

Associate Professor, Korea University – School of Electrical Engineering, Seoul, Republic of Korea

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Highlights

Research Milestones

- **147 Journals** (among them, **112 IEEE Journals**), <https://sites.google.com/view/aimlab-kuee/publications/journals>
– 120 Published / Accepted (among them, **87 IEEE**), **12** Under-Revision, and **15** Under-Review Journals
- **8076+ Citations** (H-index: 43+, i10-index 184+), obtained from Google Scholar Profile (as of July 19, 2024)
- **IEEE MMTC Best Journal Paper Award (2021)**, *IEEE Communications Society*
- **IEEE MMTC Outstanding Young Researcher Award (2020)**, *IEEE Communications Society*
- **IEEE Systems Journal Best Paper Award (2020)**, Top 7 among 793 accepted papers in 2019 (0.88%)
- **12 Awards from IEEE Conferences and Contests**, i.e., *IEEE ICTC Best Paper Award (2022)*, *IEEE ICOIN Best Paper Award (2021)*, *3 IEEE Seoul Section Student Paper Contest Awards*, and *7 IEEE VTS Seoul Chapter Awards*
- **7 Tutorials at IEEE/ACM Conferences**, i.e., *CIKM (2024)*, *ICUFN (2022)*, *ICOIN (2022)*, *ICUFN (2021)*, *ICAIC (2021)*, *ICOIN (2019)*, and *ICC (2018)*
- **71+ Patents** are granted, and among them, **46 Granted Patents** are successfully adopted by 60 GHz Millimeter-Wave IEEE 802.11 Standards, i.e., IEEE 802.11ad and IEEE 802.11ay
- **Research Funds (since March 2016)**: 14,859,784 USD \approx 14,859,784,000 KRW (except University Internal Funds)

Research Supervision and Teaching (As a faculty member since March 2016)

- **3 Tenure-Track Professors (formerly supervised by Prof. Joongheon Kim (Ph.D., M.S., Postdoctoral, Interns))**
 - *Ph.D. Alumni*: Soohyun Park (Sookmyung Women's Univ., Korea)
 - *Postdoctoral Scholars*: Minseok Choi (Kyung Hee Univ., Korea), Soyi Jung (Ajou Univ., Korea)
- **8 Best Teaching Awards at Korea University**, i.e.,
4 awards are for top 5% (*Granite Tower Best Teaching Award*) and 4 awards are for top 20% (*Best Teaching Award*)

IEEE Society Academic Activities

- **Senior Member of the IEEE (2018–)** and IEEE Membership (2005–) for 19+ years
 - **Distinguished Lecturer, IEEE Communications Society (ComSoc)** (class of 2022–2023) IEEE ComSoc
 - **Distinguished Lecturer, IEEE Systems Council** (class of 2022–2024) IEEE Systems Council
 - **Editor (2023–)**, *IEEE Internet of Things Journal* IEEE ComSoc, Computer Society, Sensors Council
 - **Associate Editor (2020–)**, *IEEE Transactions on Vehicular Technology* IEEE VTS
 - **Guest Editor (06/2022)**, *IEEE Communications Standards Magazine* (S.I. on Recent and Future Evolution of Wi-Fi) IEEE ComSoc
 - **IEEE Vehicular Technology Society (VTS)**, Seoul Chapter Treasurer for 4 years (2020–2023) IEEE VTS
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Educational Backgrounds

- **University of Southern California (USC) – Viterbi School of Engineering**, Los Angeles, California, USA
 - Ph.D. (08/2009–08/2014) in **Computer Science**, Thomas Lord Department of Computer Science
(Advisor: *Prof. Andreas F. Molisch (Fellow of the IEEE)*, Ming Hsieh Department of Electrical and Computer Engineering)
Research Assistant, Communications, Information, Learning, and Quantum (CILQ) Group
 - M.S. (05/2014) in **Computer Science** with specialization in **High Performance Computing and Simulations**
 - M.S. (05/2012) in **Electrical Engineering**
 - **Korea University – College of Informatics**, Seoul, Republic of Korea
 - M.S. (03/2004–02/2006) in **Computer Science and Engineering**
(Advisor: *Prof. Wonjun Lee (Fellow of the IEEE)*, Department of Cyber Defense and Future Network Center)
 - B.S. (03/1999–02/2004) in **Computer Science and Engineering**
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R&D Positions

Full-Time Positions

- **Korea University**, Seoul, Republic of Korea
 - *Associate Professor* (03/2021–Present), *Assistant Professor* (09/2019–02/2021), School of Electrical Engineering
 - *Adjunct Professor* (03/2023–02/2028 (Expected)), Department of Communications Engineering (with **Samsung Electronics**)
(*Steering Committee Member* (03/2023–Present), Department of Communications Engineering)
 - *Adjunct Professor* (11/2022–02/2028 (Expected)), Department of Future Science and Technology Business (Graduate School)
 - *Adjunct Professor* (03/2021–02/2026 (Expected)), Department of Semiconductor Engineering (with **SK Hynix**)
 - R&D POSITIONS AND LEADERSHIP
 - * *Center Director* (07/2024–12/2031), **Net-Zero CAFE Research Center**
University ICT Research Center (ITRC), funded by IITP and the Ministry of Science and ICT (Grant: \$7,500K)
 - ADMINISTRATIVE POSITIONS

- * *Deputy Vice President (02/2022–Present), Office of Academic Affairs*
- * *Dean (06/2021–08/2023), Center for Teaching and Learning (CTL)*
- **Chung-Ang University – College of Computer Science and Software**, Seoul, Republic of Korea
 - *Assistant Professor (03/2016–08/2019), School of Computer Science and Engineering*
- **Intel Corporation – Platform Engineering Group**, Silicon Valley (Santa Clara), California, USA
 - *Systems Engineer (03/2015–02/2016), WiGig & mmWave Standards and Advanced Technology (SAT) Team*
 - *Standards Scientist (07/2014–03/2015), WiGig & mmWave SAT Team*
 - *Wireless Standards Engineer Intern (09/2013–07/2014), WiGig & mmWave SAT Team*
- **University of Southern California (USC) – Viterbi School of Engineering**, Los Angeles, California, USA
 - *Annenberg Graduate Fellow (08/2009), Awarded with Ph.D. admission in Computer Science from USC (2009)*
 - *Ph.D. Research Assistant (01/2011–08/2014), Communication Sciences Institute (CSI) (Advised by Prof. Andreas F. Molisch)*
(CSI is now re-organized as **Communications, Information, Learning, and Quantum (CILQ) Group**)
 - *Teaching Assistant (01/2012–05/2013), Computer Science and Electrical Engineering Departments (CSCI455x and EE579)*
- **InterDigital**, San Diego, California, USA
 - *Intern (05/2012–08/2012), Wireless Systems Evolution Department*
 - *Subject Matter Expert in IEEE 802.11ad (01/2012–02/2012), Wireless Systems Evolution Department*
- **LG Electronics CTO Office**, Seoul, Republic of Korea
 - *Research Engineer (01/2006–08/2009), Multimedia Research Laboratory, Seocho R&D Campus*

Academia (Membership, Editorial Boards, and Services)

- **IEEE**
 - *Senior Member (2018–), Member (2006–2017)*
 - *Distinguished Lecturer (2022–2023), IEEE Communications Society*
 - *Editor (2023–), IEEE Internet of Things Journal*
 - *Associate Editor (2020–), IEEE Transactions on Vehicular Technology (Area: Vehicular Electronics and Systems)*
 - *Guest Editor (03/2022), IEEE Communications Standards Magazine (S.I. on Recent and Future Evolution of Wi-Fi)*
 - **IEEE Vehicular Technology Society (VTS) Seoul Chapter**
 - * *Chapter Assistant Administrator for Planning (2024–), Chapter Treasurer (2022–2023, 2020–2021)*
 - * **IEEE VTS APWCS Organizing Committee: Finance Co-Chair (2023), Finance Chair (2022), Finance Co-Chair (2021)**
- **Elsevier/Wiley**
 - *Editor (2021–), ICT Express (Area: AI for ICT Applications)*
 - *Guest Editor (2024), ICT Express (S.I. on Surveys and Tutorials in Emerging AI Technologies)*
 - *Guest Editor (2022), ETRI Journal (S.I. on Autonomous Unmanned Aerial/Ground Vehicles and their Applications)*
 - *Guest Editor (2022), Computer Networks (S.I. on ML and AI for the Internet of Things, 5G, and Beyond)*
 - *Guest Editor (2022), ICT Express (S.I. on Artificial Intelligence and Machine Learning Approaches to Communication)*
 - *Guest Editor (2021), ICT Express (S.I. on Mobile and Edge Computing Systems)*

Awards and Honors

Research and Academic Excellence (International)

- **IEEE VTS Seoul Chapter Award (2024) – IEEE Vehicular Technology Society** (w/ G.S. Kim, S. Jung, S. Park)
"Quantum multi-agent reinforcement learning software design and visual simulations for multi-drone mobility control"
- **IEEE VTS Seoul Chapter Award (2024) – IEEE Vehicular Technology Society** (w/ J.Y. Shim)
"Diffusion-based quantum error mitigation using stochastic differential equation"
- **IEEE VTS Seoul Chapter Award (2023) – IEEE Vehicular Technology Society** (w/ S. Park)
"Quantum reinforcement learning for large-scale multi-agent decision-making in autonomous aerial networks"
- **IEEE Seoul Section Student Paper Contest, Bronze Paper Award (12/2023)** (w/ G.S. Kim, J. Chung, S.B. Son, H. Lee, H. Baek, S. Park)
"Aircraft taxi routing using reinforcement learning at Hartsfield Jackson Atlanta international airport"
- **Best Editor Award (2023) – ICT Express (Elsevier)** (07/2023)
- **Finalist (Top 25), AAAI Student Abstract and Poster Session – Oral Presentation Contest (2023)** (w/ H. Baek, et al)
"FV-Train: Quantum convolutional neural network training with a finite number of qubits by extracting diverse features"
- **IEEE ICTC Best Paper Award (2022) – IEEE Communications Society** (w/ J.-H. Lee, D.P. Selvam, A.F. Molisch)
"Reinforcement learning empowered massive IoT access in LEO-based non-terrestrial networks"
- **IEEE VTS Seoul Chapter Award (2022) – IEEE Vehicular Technology Society** (w/ H. Lee, S. Jung, J.-H. Kim, et al)
"DDPG-based deep reinforcement learning for loitering munition mobility control: Algorithm design and visualization"
- **Spotlight, Oral Presentation (2022) – ICML Workshop on Dynamic Neural Networks (2022)** (w/ S. Jung, J. Park, M. Bennis, et al)
"Slimmable quantum federated learning"
- **IEEE MMTC Best Journal Paper Award (2021) – IEEE Communications Society**
 - M. Choi, A.F. Molisch, and J. Kim, "Joint Distributed Link Scheduling and Power Allocation for Content Delivery in Wireless Caching Networks," *IEEE Transactions on Wireless Communications*, 19(12):7810-7824, December 2020.
- **IEEE VTS Seoul Chapter Award (2021) – IEEE Vehicular Technology Society** (w/ S. Jung, J.-H. Kim, et al)
"Quantum scheduling for millimeter-wave observation satellite constellation"

