Joongheon Kim

Last update on January 11, 2025

Associate Professor, Korea University – School of Electrical Engineering, Seoul, Republic of Korea
– *Adjunct Professor*, Department of Communications Engineering; Department of Semiconductor Engineering; and Department of Future Science and Technology Business (Graduate School)
– *Director (University ICT Research Center)*, Net-Zero CAFE (Connectivity and Autonomy for Future Ecosystem) Research Center
– *Principal Investigator (SW Star-Lab, Software Technology Advanced Research)*, Quantum AI Empowered Second-Life Platform Technology

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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**

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**)
  – R&D Leadership
    * *Director (07/2024–12/2031)*, **Net-Zero CAFE (Connectivity and Autonomy for Future Ecosystem) Research Center**
    University ICT Research Center (ITRC), funded by IITP and the Ministry of Science and ICT
    * *Principal Investigator (07/2024–12/2031)*, **Quantum AI Empowered Second-Life Platform Technology**
    SW Star-Lab (Software Technology Advanced Research), funded by IITP and the Ministry of Science and ICT
- **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
- **Korea University – Department of Computer Science and Engineering**, Seoul, Republic of Korea
  – *M.S. Research/Teaching Assistant (03/2004–02/2006)*, Network Research Laboratory (Advised by Prof. Wonjun Lee)

Administration Positions

- **Korea University**, Seoul, Republic of Korea
  – *Vice Department Chair (01/2025–08/2025)*, Academic Affairs
  – *Deputy Vice President (02/2022–08/2024)*, Office of Academic Affairs
  – *Dean (06/2021–08/2023)*, Center for Teaching and Learning (CTL)
- **NRF-Korea**, Daejeon, Republic of Korea
  – *Chief Review Board (11/2024–10/2026)*, Area: Communications (Communication-based Convergence)

Academia (Membership, Editorial Boards, and Services)

- **IEEE**

  - *Senior Member (2018–)*, *Member (2006–2017)*
  - *Distinguished Lecturer (2022–2023)*, **IEEE Communications Society**
  - *Editor (2025–)*, **IEEE Communications Surveys and Tutorials**
  - *Editor (2023–)*, **IEEE Internet of Things Journal**
  - *Associate Editor (2020–)*, **IEEE Transactions on Vehicular Technology** (Area: Vehicular Electronics and Systems)
  - *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)
  - **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/Springer/Wiley**
  - *Editor (2021–)*, **ICT Express** (Area: AI for ICT Applications)
  - *Guest Editor (2025)*, **The Journal of Supercomputing** (S.I. on Quantum Algorithms, Optimization, and A.I.)
  - *Guest Editor (2023)*, **ETRI Journal** (S.I. on Autonomous Unmanned Aerial/Ground Vehicles and their Applications)
  - *Guest Editor (2023)*, **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)
- **KICS (Korean Institute of Communications and Information Sciences)**
  - *Life Member (2018–)*
  - *Executive Director (2023–):* IEEE ICTC AI (2025, 2024), AI Scholarship [AI Frontiers Summit] (2023)
  - *Vice Executive Director (2021–2022):* IEEE ICTC (2022, 2021), IEEE APCC (2022), Intelligence Technology Division (2021)
  - *Director (2017–2022):* KICS Summer Conference (2022), Intelligence Technology Division (2020, 2019, 2018), ICT Convergence Division (2017)
  - **KICS Technical Society on Communication Networking (2017–):** *Vice President (2024, 2023, 2022)*
  - **KICS Technical Society on Mobile Communications (2017–)**
  - **KICS Technical Committee on Quantum Computing and Quantum Communications (2025–):** *President (2025)*
  - **KICS Technical Committee on Military Communication (2019–):** *Secretary (2024, 2023, 2022)*
  - **KICS Technical Committee on Coding and Information Theory (2019–)**
  - **KICS Technical Committee on Spectrum Sharing (2018–)**
  - *Editor*, **The Journal of Korean Institute of Communications and Information Sciences**
  - *Guest Editor (09/2019)*, **KICS Information and Communications Magazine** (S.I. on AI and Deep Learning)
  - **JCCI (Joint Conference on Communication and Information) Organizing Committee:** *Special Session (2025, 2024)*, *Publication Chair (2023, 2021, 2020, 2019, 2018)*, *General Affair Chair (2022)*
- **KIISE (Korean Institute of Information Scientists and Engineers)**
  - **Information Network Society:** *Vice President (2024, 2023, 2022)*, *General Affair Manager (2021)*, *General Affair Manager in Academia (2020)*
  - *Editor*, **Journal of KIISE** (Area: Information Network)
- **IEIE (Institute of Electronics and Information Engineers)**
  - *Executive Director (2023)*, *Director (2024, 2022)*
  - **Telecommunication Society:** *General Affair Manager (2025, 2024, 2023, 2022)*
  - *Editor*, **Journal of the Institute of Electronics and Information Engineers** (Area: Telecommunication)
- **OSIA (Open Standards and ICT Association)**
  - *Vice President (2025, 2024, 2023, 2022, 2021)*, *General Affair Manager (2020)*

