunications Research Institute, Korea (South)); Jung-Bin Kim (ETRI - Electronics & Telecommunications Research Institute, Korea (South))

F10-6 Mobility-Aware Multi-Agent Learning for Efficient Handover in Multi-Layer Satellite Network
Junyoung Kim, Huiyeon Jang and Soyi Jung (Ajou University, Korea (South))

Technical Paper Sessions

P10 [SCSS] Interactive Session 10

Oct. 17, 08:30~10:00 | Foyer

Chair : Dong-Hyun Jung (Soongsil Univ.), Do-Yup Kim (Incheon National Univ.)

P10-1 Beamforming for Beam Squint Effect Mitigation in LEO Satellite Communication Systems
Jung Hoon Lee (Hankuk University of Foreign Studies, Korea (South)); Pansoo Kim (ETRI, Korea (South)); Jae-young Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Kyungrak Son (Hankuk University of Foreign Studies, Korea (South))

P10-2 Feeder Link Constraints-Aware Inter-Satellite Routing for LEO Satellite Networks
Joohan Park (Electronics and Telecommunications Research Institute, Korea (South)); Sung-Min Oh (Electronics and Telecommunications Research Institute (ETRI), Korea (South))

P10-3 Secure HAPS Based FSO Communications Using Metamaterials
Seunggi Lee (KAIST, Korea (South)); Geonho Han (Electronics and Telecommunications Research Institute, Korea (South)); Miyeon Lee and Junil Choi (KAIST, Korea (South))

P10-4 Evaluation of Interleaving-based PLS Scheme for Satellite Communications
Thara Son and Sooyoung Kim (Jeonbuk National University, Korea (South))

P10-5 A Review of Discussions on Support of Regenerative Payloads in NR NTN
Seungkwon Cho (Electronics and Telecommunication Research Institute, Korea (South)); JunHwan Lee (ETRI, Korea (South))

P10-6 Comparative Study of Potential Solutions for Satellite IoT Communications
Sooyeob Jung (Chungbuk National University (CBNU), Korea (South)); Pansoo Kim (ETRI, Korea (South)); Jae-young Lee (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); JoonGyu Ryu (ETRI, Korea (South))

P10-7 A Survey of Military Anti-Satellite Weapon Systems and Corresponding Countermeasures
Eunhyuck Kwon (Republic of Korea Army, Korea (South)); Sungjae Park (Korea Military Academy, Korea (South)); Sunghwan Cho (Korea Military Academy)

P10-8 LNOMS-SS: A Low-Complexity LDPC Decoding Algorithm with Hardware Implementation
Kaishi Wang, Cheng Wang and Songsong Cai (Beijing University of Posts and Telecommunications, China); Weidong Wang (Beijing Unversity of Posts and Telecommunications, China); Jiewen Jiang and Xi Gong (Beijing University of Posts and Telecommunications, China)

P10-9 Localization Based on Doppler and RTT Measurements Exploiting a Single Low Earth Orbit Satellite
Jaejoon Moon (Kyung Hee University, Korea (South)); Jung-Bin Kim (ETRI - Electronics & Telecommunications Research Institute, Korea (South)); In-Ho Lee (Hankyong National University, Korea (South)); Haejoon Jung (Kyung Hee University, Korea (South))

P10-10 A Lightweight Improved YOLOv8 for SAR-based Ship Detection in ICRS LEO Satellite Systems
YoungGyu Lee and Jae woo Park (Gyeongsang National University, Korea (South)); Gyeongrae Im (ETRI, Korea (South)); Jinho Kang (Gyeongsang National University, Korea (South))

P10-11 Real-Time Reconfigurable FIR Filter Design based on FPGA
Seunghwa Jung, Ye-Bon Kim, Kim Tae Hee and Yoola Hwang (ETRI, Korea (South))

P10-12 Hybrid Block Coordinate Optimization for 3-D Cooperative UAV Sensing and Communication
InPyo Lee and Jae Sung Lim (Ajou University, Korea (South))

P10-13 MLI-Integrated Compact High Gain Antenna for mmWave Satellite Communication Systems
Ye-Bon Kim, Seunghwa Jung, Sanguk Lee and Yoola Hwang (ETRI, Korea (South))