- **IEEE VTS Seoul Chapter Award (2021)** – *IEEE Vehicular Technology Society* (w/ S. Jung, et al)
"Distributed and autonomous aerial data collection in smart city surveillance applications"
- **IEEE ICOIN Best Paper Award (2021)** – *IEEE Computer Society* (w/ S. Jung, J.-H. Kim, et al)
"Infrastructure-assisted cooperative multi-UAV deep reinforcement energy trading learning for big-data processing"
- **IEEE MMTC Outstanding Young Researcher Award (2020)** – *IEEE Communications Society*
- **IEEE Systems Journal Best Paper Award (2020)** – *IEEE Systems Council*
(Top 7 among 793 accepted papers in 2019 (Top 0.88%))
– M. Saad, J. Choi, D. Nyang, J. Kim, and A. Mohaisen, "Towards Characterizing Blockchain-based Cryptocurrencies for Highly-Accurate Predictions," *IEEE Systems Journal*, 14(1):321-332, March 2020.
- **IEEE Seoul Section Student Paper Contest, Bronze Paper Award (2020)** (w/ S. Park)
"Reliable offloading target selection using deep reinforcement learning for large fire accident"
- **IEEE Seoul Section Student Paper Contest, Gold Paper Award (2019)** (w/ D. Kim, et al)
"Stabilized super-resolution deep learning adaptation for UAV-assisted mobile edges: A Lyapunov optimization approach"
- **IEEE VTS Seoul Chapter Award (2019)** – *IEEE Vehicular Technology Society* (w/ S. Park, D. Kwon, M. Shin)
"Joint offloading and streaming in mobile edges: A deep reinforcement learning approach"
- **Next Generation and Standards (NGS) Division Recognition Award (Q1/2005)** – *Intel Corporation*
For developing a 3-dual sector mmWave backhaul link software stack with mesh, relay, and load balancing capability for modular antenna array (MAA) proof-of-concept (POC)
- **Annenberg Graduate Fellowship Award (2009)** – *University of Southern California*
Awarded with Ph.D. Admission in Computer Science, Viterbi School of Engineering

Research and Academic Excellence (Korea Regional)

- **HFR Paper Award (Area: Quantum Technologies and Quantum Communications) (11/2023)** – *KICS* (w/ S. Park, H. Baek)
"Quantum multi-agent reinforcement learning for multi-metaverse adaptive streaming in hybrid quantum-classical networks"
- **Korea Electronics Technology Institute (KETI) President Award (06/2023)** – *2023 KICS Summer Conference* (w/ H. Lee, S. Park)
"Grid environment design and grouping for optimal relay station placement"
- **Haedong Paper Award (02/2023)** – *KICS* (w/ S. Jung, J. Park, et al)
"Dynamic quantum federated learning framework at satellites and ground stations using slimmable quantum neural networks"
- **Excellence Paper Award (02/2023)** – *2023 KICS Winter Conference* (w/ H. Lee, S. Jung, J.-H. Kim, et al)
"Self-learning-based hybrid MAC for military UAV networks"
- **Insung Research Grant Award (01/2023)** – *Korea University*
For recognizing Korea University professors in research excellence during the first 3 years at Korea University (Top 5%)
- **Excellence Paper Award (02/2022)** – *2022 KIISE Summer Workshop on Computer Communications (SWCC)* (w/ H. Lee, S. Jung)
- **Excellence Paper Award (02/2022)** – *2022 KICS Winter Conference* (w/ Y.K. Lee, S. Jung, et al)
"Trends in neural architecture search for object detection"
- **Haedong Young Scholar Award (2018)** – *KICS and Haedong Foundation*
For recognizing a researcher under the age of 40 who has made outstanding contributions to communication sciences R&D
- **Haedong Paper Award (06/2021)** – *KICS* (w/ H. Baek, S. Jung, et al)
"Neural architectural nonlinear pre-processing for mmWave radar-based human gesture perception in on-driving scenarios"
- **Excellence Paper Award (06/2021)** – *2021 KICS Summer Conference* (w/ B. Lim, Y.-C. Ko, et al)
"Deep learning based non-orthogonal pilot design for massive MIMO"
- **Excellence Paper Award (Undergraduate) (06/2021)** – *2021 KICS Summer Conference* (w/ S. Jung, et al)
"Deep reinforcement learning visualization and simulations using Unity-RL in an autonomous driving environment"
- **Encouragement Paper Award (11/2020)** – *2020 KICS Fall Conference*
"UAV trajectory optimization via multi-agent deep reinforcement learning"
- **Encouragement Paper Award (06/2020)** – *2020 KICS Summer Conference*
"3D modeling and WebVR implementation using Azure Kinect, Open3D, and Three.js"
- **Encouragement Paper Award (02/2020)** – *2020 KICS Winter Conference*
"Quantum heuristic solver using QAOA for the maximum independent set problem"
- **Encouragement Paper Award (02/2020)** – *2020 KICS Winter Conference*
"Multi-drone scheduling for high-reliable and high-performance UAV-based surveillance networking"
- **Outstanding Paper Award (2008)** – *LG Electronics CTO Office, Multimedia Research Laboratory*
– W. Lee, E. Kim, J. Kim, I. Lee, and C. Lee, "Movement-Aware Vertical Handoff of WLAN and Mobile WiMAX for Seamless Ubiquitous Access," *IEEE Transactions on Consumer Electronics*, 53(4):1268-1275, November 2007.
- **RFID Expert Group President Award (2007)** – *The 3rd RFID/USN Research Paper Contest*
- **ETRI President Award (2006)** – *The 2nd RFID/USN Research Paper Contest*
- **Korea Association of RFID/USN (KARUS) President Award (2005)** – *The 1st RFID/USN Research Paper Contest*
- **Scholarships for Academic Excellence (Fall 1999, Fall 2000)** – *Korea University, Department of Computer Science and Engineering*

Research and Academic Excellence of the Students under Joongheon Kim's Supervision

- **Best Presentation Award (12/2022)** – *A3 Foresight Program 2022 Workshop* (awarded to Soohyun Park)
- **ICT Express Best Reviewer Award (12/2021)** – *ICT Express (Elsevier)* (awarded to Soohyun Park)
- **Best Presentation Award (02/2021)** – *A3 Foresight Program 2021 Workshop* (awarded to Hankyul Baek)

Teaching and Supervision Excellence

- **Granite Tower Best Teaching Award (Top 5%)** – Korea University (Future Mobility Technology, GEQR075) Spring 2022
- **Best Teaching Award (Top 20%)** – Korea University (Probability and Random Process, KECE209) Spring 2022
- **Granite Tower Best Teaching Award (Top 5%)** – Korea University (Computer Language and Lab, EGRN151) Fall 2021
- **Best Teaching Award (Top 20%)** – Korea University (Object Oriented Programming, SEMI104) Fall 2021
- **Granite Tower Best Teaching Award (Top 5%)** – Korea University (Introduction to Computers, SEMI103) Spring 2021
- **Best Teaching Award (Top 20%)** – Korea University (Probability and Random Process, KECE209) Spring 2021
- **Best Teaching Award (Top 20%)** – Korea University (Computer Language and Lab, EGRN151) Fall 2020
- **Granite Tower Best Teaching Award (Top 5%)** – Korea University (Computer Language and Lab, EGRN151) Fall 2019

Academic and University Services

- **Outstanding Contribution Award (02/2023)** – KIISE Information Network Society
- **2022 Best Chapter Award, IEEE Vehicular Technology Society Chapter (12/2022)** – IEEE Seoul Section
Awarded as a Treasure with Seung-Hoon Hwang, Byeonghyo Shim, Oh-Soon Shin, Junsu Kim
- **Outstanding Contribution Award (02/2022)** – KIISE Information Network Society
- **Outstanding Contribution Award (12/2021)** – Open Standards and ICT Association (OSIA)
- **Outstanding Contribution Award (11/2021)** – KICS
- **Appreciation Recognition (10/2021)** – Daegu Gyeongbuk Institute of Science and Technology (DGIST)
- **Outstanding Contribution Award (11/2019)** – KICS
- **Fellow Employee Recognition [#3081146] (12/2014)** – Intel Corporation
- **Certificate of Appreciation (09/2010)** – Department of Computer Science, University of Southern California

Highly-Cited Publications (IEEE Magazines, Journals, and Conferences)

- **Highly-Cited (100+ citations)**, as of July 19, 2024
- (MobiSys'10) [653+] *Energy-efficient rate-adaptive GPS-based positioning for smartphones*
- (PIEEE'21) [197+] *Communication-efficient and distributed learning over wireless networks: Principles and applications*
- (TON'16) [191+] *Quality-aware streaming and scheduling for device-to-device video delivery*
- (ISJ'20) [182+] *Toward characterizing blockchain-based cryptocurrencies for highly accurate predictions, (Best Paper Award)*
- (TII'20) [171+] *Cooperative management for PV/ESS-enabled electric vehicle charging stations*
- (TVT'19) [138+] *Auction-based charging scheduling with deep learning framework for multi-drone networks*
- (TII'17) [130+] *Residential demand response for renewable energy resources in smart grid systems*
- (TII'22) [117+] *Cooperative multi-agent deep reinforcement learning for reliable surveillance via autonomous multi-UAV control*
- (JCN'14) [117+] *Fast millimeter-wave beam training with receive beamforming*
- (ICTC'20) [116+] *A tutorial on quantum convolutional neural networks (QCNN)*
- (IOTJ'20) [116+] *Multiagent DDGP-based deep learning for smart ocean federated learning IoT networks*
- (TCE'07) [115+] *Movement-aware vertical handoff of WLAN and mobile WiMAX for seamless ubiquitous access*
- (IOTJ'18) [109+] *Energy-efficient mobile charging for wireless power transfer in Internet of Things networks*
- (FL@ICML'20) [098+] *XOR mixup: Privacy-preserving data augmentation for one-shot federated learning, (arXiv:2006.05148)*

