Joongheon Kim

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)

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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)
  - 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**

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) (Advised by Prof. Andreas F. Molisch)
  - *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)

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)**
- *Network Engineering: Development and Application of 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)**
- *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

- *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*, Supported by a Gift from **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

- **9111+ Citations** (H-index: 45+, i10-index 197+), obtained from Google Scholar Profile (as of February 3, 2025)

Dissertation and Books

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

Selected Papers

■ *Top-Tier Conferences*

[IPDPS'25] AQUA: Hardware-Agnostic Qubit Allocation for Quantum Multi-Programming, **IEEE IPDPS (2025)** *(X. Piao, J.Y. Shim, J. Kim, J.-K. Kim)*

[NOMS'25] Joint Multi-Agent Reinforcement Learning and Message-Passing for Distributed Multi-UAV Network Management using Conflict Graphs, **IEEE/IFIP NOMS (2025)** *(Y. Cho, H. Lee, S. Park, J. Kim)*

[CIKM'24] Hands-On Introduction to Quantum Machine Learning, **ACM CIKM (2024)** *(S.Y.-C. Chen, J. Kim)*

[WiOpt'24] Advanced Taxiing Path Guidance using Multi-Agent Reinforcement Learning for Air Traffic Management, **IEEE/IFIP WiOpt (2024)** *(S. Lee, G.S. Kim, S. Park, J. Kim)*

[CIKM'23] Quantum Split Learning for Privacy-Preserving Information Management, **ACM CIKM (2023)** *(S. Park, H. Baek, J. Kim)*

[CIKM'23] Logarithmic Dimension Reduction for Quantum Neural Networks, **ACM 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, **ACM 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, **IEEE/IFIP WiOpt (2022)** *(M. Choi, W.J. Yun, J. Kim)*

[INFOCOM'22] Joint Superposition Coding and Training for Federated Learning over Multi-Width Neural Networks, **IEEE 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, **IEEE 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)*

[ICBC'19] Mempool Optimization for Defending Against DDoS Attacks in PoW-based Blockchain Systems, **IEEE ICBC (2019)** *(M. Saad, L. Njilla, C. Kamhoua, J. Kim, D. Nyang, A. Mohaisen)*

[ICDCS'18] ShmCaffe: A Distributed Deep Learning Platform with Shared Memory Buffer for HPC Architecture, **IEEE 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 Multimedia (2017)** *(J. Koo, J. Yi, J. Kim, M.A. Hoque, S. Choi)*

[MobiSys'10] Energy-Efficient Rate-Adaptive GPS-based Positioning for Smartphones, **ACM MobiSys (2010)** *(J. Paek, J. Kim, R. Govindan)*

[ICCCN'05] Effect of Localized Optimal Clustering for Reader Anti-Collision in RFID Networks: Fairness Aspect to the Readers, **IEEE ICCCN (2005)** *(J. Kim, W. Lee, J. Yu, J. Myung, E. Kim, C. Lee)*

■ *IEEE Journals and Magazines*

[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*] 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)

[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)

[IOTJ'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: Lightening 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. Elgabli, 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))**

[IOTJ'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)*

[IOTJ'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)*

[IOTJ'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)*

[IOTJ'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)*

[IOTJ'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, <u>J. Kim</u>, 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) *(<u>J. Kim</u>, 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) *(<u>J. Kim</u>, W. Lee, E. Kim, D. Kim, K. Suh)*

Academic Activities

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–'26.02 (Postdoc)), *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 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), Ph.D. Student (Computer Science) at the University of Chicago

■ **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. Ju-Hyung Lee** ('22.03—'23.02, jointly with Prof. Andreas F. Molisch (USC)), *Principal Researcher* at Nokia

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

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

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)

References

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