Technical Paper Sessions

P10-14 Space-Time RSMA for Robust Max-Min Fair Transmission in LEO Satellite Networks
Jaehyup Seong (Korea University, Korea (South)); Byungju Lee (Incheon Natioanl University, Korea (South)); Aryan Kaushik (RakFort & IIITD, United Kingdom (Great Britain)); Wonjae Shin (Korea University, Korea (South))

P10-15 Resilient Doppler-Driven Positioning with LEO Satellites in GNSS-Denied Environments
Md. Ali Hasan, Sangmin Han and Wonjae Shin (Korea University, Korea (South))

P10-16 Superimposed Pilot based OTFS Channel Estimation for LEO Satellite Communication System
Jiewen Jiang, Cheng Wang, Songsong Cai, Xi Gong and Kaishi Wang (Beijing University of Posts and Telecommunications, China); Weidong Wang (Beijing Unversity of Posts and Telecommunications, China)

P10-17 Evaluation of a Graph Coloring based Satellite Resource Allocation Scheme
Jaeyoung Song and Sooyoung Kim (Jeonbuk National University, Korea (South)); Satya Chan and Daesub Oh (Electronics and Telecommunications Research Institute, Korea (South))

P10-18 Successive Successful Uplinks-Based Reliability Analysis for Satellite-IoT Networks
Ayush Kumar Dwivedi, Fatemeh Rafiei Maleki and Taneli Riihonen (Tampere University, Finland)

P10-19 A Ka-band Down Converter IC in 65-nm CMOS for LEO-Satellite Payloads
Hongkie Lim (Electronics and Telecommunications Research Institute (ETRI), Korea (South)); Seong-Mo Moon and Dong-pil Chang (ETRI, Korea (South))

P10-20 User Selection with Truncated Constant Power Control for Covert Communications in Uplink NOMA Systems
Yeojin Seon (Electronics and Telecommunications Research Institute, Korea (South)); Jung-Bin Kim (ETRI - Electronics & Telecommunications Research Institute, Korea (South))

P10-21 Impact of NTN UE Deployment on Downlink Interference in TN/NTN Coexistence Scenarios
Seung-Woo Jo and Won Cheol Lee (Soongsil University, Korea (South))

P10-22 3D O-RAN Architecture toward Future NTNs
Jae Seung Lee (ETRI, Korea (South)); Mi Young Yun (Electronis and Telecommunications Research Institute, Korea (South)); Seungkwon Cho (Electronics and Telecommunication Research Institute, Korea (South)); SeungKwon Baek and JunHwan Lee (ETRI, Korea (South)); Moon-Sik Lee (Electronics and Telecommunications Research Institute, Korea (South))

P10-23 Applicability of Generative Semantic Communications to Satellite Networks
Hyein Lee and Sooyoung Kim (Jeonbuk National University, Korea (South)); Hee Wook Kim (Electrionics and Telecommunications Research Institute, Korea (South)); Jihong Park (Singapore University of Technology and Design, Singapore); Jinho Choi (The University of Adelaide, Australia); Daesub Oh (Electronics and Telecommunications Research Institute, Korea (South))

P10-24 Robust Doppler Compensation for LEO-OFDM Radar Sensing Using Hierarchical 2-D Grid Search
Zahra Zarei, Fitsum Debebe Tilahun and Chung G. Kang (Korea University, Korea (South))

P10-25 UAV-Relay-Assisted LEO Satellite Communication Systems with Cooperative Non-Orthogonal Multiple Access
Gyeongrae Im and JoonGyu Ryu (ETRI, Korea (South))

P10-26 In-Vehicle Human Detection and Seat Positioning via Respiration-Based IR-UWB Radar Sensing
Eunji Lee, Jihye Kim and Seong-Cheol Kim (Seoul National University, Korea (South))

P10-27 A Multi-Sensor Simulator for UAV Localization: Kalman Filter-Based Approach
Jihyeok Jung, Jinho Kwon, Jeongwon Jeon and Song Noh (Incheon National University, Korea (South))

P10-28 CEEMDAN-AI Based Equalizer for Nonlinear Distortion Mitigation in Satellite Communications
Yongkyun Kim, Jongbeom Lee and Minyong Park (Incheon National University, Korea (South)); Byungju Lee (Incheon Natioanl University, Korea (South))

Technical Paper Sessions

A11 Wireless Communications 4

Oct. 17, 10:20~11:50 | Crystal 2

Chair : Jeong Seon Yeom (Hankyong National Univ.)