Awards and Honors

Research and Academic Excellence (International)

- **IEEE Seoul Section Student Paper Contest, Bronze Paper Award (12/2024)**
  "Quantum convolutional neural networks based monocular 3D object detection for autonomous driving applications"
- **IEEE Seoul Section Student Paper Contest, Bronze Paper Award (12/2024)**
  "Correlation graph-based proximal policy optimization for stock prediction in volatile markets"
- **Certificate of Appreciation (10/2024)** – *IEEE/IFIP WiOpt (2024)*
- **IEEE VTS Seoul Chapter Award (2023)** – *IEEE Vehicular Technology Society*
  "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)**
  "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)**
  "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*
  "Reinforcement learning empowered massive IoT access in LEO-based non-terrestrial networks"
- **IEEE VTS Seoul Chapter Award (2022)** – *IEEE Vehicular Technology Society*
  "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)*
  "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*
  "Quantum scheduling for millimeter-wave observation satellite constellation"
- **IEEE VTS Seoul Chapter Award (2021)** – *IEEE Vehicular Technology Society*
  "Distributed and autonomous aerial data collection in smart city surveillance applications"
- **IEEE ICOIN Best Paper Award (2021)** – *IEEE Computer Society*
  "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)**
  "Reliable offloading target selection using deep reinforcement learning for large fire accident"
- **IEEE Seoul Section Student Paper Contest, Gold Paper Award (2019)**
  "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*
  "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)

- **Excellence Paper Award (12/2024)** – *2024 IEIE Electronics and Communications Conference*
  "Carbon emission aware satellite-terrestrial integrated network offloading method"
- **Excellence Paper Award (10/2024)** – *2024 KICS Fall Conference*
  "Dynamic object recognition in low-resolution for autonomous mobile systems"
- **Best Paper Award, The Journal of KICS (11/2024)** – *KICS*
  "Reinforcement learning-based counter measure tactics to avoid torpedo threat"
- **HFR Paper Award (Area: Quantum Technologies and Quantum Communications) (11/2023)** – *KICS*
  "Quantum multi-agent reinforcement leaning for multi-metaverse adaptive streaming in hybrid quantum-classical networks"
- **Korea Electronics Technology Institute (KETI) President Award (06/2023)** – *2023 KICS Summer Conference*
  "Grid environment design and grouping for optimal relay station placement"
- **Haedong Paper Award (02/2023)** – *KICS*
  "Dynamic quantum federated learning framework at satellites and ground stations using slimmable quantum neural networks"
- **Excellence Paper Award (02/2023)** – *2023 KICS Winter Conference*
  "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)*
  "Unity-based reinforcement learning visualization and simulations for suicide drone attacks"
- **Excellence Paper Award (02/2022)** – *2022 KICS Winter Conference*
  "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*
  "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*
  "Deep learning based non-orthogonal pilot design for massive MIMO"
- **Excellence Paper Award (Undergraduate) (06/2021)** – *2021 KICS Summer Conference*
  "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*

Teaching and Supervision Excellence (Korea University)

- **Granite Tower Best Teaching Award (Top 5%)** – (SW Programming Basics, GECT002-01, 297 students) Spring 2024
- **Best Teaching Award (Top 20%)** – (SW Programming Basics, GECT002-02, 240 students) Spring 2024
- **Best Teaching Award (Top 20%)** – (SW Programming Basics, GECT002-08, 375 students) Spring 2024
- **Granite Tower Best Teaching Award (Top 5%)** – (Future Mobility Technology, GEQR075-00, 198 students) Spring 2022
- **Best Teaching Award (Top 20%)** – (Probability and Random Process, KECE209-02, 90 students) Spring 2022
- **Granite Tower Best Teaching Award (Top 5%)** – (Computer Language and Lab, EGRN151-06, 98 students) Fall 2021
- **Best Teaching Award (Top 20%)** – (Object Oriented Programming, SEMI104-00, 22 students) Fall 2021
- **Granite Tower Best Teaching Award (Top 5%)** – (Introduction to Computers, SEMI103-00, 28 students) Spring 2021
- **Best Teaching Award (Top 20%)** – (Probability and Random Process, KECE209-02, 92 students) Spring 2021
- **Best Teaching Award (Top 20%)** – (Computer Language and Lab, EGRN151-09, 129 students) Fall 2020
- **Granite Tower Best Teaching Award (Top 5%)** – (Computer Language and Lab, EGRN151-07, 100 students) Fall 2019

