

Associate Professor, Korea University – School of Electrical Engineering, Seoul, Republic of Korea
 – *Director*, Net-Zero CAFE (Connectivity and Autonomy for Future Ecosystem) Research Center (ITRC)
 • E-mail: joongheon@korea.ac.kr • WWW: <https://joongheon.github.io>

Educational Backgrounds

- **University of Southern California (USC) – Viterbi School of Engineering**, Los Angeles, California, USA
 - Ph.D. (08/2009–08/2014) in **Computer Science** (Advisor: *Prof. Andreas F. Molisch*, Department of Electrical Engineering)
 - 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*, Department of Cyber Defense)
 - B.S. (03/1999–02/2004) in **Computer Science and Engineering**

Professional Affiliations (R&D 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**)
 - 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**)
- **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 (09/2013–02/2016), WiGig & mmWave Standards and Advanced Technology (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)
 - 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
- **LG Electronics – CTO Office**, Seoul, Republic of Korea
 - Research Engineer (01/2006–08/2009), Multimedia Research Laboratory, Seocho R&D Campus

Awards and Honors

Research and Academic Excellence (International)

- | | |
|---|---|
| • Certificate of Appreciation – IEEE/IFIP WiOpt (2024) | 10/2024 |
| • Best Editor Award – ICT Express (Elsevier) | 07/2023 |
| • Finalist (Top 25), AAAI Student Abstract and Poster Session – Oral Presentation Contest | 02/2023 |
| • IEEE ICTC Best Paper Award – IEEE Communications Society | 10/2022 |
| • Spotlight, Oral Presentation – ICML Workshop on Dynamic Neural Networks (2022) | 07/2022 |
| • IEEE MMTC Best Journal Paper Award – IEEE Communications Society | 2021 |
| • IEEE ICOIN Best Paper Award – IEEE Computer Society | 01/2021 |
| • IEEE MMTC Outstanding Young Researcher Award – IEEE Communications Society | 2020 |
| • IEEE Systems Journal Best Paper Award – IEEE Systems Council | 2020 |
| • Next Generation and Standards (NGS) Division Recognition Award – Intel Corporation | Q1/2015 |
| • Annenberg Graduate Fellowship Award – University of Southern California | 2009–2013 |
| • IEEE Seoul Section Student Paper Contest | 2024 (Bronze), 2024 (Bronze), 2023 (Bronze), 2020 (Bronze), 2019 (Gold) |
| • IEEE VTS Seoul Chapter Award – IEEE Vehicular Technology Society | 2022, 2023, 2022, 2021, 2021, 2019 |

Research and Academic Excellence (Korea Regional)

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|---|------------------|
| • Best Paper Award, The Journal of KICS – KICS | 11/2024 |
| • HFR Paper Award (Area: Quantum Technologies and Quantum Communications) – KICS | 11/2023 |
| • Korea Electronics Technology Institute (KETI) President Award – KICS | 06/2023 |
| • Haedong Paper Award – KICS | 02/2023, 06/2021 |
| • Insung Research Grant Award – Korea University | 01/2023 |
| For recognizing professors in research excellence during the first 3 years at Korea University (Top 5%) | |
| • Haedong Young Scholar Award – KICS and Haedong Foundation | 12/2018 |
| For recognizing a researcher under the age of 40 who has made outstanding contributions to IT R&D | |
| • Outstanding Paper Award – LG Electronics CTO Office, Multimedia Research Laboratory | 01/2008 |

- **RFID Expert Group President Award** – *The 3rd RFID/USN Research Paper Contest* 10/2007
- **ETRI President Award** – *The 2nd RFID/USN Research Paper Contest* 11/2006
- **Korea Association of RFID/USN (KARUS) President Award** – *The 1st RFID/USN Research Paper Contest* 10/2005
- **Scholarships for Academic Excellence** – *Korea University (Computer Science and Engineering)* Fall 2000, Fall 1999

Teaching Excellence at Korea University (11 Times)

- **Granite Tower Best Teaching Award (Top 5%)** Spring 2024, Spring 2022, Fall 2021, Spring 2021, Fall 2019
- **Best Teaching Award (Top 20%)** Spring 2024, Spring 2024, Spring 2022, Fall 2021, Spring 2021, Fall 2020

Academic and University Services

- **Outstanding Contribution Award** – KICS 2024, 2021, 2019
- **Outstanding Contribution Award** – KIISE Information Network Society 2023, 2022
- **2022 Best Chapter Award, IEEE Vehicular Technology Society Chapter**, Awarded as a Treasure 2022
- **Outstanding Contribution Award** – Open Standards and ICT Association (OSIA) 2021
- **Appreciation Recognition** – Daegu Gyeongbuk Institute of Science and Technology (DGIST) 2021
- **Fellow Employee Recognition [#3081146]** – Intel Corporation 2014
- **Certificate of Appreciation** – Department of Computer Science, University of Southern California 2010