A11-1 Impact of Number of DMRS Symbols on Self-interference Cancellation in Full-duplex Mobile Communication
Kazuma Matsushima and Takatoshi Sugiyama (Kogakuin University, Japan)

A11-2 PureTrack-IR: Blockchain-Enabled Infrared Imaging Agent AI-UAV System for Military Tracking
Sium Bin Noor and Md Tayeb Adnan (Kumoh National Institute of Technology, Korea (South)); Mohtasin Golam (Kumoh National Institute of Technology & IT Convergence, Korea (South)); Subroto Kumar Ghosh, Muhammad Sannan Khaliq, Jae-Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

A11-3 Robust Indoor Human Detection and Tracking via Fusion of mmWave Radar and Vision Sensor
Jae Myung Shin and Kae Won Choi (Sungkyunkwan University, Korea (South)); JaeYoon Jung (Sungkyunkwan University, Korea (South) & CIOT, Korea (South))

A11-4 A Deep Learning Approach for UWB-based Indoor UAV Localization Using TDoA and RSSI Data
Juwon Hong (SungKyunKwan University, Korea (South)); Jiwon Suh, Mose Gu and Jaehoon Jeong (Sungkyunkwan University, Korea (South))

A11-5 Multi-agent Radio SLAM: A Point Cloud-based Approach
Seyeon Lee, Kyeong-Ju Cha, Hyunwoo Park and Sunwoo Kim (Hanyang University, Korea (South))

A11-6 Scalable Positioning via One-Way Ranging: Beyond Wi-Fi FTM in Dense Environments
Younghun Ha and Jeongsik Choi (Kyungpook National University, Korea (South))

A11-7 Picocell Range Expansion for UEs Connected to Macro-BSs in HetNets
Daichi Shinji, 進士大地 (Kogakuin University of Technology & Engineering, Japan); Hiroyuki Otsuka and Takatoshi Sugiyama (Kogakuin University, Japan)

B11 ICT Convergence 2

Oct. 17, 10:20~11:50 | Crystal 3

Chair : Seyeon Kim (Korea Univ.)

B11-1 PhantomSwap: A Hybrid Memory Swapping System for Mobile Devices
Cheng-Yu Hu and Sheng-De Wang (National Taiwan University, Taiwan)

B11-2 Channel Estimation for Joint Communication and Sensing in OFDM-FMCW Systems
Yeong Choi and Seongwook Lee (Chung-Ang University, Korea (South))

B11-3 Power Allocation for Downlink and Uplink Full-Duplex Integrated Sensing and Communications
Jiyoon Noh and Dongmin Kim (ROKAF & Ajou University, Korea (South)); Juhyung Lee (ROKAF, Korea (South) & Ajou University, Korea (South)); Jae Sung Lim (Ajou University, Korea (South))

B11-4 Optimal Element Spacing for RIS-aided MIMO Terahertz communication
Arnold Matemu, Dong Ho Kim and Kyungchun Lee (Seoul National University of Science and Technology, Korea (South))

B11-5 Multi Robot-assisted Channel Estimation for 6G Upper Mid-band Communications
Seonghoon Kim, HoKyung Kim and Byonghyo Shim (Seoul National University, Korea (South))

Technical Paper Sessions

D11 ICTC Workshop on Semantic Communication

Oct. 17, 10:20~11:50 | Pearl

Chair : Yo-Seb Jeon (POSTECH)

D11-1 Importance-Aware Subcarrier Mapping for OFDM-Based Digital Semantic Communication
Joohyuk Park (POSTECH, Korea (South)); Jiyoon Kim (Pohang University of Science and Technology, Korea (South)); Yo-Seb Jeon (POSTECH, Korea (South))

D11-2 On the Performance of Channel Coding in Digital Semantic Communication
Seonjung Kim and Yo-Seb Jeon (POSTECH, Korea (South))

D11-3 Depth-aware Style Transfer for Robust Data Augmentation in Object Detection
Ian Ryu and Jong-Seok Lee (Yonsei University, Korea (South))

