

Highlights

Research Milestones

- **110 Journals** (among them, **83 IEEE Journals**), <https://sites.google.com/view/aimlab-kuee/publications/journals>
– 87 Published / Accepted (among them, **69 IEEE**), 7 Under-Revision, and 16 Under-Review Journals
- **11 Top Conferences**, i.e., ICSE (2023, review), AAAI (2023), CIKM (2022), WiOpt (2022), ICDCS (2022), INFOCOM (2022), ICDCS (2020), IJCAI (2019), ICDCS (2018), MM (2017), MobiSys (2010)
- **5529+ Citations** (H-index: 35+, i10-index 134+), obtained from Google Scholar Profile (as of December 5, 2022)
- **IEEE MMTC Best Journal Paper Award (2021)**, *IEEE Communications Society*
- **IEEE MMTC Outstanding Young Researcher Award (2020)**, *IEEE Communications Society*
- **IEEE Systems Journal Best Paper Award (2020)**, Top 7 among 793 accepted papers in 2019 (0.88%)
- **7 Awards from IEEE Conferences and Contests**, i.e., *IEEE ICTC Best Paper Award (2022)*, *IEEE ICOIN Best Paper Award (2021)*, *IEEE Seoul Section Student Paper Contest Awards (1 in 2020; 1 in 2019)*, and *IEEE VTS Seoul Chapter Awards (2 in 2021; 1 in 2019)*
- **6 Tutorials at IEEE Conferences**, i.e., *ICUFN (2022)*, *ICOIN (2022)*, *ICUFN (2021)*, *ICAIIC (2021)*, *ICOIN (2019)*, and *ICC (2018)*
- **66+ Patents** are granted, and among them, **46 Granted Patents** are successfully adopted by 60 GHz Millimeter-Wave IEEE 802.11 Standards, i.e., IEEE 802.11ad and IEEE 802.11ay
- **Research Funds (since March 2016)**: 6,280,384 USD \approx 6,280,384,000 KRW (except University Internal Funds)

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

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

IEEE Society Academic Activities

- **Senior Member of the IEEE (2018–)** and IEEE Membership (2005–) for 18+ years
 - **Distinguished Lecturer, IEEE Communications Society (ComSoc)** (class of 2022–2023) IEEE ComSoc
 - **Distinguished Lecturer, IEEE Systems Council** (class of 2022–2024) IEEE Systems Council
 - **Editor (2022–)**, *IEEE Transactions on Machine Learning in Communications and Networking* IEEE ComSoc
 - **Associate Editor (2020–)**, *IEEE Transactions on Vehicular Technology* IEEE VTS
 - **Guest Editor (06/2022)**, *IEEE Communications Standards Magazine* (S.I. on Recent and Future Evolution of Wi-Fi) IEEE ComSoc
 - **IEEE Vehicular Technology Society (VTS)**, Seoul Chapter Treasurer for 3 years (2020–2023) IEEE VTS
 - **99+ Technical Program Committee (TPC) and 26+ Organizing Committee (OC) Contributions** for IEEE Conferences
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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 (Advisor: *Prof. Andreas F. Molisch*, Fellow of the IEEE)
– M.S. (05/2014) in Computer Science with specialization in High Performance Computing and Simulations
– M.S. (05/2012) in Electrical Engineering
 - **Korea University**, Seoul, Republic of Korea
– M.S. (03/2004–02/2006) in Computer Science and Engineering
– B.S. (03/1999–02/2004) in Computer Science and Engineering
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R&D Positions