R&D Projects (Totally, 15,795,033 USD ≈ 15,795,033,875 KRW)

University-Wide/Center Projects

- **Net-Zero CAFE Research Center** (07/2024–12/2031) ITRC (Korea Univ) (**Center Director**)
- **Intelligent 6G Wireless Access System Research Center** (04/2021–12/2025) 6G AI Research Center (Korea Univ)
- **K-Starlink: Dynamic Reconfigurable and Intelligent Space-Terrestrial Networks** (06/2021–05/2024) Basic Research Lab (Ajou)
- **Nano UAV Intelligence Systems Research Lab** (10/2020–08/2023) ADD Military Special Research Center (Kwangwoon)
- **5G/Unmanned Vehicle Research Center (5G/UV-RC)** (06/2020–12/2022) ITRC (Hanyang)
- **Human Resource Development for the Biomedical Unstructured Big Data Analysis** (08/2018–12/2021) ITRC (SNU-Hospital)
- **Novel Data Science Driven Framework for Efficient Network Design** (06/2017–05/2020) Basic Research Lab (Chung-Ang)
- **Intelligent Internet of Energy (IoE) Data Research Center** (02/2020–05/2020) ITRC (Kookmin)

Industry-Funded Projects

- **Advancement Technology Development for Torpedo Deception Strategies in Submarines** (11/2022–11/2026) LIG Nex1
- **Advancement Tech Dev for Submarine Target Identification and Engagement Support Intelligence** (11/2022–11/2026) LIG Nex1
- **Mapping between Real World and VR for End-Edged Cloud Real-Time VR Servers** (09/2020–09/2025) Samsung Electronics
- **Research on Learning-based Swarm Mission Planning Algorithms** (03/2024–02/2025) LIG Nex1
- **Quantum Machine Learning-based Objection Detection for Point Cloud and its Acceleration** (12/2022–04/2024) Hyundai Motors
- **Routing Algorithms for LEO Satellite Networks** (12/2022–08/2023) Solvit System
- **Optimal Positioning Algorithms for Wide-Area Relaying Networks** (12/2022–08/2023) Solvit System
- **Distributed Learning Algorithms to Build AI Models with Multi-Center Clinical Data** (11/2022–02/2023) Cipherome
- **Cellular/Wi-Fi Handover Technology Development** (02/2022–12/2022) LG Electronics CTO Division (Smart Mobility Lab)
- **Research Trends in Digital Twin Applications to Autonomous Driving** (03/2022–04/2022) Hyundai NGV
- **Distributed Learning System Design and Implementation for Clinical Applications** (02/2022–03/2022) Cipherome
- **Super-Resolution Performance Optimization in Mobile Platforms** (05/2020–08/2020) Samsung SDS
- **Deep Learning Algorithms for mVOC Concentration Analysis** (03/2020–06/2020) Samsung Electronics (C-Lab)
- **Visual Recognition Software Implementation using Deep Learning Tools** (05/2019–11/2019) Hyundai Motors
- **A Priori Techniques Research for Efficient Multi-Edge Computing** (06/2017–12/2017) Samsung Electronics (Software Center)

Government-Funded Projects

- **Quantum AI Empowered Second-Life Platform Technology** (07/2024–12/2031) IITP (**Software Star-Lab**)
- **Quantum-Empowered Spatio-Temporal Multi-Scale Digital Twin System** (03/2025–02/2028) NRF
- **6GARROW: 6G AI-Native Integrated RAN-Core Networks** (09/2024–08/2027) IITP
- **AI Bots Collaborative Platform and Self-Organizing Artificial Intelligence Technology Development** (04/2022–12/2026) IITP
- **Development of Integrated Development Framework that supports Automatic Neural Network Generation and Deployment optimized for Runtime Environment** (04/2021–12/2025) IITP
- **Quantum Hyper-Driving: Quantum-Inspired Hyper-Connected and Hyper-Sensing Autonomous Mobility** (03/2022–02/2025) NRF
- **Korea-Japan Joint Seminar Project for Generative and Multi-Modal AI Technologies** (10/2023–09/2024) NRF
- **Integrated Perception Technology Developments for Public Safety Platforms** (06/2019–05/2023) NRF
- **Development of Quantum Deep Reinforcement Learning Algorithm using QAOA** (10/2019–04/2022) NRF
- **mmWave Radar and Deep Reinforcement Learning based Optimal Policy Autonomous Driving** (06/2019–02/2022) NRF
- **Development of Privacy-Reinforcing Distributed Transfer-Iterative Learning Algorithm** (07/2019–12/2021) MHW
- **Virtual Presence in Moving Objects through 5G (PriMO-5G)** (06/2018–06/2021) IITP
- **Distributed Secure Platform for Scalable Clinical OMOP CDM Models** (04/2019–12/2020) MHW
- **mmWave High-Speed Networking Platform Design for Next-Generation Convergence Services** (06/2016–05/2019) NRF
- **Feasibility Study of 60 GHz IEEE 802.11ad for Virtual Reality (VR) Platforms** (04/2017–12/2017) IITP