R&D Projects (Totally, 14,859,784 USD ≈ 14,859,784,000 KRW)

Industry-Funded Projects

- **Advancement Technology Development for Torpedo Deception Strategies in Submarines** 11/2022–11/2026
Funded by *LIG Nex1* [Grant: \$700,000; Primary-PI]
- **Advancement Technology Development for Submarine Target Identification and Engagement Support Intelligence** 11/2022–11/2026
Funded by *LIG Nex1* [Grant: \$300,000; Primary-PI]
- **Mapping between Real World and Virtual Reality (VR) for End-Edged Cloud Real-Time VR Servers** 09/2020–09/2025
Funded by *Samsung Advanced Institute of Technology* [Grant: \$325,000; Primary-PI]
- **Research on Learning-based Swarm Mission Planning Algorithms** 03/2024–02/2025
Funded by *LIG Nex1* [Grant: \$110,000; Primary-PI]
- **Quantum Machine Learning-based Objection Detection for Point Cloud and its Acceleration** 12/2022–04/2024
Funded by *Hyundai Motors Group* [Grant: \$110,000; Primary-PI]
- **Routing Algorithms for LEO Satellite Networks** 12/2022–08/2023
Funded by *Solvit System* [Grant: \$27,500; Primary-PI]
- **Optimal Positioning Algorithms for Wide-Area Relaying Networks** 12/2022–08/2023
Funded by *Solvit System* [Grant: \$22,000; Primary-PI]
- **Distributed Learning Algorithms to Build AI Models with Multi-Center Clinical Data** 11/2022–02/2023
Funded by *Cipherome* [Grant: \$12,000; Primary-PI]
- **Cellular/Wi-Fi Handover Technology Development** 02/2022–12/2022
Funded by *LG Electronics CTO Division – Smart Mobility Lab., Advanced R&BD Center* [Grant: \$88,000; Primary-PI]
- **Research Trends in Digital Twin Applications to Autonomous Driving** 03/2022–04/2022
Funded by *Hyundai NGV* [Grant: \$1,000; Primary-PI]

- **Distributed Learning System Design and Implementation for Clinical Applications** 02/2022–03/2022
Funded by *Cipherome* [Grant: \$15,000; Primary-PI]
- **Super-Resolution Performance Optimization in Mobile Platforms** 05/2020–08/2020
Funded by *Samsung SDS* [Grant: \$15,000; Primary-PI]
- **Deep Learning Algorithms for mVOC Concentration Analysis** 03/2020–06/2020
Funded by *Samsung Electronics (C-Lab)* [Grant: \$12,000; Primary-PI]
- **Visual Recognition Software Implementation using Deep Learning Tools** 05/2019–11/2019
Funded by *Hyundai Motors Company (Hyundai NGV)* [Grant: \$59,500; Primary-PI]
- **A Priori Techniques Research for Efficient Multi-Edge Computing** 06/2017–12/2017
Funded by *Samsung Electronics (Software Center)* [Grant: \$80,000]

University/Center-Level Projects

- **Net-Zero CAFE (Connectivity and Autonomy for Future Ecosystem) Research Center – ITRC** 07/2024–12/2031
Funded by *Institute for ICT Promotion (IITP)* [XXX, Grant: \$7,500,000], PI: Korea University (Korea)
Center Director
- **Intelligent 6G Wireless Access System Research Center – 6G AI Research Center** 04/2021–12/2025
Funded by *Institute for ICT Promotion (IITP)* [2021-0-00467, Grant: \$154,000 (2 yrs)], PI: Korea University (Korea)
- **Nano UAV Intelligence Systems Research Lab (NUiSRL) – ADD Military Special Research Center** 10/2020–08/2023
Funded by *Agency for Defense Development (ADD)* [UD200027ED, Grant: \$130,000], PI: Kwangwoon University (Korea)
- **5G/Unmanned Vehicle Research Center (5G/UV-RC) – ITRC** 06/2020–12/2022
Funded by *Institute for ICT Promotion (IITP)* [2020-0-01637, Grant: \$55,709], PI: Hanyang University (Korea)
Part Lead
- **Human Resource Development for the Biomedical Unstructured Big Data Analysis – ITRC** 08/2018–12/2021
Funded by *Institute for ICT Promotion (IITP)* [2018-0-01833], PI: Seoul National University Hospital (Korea)
- **Intelligent Internet of Energy (IoE) Data Research Center – ITRC** 02/2020–05/2020
Funded by *Institute for ICT Promotion (IITP)* [2018-0-01396], PI: Kookmin University (Korea)

Government-Funded Projects

- **6GARROW: 6G AI-Native Integrated RAN-Core Networks** 09/2024–08/2027
Funded by *Institute for ICT Promotion (IITP)* [xxx, Grant: \$330,000]
- **AI Bots Collaborative Platform and Self-Organizing Artificial Intelligence Technology Development** 04/2022–12/2026
Funded by *Institute for ICT Promotion (IITP)* [2022-0-00907, Grant: \$950,000]
- **Development of AI Learning Platform for Intelligent Excavators based on Expert Work Data** 04/2023–12/2026
Funded by *Korea Evaluation Institute of Industrial Technology (KEIT)*
(Primary-PI: Prof. Soyi Jung at Ajou University)
- **Quantum Hyper-Driving: Quantum-Inspired Hyper-Connected and Hyper-Sensing Autonomous Mobility Technologies** 03/2022–02/2025
Funded by *National Research Foundation of Korea* [2022R1A2C2004869, Grant: \$600,000; Primary-PI]
- **Development of Integrated Development Framework that supports Automatic Neural Network Generation and Deployment optimized for Runtime Environment** 04/2021–12/2024
Funded by *Institute for ICT Promotion (IITP)* [2018-0-00170, Grant: \$270,000]
- **Korea-Japan Joint Seminar Project for Generative and Multi-Modal AI Technologies** 10/2023–09/2024
Funded by *National Research Foundation of Korea (International Research Collaboration)* [Grant: \$50,000; PI]
- **K-Starlink: Dynamic Reconfigurable and Intelligent Space-Terrestrial Networks** 06/2021–05/2024
Funded by *National Research Foundation of Korea (Basic Research Lab)* [2021R1A4A1030775, Grant: \$251,000]
- **Integrated Perception Technology Developments for Public Safety Platforms** 06/2019–05/2023
Funded by *National Research Foundation of Korea* [2019M3E3A1084054, Grant: \$400,000]
- **Development of Quantum Deep Reinforcement Learning Algorithm using QAOA** 10/2019–04/2022
Funded by *Ministry of Science and ICT* [2019M3E4A1080391, Grant: \$503,250; Primary-PI]
- **mmWave Radar and Deep Reinforcement Learning based Optimal Policy Autonomous Driving** 06/2019–02/2022
Funded by *National Research Foundation of Korea* [2019R1A2C4070663, Grant: \$275,000; Primary-PI]
- **Development of Privacy-Reinforcing Distributed Transfer-Iterative Learning Algorithm** 07/2019–12/2021
Funded by *Ministry of Health and Welfare* [HI19C0842, Grant: \$150,000]
- **Virtual Presence in Moving Objects through 5G (PriMO-5G)** 06/2018–06/2021
Funded by *Institute for ICT Promotion (IITP)* [2018-0-00170, Grant: \$246,464]
- **Distributed Secure Platform for Scalable Clinical OMOP CDM Models** 04/2019–12/2020
Funded by *Ministry of Health and Welfare* [HI19C0572, Grant: \$90,000]
- **Network Engineering: Development and Application of Novel Data Science Driven Framework for Efficient Network Design** 06/2017–05/2020
Funded by *National Research Foundation of Korea (Basic Research Lab)* [2017R1A4A1015675, Grant: \$150,000]
- **mmWave High-Speed Networking Platform Design for Next-Generation Convergence Services** 06/2016–05/2019
Funded by *National Research Foundation of Korea* [2016R1C1B1015406, Grant: \$150,000; Primary-PI]
– Selected as **Initial Innovation Lab** [Grant: \$60,000]
- **Feasibility Study of 60 GHz IEEE 802.11ad for Virtual Reality (VR) Platforms** 04/2017–12/2017
Funded by *Institute for ICT Promotion (IITP)* [Grant: \$33,333; Primary-PI]

Government-Funded Research Institute Projects

- **Quantum Reinforcement Learning for Satellite Backhaul Routing in Disaster Networks** 05/2024–11/2024
Funded by *Electronics and Telecommunications Research Institute* [Grant: \$40,000; Primary-PI]
- **Research on Quantum Multi-Agent Reinforcement Learning Stability** 09/2023–01/2024
(Research on Multi-Agent Reinforcement Learning Exploration, Communication, Training Strategy)
Funded by *Electronics and Telecommunications Research Institute*
(Primary-PI: Prof. Soohyun Park at Sookmyung Women's University)
- **NOMA-based Resource Allocation Research in Space-Air-Ground Integrated Networks** 09/2023–11/2023
Funded by *Electronics and Telecommunications Research Institute* [Grant: \$20,900; Primary-PI]
- **Autonomous Intelligent COA Search Methods for Cyber-Attacks** 12/2021–11/2022
Funded by *Agency for Defense Development (ADD)* [UI210009XD, Grant: \$100,000; Primary-PI]
- **Fundamental Research on LEO Satellite Access Protocols in Non-Territorial Networks** 04/2021–11/2021
Funded by *Electronics and Telecommunications Research Institute*
(Primary-PI: Prof. Soyi Jung at Ajou University)
- **Research on Intelligent Agent-based CPS Security and Reliability** 05/2021–11/2021
Funded by *Telecommunications Technology Association (TTA)* [Grant: \$48,000; Primary-PI]
- **Multi-GPU based Automotive HPC Platform Development** 04/2020–10/2020
(A Development of Driving Decision Engine for Autonomous Driving using Driving Experience Information)
Funded by *Electronics and Telecommunications Research Institute* [19HS2720 (IITP 2017-0-00068), Grant: \$20,000; Primary-PI]
- **Cooperative Deep Reinforcement Learning for Online Game Multi-Agents** 04/2020–08/2020
(Human-Agent Cooperation Algorithm Design in Multi-Agent Environment)
Funded by *Electronics and Telecommunications Research Institute* [19YE1400, Grant: \$28,000; Primary-PI]
- **Verification Testbed Implementation for Privacy-Preserving Trust Data Generation** 10/2019–11/2019
Funded by *Electronics and Telecommunications Research Institute* [Grant: \$44,000]
- **Measurement and Analysis of Multi-Task GPU Scheduling Delays** 05/2019–10/2019
(A Development of Driving Decision Engine for Autonomous Driving using Driving Experience Information)
Funded by *Electronics and Telecommunications Research Institute* [19HS2720 (IITP 2017-0-00068), Grant: \$40,000; Primary-PI]
- **Probabilistic Decision Making and Econometric Methods for Micro-Grid** 05/2017–04/2019
Funded by *Korea Electric Power Corporation (KEPCO) Research Institute* [R17XA05-41, Grant: \$143,128; Primary-PI]
- **GPU Scheduling Performance Analysis under Queueing Delay Considerations** 05/2018–10/2018
(A Development of Driving Decision Engine for Autonomous Driving using Driving Experience Information)
Funded by *Electronics and Telecommunications Research Institute* [18HS1420 (IITP 2017-0-00068), Grant: \$40,000; Primary-PI]
- **Improving Massive Deep Learning Training via Computation and Communication Acceleration** 04/2018–10/2018
(Development of HPC System for Accelerating Large-Scale Deep Learning)
Funded by *Electronics and Telecommunications Research Institute* [18HS1710 (IITP 2016-0-00087), Grant: \$30,000; Primary-PI]
- **Parsing Techniques for Artificial Neural Network (ANN) Data Processing** 09/2017–11/2017
(A Development of Driving Decision Engine for Autonomous Driving using Driving Experience Information)
Funded by *Electronics and Telecommunications Research Institute* [17HS2720 (IITP 2017-0-00068), Grant: \$40,000; Primary-PI]