Academic and University Services

- **Outstanding Contribution Award (11/2024)** – *KICS*
- **Outstanding Contribution Award (02/2023)** – *KIISE Information Network Society*
- **2022 Best Chapter Award, IEEE Vehicular Technology Society Chapter (12/2022)**, Awarded as a Treasure
- **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*

R&D Projects (Totally, 15,795,033 USD ≈ 15,795,033,875 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: $357,500; 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: $48,189.170; 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** 07/2024–12/2031
  University ICT Research Center (ITRC) @ Korea University, Funded by *IITP* [IITP-2024-RS-2024-00436887, Grant: $6,940,000]
  Center Director
- **Intelligent 6G Wireless Access System Research Center** 04/2021–12/2025
  6G AI Research Center @ Korea University, Funded by *IITP* [2021-0-00467, Grant: $290,000]
- **K-Starlink: Dynamic Reconfigurable and Intelligent Space-Terrestrial Networks** 06/2021–05/2024
  Basic Research Laboratory @ Ajou University, Funded by *NRF-Korea* [2021R1A4A1030775, Grant: $251,000]
- **Nano UAV Intelligence Systems Research Lab (NUiSRL)** 10/2020–08/2023
  Military Special Research Center @ Kwangwoon University, Funded by *ADD* [Grant: $130,000]
- **5G/Unmanned Vehicle Research Center (5G/UV-RC)** 06/2020–12/2022
  University ICT Research Center (ITRC) @ Hanyang University, Funded by *IIITP* [Grant: $55,709]
- **Human Resource Development for the Biomedical Unstructured Big Data Analysis** 08/2018–12/2021
  University ICT Research Center (ITRC) @ Seoul National University Hospital, Funded by *IITP*
- **Network Engineering: Development and Application of Novel Data Science Driven Framework for Efficient Network Design** 06/2017–05/2020
  Basic Research Laboratory @ Chung-Ang University, Funded by *NRF-Korea* [2017R1A41015675, Grant: $150,000]
- **Intelligent Internet of Energy (IoE) Data Research Center** 02/2020–05/2020
  University ICT Research Center (ITRC) @ Kookmin University, Funded by *IITP*

Government-Funded Projects

- **Quantum AI Empowered Second-Life Platform Technology** 07/2024–12/2031
  Funded by *IITP – SW Star-Lab (Software Technology Advanced Research)* [RS-2024-00439803, Grant: $2,200,000]
- **6GARROW: 6G AI-Native Integrated RAN-Core Networks** 09/2024–08/2027
  Funded by *IITP* [xxx, Grant: $55,000]
- **AI Bots Collaborative Platform and Self-Organizing Artificial Intelligence Technology Development** 04/2022–12/2026
  Funded by *IITP* [2022-0-00907, Grant: $537,222.852]
- **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)
- **Development of Integrated Development Framework that supports Automatic Neural Network Generation and Deployment optimized for Runtime Environment** 04/2021–12/2025
  Funded by *IITP* [2018-0-00170, Grant: $291,073.362]
- **Quantum Hyper-Driving: Quantum-Inspired Hyper-Connected and Hyper-Sensing Autonomous Mobility Technologies** 03/2022–02/2025
  Funded by *NRF-Korea* [2022R1A2C2004869, Grant: $571,836.753; Primary-PI]
- **Korea-Japan Joint Seminar Project for Generative and Multi-Modal AI Technologies** 10/2023–09/2024
  Funded by *NRF-Korea (International Research Collaboration)* [Grant: $50,000; PI]
- **Integrated Perception Technology Developments for Public Safety Platforms** 06/2019–05/2023
  Funded by *NRF-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: $503,361.794; Primary-PI]
- **mmWave Radar and Deep Reinforcement Learning based Optimal Policy Autonomous Driving** 06/2019–02/2022
  Funded by *NRF-Korea* [2019R1A2C4070663, Grant: $282,124.926; Primary-PI]
- **Development of Privacy-Reinforcing Distributed Transfer-Iterative Learning Algorithm** 07/2019–12/2021
  Funded by *Ministry of Health and Welfare* [HI19C0842, Grant: $149,558.670]
- **Virtual Presence in Moving Objects through 5G (PriMO-5G)** 06/2018–06/2021
  Funded by *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]
- **mmWave High-Speed Networking Platform Design for Next-Generation Convergence Services** 06/2016–05/2019
  Funded by *NRF-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 *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: $104,039; 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** 04/2021–11/2021
  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

- **8980+ Citations** (H-index: 45+, i10-index 195+), obtained from Google Scholar Profile (as of January 11, 2025)

Dissertation, Books, and Book Chapters

■ **Ph.D. Dissertation, Books, and Book Editing**

- *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)