Full-Time Positions

- **Korea University – College of Engineering**, Seoul, Republic of Korea
 - Associate Professor (03/2021–Present), Assistant Professor (09/2019–02/2021), School of Electrical Engineering
 - Adjunct Professor (03/2023–Present), Department of Communications Engineering (with **Samsung Electronics**)
 - Adjunct Professor (11/2022–Present), Department of Future Science and Technology Business (Graduate School)
 - Adjunct Professor (09/2022–Present), Department of Smart Convergence (Graduate School, with **LG Electronics**)
 - Adjunct Professor (03/2021–02/2023), Department of Semiconductor Engineering (with **SK Hynix**)
 - R&D POSITIONS
 - * Vice Director (10/2020–Present), **Artificial Intelligence Engineering Research Center (KU-AIER)**
 - ADMINISTRATIVE POSITIONS
 - * Dean (06/2021–Present), **Center for Teaching and Learning (CTL)**
 - * Deputy Vice President (02/2022–Present), **Office of Academic Affairs**
 - * Steering Committee Member (09/2022–08/2023), Academic Affairs and Planning Steering Committee
 - * Steering Committee Member (07/2020–06/2022), Korea University Institute of Data Science (KUIDS)

* *Steering Committee Member (06/2021–03/2022)*, Academic Affairs and Planning Steering Committee

- **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), CA, USA
 - *Systems Engineer (09/2013–02/2016)*, mmWave Standards and Advanced Technology (mSAT) Team (with Dr. Ali S. Sadri)
- **University of Southern California (USC) – Viterbi School of Engineering**, Los Angeles, CA, 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 (Advised by Prof. Andreas F. Molisch)
 - *Teaching Assistant (01/2012–05/2013)*, Computer Science and Electrical Engineering Departments (CSCI455x and EE579)
- **InterDigital**, San Diego, CA, 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

Industry, Advisory, and Consulting Positions

- **Samsung Electronics (C-Lab), Seoul National University R&D Center**, Seoul, Republic of Korea
 - Advisory Professor (02/2020–08/2020)*, Nonlinear Regression Deep Learning Algorithm Design and Implementation

Academia (Membership, Editorial Boards, and Services)

- **IEEE**
 - *Senior Member (2018–), Member (2006–2017)*
 - *Distinguished Lecturer (2022–2023)*, **IEEE Communications Society**
 - *Editor (2022–), IEEE Transactions on Machine Learning in Communications and Networking*
 - *Associate Editor (2020–), IEEE Transactions on Vehicular Technology* (Area: Vehicular Electronics and Systems)
 - *Guest Editor (03/2022)*, **IEEE Communications Standards Magazine** (S.I. on Recent and Future Evolution of Wi-Fi)
 - **IEEE Vehicular Technology Society (VTS) Seoul Chapter**
 - * *Chapter Treasurer (2022–Present)*, *Chapter Treasurer (2020–2021)*
 - * **IEEE VTS APWCS Organizing Committee: Finance Chair (2022)**, *Finance Co-Chair (2021)*
- **Elsevier**
 - *Editor (2021–), ICT Express* (Area: AI for ICT Applications)
 - *Guest Editor (10/2022)*, **Computer Networks** (S.I. on ML and AI for the Internet of Things, 5G, and Beyond)
 - *Guest Editor (03/2022)*, **ICT Express** (S.I. on Artificial Intelligence and Machine Learning Approaches to Communication)
 - *Guest Editor (06/2021)*, **ICT Express** (S.I. on Mobile and Edge Computing Systems)

Awards and Honors

Research and Academic Excellence (International)