Awards and Fellowship Funds

- **Insung Research Grant Award (2023) – Korea University** 03/2023–02/2024
For recognizing Korea University professors in research excellence during the first 3 years at Korea University (Top 5%)
Awarded Project Title: **Quantum Machine Learning for Autonomous Mobility Systems**
Awarded Project Fund: \$20,000
- **Annenberg Graduate Fellowship Award (2009) – University of Southern California** 08/2009–06/2013
Awarded with Ph.D. Admission in Computer Science, Viterbi School of Engineering
Awarded Fund: 4 Year Full Scholarship (Tuition Waiver and \$120,000 Stipend (\$30,000/year for 4 years))

University of Southern California (USC) – Viterbi School of Engineering (Ph.D. Research Projects)

- **Video Aware Wireless Networks (VAWN) Research Program**
Funded by *Intel Labs, Verizon Wireless, and Cisco Systems*; Under the guidance of Prof. Andreas F. Molisch (University of Southern California, USA) and Prof. Giuseppe Caire (Technische Universität Berlin, Germany)
- **60 GHz Real-Time Wireless Video Broadcasting**
Supported by a Gift from *Disney Research Zürich*; Under the guidance of Prof. Andreas F. Molisch (University of Southern California, USA), Prof. Yafei Tian (Beihang Univ, China), and Dr. Stefan Mangold (Disney Research Zürich, Switzerland)

Selected Publications

- **8076+ Citations** (H-index: 43+, i10-index 184+), obtained from Google Scholar Profile (as of July 19, 2024)
- **147 journals and 11 top-tier conferences**, <https://sites.google.com/view/aimlab-kuee/publications>
– **112 IEEE journals/magazines**, among them, **78 publications** are in **IEEE Magazines and ComSoc/VTS Journals**

Dissertation, Books, and Book Chapters

- **Ph.D. Dissertation**

- *Elements of Next-Generation Wireless Video Systems: Millimeter-Wave and Device-to-Device Algorithms*
Ph.D. Dissertation (Computer Science), University of Southern California (Los Angeles, California, USA, August 2014)

■ Books and Book Editing

- *Fundamentals of 6G Communications and Networking*, Springer (2023). (Editors: X. Lin, J. Zhang, Y. Liu, [J. Kim](#))

■ Book Chapters

- *Fundamentals of 6G Communications and Networking*, Springer (2023).
 - Chapter 30. Network Security and Trustworthiness, (S. Jung, S. Park, S.B. Son, H. Lee, [J. Kim](#))
 - Chapter 29. Semantic Communications and Networking, (W.J. Yun, S. Park, R. Lee, J. Park, Y.-C. Ko, [J. Kim](#))
 - Chapter 28. Convergence of 6G and Wi-Fi Networks, (H. Lee, S. Park, M. Yoo, C. Park, H. Baek, [J. Kim](#))
 - Chapter 26. UAV Communications and Networks, (S. Park, J.-H. Lee, S. Jung, [J. Kim](#))
 - Chapter 22. AI-Native Network Algorithms and Architectures, (H. Lee, S. Park, H. Baek, C. Park, S. Son, J. Park, [J. Kim](#))
 - Chapter 21. AI-Native Communications, (H. Baek, H. Lee, S. Park, H. Lee, J. Park, [J. Kim](#))
 - Chapter 20. Network Disaggregation, (S. Park, C. Park, J.P. Kim, M. Choi, [J. Kim](#))
 - Chapter 1. Introduction to 6G Communications and Networking, (X. Lin, J. Zhang, Y. Liu, [J. Kim](#))
- *Advances and Applications in Deep Learning*, IntechOpen (2020).
 - Chapter 6. Dynamic Decision-Making for Stabilized Deep Learning Software Platforms, (S. Park, D. Kim, [J. Kim](#))
- *Towards 5G: Applications, Requirements and Candidate Technologies*, Wiley (2017).
 - Chapter 9. Device-to-Device Communications, (A.F. Molisch, M. Ji, [J. Kim](#), D. Burghal, A.S. Tehrani)
- *Opportunities in 5G Networks: A Research and Development Perspective*, CRC Press (2016).
 - Chapter 19. Millimeter-Wave (mmWave) Medium Access Control: A Survey, ([J. Kim](#))
 - Chapter 17. Millimeter-Wave (mmWave) Radio Propagation Characteristics, ([J. Kim](#))
- *Handbook on Mobile and Ubiquitous Computing: Status and Perspective*, CRC Press (2012).
 - Chapter 22. Weighted Localized Clustering: A Coverage-Aware Reader Collision Arbitration Protocol in RFID Networks, ([J. Kim](#), E. Kim, W. Lee, D. Kim, J. Choi, J. Jung, C.K. Shin)
- *Wireless Mesh Networking*, McGraw-Hill (2008).
 - Chapter 2.5.4.1. Coverage-Time Optimized Dynamic Clustering for Two-Tiered WM2Nets, ([J. Kim](#), W. Lee, E. Kim, T.K. Shih)

Selected Papers

■ Conferences – Top-Tiers and Awarded/Honored

- [WiOpt'24] (Notification: 06-Aug-2024) Advanced Taxiing Path Guidance using Multi-Agent Reinforcement Learning for Air Traffic Management, **WiOpt (2024)**. (S. Lee, G.S. Kim, S. Park, [J. Kim](#))
- [WiOpt'24] (Notification: 06-Aug-2024) Joint Multi-Agent Reinforcement Learning and Message-Passing for Distributed Multi-UAV Cooperation using Conflict Graphs, **WiOpt (2024)**. (Y. Cho, H. Lee, S. Park, [J. Kim](#))
- [CIKM'23] Quantum Split Learning for Privacy-Preserving Information Management, **CIKM (2023)**. (S. Park, H. Baek, [J. Kim](#))
- [CIKM'23] Logarithmic Dimension Reduction for Quantum Neural Networks, **CIKM (2023)**. (H. Baek, S. Park, [J. Kim](#))
- [APWCS'23] Quantum Reinforcement Learning for Large-Scale Multi-Agent Decision-Making in Autonomous Aerial Networks, **APWCS (2023)**. (S. Park, [J. Kim](#)) (**IEEE VTS Seoul Chapter Award**)
- [AAAI'23] Quantum Multi-Agent Meta Reinforcement Learning, **AAAI (2023)**. (W.J. Yun, J. Park, [J. Kim](#))
- [AAAI'23] FV-Train: Quantum Convolutional Neural Network Training with a Finite Number of Qubits by Extracting Diverse Features, **AAAI Student Abstract and Poster (2023)**. (H. Baek, W.J. Yun, [J. Kim](#)) (**Finalist, Oral Presentation Contest**)
- [CIKM'22] Hierarchical Reinforcement Learning using Gaussian Random Trajectory Generation in Autonomous Furniture Assembly, **CIKM (2022)**. (W.J. Yun, D. Mohaisen, S. Jung, J.-K. Kim, [J. Kim](#))
- [ICTC'22] Reinforcement Learning Empowered Massive IoT Access in LEO-based Non-Terrestrial Networks, **ICTC (2022)**. (J.-H. Lee, D.P. Selvam, A.F. Molisch, [J. Kim](#)) (**Best Paper Award**)
- [WiOpt'22] Cooperative Video Quality Adaptation for Delay-Sensitive Dynamic Streaming using Adaptive Super-Resolution, **WiOpt (2022)**. (M. Choi, W.J. Yun, [J. Kim](#))
- [APWCS'22] DDPG-based Deep Reinforcement Learning for Loitering Munition Mobility Control: Algorithm Design and Visualization, **APWCS (2022)**. (H. Lee, W.J. Yun, S. Jung, J.-H. Kim, [J. Kim](#)) (**IEEE VTS Seoul Chapter Award**)
- [ICML'22] Slimmable Quantum Federated Learning, **ICML Workshop on Dynamic Neural Networks (2022)**. (W.J. Yun, J.P. Kim, S. Jung, J. Park, M. Bennis, [J. Kim](#)) (**Spotlight, Oral Presentation**)
- [INFOCOM'22] Joint Superposition Coding and Training for Federated Learning over Multi-Width Neural Networks, **INFOCOM (2022)**. (H. Baek, W.J. Yun, Y. Kwak, S. Jung, M. Ji, M. Bennis, J. Park, [J. Kim](#))
- [APWCS'21] Quantum Scheduling for Millimeter-Wave Observation Satellite Constellation, **APWCS (2021)**. ([J. Kim](#), Y. Kwak, S. Jung, J.-H. Kim) (**IEEE VTS Seoul Chapter Award**)
- [APWCS'21] Distributed and Autonomous Aerial Data Collection in Smart City Surveillance Applications, **APWCS (2021)**. (H. Lee, S. Jung, [J. Kim](#)) (**IEEE VTS Seoul Chapter Award**)
- [ICOIN'21] Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing, **ICOIN (2021)**. (S. Jung, W.J. Yun, [J. Kim](#), J.-H. Kim) (**Best Paper Award**)
- [ICDCS'20] Understanding the Potential Risks of Sharing Elevation Information on Fitness Applications, **ICDCS (2020)**. (Ü. Meteriz, N.F. Yildiran, [J. Kim](#), D. Mohaisen)
- [APWCS'19] Joint Offloading and Streaming in Mobile Edges: A Deep Reinforcement Learning Approach, **APWCS (2019)**. (S. Park, J. Kim, D. Kwon, M. Shin, [J. Kim](#)) (**IEEE VTS Seoul Chapter Award**)
- [IJCAI'19] Randomized Adversarial Imitation Learning for Autonomous Driving, **IJCAI (2019)**. (M. Shin, [J. Kim](#))