Government-Funded Research Institute Projects

- Research on Generative Quantum Machine Learning Models (04/2025–10/2025) **ETRI Affiliated Research Institute**
- Quantum Reinforcement Learning for Satellite Backhaul Routing in Disaster Networks (05/2024–11/2024) **ETRI**
- NOMA-based Resource Allocation Research in Space-Air-Ground Integrated Networks (09/2023–11/2023) **ETRI**
- Autonomous Intelligent COA Search Methods for Cyber-Attacks (12/2021–11/2022) **ADD**
- Research on Intelligent Agent-based CPS Security and Reliability (04/2021–11/2021) **TTA**
- Multi-GPU based Automotive HPC Platform Development (04/2020–10/2020) **ETRI**
- Cooperative Deep Reinforcement Learning for Online Game Multi-Agents (04/2020–08/2020) **ETRI**
- Verification Testbed Implementation for Privacy-Preserving Trust Data Generation (10/2019–11/2019) **ETRI**
- Measurement and Analysis of Multi-Task GPU Scheduling Delays (05/2019–10/2019) **ETRI**
- Probabilistic Decision Making and Econometric Methods for Micro-Grid (05/2017–04/2019) **KEPCO Research Institute**
- GPU Scheduling Performance Analysis under Queueing Delay Considerations (05/2018–10/2018) **ETRI**
- Improving Massive Deep Learning Training via Computation and Communication Acceleration (04/2018–10/2018) **ETRI**
- Parsing Techniques for Artificial Neural Network (ANN) Data Processing (09/2017–11/2017) **ETRI**

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

- Video Aware Wireless Networks (VAWN) Research Program **Intel Labs, Verizon Wireless, and Cisco Systems**
- 60 GHz Real-Time Wireless Video Broadcasting **Disney Research Zürich**

Awards and Fellowship Funds

- Insung Research Grant Award (03/2023–02/2024) **Korea University**
For recognizing Korea University professors in research excellence during the first 3 years at Korea University (Top 5%)
- Annenberg Graduate Fellowship Award (08/2009–06/2013) **University of Southern California**
Awarded Fund: 4 Year Full Scholarship (Tuition Waiver and \$120,000 Stipend (\$30,000/year for 4 years))

Selected Publications

- **9488+ Citations** (H-index: 48+, i10-index 202+), obtained from Google Scholar Profile (as of April 6, 2025)

Books

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

Selected Papers

■ Top-Tier Conferences

- [IPDPS'25]** AQUA: Hardware-Agnostic Qubit Allocation for Quantum Multi-Programming, **IPDPS (2025)** (X. Piao, J. Shim, [J. Kim](#), J. Kim)
- [WiOpt'25]** Stabilized Robust Control for Lightweight Autonomous Aircraft Mobility: A Quantum Reinforcement Learning Approach, **WiOpt (2025)** (G.S. Kim, J. Chung, T.Q. Duong, S. Park, [J. Kim](#))
- [CIKM'24]** Hands-On Introduction to Quantum Machine Learning, **CIKM (2024)** (S.Y.-C. Chen, [J. Kim](#))
- [WiOpt'24]** Advanced Taxiing Path Guidance using Multi-Agent Reinforcement Learning for Air Traffic Management, **WiOpt (2024)** (S. Lee, G.S. Kim, 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](#))
- [AAAI'23]** Quantum Multi-Agent Meta Reinforcement Learning, **AAAI (2023)** (W.J. Yun, J. Park, [J. Kim](#))
- [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](#))
- [WiOpt'22]** Cooperative Video Quality Adaptation for Delay-Sensitive Dynamic Streaming using Adaptive Super-Resolution, **WiOpt (2022)** (M. Choi, W.J. Yun, [J. Kim](#))
- [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](#))
- [ICDCS'20]** Understanding the Potential Risks of Sharing Elevation Information on Fitness Applications, **ICDCS (2020)** (Ü. Meteriz, N.F. Yildiran, [J. Kim](#), D. Mohaisen)
- [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, **ACM-MM (2017)** (J. Koo, J. Yi, [J. Kim](#), M.A. Hoque, S. Choi)
- [MobiSys'10]** Energy-Efficient Rate-Adaptive GPS-based Positioning for Smartphones, **MobiSys (2010)** (J. Paek, [J. Kim](#), R. Govindan)

■ IEEE Journals and Magazines (**104** publications)