D11-4 On the Potential of Entropy-Constrained Vector Quantization in Semantic Communication
Junyong Shin and Yo-Seb Jeon (POSTECH, Korea (South))

D11-5 On the Performance of Pilot-Free Semantic Communication over Time-Varying OFDM Channels
Jihun Park and Yo-Seb Jeon (POSTECH, Korea (South))

D11-6 Agile Semantics Alignment over Fading Channel via LoRA-based Fine-Tuning
Sang-Hyeok Kim, Joonhoe Koo and Seung-Woo Ko (Inha University, Korea (South))

E11 ICTC Workshop on Information and Communication Strategic Technology for Industry Convergence (IWICST)

Oct. 17, 10:20~11:50 | Ruby

Chair : Wooyong Lee (ETRI)

E11-1 Security Analysis of a Fork-Delay-Based Coalition Policy Algorithm for Improving Proof-of-Stake Consensus in Delay-Tolerant IoET Networks
Woo Yong Lee (Electronics and Telecommunications Research Institute, Korea (South)); Keunyoung Kim (ETRI, Korea (South))

E11-2 Multistage Real-time Violence Detection using Convolutional Neural Network and Long Short-term Memory
Nguyen Manh Dung (Posts and Telecommunications Institute of Technology, Vietnam)

E11-3 Data Labeling Method Combining Visual and Thermal Images for Effective AI-Based Chemical Recognition
Seong Min Ryoo (Seowon University, Korea (South)); Soo Young Choi and Sook Kyoung Cho (Nestors Co. Ltd, Korea (South)); Kap Yong Choi and Gyoung-Bae Kim (Seowon University, Korea (South))

E11-4 PAPR-Constrained Throughput of OTFDM with DFT-s-OFDM as a Baseline
Kyeongpyo Kim (Electronics and Telecommunications Research Institute, Korea (South)); Wooram Shin (Electronics and Telecommunications Research Institute & Korea Advanced Institute of Science and Technology, Korea (South)); Kapseok Chang (ETRI, Korea (South)); Young-Jo Ko (Electronics and Telecommunications Research Institute, Korea (South))

Technical Paper Sessions

F11 [SCSS] Special Session on Ajou 6GRC/RRC

Oct. 17, 10:20~11:50 | Emerald

Chair : Jae-Hyun Kim (Ajou Univ.)

F11-1 Propagation Modeling of LEO Satellites in Urban Environments
Sangjoon Do, Haeseung Lee and Yong Bae Park (Ajou University, Korea (South))

F11-2 Multi-Agent DRL for Cooperative Resource Allocation in Heterogeneous LEO Satellite Networks
Yoogyung Jin, Yerin Lee and Howon Lee (Ajou University, Korea (South))

F11-3 An Interleave-Division Multiple Access Technique for 6G Non-Terrestrial IoT Networks
Yong Jin Song, Young-Seok Lee and Bang Chul Jung (Ajou University, Korea (South))

F11-4 Deep Learning-Based SAR Super-Resolution for Accurate Water Body Mapping
Jung-Hoon Lee, Tae-Yoon Kim and Jongtae Lee (Ajou University, Korea (South)); Minsik Kim and YuJeong Ahn (University of Ajou, Korea (South)); Habeen Oh (AJOU University, Korea (South)); Jae-Hyun Kim (Ajou University, South Korea, Korea (South))

F11-5 Time Synchronization for LEO Satellites Positioning in GNSS Resilient Systems
Heon-Woo Chu (University of Ajou, Korea (South)); Jae-Yeol Lee (Ajou Unviersity, Korea (South)); Tae-Han Moon (Unviersity of Ajou, Korea (South)); Jae-Yeong Lee (Ajou University, Korea (South)); Jihong Park (AJOU University, Korea (South)); Jae-Hyun Kim (Ajou University, South Korea, Korea (South))

F11-6 An Inhomogeneous Plane Wave-based Ray Tracing Algorithm for LEO Atmospheric Propagation Modeling
Bowoo Jang (Pohang University of Science and Technology, Korea (South) & POSTECH, Korea (South)); Jun Heo and Dong-Yeop Na (Pohang University of Science and Technology, Korea (South))

F11-7 Hierarchical Reinforcement Learning Based Resource Scheduling and Handover Control in Integrated Satellite-Ground Network
Huiyeon Jang and Soyi Jung (Ajou University, Korea (South))