- [ICDCS'18] ShmCaffe: A Distributed Deep Learning Platform with Shared Memory Buffer for HPC Architecture, **ICDCS (2018)**. (S. Ahn, J. Kim, E. Lim, W. Choi, A. Mohaisen, S. Kang)
- [MM'17] REQUEST: Seamless Dynamic Adaptive Streaming over HTTP for Multi-Homed Smartphone under Resource Constraints, **Multimedia (2017)**. (J. Koo, J. Yi, J. Kim, M.A. Hoque, S. Choi)
- [ITA'14] Joint Scheduling and Stochastic Streaming for Device-to-Device Video Delivery, **ITA Workshop (2014)**. (J. Kim, A. Turci, G. Caire, A.F. Molisch) ([ITA Graduation Day Talk](#))
- [MobiSys'10] Energy-Efficient Rate-Adaptive GPS-based Positioning for Smartphones, **MobiSys (2010)**. (J. Paek, J. Kim, R. Govindan)

■ Journals and Magazines

◀ Review ▶

- [TETC.review] (Review since 26-Jun-2024) Reliable Transpilation Control for Cloud-based Quantum Learning Systems, [IEEE Transactions on Emerging Topics in Computing](#). (J. Y. Shim, X. Piao, S. Park, J. Kim, J.-K. Kim)
- [TIV.review] (Review since 24-Jun-2024) Quantum Multi-Agent Reinforcement Learning for Joint Cube-Satellites and High-Altitude Long-Endurance Aerial Vehicles in SAGIN, [IEEE Transactions on Intelligent Vehicles](#). (G.S. Kim, Y. Cho, S. Park, S. Jung, J. Kim)
- [IOTJ.review] (Review since 24-Jun-2024) Privacy-Preserving Uncertainty Calibration using Perceptual Encryption in Cloud-Edge Collaborative Artificial Intelligence of Things, [IEEE Internet of Things Journal](#). (I. Ahmad, J. Kim, S. Shin)
- [TETCI.review] (Review since 08-Jun-2024) (Double Blind Review), [IEEE Transactions on Emerging Topics in Computational Intelligence](#). (C. Im, S. Park, J. Kim)
- [CM.review] (Review since 06-Jun-2024) Sustainable Quantum Multi-Agent Cooperative Learning: Algorithms and Software Methods, [IEEE Communications Magazine](#). (S. Park, J. Kim)
- [NN.review] (Review since 02-Jun-2024) Quantum Federated Learning with Pole-Angle Quantum Local Training and Trainable Measurement, [Neural Networks \(Elsevier\)](#). (S. Park, H. Lee, S.B. Son, S. Jung, J. Kim)
- [IOTJ.review] (Review since 01-Jun-2024) Entanglement-Controlled Quantum Federated Learning, [IEEE Internet of Things Journal](#). (S. Park, H. Lee, S. Jung, J. Park, M. Bennis, J. Kim)
- [TMC.review] (Review since 30-May-2024) Quantum Multi-Agent Reinforcement Learning for Cooperative Mobile Access in Space-Air-Ground Integrated Networks, [IEEE Transactions on Mobile Computing](#). (G.S. Kim, Y. Cho, J. Chung, S. Park, S. Jung, Z. Han, J. Kim)
- [Neuro.review] (Review since 10-May-2024) Multi-Resolution 3D Quantum Convolutional Neural Networks, [Neurocomputing \(Elsevier\)](#). (S. Park, E.J. Roh, C. Im, J. Kim)
- [IOTJ.review] (Review since 22-Apr-2024) Joint Quantum Reinforcement Learning and Neural Myerson Auction for High-Quality Digital-Twin Services in Multi-Tier Networks, [IEEE Internet of Things Journal](#). (S. Park, G.S. Kim, J. Kim)
- [TVT.review] (Review since 22-Apr-2024) Joint Communication, Computing, and Control for Mission-Critical Aerial Distributed Systems, [IEEE Transactions on Vehicular Technology](#). (G.S. Kim, S. Park, S. Jung, D. Mohaisen, J. Kim)
- [TNNLS.review] (Double Blind Review), [IEEE Transactions on Neural Networks and Learning Systems](#). (H. Baek, J. Chung, S. Park, J. Kim)
- [TON.review] (Review since 05-Apr-2024) Slimmable Federated Reinforcement Learning for Energy-Efficient Proactive Caching, [IEEE/ACM Transactions on Networking](#). (H. Baek, G.S. Kim, S. Park, A.F. Molisch, J. Kim)
- [TITS.review] (Review since 30-Mar-2024) Learning-based Aircraft Taxi Routing: Empirical Evaluation Study for Hartsfield-Jackson Atlanta International Airport, [IEEE Transactions on Intelligent Transportation Systems](#). (G.S. Kim, S. Lee, S. Park, J. Kim)
- [MM.review] (Review since 25-Mar-2024) Quantum Jump to Virtual Worlds: High-Quality Multiple Virtual Meta-Space Realization in Metaverse, [IEEE Multimedia](#). (S. Park, J. Kim)

◀ Revision ▶

- [TNSM.revision] Intelligent Extra Resource Allocation for Cooperative Awareness Message Broadcasting in Cellular-V2X Networks, [IEEE Transactions on Network and Service Management](#). (S. Jung, J.-H. Kim, J. Kim)
- [TMC.revision] Joint Sustainable Control and Quantum Reinforcement Learning for Energy-Efficient Cube-Satellite Networks, [IEEE Transactions on Mobile Computing](#). (S. Park, G.S. Kim, S. Jung, Z. Han, J. Kim)
- [TMC.revision] Fast Quantum Convolutional Neural Networks for Low-Complexity Object Detection in Autonomous Driving Applications, [IEEE Transactions on Mobile Computing](#). (H. Baek, E.J. Roh, D. Kim, J. Kim)
- [CM.revision] Dynamic Software Testing for Run-Time Program Analysis in Quantum-based Autonomous Driving Applications, [IEEE Communications Magazine](#). (S. Park, J. Kim)
- [CM.revision] Quantum Neural Network Software Testing, Analysis, and Code Optimization for Advanced IoT Systems: Design, Implementation, and Visualization, [IEEE Communications Magazine](#). (S. Park, J. Kim)
- [Access.revision] Enhancing Cost-Effective 5G Virtualized RAN Pooling Gain on Clouds: An Intelligent Auto-Scaling Approach, [IEEE Access](#). (K. Cho, J. Kim, S. Jung)
- [Access.revision] Sensing-to-Sky Intermittent Connectivity Realization for LTE-Enabled Drone Platforms: Embedded Design, Measurement Study, and Positioning Applications, [IEEE Access \(VTS Section\)](#). (J. Kim, S. Park, U. Jo, T. Kim, S. Jung, J. Kim)
- [TIV.revision] Adaptive Quantum Federated Learning for Autonomous Surveillance Multi-Drone Networks, [IEEE Transactions on Intelligent Vehicles](#). (S. Park, C. Park, S. Jung, J. Kim)
- [IOTJ.revision] Markov Decision Policies for Distributed Angular Routing in LEO Mobile Satellite Constellation Networks, [IEEE Internet of Things Journal](#). (S. Park, G.S. Kim, S. Jung, J. Kim)
- [TON.revision] Spatio-Temporal Multi-Metaverse Dynamic Streaming for Hybrid Quantum-Classical Systems, [IEEE/ACM Transactions on Networking](#). (S. Park, H. Baek, J. Kim)
- [CM.revision] The Matrix: Quantum AI for Interacting Two Worlds in Prioritized Metaverse Spaces, [IEEE Communications Magazine](#). (S. Park, H. Baek, J. Kim)
- [CM.revision] Quantum Multi-Agent Reinforcement Learning is All You Need: Coordinated Global Access in Integrated TN/NTN

◀ Accepted ▶

- [TVT'accepted] Dynamic Quantum Federated Learning for UAV-based Autonomous Surveillance, *IEEE Transactions on Vehicular Technology*. (S. Park, S.B. Son, S. Jung, J. Kim)
- [TIV'accepted] Neural Myerson Auction for Truthful and Distributed Mobile Charging in UAV-Assisted Digital-Twin Networks, *IEEE Transactions on Intelligent Vehicles*. (S. Jung, H. Baek, J. Kim)