- **Top 10 Highly-Cited Publications (Magazines, IEEE ComSoc/VTS Journals, Awarded, and Top Conferences)**
 - (624+) *Energy-Efficient Rate-Adaptive GPS-based Positioning for Smartphones*, **MobiSys ('10)**
 - (158+) *Quality-Aware Streaming and Scheduling for Device-to-Device Video Delivery*, **TON ('16)**
 - (111+) *Towards Characterizing Blockchain-based Cryptocurrencies for Highly-Accurate Predictions*, **ISJ ('20)**, *Best Paper Award*
 - (110+) *Communication-Efficient and Distributed Learning over Wireless Networks: Principles and Applications*, **PIEEE ('21)**
 - (104+) *Fast Millimeter-Wave Beam Training with Receive Beamforming*, **JCN ('14)**
 - (97+) *Auction-based Charging Scheduling with Deep Learning Framework for Multi-Drone Networks*, **TVT ('19)**
 - (85+) *Energy-Efficient Mobile Charging for Wireless Power Transfer in Internet of Things Networks*, **IOTJ ('18)**
 - (64+) *Wireless Video Caching and Dynamic Streaming under Differentiated Quality Requirements*, **JSAC ('18)**
 - (59+) *Multiagent DDPG-based Deep Learning for Smart Ocean Federated Learning IoT Networks*, **IOTJ ('20)**
 - (53+) *Internet of Things for Smart Manufacturing System: Trust Issues in Resource Allocation*, **IOTJ ('18)**
- **Finalist (Top 25), AAAI Student Abstract and Poster Session – Oral Presentation Contest (2023)** (w/ H. Baek, W.J. Yun)
"FV-Train: Quantum Convolutional Neural Network Training with a Finite Number of Qubits by Extracting Diverse Features"
- **IEEE ICTC Best Paper Award (2022)** – *IEEE Communications Society* (w/ J.-H. Lee, D.P. Selvam, A.F. Molisch)
"Reinforcement Learning Empowered Massive IoT Access in LEO-based Non-Terrestrial Networks"
- **Best Special Issue Guest Editor Award (2022)** – *ICT Express (Elsevier)*, S.I. on Mobile Edge Computing Systems (06/2021)
- **Distinguished Lecturer (class of 2022–2024)** – *IEEE Systems Council*
- **Distinguished Lecturer (class of 2022–2023)** – *IEEE Communications Society*
- **IEEE VTS Seoul Chapter Award (2022)** – *IEEE Vehicular Technology Society* (w/ H. Lee)
"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* (w/ M. Choi, A.F. Molisch)
 - M. Choi, A.F. Molisch, and J. Kim, "Joint Distributed Link Scheduling and Power Allocation for Content Delivery in Wireless Caching Networks," *IEEE Transactions on Wireless Communications*, 19(12):7810–7824, December 2020.
- **IEEE VTS Seoul Chapter Award (2021)** – *IEEE Vehicular Technology Society* (w/ Y. Kwak, S. Jung, J.-H. Kim)
"Quantum Scheduling for Millimeter-Wave Observation Satellite Constellation"

- **IEEE VTS Seoul Chapter Award (2021)** – *IEEE Vehicular Technology Society* (w/ H. Lee, S. Jung)
"Distributed and Autonomous Aerial Data Collection in Smart City Surveillance Applications"
- **IEEE ICOIN Best Paper Award (2021)** – *IEEE Computer Society* (w/ S. Jung, W.J. Yun, J.-H. Kim)
"Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing"
- **IEEE MMTC Outstanding Young Researcher Award (2020)** – *IEEE Communications Society*
- **Bronze Paper Award (2020)** – *2020 IEEE Seoul Section Student Paper Contest* (w/ S. Park)
"Reliable Offloading Target Selection using Deep Reinforcement Learning for Large Fire Accident"
- **IEEE Systems Journal Best Paper Award (2020)** – *IEEE Systems Council* (w/ M. Saad, J. Choi, D. Nyang, A. Mohaisen)
"Towards Characterizing Blockchain-based Cryptocurrencies for Highly-Accurate Predictions," 14(1):321-332, March 2020.
- **Gold Paper Award (2019)** – *2019 IEEE Seoul Section Student Paper Contest* (w/ J. Yoo)
"Stabilized Super-Resolution Deep Learning Adaptation for UAV-Assisted Mobile Edges: A Lyapunov Optimization Approach"
- **IEEE VTS Seoul Chapter Award (2019)** – *IEEE Vehicular Technology Society* (w/ S. Park, D. Kwon, M. Shin)
"Joint Offloading and Streaming in Mobile Edges: A Deep Reinforcement Learning Approach"
- **Next Generation and Standards (NGS) Division Recognition Award (Q1/2005)** – *Intel Corporation*
For developing a 3-dual sector mmWave backhaul link software stack with mesh, relay, and load balancing capability for modular antenna array (MAA) proof-of-concept (POC)
- **Annenberg Graduate Fellowship Award (2009)** – *University of Southern California*
Awarded with Ph.D. Admission – 4 Year Full Scholarship (\$30,000/year for 4 years, i.e., \$120,000)

Research and Academic Excellence (Korea Regional)