P11 [Main Track] Interactive Session 11

Oct. 17, 10:20~11:50 | Foyer

Chair : Seungnyun Kim (MIT)

P11-1 RFO Estimation for in CP-OFDM Based Private 5G NR Sidelink System
Yong-An Jung (Gumi Electronics & Information Technology Research Institute, Korea (South)); Mahn-suk Yoon (Gumi Electronics & Information Technology Research Institute, Korea (South) & 구미전자정보기술원, Korea (South)); Sang-Bong Byun, Dong-Cheul Han and Soo-Hyun Cho (Gumi Electronics & Information Technology Research Institute, Korea (South)); Sunghun Lee (GERI, Korea (South))

P11-2 History-based P2P Key Management Protocol for IoT Environments
HyeonHo Lee and Won Seok Choi (Chungbuk National University, Korea (South)); Seong Gon Choi (Chungbuk University, Korea (South))

P11-3 ALO-IDChain: Ant Lion Optimized DL Model for Intrusion Detection with Blockchain Logging in IoMT
Subroto Kumar Ghosh, Mohtasin Golam, Sium Bin Noor, Jae-Min Lee and Dong Seong Kim (Kumoh National Institute of Technology, Korea (South))

Technical Paper Sessions

P11-4 Group-Based Method for the Large-Scale Traveling Salesman Problem
Janghee Woo (Hanyang University, Korea (South)); Taehyung Kim (Hanyang Univerity, Korea (South)); Sang-Woon Jeon (Hanyang University, Korea (South))

P11-5 Surface Code-17 Magic State Injection Protocol on the Heavy-Hexagon Lattice
Shengyue Heng (School, Korea (South)); Yujin Kang and Jun Heo (Korea University, Korea (South))

P11-6 A Comparative Study of Quantum Circuit Mapping Techniques for NISQ Devices
You-Seok Lee, Jongheon Lee and Yousung Kang (ETRI, Korea (South))

P11-7 Understanding Logical Output States in Repetition Code-Based Entanglement Purification
Huidan Zheng and Jun Heo (Korea University, Korea (South))

P11-8 An eBPF-First Datapath for CNF Chains on Commodity NICs
Yongyoon Shin (ETRI, Korea (South)); Jisoo Shin and Jong-Geun Park (Electronics and Telecommunications Research Institute, Korea (South))

P11-9 Constellation Reallocation of 16QAM for Gaussian Like Correlations in CV-QKD
Seonguk Kim, Seungho Yoon, Jihee Jung and Jun Heo (Korea University, Korea (South))

P11-10 Combining PEC and Classical Shadows for Efficient Error Mitigation in NISQ Devices
SangUk Lee and Jun Heo (Korea University, Korea (South))

P11-11 Low Spatial Overhead CCZ Magic State Factory
Sungyeon Kook, Yujin Kang, Youshin Chung and Jun Heo (Korea University, Korea (South))

P11-12 User Evaluation of KSL 3D Gaussian Avatar
Cho Seongwhan and Younggeun Choi (Dankook University, Korea (South))

P11-13 Enhancing Topology Preservation in Intrusion Detection Systems through Continual Learning
Thanh-Tung Nguyen and Minho Park (Soongsil University, Korea (South))

P11-14 Deep Learning-aided Log Likelihood Ratio Detection Using Channel Classification
Wonseok Shin, Inkook Keum and Byonghyo Shim (Seoul National University, Korea (South))

P11-15 Redacted Text Model with Homomorphic Encryption for Privacy-Preserving LLM
Yejin Lee, Yundo Hwang and Jaeha Kung (Korea University, Korea (South))

P11-16 A 3D Hand Pose Estimation Dataset for Wrist-Mounted Camera Systems
ChangHo Kim (University of Dankook, Korea (South)); Cheolmin Lee (University of Dankook, Korea (South), Korea (South)); Younggeun Choi (Dankook University, Korea (South))

P11-17 A Multi-Agent Framework for Personalized Skincare Recommendation
Xin Chu, Cho Seongwhan and Younggeun Choi (Dankook University, Korea (South))

P11-18 Range-Doppler Map-Based Multi-Object Estimation in OFDM Radar Using YOLOv8
Soyeon Jeon, Euna Ko, Eui-Rim Jeong and Geun Won Choi (Hanbat National University, Korea (South))