■ **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

■ *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)* **(xx.xx%)**

[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)* **(27.44%)**

[CIKM'23] Logarithmic Dimension Reduction for Quantum Neural Networks, **ACM CIKM (2023)**. *(H. Baek, S. Park, J. Kim)* **(27.44%)**

[AAAI'23] Quantum Multi-Agent Meta Reinforcement Learning, **AAAI (2023)**. *(W.J. Yun, J. Park, J. Kim)* **(19.61%)**

[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)* **(19.93%)**

[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)* **(17.98%)**

[IJCAI'19] Randomized Adversarial Imitation Learning for Autonomous Driving, **IJCAI (2019)**. *(M. Shin, J. Kim)* **(17.89%)**

[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)* **(Citations: 100+)** **(19.61%)**

[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)* **(20.63%)**

[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)* **(27.63%)**

[MobiSys'10] Energy-Efficient Rate-Adaptive GPS-based Positioning for Smartphones, **ACM MobiSys (2010)**. *(J. Paek, J. Kim, R. Govindan)* **(Citations: 600+)** **(19.84%)**

[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)* **(32.17%)**

■ *Journals and Magazines*

◂ Review ▸

[TASE.*review*] *(Review since 10-Jan-2025)* Adaptive Excavation Automation in Complex Soil Environments using Reinforcement Learning, **IEEE Transactions on Automation Science and Engineering**. *(M. Shin, J. Cho, J. Kim, S. Jung)*

[IOTJ.*review*] *(Review since 09-Jan-2025)* Carbon-Aware Edge Computing for Internet of Everything Networks: A Digital Twin Approach, **IEEE Internet of Things Journal**. *(D. V. Huynh, et al)*

[CM.*review*] *(Review since 31-Dec-2025)* Living on the Quantum Edge: Quantum Machine Learning for Hybrid Cache-and-Edge Models, **IEEE Communications Magazine**. *(S. Park, J.Y. Shim, S. Jung, M. Bennis, J. Kim)*

[CM.*review*] *(Review since 30-Dec-2024)* Quantum Jump to Connected Worlds: Paradigm Shifts in Mobility and Network Applications via Quantum Neural Networks, **IEEE Communications Magazine**. *(H. Lee, G.S. Kim, E.J. Roh, S. Lee, S. Park, T.Q. Duong, J. Kim)*

[TIFS.*review*] *(Review since 29-Dec-2024)* A Privacy-Preserving Scheme using 2D Chaos for Medical Image Analysis and Archiving, **IEEE Transactions on Information Forensics and Security**. *(I. Ahmad, J. Kim, S. Shin)*

[JCN.*review*] *(Review since 22-Dec-2024)* 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)*

[TAES.*review*] *(Review since 21-Dec-2024)* Integrated Control, Communication, and Computing for Mission-Critical Embedded Unmanned Aerial Vehicles, **IEEE Transactions on Aerospace and Electronic Systems**. *(G.S. Kim, S. Park, S. Jung, D. Mohaisen, J. Kim)*

[JS.*review*] *(Review since 28-Nov-2024)* SQUAD: Software Testing for Quantum Distributed Learning Software, **The Journal of Supercomputing**. *(S. Park, J.H. Cho, H.J. Yook, G.S. Jhun, Y.K. Lee, J. Kim)*

[TMC.*review*] *(Review since 26-Nov-2024)* Time-to-Collision Aware Autonomous Driving Motion Control under Risky Scenario Considerations, **IEEE Transactions on Mobile Computing**. *(S. Kim, J. Kim, J. Kim, S. Jung)*

[TMC.*review*] *(Review since 20-Nov-2024)* Quantum Reinforcement Learning for Joint Control, Communication, and Computing in Stabilized Reusable Space Rocket, **IEEE Transactions on Mobile Computing**. *(G.S. Kim, J. Chung, S. Jung, S. Park, J. Kim)*

[JS.*review*] *(Review since 16-Nov-2024)* Joint Scalable Quantum Convolutional Neural Network and Reverse-Fidelity Training for High-Accurate Recognition in Unmanned Aerial Vehicle Surveillance, **The Journal of Supercomputing**. *(E.J. Roh, J. Kim, S. Jung, S. Park)*

[TON.*review*] *(Review since 08-Nov-2024)* Quantum Federated Aggregation: We Don't Need to Get Everything, **IEEE/ACM Transactions on Networking**. *(J. Chung, C. Im, H. Baek, S. Park, J. Kim)*

[TMC.*review*] *(Review since 03-Nov-2024)* Quantum Reinforcement Learning for Lightweight LEO Satellite Routing, **IEEE Transactions on Mobile Computing**. *(G.S. Kim, S. Lee, I.-S. Cho, S. Park, J. Kim)*