- **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
- **Outstanding Paper Award (2008)** – *LG Electronics CTO Office, Multimedia Research Laboratory*
– W. Lee, E. Kim, J. Kim, I. Lee, and C. Lee, "Movement-Aware Vertical Handoff of WLAN and Mobile WiMAX for Seamless Ubiquitous Access," *IEEE Transactions on Consumer Electronics*, 53(4):1268-1275, November 2007.
- **RFID Expert Group President Award (2007)** – *The 3rd RFID/USN Research Paper Contest*
- **ETRI President Award (2006)** – *The 2nd RFID/USN Research Paper Contest*
- **Korea Association of RFID/USN (KARUS) President Award (2005)** – *The 1st RFID/USN Research Paper Contest*
- **Scholarships for Academic Excellence (Fall 1999, Fall 2000)** – *Korea University. Department of Computer Science and Engineering*

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

- **Excellence Paper Award (02/2022)** – *2022 Summer Workshop on Computer Communications (SWCC)* (w/ H. Lee, S. Jung)
- **Excellence Paper Award (02/2022)** – *2022 KICS Winter Conference* (w/ Y. Kim, Y.K. Lee, S. Jung)
- **ICT Express Best Reviewer Award (2021)** – *ICT Express (Elsevier)* (Awarded to Soohyun Park)
- **ICT Express Best Reviewer Award (2021)** – *ICT Express (Elsevier)* (Awarded to Haemin Lee)
- **Haedong Paper Award (06/2021)** – *2021 KICS Summer Conference* (w/ H. Baek, Y.J. Ha, M. Yoo, S. Jung)
- **Excellence Paper Award (06/2021)** – *2021 KICS Summer Conference* (w/ B. Lim, W.J. Yun, Y.-C. Ko)
- **Excellence Paper Award (Undergraduate) (06/2021)** – *2021 KICS Summer Conference* (w/ G. Lee, W.J. Yun, S. Jung)
- **Encouragement Paper Award (11/2020)** – *2020 KICS Fall Conference* (w/ W.J. Yun)
- **Encouragement Paper Award (06/2020)** – *2020 KICS Summer Conference* (w/ W.J. Yun)
- **Encouragement Paper Award (02/2020)** – *2020 KICS Winter Conference* (w/ S. Oh, J. Choi)
- **Encouragement Paper Award (02/2020)** – *2020 KICS Winter Conference* (w/ J. Kim)

Teaching and Supervision Excellence

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

Academic and University Services

- **Outstanding Contribution Award (02/2022)** – *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*

Business Administration

- **The 5th Hyundai/Kia Motors Marketing Forum (02/2004), 2nd Prize Winner (Sales Promotion)**

R&D Projects (Totally, 6,280,384 USD ≈ 6,280,384,000 KRW)

Industry-Funded Projects

- **Advancement Technology Development for Torpedo Deception Strategies in Submarines** 11/2022–11/2026
Funded by *LIG Nex1* [Grant: \$700,000; Primary-PI]
- **Mapping between Real World and Virtual Reality (VR) for End-Edged Cloud Real-Time VR Servers** 09/2020–09/2024
Funded by *Samsung Electronics – Samsung Advanced Institute of Technology* [Grant: \$286,000; Primary-PI]
- **Quantum Machine Learning-based Objection Detection for Point Cloud and its Acceleration** 12/2022–11/2023
Funded by *Hyundai Motors Group (Hyundai NGV)* [Grant: \$100,000; 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* [Grant: \$12,000; Primary-PI]
- **Visual Recognition Software Implementation using Deep Learning Tools** 05/2019–11/2019
Funded by *Hyundai/Kia Motors Company (Hyundai NGV)* [Grant: \$59,500; Primary-PI]
- **A Priori Techniques Research for Efficient Multi-Edge Computing** 06/2017–12/2017
Funded by *Samsung Electronics Software Center* [Grant: \$80,000; Co-PI]