P11-19 QoS-Aware Hybrid Beamforming Optimizaiton in MU-MIMO systems
Jiwon Jung, Jihoon Moon and Byonghyo Shim (Seoul National University, Korea (South))

P11-20 A Hierarchical Multi-RAT MEC Framework with LLM-based EC
Zhaokun Shao, Kang-Yu Gao and Sang-Woon Jeon (Hanyang University, Korea (South))

P11-21 A PAM-4 Time-Based Receiver for QKD-WDM System
Hyun min Shin (Korea University, Korea (South))

Registration

- Author Registration Deadline : ~ September 17, 2025
- Early Registration Deadline (Non-Author) : ~ October 1, 2025
- Late Registration : October 2 ~ 17, 2025

Registration Policy

1. Paper Publication Requirement
   To be published in the ICTC 2025 Conference Proceedings, a minimum of one author from each accepted paper MUST register at the regular registration fee (member or non-member).
   The paper must be presented at the conference.
2. Member Rates
   "Member" rates apply to members of IEEE (Institute of Electrical and Electronics Engineers), IEICE (The Institute of Electronics, Information and Communication Engineers), KICS (Korea Institute of Communications and Information Science), and CIC (China Institute of Communications).
   KICS members must have paid their membership fee for the current year to qualify for the member rate.
3. Student Registration
   A valid student ID is required at the registration desk to check the eligibility for student-rate registration.
4. Registration Entitlements
   Please note that registered participants are entitled to attend all conference sessions (technical paper sessions, workshops, plenary sessions including keynote speeches, industrial sessions, and special sessions), receive the conference proceedings (downloadable from the conference website), coffee breaks, and 2 luncheon tickets (October 15–16).

   - Due to venue capacity limitations, the October 15 luncheon will be divided into multiple time slots based on the order of registration fee payment.
   - The assigned time slot will be indicated on the luncheon coupon.
   - Regular registration includes a banquet ticket (October 15).
   - Student registration does not include a banquet ticket.

Registration Fee

		Early Birds USD (International) / KRW (Domestic)	Late USD (International) / KRW (Domestic)
Regular	Member	$650 / ₩780,000	$730 / ₩880,000
	Nonmember	$720 / ₩860,000	$850 / ₩980,000
Student	Member	$440 / ₩530,000	$500 / ₩600,000
	Nonmember	$500 / ₩600,000	$550 / ₩670,000

Contact Information

If you have any questions, please contact Registration Secretariat of ICTC 2025 at ictc@kics.or.kr
- Tel: +82-2-3453-5555 - Fax: +82-2-539-5638

Venue

Lotte Hotel Jeju

https://www.lottehotel.com/jeju-hotel/en

Located in the Jungmun Tourist Complex on the magnificent island of Jeju, LOTTE HOTEL JEJU is one of the finest resort hotels in Korea offering 500 rooms.
Modeled after the South African resort hotel, "The Palace of the Lost City," LOTTE HOTEL JEJU boasts an exotic atmosphere in harmony with its natural surroundings.
In addition to four restaurants and lounges and six event spaces optimized for large-scale international events and seminars, it features various facilities beloved by families and couples alike, including the all-season outdoor spa pool, Hello Kitty character room, PlayTopia, and more.