[TAES.*review*] *(Review since 15-Oct-2024)* 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)*

[NN.*review*] *(Review since 23-Sep-2024)* Correlation-Assisted Spatio-Temporal Reinforcement Learning for Stock Revenue Maximization, **Neural Networks**. *(J. Chung, M. Kim, S. Min, H. Choi, S. Park, J. Kim)*

[TVT.*review*] *(Review since 20-Aug-2024)* Learning-based Aircraft Taxi Routing: Empirical Evaluation Study for Hartsfield-Jackson Atlanta International Airport, **IEEE Transactions on Vehicular Technology**. *(G.S. Kim, S. Lee, 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)*

[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**. *(S. Park, E.J. Roh, C. Im, J. Kim)*

◂ Revision ▸

[IOTJ.revision] 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)*

[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)*

[JS.*revision*] Hybrid Quantum-Classical 3D Object Detection, **The Journal of Supercomputing**. *(E.J. Roh, J.Y. Shim, J. Kim, S. Park)*

[IOTJ.*revision*] Entanglement-Controlled Quantum Federated Learning, **IEEE Internet of Things Journal**. *(S. Park, H. Lee, S. Jung, J. Park, M. Bennis, 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)*

[IET.*revision*] Fast Batch Gradient Descent in Quantum Neural Networks, **IET Electronics Letters**. *(J.Y. Shim, J. Kim)*

[IOTJ.*revision*] 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)*

[TON.*revision*] 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)*

[NN.*revision*] Quantum Federated Learning with Pole-Angle Quantum Local Training and Trainable Measurement, **Neural Networks**. *(S. Park, H. Lee, S.B. Son, S. Jung, J. Kim)*

[MM.*revision*] Quantum Jump to Virtual Worlds: High-Quality Multiple Virtual Meta-Space Realization in Metaverse, **IEEE Multimedia**. *(S. Park, J. Kim)*

◂ 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)*

[TNSM.*accepted*] 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)*

[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)*

◂ 2025 ▸

[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)*

◂ 2024 ▸

[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)*

[FGCS'24.10] AQUA: Analytics-driven Quantum Neural Network (QNN) User Assistance for Software Validation, **Future Generation Computer Systems**, 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**, 46(5):748–758 (2024). *(S. Park, J. Kim)* **(Invited Article)**

[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)*

[MTAP'24.07] Stabilized Performance Maximization for GAN-based Real-Time Authentication Image Generation over Internet, **Multimedia Tools and Applications**, 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**, 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)*

[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)*

[ETRI'23.10] Joint Frame Rate Adaptation and Object Recognition Model Selection for Stabilized Unmanned Aerial Vehicle Surveillance, **ETRI Journal**, 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**, 45(5):735–745 (2023). *(S. Park, H. Lee, C. Park, S. Jung, M. Choi, J. Kim)* **(Invited Article)**

[ETRI'23.10] Special Issue on Autonomous Unmanned Aerial/Ground Vehicles and their Applications, **ETRI Journal**, 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**, 165:860–867 (2023). *(H. Baek, W.J. Yun, S. Park, 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)*

[ICTE'23.06] Quantum Distributed Deep Learning Architectures: Models, Discussions, and Applications, **ICT Express**, 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**, 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**, 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**, 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**, 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)*

[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)* **(Citations: 100+)**

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■ *Conferences* – Top-Conference Related, Society-Representative, Awarded, Highly-Cited (Selected)

[ICASSP'25] Quantum Reinforcement Learning for Coordinated Satellite Systems

[AAAI'25] Hybrid Quantum-Classical Style Transfer, *(Student Abstract and Poster)*

[APWCS'24] Quantum Multi-Agent Reinforcement Learning Software Design and Visual Simulations for Multi-Drone Mobility Control

[APWCS'24] Diffusion-based Quantum Error Mitigation using Stochastic Differential Equation

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[IJCAI'24] Depth-Controllable Quantum Federated Learning, *(Workshop on Quantum Algorithms, Optimization, and AI)*

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[IJCAI'24] Shifting from Knowledge to Infidelity Distillation for Fast and Accurate Distributed Quantum Machine Learning, *(Workshop on Quantum Algorithms, Optimization, and AI)*

[APWCS'23] Quantum Reinforcement Learning for Large-Scale Multi-Agent Decision-Making in Autonomous Aerial Networks **(IEEE VTS Seoul Chapter Award)**

[ICDCS'23] EQuaTE: Efficient Quantum Train Engine Design and Demonstration for Dynamic Software Analysis, *(Demo)*

[ICDCS'23] Multi-Site Clinical Federated Learning Using Recursive and Attentive Models and NVFlare, *(Demo)*

[ICDCS'23] Coordinated Multi-Agent Reinforcement Learning for UAV Swarms in Autonomous Mobile Access Applications, *(Poster)*