University/Center-Level Projects

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

Government-Funded Projects

- **AI Bots Collaborative Platform and Self-Organizing Artificial Intelligence Technology Development** 04/2022–12/2026
Funded by *Institute for ICT Promotion (IITP)* [2022-0-00907, Grant: \$950,000; Co-PI]
- **Quantum Hyper-Driving: Quantum-Inspired Hyper-Connected and Hyper-Sensing Autonomous Mobility Technologies** 03/2022–02/2025
Funded by *National Research Foundation of Korea* [2022R1A2C2004869, Grant: \$600,000; Primary-PI]
- **K-Starlink: Dynamic Reconfigurable and Intelligent Space-Terrestrial Networks** 06/2021–05/2024
Funded by *National Research Foundation of Korea (Basic Research Lab)* [2021R1A4A1030775, Grant: \$161,000 (2 yrs); Co-PI]
- **Development of Integrated Development Framework that supports Automatic Neural Network Generation and Deployment optimized for Runtime Environment** 04/2021–12/2023
Funded by *Institute for ICT Promotion (IITP)* [2018-0-00170, Grant: \$230,000; Co-PI]
- **Integrated Perception Technology Developments for Public Safety Platforms** 06/2019–05/2023
Funded by *National Research Foundation of Korea* [2019M3E3A1084054, Grant: \$400,000; Co-PI]
- **Development of Quantum Deep Reinforcement Learning Algorithm using QAOA** 10/2019–04/2022
Funded by *Ministry of Science and ICT* [2019M3E4A1080391, Grant: \$503,250; Primary-PI]
- **mmWave Radar and Deep Reinforcement Learning based Optimal Policy Autonomous Driving** 06/2019–02/2022
Funded by *National Research Foundation of Korea* [2019R1A2C4070663, Grant: \$275,000; Primary-PI]
- **Development of Privacy-Reinforcing Distributed Transfer-Iterative Learning Algorithm** 07/2019–12/2021
Funded by *Ministry of Health and Welfare* [HI19C0842, Grant: \$150,000; Co-PI]
- **Virtual Presence in Moving Objects through 5G (PriMO-5G)** 06/2018–06/2021
Funded by *Institute for ICT Promotion (IITP)* [2018-0-00170, Grant: \$246,464; Co-PI]
- **Distributed Secure Platform for Scalable Clinical OMOP CDM Models** 04/2019–12/2020
Funded by *Ministry of Health and Welfare* [HI19C0572, Grant: \$90,000; Co-PI]
- **Network Engineering: Development and Application of Novel Data Science Driven Framework for Efficient Network Design** 06/2017–05/2020
Funded by *National Research Foundation of Korea (Basic Research Lab)* [2017R1A4A1015675, Grant: \$150,000; Co-PI]

- **mmWave High-Speed Networking Platform Design for Next-Generation Convergence Services** 06/2016–05/2019
Funded by *National Research Foundation of Korea* [2016R1C1B1015406, Grant: \$150,000; Primary-PI]
– Selected as **Initial Innovation Lab** [Grant: \$60,000]
- **Feasibility Study of 60 GHz IEEE 802.11ad for Virtual Reality (VR) Platforms** 04/2017–12/2017
Funded by *Institute for ICT Promotion (IITP)* [Grant: \$33,333; Primary-PI]

Government-Funded Research Institute Projects

- **Autonomous Intelligent COA Search Methods for Cyber-Attacks** 12/2021–11/2022
Funded by *Agency for Defense Development (ADD)* [UI210009XD, Grant: \$100,000; Primary-PI]
- **Research on Intelligent Agent-based CPS Security and Reliability** 05/2021–11/2021
Funded by *Telecommunications Technology Association (TTA)* [Grant: \$48,000; Primary-PI]
- **Multi-GPU based Automotive HPC Platform Development** 04/2020–10/2020
(A Development of Driving Decision Engine for Autonomous Driving using Driving Experience Information)
Funded by *Electronics and Telecommunications Research Institute* [19HS2720 (IITP 2017-0-00068), Grant: \$20,000; Primary-PI]
- **Cooperative Deep Reinforcement Learning for Online Game Multi-Agents** 04/2020–08/2020
(Human-Agent Cooperation Algorithm Design in Multi-Agent Environment)
Funded by *Electronics and Telecommunications Research Institute* [19YE1400, Grant: \$28,000; Primary-PI]
- **Verification Testbed Implementation for Privacy-Preserving Trust Data Generation** 10/2019–11/2019
Funded by *Electronics and Telecommunications Research Institute* [Grant: \$44,000; Co-PI]
- **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]