- [MM.minor]** Quantum Jump to Virtual Worlds: High-Quality Multiple Virtual Meta-Space Realization in Metaverse, **IEEE Multimedia** (S. Park, [J. Kim](#))
- [IOT].minor]** Carbon-Aware Edge Computing for Internet of Everything Networks: A Digital Twin Approach, **IEEE Internet of Things Journal** (D. V. Huynh, S. R. Khosravirad, V. Sharma, [J. Kim](#), B. Canberk, T. Q. Duong)
- [JCN.accepted]** Stabilized Classification Control using Multi-Stage Quantum Convolutional Neural Networks for Autonomous Driving, **Journal of Communications and Networks** (E. J. Roh, S. Park, S. Jung, [J. Kim](#))
- [IOT].accepted]** 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)

- [TAES.accepted] Quantum Multi-Agent Reinforcement Learning for Joint Cube-Satellites and High-Altitude Long-Endurance Aerial Vehicles in SAGIN, *IEEE Transactions on Aerospace and Electronic Systems* (G. S. Kim, Y. Cho, S. Park, S. Jung, J. Kim)
- [TON.accepted] 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)
- [IOTJ.accepted] 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)
- [TIV.accepted] Adaptive Quantum Federated Learning for Autonomous Surveillance Multi-Drone Networks, *IEEE Transactions on Intelligent Vehicles* (S. Park, C. Park, 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)
- [IOTI'25.06] Entanglement-Controlled Quantum Federated Learning, *IEEE Internet of Things Journal*, 12(12):ppp–ppp (2025) (S. Park, H. Lee, S. Jung, J. Park, M. Bennis, J. Kim)
- [TVT'25.05] Dynamic Quantum Federated Learning for UAV-based Autonomous Surveillance, *IEEE Transactions on Vehicular Technology*, 74(5):ppp–ppp (2025) (S. Park, S.B. Son, S. Jung, J. Kim)
- [TNSM'25.04] Intelligent Extra Resource Allocation for Cooperative Awareness Message Broadcasting in Cellular-V2X Networks, *IEEE Transactions on Network and Service Management*, 22(2):ppp–ppp (2025) (S. Jung, J.-H. Kim, J. Kim)
- [TMC'25.02] Fast Quantum Convolutional Neural Networks for Low-Complexity Object Detection in Autonomous Driving Applications, *IEEE Transactions on Mobile Computing*, 24(2):1031–1042 (2025) (E.J. Roh, H. Baek, D. Kim, J. Kim)
- [CM'24.12] The Matrix: Quantum AI for Interacting Two Worlds in Prioritized Metaverse Spaces, *IEEE Communications Magazine*, 62(12):97–103 (2024) (S. Park, H. Baek, J. Kim)
- [TON'24.12] Spatio-Temporal Multi-Metaverse Dynamic Streaming for Hybrid Quantum-Classical Systems, *IEEE/ACM Transactions on Networking*, 32(6):5279–5294 (2024) (S. Park, H. Baek, J. Kim)
- [TMC'24.12] Joint Quantum Reinforcement Learning and Stabilized Control for Spatio-Temporal Coordination in Metaverse, *IEEE Transactions on Mobile Computing*, 23(12):12410–12427 (2024) (S. Park, J. Chung, C. Park, S. Jung, M. Choi, S. Cho, J. Kim)
- [IOTJ'24.12] Markov Decision Policies for Distributed Angular Routing in LEO Mobile Satellite Constellation Networks, *IEEE Internet of Things Journal*, 11(23):38744–38754 (2024) (S. Park, G.S. Kim, S. Jung, J. Kim)
- [CM'24.10] Quantum Multi-Agent Reinforcement Learning is All You Need: Coordinated Global Access in Integrated TN/NTN Cube-Satellite Networks, *IEEE Communications Magazine*, 62(10):86–92 (2024) (S. Park, G.S. Kim, Z. Han, J. Kim)
- [Access'24.10] Sensing-to-Sky Intermittent Connectivity Realization for LTE-Enabled Drone Platforms: Embedded Design, Measurement Study, and Positioning Applications, *IEEE Access*, 12:137360–137372 (2024) (J. Kim, S. Park, U. Jo, T. Kim, S. Jung, 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):3797–3812 (2024) (J. Kim, S. Park, S. Jung, C. Cordeiro)
- [Access'24.08] Enhancing Cost-Effective 5G Virtualized RAN Pooling Gain on Clouds: An Intelligent Auto-Scaling Approach, *IEEE Access*, 12:111322–111333 (2024) (K. Cho, J. Kim, S. Jung)
- [TVT'24.07] Age-of-Information Aware Caching and Delivery for Infrastructure-Assisted Connected Vehicles, *IEEE Transactions on Vehicular Technology*, 73(7):10681–10696 (2024) (S. Park, C. Park, S. Jung, M. Choi, J. 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*, 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)
- [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)
- [IOTJ'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. Levorato, J.-H. Kim, J. Kim)
- [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)
- [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)
- [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)
- [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*, 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)
- [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)
- [TII'22.10] Cooperative Multi-Agent Deep Reinforcement Learning for Reliable Surveillance via Autonomous Multi-UAV Control, *IEEE Transactions on Industrial Informatics*, 18(10):7086–7096 (2022) (W.J. Yun, S. Park, J. Kim, M. Shin, S. Jung, D. Mohaisen, J.-H. Kim)