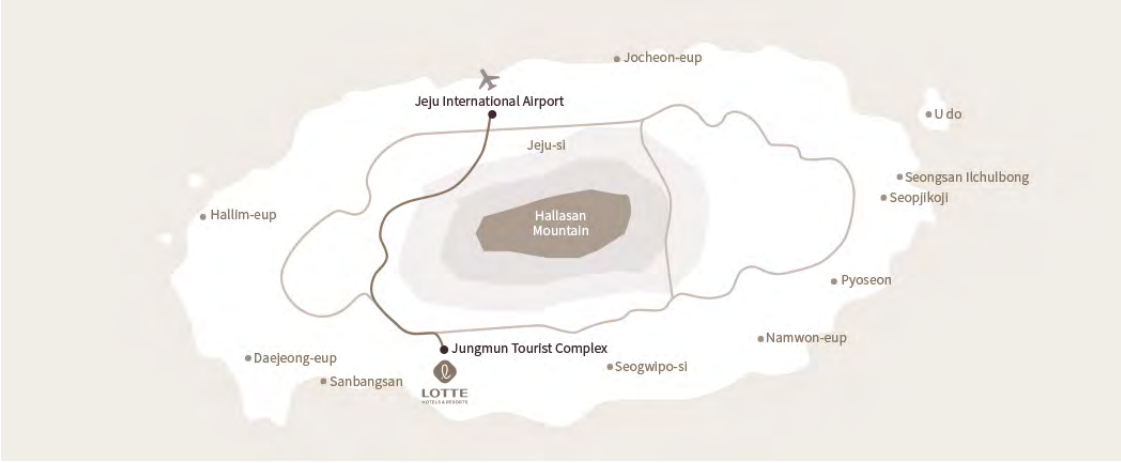
LOTTE HOTEL JEJU

Address: LOTTE HOTEL JEJU, 35 Jungmungwangwang-ro 72beon-gil, Seogwipo-si, Jeju-do South Korea
TEL. +82-64-731-1000 | FAX. +82-64-738-7305
* Parking support is not available. Please use public transportation.

Transportation to and from Hotel

By Shuttle Bus

Free Airport Shuttle Service (Exclusively for hotel guests, Operated on a reservation basis)



	HOTEL → AIRPORT	AIRPORT → HOTEL
1st	10:00	14:30
2nd	13:00	17:30
3rd	16:20	

Additional Information

- Shuttle boarding location: Jeju Airport, Gate 3 exit, at Large Bus Parking Area B-3 or B-4
- It takes approximately 5 minutes on foot from the airport gate to the shuttle boarding area.
- The shuttle service is free of charge, available exclusively for hotel guests, and operates on a reservation-only basis (limited to the stay period).
- Boarding begins 10 minutes prior to departure, and the shuttle departs on time.
- Please note that the vehicle location and schedule are subject to change depending on hotel circumstances.
- Food and beverages are not allowed on board to maintain a clean and pleasant environment. We appreciate your understanding.

Inquiries

TEL +82-64-731-4343 (Concierge)

By Airport Limousine Bus

Additional Information

- Bus stop: Exit to Gate 5, turn right for Airport Limousine platform (Samyoung Bus #600)
- Travel Time: Approx. 50 min
- Fare: Airport ↔ LOTTE HOTEL JEJU (One way)
  - Adult: KRW 4,500
  - Middle to High School Student: KRW 3,600
  - Elementary School student: KRW 2,300

Inquiries

TEL +82-64-713-7000 (Samyoung Express Airport Office)

By Taxi

Catch a taxi from the nearest taxi stand across from the airport. Most taxis are medium-sized passenger vehicles but are charged the same as a general taxi.

Travel Information

Hallasan National Park

Hallasan stands out at the center of South Korea's southernmost island, boasting exquisite landscapes due to its varied volcanic topography and vegetation distribution ranging vertically through the subtropical, temperate, frigid and alpine zones. The special nature of this area led to its being designated and managed as a national park in 1970, a UNESCO Biosphere Reserve in 2002, a World Natural Heritage Site in 2007. Muljangori Oreum registered as a Ramsar Wetland in 2008.

Jeju Olle

“Olle” [Ole] is the Jeju word for a narrow pathway that is connected from the street to the front gate of a house. Hence, “Olle” is a path that comes out from a secret room to an open space and a gateway to the world. If the road is connected, it is linked to the whole island and the rest of the world as well. It has the same sound as “Would you come?” in Korean, so Jeju's “Olle” sounds the same as ‘Would you come to Jeju?’. The first trail route was opened to the public in September, 2007. Since then, the Jeju Olle exploration team has created a combined total of 200km of walking trails in Jeju island. Currently eleven trail routes have been opened to walkers and the trail exploration team is still working on new routes.

Udo (Cow Islet)

The island was named "Udo" or "Cow Island" as its contours look like a cow lying down on the ground. There are 8 scenic wonders of Udo: day and night(Judan-myeongwol and Yahang-eobeom), sky and earth (Cheonjin-gwansan and Jidu-cheongsa), front and back (Jeonpo-mangdo and Huhae-seokbyeok), and east and west (Dongan-gyeonggul and Seobin-baeksa). The movie "In October" and "The mermaid" were shot at Cow Island, capitalizing on its picturesque scene of a fishing village and a lush, peaceful grassy field. The white sand beach facing the indigo and turquoise sea of Jeju is very impressive.