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

- **5529+ Citations** (H-index: 35+, i10-index 134+), obtained from Google Scholar Profile (as of December 5, 2022)
- Totally, **110** journals, <https://sites.google.com/view/aimlab-kuee/publications/journals>
– **83** IEEE publications, among them, **50** publications are in **IEEE Magazines and ComSoc/VTs Journals**

Dissertation, Books, and Book Chapters

■ Ph.D. Dissertation

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

■ Books

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

■ Book Chapters

- Chapter 6. Dynamic Decision-Making for Stabilized Deep Learning Software Platforms, *Advances and Applications in Deep Learning*, IntechOpen, September 2020. (Editor: M.A. Aceves-Fernandez) (S. Park, D. Kim, J. Kim)
- Chapter 9. Device-to-Device Communications, *Towards 5G: Applications, Requirements and Candidate Technologies*, Wiley, January 2017. (Editors: R. Vannithamby, S. Talwar) (A.F. Molisch, M. Ji, J. Kim, D. Burghal, A.S. Tehrani)
- Chapter 19. Millimeter-Wave (mmWave) Medium Access Control: A Survey, *Opportunities in 5G Networks: A Research and Development Perspective*, CRC Press, April 2016. (Editor: F. Hu) (J. Kim)
- Chapter 17. Millimeter-Wave (mmWave) Radio Propagation Characteristics, *Opportunities in 5G Networks: A Research and Development Perspective*, CRC Press, April 2016. (Editor: F. Hu) (J. Kim)

- Chapter 22. Weighted Localized Clustering: A Coverage-Aware Reader Collision Arbitration Protocol in RFID Networks, *Handbook on Mobile and Ubiquitous Computing: Status and Perspective*, CRC Press, October 2012. (Editors: L.T. Yang, E. Syukur, S.W. Loke) ([J. Kim](#), [E. Kim](#), [W. Lee](#), [D. Kim](#), [J. Choi](#), [J. Jung](#), [C.K. Shin](#))
- Coverage-Time Optimized Dynamic Clustering for Two-Tiered WM2Nets, *Wireless Mesh Networking*, McGraw-Hill, August 2008. (Editor: G. Aggelou) ([J. Kim](#), [W. Lee](#), [E. Kim](#), [T.K. Shih](#))