- [TVT'22.07] Joint Pilot Design and Channel Estimation using Deep Residual Learning for Multi-Cell Massive MIMO under Hardware Impairments, *IEEE Transactions on Vehicular Technology*, 71(7):7599–7612 (2022) (B. Lim, W.J. Yun, J. Kim, Y.-C. Ko)
- [ISJ'22.06] Securing Heterogeneous IoT with Intelligent DDoS Attack Behavior Learning, *IEEE Systems Journal*, 16(2):1974–1983 (2022) (N.-N. Dao, T. Phan, U. Sa'ad, J. Kim, T. Bauschert, D.-T. Do, S. Cho)
- [CSM'22.06] Recent and Future Evolution of Wi-Fi, *IEEE Communications Standards Magazine*, 6(2):8–11 (2022) (E. Au, L. Wilhelmsson, T. Baykas, J. Kim)
- [TMC'22.05] Supremo: Cloud-Assisted Low-Latency Super-Resolution in Mobile Devices, *IEEE Transactions on Mobile Computing*, 21(5):1847–1860 (2022) (J. Yi, S. Kim, J. Kim, S. Choi)
- [TVT'22.05] Stabilized Detection Accuracy Maximization using Adaptive SAR Image Processing in LEO Networks, *IEEE Transactions on Vehicular Technology*, 71(5):5661–5665 (2022) (K. Kim, J.-H. Lee, S. Jung, J. Kim, J.-H. Kim)
- [ISJ'22.03] LiteZKP: Lightning Zero-Knowledge Proof-based Blockchains for IoT and Edge Platforms, *IEEE Systems Journal*, 16(1):112–123 (2022) (E. Boo, J. Kim, J. Ko)
- [TVT'22.02] Quality-Aware Deep Reinforcement Learning for Streaming in Infrastructure-Assisted Connected Vehicles, *IEEE Transactions on Vehicular Technology*, 71(2):2002–2017 (2022) (W.J. Yun, D. Kwon, M. Choi, J. Kim, G. Caire, A.F. Molisch)
- [ISJ'21.09] Intelligent Active Queue Management for Stabilized QoS Guarantees in 5G Mobile Networks, *IEEE Systems Journal*, 15(3):4293–4302 (2021) (S. Jung, J. Kim, J.-H. Kim)
- [Access'21.09] Spatio-Temporal Split Learning for Privacy-Preserving Medical Platforms: Case Studies with COVID-19 CT, X-Ray, and Cholesterol Data, *IEEE Access*, 9:121046–121059 (2021) (Y.J. Ha, M. Yoo, G. Lee, S. Jung, S. Choi, J. Kim, S. Yoo)
- [TVT'21.08] Infrastructure-Assisted On-Driving Experience Sharing for Millimeter-Wave Connected Vehicles, *IEEE Transactions on Vehicular Technology*, 70(8):7307–7321 (2021) (S. Jung, J. Kim, M. Levorato, C. Cordeiro, J.-H. Kim)
- [TMC'21.06] A Personalized Preference Learning Framework for Caching in Mobile Networks, *IEEE Transactions on Mobile Computing*, 20(6):2124–2139 (2021) (A. Malik, K.S. Kim, J. Kim, W.-Y. Shin)
- [TVT'21.06] Orchestrated Scheduling and Multi-Agent Deep Reinforcement Learning for Cloud-Assisted Multi-UAV Charging Systems, *IEEE Transactions on Vehicular Technology*, 70(6):5362–5377 (2021) (S. Jung, W.J. Yun, M. Shin, J. Kim, J.-H. Kim)
- [Access'21.06] Joint Mobile Charging and Coverage-Time Extension for Unmanned Aerial Vehicles, *IEEE Access*, 9:94053–94063 (2021) (S. Park, M. Choi, W.-Y. Shin, J. Kim)
- [PIEEE'21.05] Communication-Efficient and Distributed Learning Over Wireless Networks: Principles and Applications, *Proceedings of the IEEE*, 109(5):796–819 (2021) (J. Park, S. Samarakoon, A. Elgabri, J. Kim, M. Bennis, S.-L. Kim, M. Debbah)
- [TWC'21.04] Probabilistic Caching and Dynamic Delivery Policies for Categorized Contents and Consecutive User Demands, *IEEE Transactions on Wireless Communications*, 20(4):2685–2699 (2021) (M. Choi, A.F. Molisch, D.-J. Han, D. Kim, J. Kim, J. Moon)
- [JCN'21.04] Stabilized Adaptive Sampling Control for Reliable Real-Time Learning-based Surveillance Systems, *Journal of Communications and Networks*, 23(2):129–137 (2021) (D. Kim, S. Park, J. Kim, J.y. Bang, S. Jung)
- [JCN'21.04] Dynamic Video Delivery using Deep Reinforcement Learning for Device-to-Device Underlaid Cache-Enabled Internet-of-Vehicle Networks, *Journal of Communications and Networks*, 23(2):117–128 (2021) (M. Choi, M. Shin, J. Kim)
- [ISJ'21.03] Multiscale LSTM-Based Deep Learning for Very-Short-Term Photovoltaic Power Generation Forecasting in Smart City Energy Management, *IEEE Systems Journal*, 15(1):346–354 (2021) (D. Kim, D. Kwon, L. Park, J. Kim, S. Cho)
- [TWC'20.12] Joint Distributed Link Scheduling and Power Allocation for Content Delivery in Wireless Caching Networks, *IEEE Transactions on Wireless Communications*, 19(12):7810–7824 (2020) (M. Choi, A.F. Molisch, J. Kim)
- (IEEE ComSoc MMTC Best Journal Paper Award (2021))**
- [IOTI'20.10] Multiagent DDPG-Based Deep Learning for Smart Ocean Federated Learning IoT Networks, *IEEE Internet of Things Journal*, 7(10):9895–9903 (2020) (D. Kwon, J. Jeon, S. Park, J. Kim, S. Cho)
- [JCN'20.08] Self-Adaptive Power Control with Deep Reinforcement Learning for Millimeter-Wave Internet-of-Vehicles Video Caching, *Journal of Communications and Networks*, 22(4):326–337 (2020) (D. Kwon, J. Kim, D. Mohaisen, W. Lee)
- [Access'20.06] Blind Signal Classification Analysis and Impact on User Pairing and Power Allocation in Nonorthogonal Multiple