Seongsan Ilchulbong (Sunrise Peak)

99 rocky peaks surround the crater like a fortress and the gentle southern slope connected to water is a lush grassland. On the grassland at the entrance of Sunrise Peak, you can enjoy horseback riding. Breathtaking scenic views while taking a rest in the middle of climbing up the peak such as Mount Halla, the deep blues of the ocean, the multi-colored coast line, and the picturesque neighboring villages will become unforgettable memories.

Seopjikoji

Jutting out at the eastern seashore of Jeju Island, Seopji-Koji is one of the most scenic views with the bright yellow canola and Seongsan Sunrise Peak as a backdrop. The pristine beauty of Jeju can be seen in Seopji-koji. Sinyang Beach, a meadow filled with canola flowers, peacefully grazing Jeju ponies, a rocky sea cliff, and a towering legendary large rock (Sunbawe) all combine to make nature s masterpiece. Unlike the other coastal areas of Jeju, it has red volcanic rock (songi) and strangely-shaped rocks that at low tide transform this area into a breath-taking stone exhibition gallery.

Travel Information

Manjang Cave

Manjang Cave, situated at Donggimnyeong-ri, Gujwa-eup, North Jeju, 30 kilometers east of Jeju City, was designated as Natural Monument No. 98 on March 28, 1970. The 7,416-meter long cave has been officially recognized as the longest lava tube in the world. The annual temperature inside the cave ranges from 11℃ to 21℃, thus facilitating a favorable environment throughout the year. The cave is also academically significant as rare species live in the cave. Created by spewing lava, "the lava turtle", "lava pillar", and "Wing-shaped Wall" look like the work of the gods. It is considered to be a world class tourist attraction.

Gimnyeong Maze Park

This park was opened to the public in 1997 after its development was begun in 1987. In the area of about 3300 square meters, there are 1232 Leylandii trees and two Gold Leylandii trees from England. The overall extended length of labyrinth is 932 m and the shortest course between entrance and exit is 190 m long. Manjang Cave Culture Center, located between Manjang Cave and Gimnyeoungsa Cave, is a part of Manjang Cave tourist complex which is currently being expanded. Three bridges totaling 46 m and an observatory give visitors ample opportunities for picture taking.

Geomun Oreum

The eroded valley of lava that erupted from the middle of the crater is the largest on Jeju Island. On one side is a 4km oval valley. On the southeast ranch site, there are many conical hills with lava detritus which are volcanic cones without craters. The Geomi Oreum in Songdang-ri, Gujwa-eup is also called the East Geomun Oreum to distinguish it from this West Geomun Oreum. Local residents call it Geomul Chang (Geomeol Chang) or the Geomun Oreum since it looks black when covered with forest. However, according to a scholars etymological study, “Geomun” originates from “Gam or Geom” during the Ancient Joseon Era which means “God”. Therefore, “Geomun Oreum” means “Holy mountain”. The forest is thick with Pinus thunbergii and Japanese cedars. It is a multiple-shaped volcanic cone. On the top of the mountain, there is a large crater with a small peak with a horse hoof-shaped crater that widens to the northeast.

Mysterious Road (Dokkaebi Road)

On Mysterious Road (or Bugaboo Road), a parked car on a slight hill road rolls uphill instead of going downhill. This is a result of an optical illusion in which the lower part looks higher because of its surrounding environment.

Cheonjiyeon Waterfall

The waterfall falls from a precipice with thundering sounds, creating white water pillars. It has the name Cheonjiyon, meaning ‘the heaven and the earth meet and create a pond’. At 22 m in height and 12 min width, the waterfall tumbles down to the pond to produce awe-inspiring scenery. The valley near the waterfall is home to Elaeocarpus sylvestrisvar, ellipticus, which is Natural Monument No. 163, Psilotum nudum, Castanopsis cuspidatavar.sieboldii, Xylosma congestum, Camellia and other subtropical trees. This place is also famous as home to the eel of Anguilla mauritiana, which is Natural Monument No. 27 and is active primarily at night.

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