Selected Papers, i.e., Journals, Top-Tier Conferences, and Awarded/Honored

■ Quantum Machine Learning

- [TON] ([REVIEW: 04-DEC-2022](#)) Quantum Federated Learning with Entanglement Controlled Circuits and Superposition Coding, *IEEE/ACM Transactions on Networking*. ([W.J. Yun](#), [J.P. Kim](#), [H. Baek](#), [S. Jung](#), [J. Park](#), [M. Bennis](#), [J. Kim](#))
- [TSMC] ([REVIEW: 14-NOV-2022](#)) Projection Valued Measure-based Quantum Machine Learning for Multi-Class Classification, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*. ([W.J. Yun](#), [H. Baek](#), [J. Kim](#))
- [SPL] ([REVIEW: 12-NOV-2022](#)) Quantum Split Neural Network Learning using Cross-Channel Pooling, *IEEE Signal Processing Letters*. ([W.J. Yun](#), [H. Baek](#), [J. Kim](#))
- [TNNLS] ([REVIEW: 02-NOV-2022](#)) Stereoscopic Scalable Quantum Convolutional Neural Networks, *IEEE Transactions on Neural Networks and Learning Systems*. ([H. Baek](#), [W.J. Yun](#), [J. Kim](#))
- [TNNLS] ([REVIEW: 05-SEP-2022](#)) SlimQFL: Quantum Federated Learning using Slimmable Neural Networks, *IEEE Transactions on Neural Networks and Learning Systems*. ([W.J. Yun](#), [J.P. Kim](#), [S. Jung](#), [J. Park](#), [M. Bennis](#), [J. Kim](#))
- [SPL] ([WIP](#)) Scalable Quantum Convolutional Neural Networks, *IEEE Signal Processing Letters*. ([H. Baek](#), [W.J. Yun](#), [J. Kim](#))
- [ICSE] ([REVIEW, NOTIFICATION: 20-JAN-2023](#)) Visual Simulation Software Demonstration for Quantum Multi-Drone Reinforcement Learning, *IEEE/ACM International Conference on Software Engineering*, May 2023. ([C. Park](#), [J.P. Kim](#), [W.J. Yun](#), [S. Jung](#), [J. Kim](#))
- [IOTJ] ([MAJOR REVISION](#)) Quantum Multi-Agent Actor-Critic Neural Networks for Internet-Connected Multi-Robot Coordination in Smart Factory Management, *IEEE Internet of Things Journal*. ([W.J. Yun](#), [J.P. Kim](#), [S. Jung](#), [J.-H. Kim](#), [J. Kim](#))
- [ICTE.accept] Quantum Distributed Deep Learning Architectures: Models, Discussions, and Applications, *ICT Express (Elsevier)*, v(n):ppp-ppp, Month Year. ([Y. Kwak](#), [W.J. Yun](#), [J.P. Kim](#), [H. Cho](#), [J. Park](#), [M. Choi](#), [S. Jung](#), [J. Kim](#))
- [AAAI'23] Quantum Multi-Agent Meta Reinforcement Learning, *AAAI Conference on Artificial Intelligence*, February 2023. ([W.J. Yun](#), [J. Park](#), [J. Kim](#)) ([Acceptance Ratio: 19.61% \(1721/8777\)](#))
- [AAAI'23] ([REVIEW, NOTIFICATION: 22-DEC-2022](#)) Privacy-Preserving Quantum Split Learning, *AAAI Workshop on Privacy-Preserving Artificial Intelligence*, February 2023. ([W.J. Yun](#), [H. Baek](#), [J. Kim](#))
- [AAAI'23] 3D Scalable Quantum Convolutional Neural Networks for Point Cloud Data Processing in Classification Applications, *AAAI Workshop on AI to Accelerate Science and Engineering*, February 2023. ([H. Baek](#), [W.J. Yun](#), [J. Kim](#))
- [AAAI'23] FV-Train: Quantum Convolutional Neural Network Training with a Finite Number of Qubits by Extracting Diverse Features, *AAAI Student Abstract and Poster*, February 2023. ([H. Baek](#), [W.J. Yun](#), [J. Kim](#))
- ([Finalist \(Top 25\), Oral Presentation Contest](#))
- [ICDCS'22] Quantum Multi-Agent Reinforcement Learning via Variational Quantum Circuit Design, *IEEE International Conference on Distributed Computing Systems*, July 2022. ([W.J. Yun](#), [Y. Kwak](#), [J.P. Kim](#), [H. Cho](#), [S. Jung](#), [J. Park](#), [J. Kim](#))
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- ([Spotlight, Oral Presentation](#))
- [APWCS'21] Quantum Scheduling for Millimeter-Wave Observation Satellite Constellation, *IEEE VTS APWCS*, August 2021. ([J. Kim](#), [Y. Kwak](#), [S. Jung](#), [J.-H. Kim](#))
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■ Mobility, Networks, Systems, and Multimedia