◀ 2024 ▶

- [TMC'24.11] Joint Quantum Reinforcement Learning and Stabilized Control for Spatio-Temporal Coordination in Metaverse, *IEEE Transactions on Mobile Computing*, 23(11):ppp–ppp (2024). (S. Park, J. Chung, C. Park, S. Jung, M. Choi, S. Cho, J. Kim)
- [FGCS'24.10] AQUA: Analytics-driven Quantum Neural Network (QNN) User Assistance for Software Validation, *Future Generation Computer Systems (Elsevier)*, 159:545–556 (2024). (S. Park, H. Baek, J.W. Yoon, Y.K. Lee, J. Kim)
- [ETRI'24.10] Trends in Quantum Reinforcement Learning: State-of-the-Arts and the Road Ahead, *ETRI Journal (Wiley)*, v(n):ppp–ppp (2024). (S. Park, J. Kim)
- [TNSM'24.08] Cooperative Multi-UAV Positioning for Aerial Internet Service Management: A Multi-Agent Deep Reinforcement Learning Approach, *IEEE Transactions on Network and Service Management*, 21(4):ppp–ppp (2024). (J. Kim, S. Park, S. Jung, C. Cordeiro)
- [TVT'24.07] Age-of-Information Aware Caching and Delivery for Infrastructure-Assisted Connected Vehicles, *IEEE Transactions on Vehicular Technology*, 73(7):ppp–ppp (2024). (S. Park, C. Park, S. Jung, M. Choi, J. Kim)
- [MTAP'24.07] Stabilized Performance Maximization for GAN-based Real-Time Authentication Image Generation over Internet, *Multimedia Tools and Applications (Springer)*, 83(22):62045–62059 (2024). (J.Y. Shim, S. Jung, J. Kim, J.-K. Kim)
- [CM'24.06] Quantum Multi-Agent Reinforcement Learning for Autonomous Mobility Cooperation, *IEEE Communications Magazine*, 62(6):106–112 (2024). (S. Park, J.P. Kim, C. Park, S. Jung, J. Kim)
- [TVT'24.04] Learning-Based Cooperative Mobility Control for Autonomous Drone-Delivery, *IEEE Transactions on Vehicular Technology*, 73(4):4870–4885 (2024). (S. Park, C. Park, J. Kim)
- [Access'24.04] Dynamic Quantum Federated Learning for Satellite-Ground Integrated Systems using Slimmable Quantum Neural Networks, *IEEE Access (VTS Section)*, 12:58239–58247 (2024). (S. Park, S. Jung, J. Kim)
- [Access'24.04] Quantum Reinforcement Learning for Spatio-Temporal Prioritization in Metaverse, *IEEE Access*, 12:54732–54744 (2024). (S. Park, H. Baek, J. Kim)
- [TWC'24.03] Joint User Clustering, Beamforming, and Power Allocation for mmWave-NOMA with Imperfect SIC, *IEEE Transactions on Wireless Communications*, 23(3):2025–2038 (2024). (B. Lim, W.J. Yun, J. Kim, Y.-C. Ko)
- [TGCN'24.03] Joint Delay-Sensitive and Power-Efficient Quality Control of Dynamic Video Streaming using Adaptive Super-Resolution, *IEEE Transactions on Green Communications and Networking*, 8(1):103–117 (2024). (M. Choi, W.J. Yun, S.B. Son, S. Park, J. Kim)
- [TIV'24.02] Intelligent Caching for Seamless High-Quality Streaming in Vehicular Networks: A Multi-Agent Reinforcement Learning Approach, *IEEE Transactions on Intelligent Vehicles*, 9(2):3672–3686 (2024). (M. Choi, T. Xiang, J. Kim)
- [TNNLS'24.02] Hierarchical Deep Reinforcement Learning-based Propofol Infusion Assistant Framework in Anesthesia, *IEEE Transactions on Neural Networks and Learning Systems*, 35(2):2510–2521 (2024). (W.J. Yun, M. Shin, D. Mohaisen, K. Lee, J. Kim)
- [TMC'24.01] Learning Location from Shared Elevation Profiles in Fitness Apps: A Privacy Perspective, *IEEE Transactions on Mobile Computing*, 23(1):581–596 (2024). (U. Meteriz, N.F. Yildiran, J. Kim, D. Mohaisen)

◀ 2023 ▶

- [TON'23.12] SlimFL: Federated Learning with Superposition Coding over Slimmable Neural Networks, *IEEE/ACM Transactions on Networking*, 31(6):2499–2514 (2023). (W.J. Yun, Y. Kwak, H. Baek, S. Jung, M. Ji, M. Bennis, J. Park, J. Kim)
- [IET'23.12] Two-Stage Architectural Fine-Tuning for Neural Architecture Search in Efficient Transfer Learning, *IET Electronics Letters*, 59(24):e13066 (2023). (S. Park, S.B. Son, Y.K. Lee, S. Jung, J. Kim)
- [IOTI'23.11] Quantum Multiagent Actor–Critic Networks for Cooperative Mobile Access in Multi-UAV Systems, *IEEE Internet of Things Journal*, 10(22):20033–20048 (2023). (C. Park, W.J. Yun, J.P. Kim, S. Park, T.K. Rodrigues, S. Jung, J. Kim)
- [TVT'23.11] Two-Stage Self-Adaptive Task Outsourcing Decision Making for Edge-Assisted Multi-UAV Networks, *IEEE Transactions on Vehicular Technology*, 72(11):14889–14905 (2023). (S. Jung, C. Park, M. Leorato, J.-H. Kim, J. Kim)
- [ETRI'23.10] Joint Frame Rate Adaptation and Object Recognition Model Selection for Stabilized Unmanned Aerial Vehicle Surveillance, *ETRI Journal (Wiley)*, 45(5):811–821 (2023). (G.S. Kim, H. Lee, S. Park, J. Kim)
- [ETRI'23.10] Two Tales of Platoon Intelligence for Autonomous Mobility Control: Enabling Deep Learning Recipes, *ETRI Journal (Wiley)*, 45(5):735–745 (2023). (S. Park, H. Lee, C. Park, S. Jung, M. Choi, J. Kim)
- [ETRI'23.10] Special Issue on Autonomous Unmanned Aerial/Ground Vehicles and their Applications, *ETRI Journal (Wiley)*, 45(5):731–734 (2023). (J. Kim, Y.-C. Lee, J.H. Lee, J.S. Choi)
- [IC'23.09-10] EQuaTE: Efficient Quantum Train Engine for Run-Time Dynamic Analysis and Visual Feedback in Autonomous Driving, *IEEE Internet Computing*, 27(5):24–31 (2023). (S. Park, H. Feng, C. Park, Y.K. Lee, S. Jung, J. Kim)
- [OJCS'23.09] Real-Time High-Quality Visualization for Volumetric Contents Rendering: A Lyapunov Optimization Framework, *IEEE Open Journal of the Computer Society*, 4:243–252 (2023). (H. Baek, R. Lee, S. Jung, J. Kim, S. Park)
- [TIV'23.08] Multi-Agent Reinforcement Learning for Cooperative Air Transportation Services in City-Wide Autonomous Urban Air Mobility, *IEEE Transactions on Intelligent Vehicles*, 8(8):4016–4030 (2023). (C. Park, G.S. Kim, S. Park, S. Jung, J. Kim)
- [NN'23.08] Stereoscopic Scalable Quantum Convolutional Neural Networks, *Neural Networks (Elsevier)*, 165:860–867 (2023). (H. Baek, W.J. Yun, S. Park, J. Kim)
- [IOTI'23.06] Quantum Multiagent Actor-Critic Neural Networks for Internet-Connected Multirobot Coordination in Smart Factory Management, *IEEE Internet of Things Journal*, 10(11):9942–9952 (2023). (W.J. Yun, J.P. Kim, S. Jung, J.-H. Kim, J. Kim)

- [ICTE'23.06] Quantum Distributed Deep Learning Architectures: Models, Discussions, and Applications, *ICT Express (Elsevier)*, 9(3):486–491 (2023). (Y. Kwak, W.J. Yun, J.P. Kim, H. Cho, J. Park, M. Choi, S. Jung, J. Kim)
- [Access'23.05] Entropy-Aware Similarity for Balanced Clustering: A Case Study with Melanoma Detection, *IEEE Access*, 11:46892–46902 (2023). (S.B. Son, S. Park, J. Kim)
- [ComNet'23.04] Self-Adaptive End-to-End Resource Management for Real-Time Monitoring in Cyber-Physical Systems, *Computer Networks (Elsevier)*, 225:109669 (2023). (H.-C. Jo, H.-W. Jin, J. Kim)
- [ComNet'23.04] Truthful and Performance-Optimal Computation Outsourcing for Aerial Surveillance Platforms via Learning-based Auction, *Computer Networks (Elsevier)*, 225:109651 (2023). (S. Jung, J.-H. Kim, D. Mohaisen, J. Kim)
- [CIBM'23.04] Deep Reinforcement Learning-based Propofol Infusion with a 3,000-subject Dataset in Anesthesia, *Computers in Biology and Medicine (Elsevier)*, 156:106739 (2023). (W.J. Yun, M. Shin, S. Jung, J. Ko, H.-C. Lee, J. Kim)
- [Access'23.03] Audio-to-Visual Cross-Modal Generation of Birds, *IEEE Access*, 11:27719–27729 (2023). (J.Y. Shim, J. Kim, J.-K. Kim)
- [Access'23.02] Workload-Aware Scheduling using Markov Decision Process for Infrastructure-Assisted Learning-Based Multi-UAV Surveillance Networks, *IEEE Access (VTS Section)*, 11:16533–16548 (2023). (S. Park, C. Park, S. Jung, J.-H. Kim, J. Kim)
- [TITS'23.01] Self-Configurable Stabilized Real-Time Detection Learning for Autonomous Driving Applications, *IEEE Transactions on Intelligent Transportation Systems*, 24(1):885–890 (2023). (W.J. Yun, S. Park, J. Kim, D. Mohaisen)
- ◀ 2022 ▶
- [JCN'22.12] Neural Myerson Auction for Truthful and Energy-Efficient Autonomous Aerial Data Delivery, *Journal of Communications and Networks*, 24(6):730–741 (2022). (H. Lee, S. Kwon, S. Jung, J. Kim)
- [JCN'22.12] Parallelized and Randomized Adversarial Imitation Learning for Safety-Critical Self-Driving Vehicles, *Journal of Communications and Networks*, 24(6):710–721 (2022). (W.J. Yun, M. Shin, S. Jung, S. Kwon, J. Kim)
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- [CL'14.09] Joint Coding and Stochastic Data Transmission for Uplink Cloud Radio Access Networks, *IEEE Communications Letters*, 18(9):1619–1622 (2014). (S.-N. Hong, J. Kim)
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- [IET'13.02] Distributed Stochastic Buffering for Enterprise WLAN Architectures, *IET Electronics Letters*, 49(4):302–304 (2013). (J. Kim, E.-S. Ryu)
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- [CL'07.01] Optimized Transmission Power Control of Interrogators for Collision Arbitration in UHF RFID Systems, *IEEE Commu-*

Patents (Granted), *totally, 71*

- **21 US Patents:** (US 10637154), (US 9973364), (US 9887755), (US 9786985), (US 9167562), (US 8842640), (US 8761063), (US 8738068), (US 8619741), (US 8605634), (US 8599731), (US 8565200), (US 8547889), (US 8503317), (US 8493949), (US 8493948), (US 8483171), (US 8422372), (US 8416782), (US 8411644), (US 8379612)
- **26 Korean Patents:** (KR 102573880), (KR 102523056), (KR 102522930), (KR 102500352), (KR 102492736), (KR 102472809), (KR 102444449), (KR 102442891), (KR 102433897), (KR 102370599), (KR 102340895), (KR 102293287), (KR 102244380), (KR 102240442), (KR 102240425), (KR 102234007), (KR 102178895), (KR 102167344), (KR 102052835), (KR 102015429), (KR 101663613), (KR 101619964), (KR 101606951), (KR 101567829), (KR 101558017), (KR 100779165)
- **7 European Patents:** (EP 3255730), (EP 2441203), (EP 2422578), (EP 2343836), (EP 2282601), (EP 2262342), (EP 2260669)
- **11 Chinese Patents:** (CN 107634349), (CN 102461318), (CN 102461050), (CN 102388658), (CN 102349340), (CN 102342162), (CN 102318430), (CN 102318425), (CN 102204115), (CN 102132602), (CN 102057739)
- **6 Japanese Patents:** (JP 5584209), (JP 5584205), (JP 5580308), (JP 5508403), (JP 5368573), (JP 5364785)