[ICC'23] Multi-Agent Deep Reinforcement Learning for Efficient Passenger Delivery in Urban Air Mobility

[AAAI'23] 3D Scalable Quantum Convolutional Neural Networks for Point Cloud Data Processing in Classification Applications, *(Workshop on AI to Accelerate Science and Engineering)*

[AAAI'23] FV-Train: Quantum Convolutional Neural Network Training with a Finite Number of Qubits by Extracting Diverse Features, *(Student Abstract and Poster)* **(Finalist, Oral Presentation Contest)**

[ICTC'22] Reinforcement Learning Empowered Massive IoT Access in LEO-based Non-Terrestrial Networks **(Best Paper Award)**

[APWCS'22] DDPG-based Deep Reinforcement Learning for Loitering Munition Mobility Control: Algorithm Design and Visualization **(IEEE VTS Seoul Chapter Award)**

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[ICML'22] Slimmable Quantum Federated Learning, *(Workshop on Dynamic Neural Networks)* **(Spotlight, Oral Presentation)**

[ICDCS'22] Quantum Multi-Agent Reinforcement Learning via Variational Quantum Circuit Design, *(Demo)*

[ICDCS'22] Quality-Aware Real-Time Augmented Reality Visualization under Delay Constraints, *(Poster)*

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[VTC'22] Adaptive and Stabilized Streaming for Edge-Assisted Connected Vehicles under Heterogeneous Computing Constraints

[VTC'22] Random Access Protocol Learning in LEO Satellite Networks via Reinforcement Learning

[SMC'21] Multi-Agent Deep Reinforcement Learning using Attentive Graph Neural Architectures for Real-Time Strategy Games

[ISWCS'21] Attention-based Reinforcement Learning for Real-Time UAV Semantic Communication

[APWCS'21] Quantum Scheduling for Millimeter-Wave Observation Satellite Constellation **(IEEE VTS Seoul Chapter Award)**

[APWCS'21] Distributed and Autonomous Aerial Data Collection in Smart City Surveillance Applications **(IEEE VTS Seoul Chapter Award)**

[ICML'21] Communication and Energy Efficient Slimmable Federated Learning via Superposition Coding and Successive Decoding, *(Workshop on Federated Learning for User Privacy and Data Confidentiality)*

[DSN'21] Spatio-Temporal Split Learning, *(Supplemental Volume)*

[INFOCOM'21] Visualization of Deep Reinforcement Autonomous Aerial Mobility Learning Simulations, *(Demo)*

[ICOIN'21] Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing **(Best Paper Award)**

[QTML'20] A Quantum Approach to the Minimum Dominating Set Problem

[ICTC'20] A Tutorial on Quantum Convolutional Neural Networks (QCNN) **(Citations: 100+)**

[ICML'20] XOR Mixup: Privacy-Preserving Data Augmentation for One-Shot Federated Learning, *(Workshop on Federated Learning for User Privacy and Data Confidentiality)* **(Citations: 100+)**

[ICC'20] User Scheduling and Power Allocation for Content Delivery in Caching Helper Networks

[WCNC'20] Cache Allocations for Consecutive Requests of Categorized Contents: Service Provider's Perspective

[Globecom'19] Multi-Agent Deep Reinforcement Learning for Cooperative Connected Vehicles