- Access, *IEEE Access*, 8:100916–100929 (2020) (M. Choi, J. Kim)
- [TII'20.05] Cooperative Management for PV/ESS-Enabled Electric-Vehicle Charging Stations: A Multiagent Deep Reinforcement Learning Approach, *IEEE Transactions on Industrial Informatics*, 16(5):3493–3503 (2020) (M. Shin, D. Choi, J. Kim)
- [ISJ'20.03] Towards Characterizing Blockchain-based Cryptocurrencies for Highly-Accurate Predictions, *IEEE Systems Journal*, 14(1):321–332 (2020) (M. Saad, J. Choi, D. Nyang, J. Kim, A. Mohaisen) (**IEEE Systems Journal Best Paper Award (2020)**)
- [JCN'20.02] Numerical Approximation of Millimeter-Wave Frequency Sharing between Cellular Systems and Fixed Service Systems, *Journal of Communications and Networks*, 22(1):37–45 (2020) (S. Han, J.-W. Choi, J. Kim)
- [TWC'19.12] Markov Decision Policies for Dynamic Video Delivery in Wireless Caching Networks, *IEEE Transactions on Wireless Communications*, 18(12):5705–5718 (2019) (M. Choi, A. No, M. Ji, J. Kim)
- [TWC'19.10] Dynamic Power Allocation and User Scheduling for Power-Efficient and Delay-Constrained Multiple Access Networks, *IEEE Transactions on Wireless Communications*, 18(10):4846–4858 (2019) (M. Choi, J. Kim, J. Moon)
- [IOTI'19.10] Two-Stage IoT Device Scheduling with Dynamic Programming for Energy Internet Systems, *IEEE Internet of Things Journal*, 6(5):8782–8791 (2019) (L. Park, C. Lee, J. Kim, A. Mohaisen, S. Cho)
- [TVT'19.10] Blind Signal Classification for Non-Orthogonal Multiple Access in Vehicular Networks, *IEEE Transactions on Vehicular Technology*, 68(10):9722–9734 (2019) (M. Choi, D. Yoon, J. Kim)
- [TCAD'19.09] TEI-ULP: Exploiting Body Biasing to Improve the TEI-Aware Ultra-Low Power Methods, *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 38(9):1758–1770 (2019) (W. Lee, T. Kang, J.-J. Lee, K. Han, J. Kim, M. Pedram)
- [TMC'19.07] Seamless Dynamic Adaptive Streaming in LTE/Wi-Fi Integrated Network under Smartphone Resource Constraints, *IEEE Transactions on Mobile Computing*, 18(7):1647–1660 (2019) (J. Koo, J. Yi, J. Kim, M.A. Hoque, S. Choi)
- [TVT'19.05] Auction-Based Charging Scheduling With Deep Learning Framework for Multi-Drone Networks, *IEEE Transactions on Vehicular Technology*, 68(5):4235–4248 (2019) (M. Shin, J. Kim, M. Levorato)
- [CM'19.03] New Challenges of Wireless Power Transfer and Secured Billing for Internet of Electric Vehicles, *IEEE Communications Magazine*, 57(3):118–124 (2019) (L. Park, S. Jeong, D.S. Lakew, J. Kim, S. Cho)
- [TIE'19.02] Joint Geometric Unsupervised Learning and Truthful Auction for Local Energy Market, *IEEE Transactions on Industrial Electronics*, 66(2):1499–1508 (2019) (L. Park, S. Jeong, J. Kim, S. Cho)
- [IOTI'18.12] Internet of Things for Smart Manufacturing System: Trust Issues in Resource Allocation, *IEEE Internet of Things Journal*, 5(6):4418–4427 (2018) (S. Jeong, W. Na, J. Kim, S. Cho)
- [JSAC'18.11] SGCO: Stabilized Green Crosshaul Orchestration for Dense IoT Offloading Services, *IEEE Journal on Selected Areas in Communications*, 36(11):2538–2548 (2018) (N.-N. Dao, D.-N. Vu, W. Na, J. Kim, S. Cho)
- [JSAC'18.06] Wireless Video Caching and Dynamic Streaming under Differentiated Quality Requirements, *IEEE Journal on Selected Areas in Communications*, 36(6):1245–1257 (2018) (M. Choi, J. Kim, J. Moon)