Research Supervision and Teaching Experience

Research Supervision

■ Ph.D. Students and Alumni

- **Dr. Soohyun Park** ('19.03–'23.08 (MS-PhD), '23.09–'24.02 (Postdoc)), *Professor at Sookmyung Women's University*
- **Dr. Hankyul Baek** ('21.03–'24.02 (MS-PhD), '24.03–'25.08 (Postdoc)), *Active Member*
- **Hyunsoo Lee** ('21.03–), *Active Member*
- **Seok Bin Son** ('22.09–), *Active Member*
- **Gyu Seon Kim** ('23.03–), *Active Member*
- **Sungjoon Lee** ('24.03–), *Active Member*
- **Emily Jimin Roh** ('24.03–), *Active Member*

■ M.S. Students and Alumni

- **Kyeongseon Kim** ('17.09–'19.08, POSTECH (was with Upstage, LG AI Research)), **Dohyun Kwon** ('18.03–'20.02, Hyundai Motors Group), **Dohyun Kim** ('18.03–'20.02, Naver), **MyungJae Shin** ('18.03–'20.02, Naver), **Jaeho Choi** ('19.03–'21.02, Korea Meteorological Administration), **Jaehyun Chung** ('23.09–, *Active*), **Yeryeong Cho** ('24.03–, *Active*), **Chaemoon Im** ('24.03–, *Active*)

■ Postdoctoral Scholars

- **Dr. Minseok Choi** ('18.09–'19.02, jointly with Prof. Andreas F. Molisch (USC)), *Professor at Kyung Hee University*
- **Dr. Soyi Jung** ('21.03–'21.08, jointly with Prof. Marco Levorato (UC-Irvine)), *Professor at Ajou University*
- **Dr. Ijaz Ahmad** (11/2023–, jointly with Prof. Seokjoo Shin (Chosun Univ.)), *Active Member*
- **Dr. Joo Yong Shim** (03/2024–, jointly with Prof. Jong-Kook Kim (Korea Univ.)), *Active Member*

■ Ph.D. Students and Alumni (Tight Collaboration for Ph.D. Dissertation)

- **Seungyo Ryu** (Primary Advisor: Prof. Dongseung Kim at Korea Univ.), *Researcher at LG Electronics, Korea*

■ Intel Corporation (Santa Clara, California, USA), Graduate Interns

- **Minseok Choi**, Ph.D. in EE from KAIST ('16.02–'16.07), now with **Kyung Hee University**, Korea
- **Hidekazu Shimodaira**, Ph.D. in EEE from Tokyo Institute of Technology ('15.07–'15.12), now with **NTT DOCOMO**, Japan

■ USC Viterbi School of Engineering (Los Angeles, California, USA), Graduate Students

- **Feiyu Meng**, M.S. in EE from USC (Summer 2013, Fall 2013), now with **Apple**, Silicon Valley, CA, USA
- **Vivek Sankaravadivel**, M.S. in EE from USC (Spring 2011, Fall 2011), now with **Uber**, Silicon Valley, CA, USA

Teaching Experience

■ Korea University – Graduate Courses, Faculty Member

- **IT R&D Policies 1 (ECE723)**: Fall 2020
- **Design and Analysis of Wireless Communication Systems (ECE721)**: Spring 2021
- **Sensor Networks (ECE662)**: Spring 2023
- **Advanced Network Theory (ECE657)**: Fall 2022
- **Smart Mobile Platform (ECE654)**: Fall 2023, Fall 2021, Fall 2020, Fall 2019
- **Advanced Topics in Socialware IT (ECE545)**: Spring 2022
- **Wireless and Mobile Networks (ECE522)**: Spring 2024, Spring 2020
- **Wireless Network 2 (ITH525)**: Fall 2022
- **Wireless Network 1 (ITH524)**: Spring 2021

■ Korea University – Undergraduate Courses, Faculty Member

- **Introduction to Artificial Intelligence (IWC420)**: Winter 2023–2024, Winter 2022–2023, Winter 2021–2022
- **Introduction to Computer Science (IWC293)**: Winter 2023–2024
- **Data Communications (KECE316)**: Fall 2020
- **Digital System Design and Laboratory (KECE210)**: Fall 2020
- **Probability and Random Process (KECE209)**: Spring 2024, Spring 2023, Spring 2022 (*Best Teaching Award, Top 20%*), Spring 2021 (*Best Teaching Award, Top 20%*), Spring 2020
- **Digital System (KECE207)**: Spring 2020
- **Computer Language and Laboratory (EGRN151)**: Fall 2024, Fall 2023, Fall 2022, Fall 2021 (*Granite Tower Best Teaching Award, Top 5%*), Fall 2020 (*Best Teaching Award, Top 20%*), Fall 2019 (*Granite Tower Best Teaching Award, Top 5%*)
- **Introduction to Communication/Computing (COMM105)**: Spring 2024, Spring 2023
- **Object-Oriented Programming (SEMI104)**: Fall 2021 (*Best Teaching Award, Top 20%*)

- **Introduction to Computers (SEMI103):** Spring 2021 (*Granite Tower Best Teaching Award, Top 5%*)
- **Future Mobility Technology (GEQR075):** Spring 2023, Spring 2022 (*Granite Tower Best Teaching Award, Top 5%*)
- **SW Programming Basics (GECT002):** Spring 2024 (3 classes)
- **Chung-Ang University – College of Computer Science and Software, Faculty Member**
 - **Optimal Design Theory and Applications (Graduate):** Spring 2019, Spring 2018, Spring 2017
 - **Topics in Computer Science and Engineering (Graduate):** Fall 2018, Fall 2017, Fall 2016
 - **Numerical Analysis (Undergraduate):** Spring 2019
 - **Compiler Design (Undergraduate):** Spring 2019, Spring 2018, Spring 2017
 - **Principles of Programming Languages (Undergraduate):** Fall 2018, Fall 2017, Fall 2016
 - **Algorithm Analysis (Undergraduate):** Fall 2016
 - **Operating Systems (Undergraduate):** Spring 2017, Spring 2016
 - **Calculus (Undergraduate):** Spring 2017, Spring 2016
 - **Mobile Application Development (Undergraduate):** Fall 2018, Fall 2017
- **University of Southern California – Viterbi School of Engineering, Teaching Assistant**
 - **Wireless and Mobile Networks Design and Lab [EE579]** (Spring 2013), Lectured by **Professor Murali Annavaram**
Graduate Course dedicated to Android Mobile Platform Research and Programming
 - **Programming Systems Design [CSci455x]** (Spring 2012, Fall 2012)
Undergraduate Course dedicated to Object-Oriented Programming (Java and C++) and Advanced Data Structures

Professional Academic Activities

Academic Conference, Workshop, Forum, Symposium Organization (Selected)

- **Organizing Committee (OC) Activities**
 - **IEEE WiOpt: 2024** (Workshop Chair), 2022 (Organizer, *Caching, Computing and Delivery in Wireless Networks Workshop*)
 - **IEEE GLOBECOM: 2015** (Organizer, *Workshop on Millimeter-Wave Backhaul and Access*)
 - **IEEE ICC: 2022** (Patronage Chair)
 - **IEEE VTS APWCS: 2023** (Finance Co-Chair), 2022 (Finance Chair), 2021 (Finance Co-Chair), 2017 (Publication Vice Chair)
 - **IEEE ICASSP: 2018** (Special Session Organizing Chair, *Special Session on Cybersecurity and Privacy*)
 - **IEEE APCC: 2022** (Local Arrangement Chair)
 - **ACM CoNEXT: 2019** (Poster Session Chair)
 - **IEEE ICTC: 2023** (Workshop Co-Chairs), 2022 (TPC Vice Chair for Administration, a.k.a., Secretary), 2021 (Workshop Organizer, *Workshop on KU-AIER (Korea University, A.I. Engineering Research)*), 2021 (Secretary), 2020 (Secretary), 2020 (Special Session Organizing Chair, *Special Session on KU-AIER (Korea University, A.I. Engineering Research)*), 2019 (Secretary), 2018 (Secretary)
 - **IEEE ICUFN: 2024** (Workshop Chair), 2023 (Workshop Chair), 2022 (Workshop Chair), 2021 (Workshop Chair), 2021 (Workshop Organizing Chair, *Artificial Intelligence Emerging Applications (AIEA) Workshop*)
 - **IEEE ICOIN: 2024** (Workshop Chair), 2023 (Workshop Co-Chair), 2023 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*), 2022 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*), 2022 (Finance Co-Chairs), 2021 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*), 2020 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*)
 - **IEEE ICEIC: 2021** (Local Arrangement Chair)
 - **IEEE ICAIC: 2019** (Publication Chair)
- **Quantum Computing and Artificial Intelligence**
 - **IEEE ICASSP 2025:** Organizer, *Workshop on Quantum Machine Learning in Signal Processing and Artificial Intelligence* (Hyderabad, India, 04/2025)
 - **IEEE Quantum Week 2024:** Organizer, *Workshop on Quantum Computing and Reinforcement Learning* (Montréal, Canada, 09/2024)
 - **IJCAI 2024:** Organizer, *Workshop on Quantum Algorithms, Optimization, and Artificial Intelligence* (Jeju, Korea, 08/2024)

Talks and Presentations (Selected)