[ICCV'19] Deep Multi-modal Unsupervised Pen Pressure Stylization, *(Demo)*

[QTML'19] A Quantum Approach to Max-Weight Independent Set Problem
[5G-WF'19] PriMO-5G: Making Firefighting Smarter with Immersive Videos through 5G
[APWCS'19] Joint Offloading and Streaming in Mobile Edges: A Deep Reinforcement Learning Approach **(IEEE VTS Seoul Chapter Award)**
[IJCNN'19] Depth-Controllable Very Deep Super-Resolution Network
[IJCNN'19] Adversarial Imitation Learning via Random Search
[DSN'19] Privacy-Preserving Deep Learning Computation for Geo-Distributed Medical Big-Data Platforms, *(Supplemental Volume)*
[MobiSys'19] Multi-Agent Deep Reinforcement Learning for Connected Vehicles, *(Poster)*
[MobiSys'19] Light-Weight Programming Language for Blockchain, *(Demo)*
[ICML'19] Adversarial Imitation Learning via Random Search in Lane Change Decision-Making, *(Workshop on AI for Autonomous Driving)*
[ICC'19] Probabilistic Caching Policy for Categorized Contents and Consecutive User Demands
[CCS'18] Secure Big Data Processing with SGX and Compute Accelerators, *(Workshop on System Software for Trusted Execution)*
[SMC'18] Low-Complexity Online Model Selection with Lyapunov Control for Reward Maximization in Stabilized Real-Time Deep Learning
[MobiSys'18] Neural Network Syntax Analyzer for Embedded Standardized Deep Learning, *(Workshop on Embedded and Mobile Deep Learning)*
[SECON'18] Recipient-Oriented Transaction for Preventing Double Spending Attacks in Private Blockchain, *(Poster)*
[AsiaCCS'18] POSTER: Mining with Proof-of-Probability in Blockchain, *(Poster)*
[ICSE'18] A Novel Shared Memory Framework for Distributed Deep Learning in High-Performance Computing, *(Companion Volume)*
[ICASSP'18] Self-Adaptive Machine Learning Operating Systems for Security Applications
[SOSP'17] A Reliable, Self-Adaptive Face Identification Framework via Lyapunov Optimization, *(Workshop on AI Systems)*
[SIGCOMM'16] A Longitudinal Analysis of .i2p Leakage in the Public DNS Infrastructure, *(Poster)*
[INFOCOM'16] Buffer-Stable Adaptive Per-Module Power Allocation for Energy-Efficient Millimeter-Wave MAA Platforms, *(Poster)*
[EuCAP'16] Millimeter-Wave Outdoor Access Shadowing Mitigation using Beamforming Arrays
[Globecom'15] mmWave MAA Client Access & Backhaul Platform, *(Industry Demonstration ID-14, Intel Corporation)*
[Globecom'15] 60 GHz Frequency Sharing Study between Fixed Service Systems and Small-Cell Systems with Modular Antenna Arrays, *(Workshop on Millimeter-Wave Backhaul and Access)*
[SOSP'15] A Case for Bad big.LITTLE Switching: How to Scale Power-Performance in SI-HMP, *(Workshop on Power-Aware Computing and Systems)*
[IMS'15] Study of Coexistence between 5G Small-Cell Systems and Systems of the Fixed Service at 39 GHz Band
[Globecom'14] mmWave Modular Antenna Array for Next-Generation Wireless Networks, *(Expo, Intel Corporation)*
[Globecom'14] Required Frequency Rejection in 39 GHz Millimeter-Wave Small Cell Systems, *(Industry Program, Intel Corporation)*
[ICC'14] Quality-Aware Millimeter-Wave Device-to-Device Multi-Hop Routing for 5G Cellular Networks
[ITA'14] Joint Scheduling and Stochastic Streaming for Device-to-Device Video Delivery **(ITA Graduation Day Talk)**
[MobiCom'13] Adaptive Video Streaming for Device-to-Device Mobile Platforms, *(Demo)*
[ICC'13] Quality-Aware Coding and Relaying for 60 GHz Real-Time Wireless Video Broadcasting
[RWS'13] Enabling Gigabit Services for IEEE 802.11ad-Capable High-Speed Train Networks
[PIMRC'11] Joint Optimization of HD Video Coding Rates and Unicast Flow Control for IEEE 802.11ad Relaying
[CCNC'10] mmWave SVD-based Beamformed MIMO Communication Systems
[CCNC'09] Optimal Beaconing for 60 GHz Millimeter Wave
[CCNC'09] Demonstration of Display Sharing over Multi-Gbps Wireless Video and Audio Network
[Comsware'08] Cooperative Relaying Strategies for Multi-Hop Wireless Sensor Networks
[CIT'06] A Power Balanced Multipath Routing Protocol in Wireless Ad-Hoc Sensor Networks
[VTC'06] Energy-Aware Distributed Topology Control for Coverage-Time Optimization in Clustering-Based Heterogeneous Sensor Networks
[VTC'05] An Adaptive Cluster Radius Configuration Scheme for Topology Control in Wireless Sensor Networks

Patents (Granted), *totally, 72*

- **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)
- **27 Korean Patents:** (KR 102632773), (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 (Korea University, Department of Electrical and Computer Engineering)**
- **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–'25.02 (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*
- **Seungcheol Oh** ('25.03–), *Active Member*

■ **M.S. Students and Alumni (Korea University, Department of Electrical and Computer Engineering)**
- **Anna Yoo Jeong Ha** ('21.03–'23.02), *Ph.D. Student (Computer Science)* at the University of Chicago

- **Jaehyun Chung** ('23.09–), *Active Member*
- **Yeryeong Cho** ('24.03–), *Active Member*
- **Chaemoon Im** ('24.03–), *Active Member*
- **Hyojun Ahn** ('25.03–), *Active Member*

■ **M.S. Students and Alumni (Chung-Ang University, School of Computer Science and Engineering)**
- **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)