- [Access'18.05] Soft Memory Box: A Virtual Shared Memory Framework for Fast Deep Neural Network Training in Distributed High Performance Computing, *IEEE Access*, 6:26493–26504 (2018) (S. Ahn, J. Kim, E. Lim, S. Kang)
- [TVT'18.04] Adaptive Detector Selection for Queue-Stable Word Error Rate Minimization in Connected Vehicle Receiver Design, *IEEE Transactions on Vehicular Technology*, 67(4):3635–3639 (2018) (M. Choi, J. Kim, J. Moon)
- [IOTI'18.02] Energy-Efficient Mobile Charging for Wireless Power Transfer in Internet of Things Networks, *IEEE Internet of Things Journal*, 5(1):79–92 (2018) (W. Na, J. Park, C. Lee, K. Park, J. Kim, S. Cho)
- [TII'17.12] Residential Demand Response for Renewable Energy Resources in Smart Grid Systems, *IEEE Transactions on Industrial Informatics*, 13(6):3165–3173 (2017) (L. Park, Y. Jang, S. Cho, J. Kim)
- [IOTI'17.10] Feasibility Study of 60 GHz Millimeter-Wave Technologies for Hyperconnected Fog Computing Applications, *IEEE Internet of Things Journal*, 4(5):1165–1173 (2017) (J. Kim, W. Lee)
- [Access'17.09] A Software-based Monitoring Framework for Time-Space Partitioned Avionics Systems, *IEEE Access*, 5:19132–19143 (2017) (C. Shin, C. Lim, J. Kim, H. Roh, W. Lee)
- [Access'17.08] Energy-Efficient Stabilized Automatic Control for Multicore Baseband in Millimeter-Wave Systems, *IEEE Access*, 5:16584–16591 (2017) (J. Kim, J.-J. Lee, J.-K. Kim, W. Lee)
- [Access'17.06] Adaptive Resource Balancing for Serviceability Maximization in Fog Radio Access Networks, *IEEE Access*, 5:14548–14559 (2017) (N.-N. Dao, J. Lee, D.-N. Vu, J. Paek, J. Kim, S. Cho, K. Chung, C. Keum)
- [VTM'17.03] The Useful Impact of Carrier Aggregation: A Measurement Study in South Korea for Commercial LTE-Advanced Networks, *IEEE Vehicular Technology Magazine*, 12(1):55–62 (2017) (S. Lee, S. Hyeon, J. Kim, H. Roh, W. Lee)
- [TVT'16.12] Performance of Video Streaming in Infrastructure-to-Vehicle Telematic Platforms With 60-GHz Radiation and IEEE 802.11ad Baseband, *IEEE Transactions on Vehicular Technology*, 65(12):10111–10115 (2016) (J. Kim, S. Kwon, G. Choi)
- [Access'16.12] Numerical Simulation Study for Frequency Sharing between Micro-Cellular Systems and Fixed Service Systems in Millimeter-Wave Bands, *IEEE Access*, 4:9847–9859 (2016) (J. Kim, L. Xian, A.S. Sadri)
- [TON'16.08] Quality-Aware Streaming and Scheduling for Device-to-Device Video Delivery, *IEEE/ACM Transactions on Networking*, 24(4):2319–2331 (2016) (J. Kim, G. Caire, A.F. Molisch)
- [TII'15.12] Energy-Efficient Dynamic Packet Downloading for Medical IoT Platforms, *IEEE Transactions on Industrial Informatics*, 11(6):1653–1659 (2015) (J. Kim)
- [TSMC'15.11] Stochastic Decision Making for Adaptive Crowdsourcing in Medical Big-Data Platforms, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 45(11):1471–1476 (2015) (J. Kim, W. Lee)
- [JCN'14.10] Fast Millimeter-Wave Beam Training with Receive Beamforming, *Journal of Communications and Networks*, 16(5):512–522 (2014) (J. Kim, A.F. Molisch)
- [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)
- [CL'14.07] A Low-Complexity Algorithm for Neighbor Discovery in Wireless Networks, *IEEE Communications Letters*, 18(7):1119–