- **IEEE Distinguished Lectures**
 - *Federated Learning for Medical and Mobile Platforms: Motivation, Challenges, and Potential Solutions*
California State University, Long Beach (Long Beach, CA, USA, 01/2020), Hosted by Prof. Sean Kwon and Prof. Henry Yeh
IEEE Systems Council – IEEE Coastal Los Angeles Section Chapter
- **IEEE/ACM Conference Tutorials and Special Session Talks**
 - **ACM CIKM 2024 Tutorial**, *Hands-On Introduction to Quantum Machine Learning*,
Joint Presentation with Dr. Samuel Yen-Chi Chen (Wells Fargo, New York, NY, USA)
 - **ICIT 2024 Tutorial**, *Quantum Reinforcement Learning: Concepts, Models, and Applications*
 - **IEEE ICUFN 2022 Tutorial**, *A Paradigm Shift in Future Networks with Quantum Deep Learning*
 - **IEEE ICOIN 2022 Tutorial**, *Advanced Deep Learning Methods for Autonomous Mobility*
 - **IEEE ICUFN 2021 Tutorial**, *Distributed and Split Deep Learning: Theory and Applications*
 - **IEEE ICAIC 2021 Tutorial**, *Multi-Agent Deep Reinforcement Learning for Connected and Autonomous Vehicles*
 - **IEEE ICTC 2019 Special Session Talk**, *Advanced Deep Learning Methods and Their Applications to Distributed and Network Platforms*
 - **IEEE ICOIN 2019 Tutorial**, *Distributed Platform Research for Emerging Deep Learning Applications*
 - **IEEE ICC 2018 Tutorial**, *Securing the Internet of Things: A Machine Learning Approach (Making Machine Learning Practical)*,
Joint Presentation with Prof. Aziz Mohaisen (University of Central Florida, Orlando, FL, USA)
- **Korean (Local) Conference Tutorials and Special Session Talks**
 - **2024 IEIE Summer Conference Tutorial**, *GAN-based and Quantum Reinforcement Learning for Mobility Applications*
 - **2023 KICS Summer Conference Tutorial**, *Quantum Machine Learning: Theory and Trends*
 - **2023 KIISE Summer Conference Information Network Society Special Session Talk**, *Quantum Neural Networks*
 - **2022 KIPS Fall Conference Tutorial**, *Quantum Deep Learning Basics*

- 2022 Korea AI Conference Tutorial, *Trends in Deep Reinforcement Learning*
- 2022 KICS Summer Conference Tutorial, *Quantum Multi-Agent Deep Reinforcement Learning*
- 2022 KIEES Winner Conference Tutorial, *Deep Learning Theory and Implementation*
- 2021 Korea AI Conference Tutorial, *Understanding the Potential Risks of Sharing Elevation Information on Fitness Applications*
- 2021 JCCI Mobile Machine Learning Special Session Talk, *Multi-Agent Deep Reinforcement Learning for Autonomous Vehicles*
- 2020 Korea AI Conference Tutorial, *Randomized Adversarial Imitation Learning for Autonomous Driving*
- 2020 KICS Fall Conference Tutorial, *Trends in Multi-Agent Deep Reinforcement Learning for Distributed Computing*
- 2020 KICS Summer Conference Tutorial, *Deep Learning Computation for Economic Theory and Its Applications*
- 2020 KICS Winter Conference Tutorial, *Deep Learning Applications to Computer Networking*
- 2020 KICS Winter Conference Tutorial, *Deep Neural Network Basics*
- 2019 KICS Fall Conference Special Session Talk, *AI Methods for Network and Mobility Platform*
- 2019 IEK Hyundai Motors Special Session Talk, *Explainable AI (XAI) and Imitation Learning for Automotive Applications*
- 2019 KIPS Spring Conference Tutorial, *Deep Learning Basics and Representative Models*
- 2019 KICS Winter Conference Tutorial, *Deep Learning Methods for Advanced Network*
- 2017 KICS Summer Conference Tutorial, *GPU Computing Platforms and Software for Deep Learning*
- 2017 KCC Summer Conference Special Session, *Dynamic Control and Software for Next-Generation Distributed Platforms*
- 2017 KICS Winter Conference Tutorial, *Machine Learning Techniques for Mobile Computing*

■ Industry Presentations (Selected)

- International: Huawei Research Center (Text-Aware Image Understanding Workshop) (Online, 11/2021), Ericsson-LG (R&D Hackathon / AI Learning Challenge – Keynote Speech) (Seoul, Korea, 05/2021), Huawei Research Center (Deep Learning/Machine Learning for Computer Vision) (Online, 09/2020), Huawei Research Center (Fundamental and Applied Problems of Machine Learning) (Nizhny Novgorod, Russia, 12/2019), City University of Hong Kong (Hong Kong, 11/2018), Intel Communications and Devices Group (iCDG) [Cellular Modem TechTalk] (Santa Clara, CA, USA, 01/2016), Nokia Research Center at Berkeley (Berkeley, CA, USA, 08/2014), Qualcomm Research Center (San Diego, CA, USA, 02/2014)
- Korea: LG Nex1 (Pankyo), Solvit System (Seoul), Korea Institute of Machinery & Materials (Daejeon), Korea Meteorological Administration (Seoul), Hyundai NGV (Seoul), SK Telecom (SKT) (Seoul), Agency for Defense Development (ADD) (Seoul), SK Hynix (Icheon), Naver Labs - Robotics Lab (Pankyo), ETRI (Daejeon), KT AI Tech Center (Seoul), LG Electronics (Seoul), Posco ICT (Pankyo), LG U+ (Seoul), SK Broadband (Seoul), Korea Electronics Technology Institute (KETI) (Pankyo), Korea Electric Power Corporation (KEPCO) Research Institute (Daejeon), Samsung Electronics (Hwasung)

■ Demonstration at Academic Conferences

- IEEE ICDCS 2023 (Hong Kong, China), *EQuATE: Efficient Quantum Train Engine Design and Demonstration for Dynamic Software Analysis*
- IEEE ICDCS 2023 (Hong Kong, China), *Multi-Site Clinical Federated Learning using NLP Models and NVFlare*
- IEEE ICDCS 2022 (Bologna, Italy), *Quantum Multi-Agent Reinforcement Learning via Variational Quantum Circuit Design*
- IEEE INFOCOM 2021 (Online), *Visualization of Deep Reinforcement Autonomous Aerial Mobility Learning Simulations*
- IEEE/CVF ICCV 2019 (Seoul, Korea), *Deep Multi-modal Unsupervised Pen Pressure Stylization*
- ACM MobiSys 2019 (Seoul, Korea), *Light-Weight Programming Language for Blockchain*
- IEEE GLOBECOM 2015 (Industry Demonstration ID-14) (San Diego, CA, USA), *mmWave MAA Client Access & Backhaul Platform*
- IEEE GLOBECOM 2014 (Expo) (Austin, TX, USA), *mmWave Modular Antenna Array for Next-Generation Wireless Networks*
- ACM MobiCom 2013 (Miami, FL, USA), *Adaptive Video Streaming for Device-to-Device Mobile Platforms*

■ Prototyping at Industry Exhibitions

- Mobile World Congress (MWC) 2016 (Barcelona, Spain, 02/2016), *Mobile Edge mmWave Backhaul and Access*
- Intel 360 degree 2016 (Anaheim, CA, 02/2016), *mmWave MAA Client Access & Backhaul Platform*
- Intel Asia Innovation Summit 2015 (Taipei, Taiwan, 10/2015), *mmWave Modular Antenna Array Client Access & Backhaul Platform*
- Intel Developer Forum (IDF) 2015 (San Francisco, CA, USA, 08/2015), *Enabling 5G Densification*
- Intel Design and Test Technology Conference (DTTC) 2015 (Portland, OR, USA, 08/2015), *Enabling 5G Densification*
- Mobile World Congress (MWC) 2015 (Barcelona, Spain, 03/2015), *Enabling 5G Densification*

Technical Program Committee (TPC)

■ Chair-Level Activities (Selected)

- CCNC: 2022 (Track Chair, T7 (Security, Privacy and Content Protection))
- NAS: 2019 (Track Co-Chair, Network Track)
- GLOBECOM: 2015 (TPC Chair, Workshop on Millimeter-Wave Backhaul and Access)

■ General Activities (Selected)

- IEEE ICC: 2024 (Selected Areas in Communications – Integrated Sensing and Communication Track), 2024 (Selected Areas in Communications – Reconfigurable Intelligent Surfaces and Smart Environments Track), 2023 (Wireless Communications Symposium), 2023 (Selected Areas in Communications – Integrated Sensing and Communication Track), 2023 (Selected Areas in Communications – Reconfigurable Intelligent Surfaces and Smart Environments Track), 2022 (Wireless Communications Symposium), 2022, 2021 (Wireless Communications Symposium)
- IEEE GLOBECOM: 2022 (Selected Areas in Communications – Machine Learning for Communications), 2021 (Selected Areas in Communications – Machine Learning for Communications), 2021 (IoTSN), 2020 (Ad-hoc and Sensor Networks Symposium)
- IEEE MASS: 2024 (Algorithms and Theory Track), 2023, 2022, 2021, 2012 (Workshop on Internet of Things Technology and Architectures)
- IEEE Quantum Week: 2024 (Quantum Machine Learning Track)
- ACM MobiHoc: 2019
- IEEE ICCCN: 2021
- IEEE WCNC: 2023, 2022, 2021, 2020, 2020 (Workshop on Aerial Communications in 5G and Beyond Networks)
- IEEE PIMRC: 2024 (Track 1: PHY & Fundamentals), 2024 (Workshop on Secured, Intelligent, and Collaborative Cell-free Networking for 6G and Beyond)
- IEEE ICDCS: 2019 (Distributed Green Computing & Energy Management)
- IEEE VTC: 2022-Fall, 2019-Spring, 2016-Spring, 2015-Spring, 2014-Fall

- **IJCAI:** 2024 (Workshop on Quantum Algorithms, Optimization, and Artificial Intelligence)
 - *Others:* 2025 (ICOIN, ICTC), 2024 (COMNETSAT), 2022 (MSN (Track 3: Security, Privacy, Trust, and Blockchain), ICTC, ICC, IPDPS (Heterogeneity in Computing Workshop), ICUFN, WCSP, COMNETSAT, CyberneticsCom, ICEIC, ICNGC), 2021 (MSN, ICTC, ICC, ICUFN, EuCAP, COMNETSAT, ICAIIC, IGESSC, ICEIC, ICNGC, ITC-CSCC), 2020 (ICTC, ICUFN, ICC, COMNETSAT, Blockchain, ICAIIC, IGESSC), 2019 (ICTC, ICUFN, ICC, Blockchain, EuCAP, IGESSC, NAS (Network Track), ICPADS (Security & Dependable Computing), WISA, SecureComm, IE), 2018 (ICTC, ICUFN, IGESSC, APWCS, AsiaCCS (Workshop on Security in Cloud Computing), ATC, SigTelCom, WCSP, IE), 2017 (ICTC, ICUFN, IE), 2016 (ICUFN), 2015 (EuCAP)
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References

- **Prof. Andreas F. Molisch** (*Fellow of the IEEE*), *Ph.D. Research and Dissertation Advisor*
 - Solomon Golomb – Andrew and Erna Viterbi Chair at the University of Southern California (Los Angeles, California, USA)
 - Professor of Electrical and Computer Engineering at the University of Southern California (Los Angeles, California, USA)
 - URL: <https://wides.usc.edu/founder.html>