■ **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
- **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. Research Collaboration for Dissertation**
- **Dr. Minseok Choi** (Advisor: Prof. Jaekyun Moon at KAIST), *Professor* at Kyung Hee University
- **Dr. Laihyuk Park** (Advisor: Prof. Sungrae Cho at Chung-Ang Univ.), *Professor* at Seoul National University of Science and Technology
- **Dr. Jonghoe Koo** (Advisor: Prof. Sunghyun Choi at Seoul Nat'l Univ.), *Researcher* at Samsung Research
- **Dr. Soyi Jung** (Advisor: Prof. Jae-Hyun Kim at Ajou Univ.), *Professor* at Ajou University
- **Dr. Seungyo Ryu** (Advisor: Prof. Dongseung Kim at Korea Univ.), *Researcher* at LG Electronics
- **Dr. Byungju Lim** (Advisor: Prof. Young-Chai Ko at Korea Univ.), *Professor* at Pukyong National University

■ **B.S. Students and Alumni (Selected: Pursuing Ph.D./M.S. Degrees)**
- **Sunjun Hwang** (Chung-Ang Univ.), Seoul National University, M.S. in Computer Science and Engineering
- **Hyomin Ahn** (Korea Univ.), University of California at Los Angeles (UCLA), Ph.D. in Electrical and Computer Engineering
- **Hyunhee Cho** (Sungkyunkwan Univ.), KAIST, Ph.D. in Electrical Engineering
- **Rhoan Lee** (Ewha Womans Univ.), Columbia University in the City of New York, M.S. in Statistics

■ **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

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 2025, 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
- **Queueing Theory 1 (ECE527):** Fall 2024
- **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***
- **Data Communications (KECE316):** Fall 2020
- **Digital System Design and Laboratory (KECE210):** Fall 2020
- **Probability and Random Process (KECE209):** Spring 2025, 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%)*
- **Data Science and Artificial Intelligence (GECT003):** Fall 2024 (2 classes)
- **SW Programming Basics (GECT002):** Spring 2025, Spring 2024 (3 classes) *(Granite Tower Best Teaching Award, Top 5%)*, *(Best Teaching Award, Top 20%)*, *(Best Teaching Award, Top 20%)*

■ **Korea University – International Winter Campus, *Faculty Member***
- **Introduction to Artificial Intelligence (IWC420):** Winter 2024-2025, Winter 2023-2024, Winter 2022-2023, Winter 2021-2022
- **Introduction to Computer Science (IWC293):** Winter 2024-2025, Winter 2023-2024

■ **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

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Professional Academic Activities

Visiting for Research Collaboration

■ **Academia**

- *California State University at Long Beach*, Long Beach, CA, USA (Electrical Engineering); Host: **Prof. Sean Kwon** (01/2020); Collaboration for [JCN'22.12], [JCN'22.12], [TVT'16.12]
- *University of California at Irvine*, Irvine, CA, USA (Computer Science); Host: **Prof. Marco Levorato** (08/2018); Collaboration for [TVT'23.11], [ITU'22.07], [TVT'21.08], [TVT'19.05]

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: 2024 (AI Special Session Organizer), 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 ICAIIC: 2019 (Publication Chair)

■ **Quantum Machine Learning**

- **IEEE/CVF CVPR 2025:** Organizer, *Workshop on The Interplay between Quantum Computing and Generative Artificial Intelligence*
- **IEEE ICCCN 2025:** Organizer, *Quantum Machine Learning for Communication Networks*
- **IEEE ICASSP 2025:** Organizer, *Workshop on Quantum Machine Learning in Signal Processing and Artificial Intelligence*
- **IEEE Quantum Week 2024:** Organizer, *Workshop on Quantum Computing and Reinforcement Learning*
- **IJCAI 2024:** Organizer, *Workshop on Quantum Algorithms, Optimization, and Artificial Intelligence*

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 Keynote Speech**, *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 ICAIIC 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)

■ **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:* **LIG 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)

■ 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:** 20205 (Selected Areas in Communications – Reconfigurable Intelligent Surfaces and Smart Environments Track), 2025 (Communication Theory Symposium), 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:** 2025 (International Workshop on Quantum Machine Learning for Communication Networks), 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 (IPDPS (Heterogeneity in Computing Workshop), ICOIN, ICTC), 2024 (COMNETSAT, ICTC, GESS, ICOIN), 2022 (MSN (Track 3: Security, Privacy, Trust, and Blockchain), ICTC, ICCC, IPDPS (Heterogeneity in Computing Workshop), ICUFN, WCSP, COMNETSAT, CyberneticsCom, ICEIC, ICNGC), 2021 (MSN, ICTC, ICCC, ICUFN, EuCAP, COMNETSAT, ICAIIC, IGESSC, ICEIC, ICNGC, ITC-CSCC), 2020 (ICTC, ICUFN, ICCC, COMNETSAT, Blockchain, ICAIIC, IGESSC), 2019 (ICTC, ICUFN, ICCC, 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)

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