1122 (2014) (S.-N. Hong, J. Kim)

- [CL'14.03] Fast and Low-Power Link Setup for IEEE 802.15.3c Multi-Gigabit/s Wireless Sensor Networks, *IEEE Communications Letters*, 18(3):455–458 (2014) (J. Kim, A. Mohaisen, J.-K. Kim)
- [TBC'13.09] Joint Scalable Coding and Routing for 60 GHz Real-Time Live HD Video Streaming Applications, *IEEE Transactions on Broadcasting*, 59(3):500–512 (2013) (J. Kim, Y. Tian, S. Mangold, A.F. Molisch)
- [TCE'07.11] Movement-Aware Vertical Handoff of WLAN and Mobile WiMAX for Seamless Ubiquitous Access, *IEEE Transactions on Consumer Electronics*, 53(4):1268–1275 (2007) (W. Lee, E. Kim, J. Kim, I. Lee, C. Lee)
- [TCE'07.05] Coverage-Time Optimized Dynamic Clustering of Networked Sensors for Pervasive Home Networking, *IEEE Transactions on Consumer Electronics*, 53(2):433–441 (2007) (J. Kim, W. Lee, E. Kim, D.-W. Kim, H. Kim)
- [CL'07.01] Optimized Transmission Power Control of Interrogators for Collision Arbitration in UHF RFID Systems, *IEEE Communications Letters*, 11(1):22–24 (2007) (J. Kim, W. Lee, E. Kim, D. Kim, K. Suh)
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Academic Activities

Research Supervision

■ Ph.D. Alumni

- Dr. Soohyun Park ('19.03–'23.08 (MS-PhD), '23.09–'24.02 (Postdoc)), *Sookmyung Women's University* (Professor)
- Dr. Hankyul Baek ('21.03–'24.02 (MS-PhD), '24.03–'25.03 (Postdoc)), ETRI (Researcher)

■ M.S. Alumni

- Kyeongseon Kim ('17.09–'19.08), POSTECH
- Dohyun Kwon ('18.03–'20.02), Hyundai Motors Group
- Dohyun Kim ('18.03–'20.02), Naver Webtoon
- MyungJae Shin ('18.03–'20.02), Naver
- Jaeho Choi ('19.03–'21.02), Korea Meteorological Administration [Military Service Exception]
- Anna Yoo Jeong Ha ('21.03–'23.02), The University of Chicago (Ph.D. Student in Computer Science)

■ Postdoctoral Scholars

- Dr. Minseok Choi ('18.09–'19.02, jointly with Prof. Andreas F. Molisch (USC)), *Kyung Hee University* (Professor)
- Dr. Soyi Jung ('21.03–'21.08, jointly with Prof. Marco Levorato (UC-Irvine)), *Ajou University* (Professor)
- Dr. Ju-Hyung Lee ('22.03–'23.02, jointly with Prof. Andreas F. Molisch (USC)), Nokia USA (Principal Engineer)

IEEE Activities (Membership, Editorial Boards, and Services)

- Senior Member (2018–), Member (2006–2017)
 - Associate Editor (2025–), *IEEE Communications Surveys and Tutorials*
 - Editor (2023–), *IEEE Internet of Things Journal*
 - Associate Editor (2020–), *IEEE Transactions on Vehicular Technology*
 - Guest Editor, *Journal of Communications and Networks* (S.I. on Quantum Technologies for Communication Systems)
 - Guest Editor, *IEEE Communications Standards Magazine* (S.I. on Recent and Future Evolution of Wi-Fi)
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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, CA, USA)
 - Professor of Electrical and Computer Engineering at the University of Southern California (Los Angeles, CA, USA)
 - URL: <https://wides.usc.edu/founder.html>
 - E-mail: molisch@usc.edu