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- [TVT] ([WIP](#)) Sensing-to-Sky Intermittent Connectivity for LTE-Enabled Networked Drone Platforms, *IEEE Transactions on Vehicular Technology*. ([J. Kim](#), [U. Jo](#), [S. Jung](#), [J. Kim](#))
- [TVT] ([REVIEW: 27-NOV-2022](#)) Two-Stage Self-Adaptive Task Outsourcing Decision Making for Edge-Assisted Multi-UAV Networks, *IEEE Transactions on Vehicular Technology*. ([S. Jung](#), [C. Park](#), [M. Levorato](#), [J.-H. Kim](#), [J. Kim](#))
- [ISJ] ([REVIEW: 22-NOV-2022](#)) Real-Time High-Quality Visualization Systems for Volumetric Contents Rendering: A Lyapunov Optimization Framework, *IEEE Systems Journal*. ([H. Baek](#), [R. Lee](#), [Y.K. Lee](#), [S. Jung](#), [J. Kim](#))
- [TVT] ([REVIEW: 01-NOV-2022](#)) Delay-Sensitive and Power-Efficient Quality Control of Dynamic Video Streaming using Adaptive Super-Resolution, *IEEE Transactions on Vehicular Technology*. ([M. Choi](#), [W.J. Yun](#), [J. Kim](#))
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- [JCN] ([REVIEW: 01-SEP-2022](#)) Age-of-Information Aware Contents Caching and Distribution for Connected Vehicles, *IEEE/KICS Journal of Communications and Networks*. ([S. Park](#), [C. Park](#), [S. Jung](#), [M. Choi](#), [J. Kim](#))
- [TMC] ([REVIEW, WIP](#)) Adaptive and Additive Extra Resource Allocation for Cooperative Awareness Message Broadcasting in Cellular-V2X Networks, *IEEE Transactions on Mobile Computing*. ([S. Jung](#), [J.-H. Kim](#), [M. Levorato](#), [J. Kim](#))
- [ComNet] ([MAJOR REVISION, WIP](#)) Self-Adaptive End-to-End Resource Management for Real-Time Monitoring in Cyber-Physical Systems, *Computer Networks (Elsevier)*. ([H.-C. Jo](#), [H.-W. Jin](#), [J. Kim](#))

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- [TON] ([AWAITING DECISION](#)) SlimFL: Federated Learning with Superposition Coding over Slimmable Neural Networks, *IEEE/ACM Transactions on Networking*. (W.J. Yun, Y. Kwak, H. Baek, S. Jung, M. Ji, M. Bennis, J. Park, J. Kim)
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- [ICTC'22] Reinforcement Learning Empowered Massive IoT Access in LEO-based Non-Terrestrial Networks, *IEEE ICTC*, October 2022. (J.-H. Lee, D.P. Selvam, A.F. Molisch, J. Kim)
([Best Paper Award](#))
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- [SOSP'15] A Case for Bad big.LITTLE Switching: How to Scale Power-Performance in SI-HMP, *ACM SOSP Workshop on Power-Aware Computing and Systems*, October 2015. (S. Yoo, Y. Shim, S. Lee, S.-A. Lee, J. Kim)
- [IJEC'15.07] Error Concealment Mode Signaling for Robust Mobile Video Transmission, *International Journal of Electronics and Communications (Elsevier)*, 69(7):1070-1073, July 2015. (E.-S. Ryu, J. Kim)
- [TS'15.05] Dynamic Two-Stage Beam Training for Energy-Efficient Millimeter-Wave 5G Cellular Systems, *Telecommunication Systems (Springer)*, 59(1):111-122, May 2015. (J. Kim, S.-N. Hong)
- [CAEE'15.04] Adaptive Buffer Control for Distributed Autonomous Robust Routing in Mobile Surveillance Robots, *Computers and Electrical Engineering (Elsevier)*, 43:306-316, April 2015. (J. Kim, S.-N. Hong)
- [JCN'14.10] Fast Millimeter-Wave Beam Training with Receive Beamforming, *IEEE/KICS Journal of Communications and Networks*, 16(5):512-522, October 2014. (J. Kim, A.F. Molisch)
- [IET'14.10] Quality of Video Streaming in 38 GHz Millimetre-Wave Heterogeneous Cellular Networks, *IET Electronics Letters*, 50(21):1526-1528, October 2014. (J. Kim, E.-S. Ryu)
- [CL'14.09] Joint Coding and Stochastic Data Transmission for Uplink Cloud Radio Access Networks, *IEEE Communications Letters*, 18(9):1619-1622, September 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, July 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, March 2014. (J. Kim, A. Mohaisen, J.-K. Kim)
- [ITA'14] Joint Scheduling and Stochastic Streaming for Device-to-Device Video Delivery, *IEEE Information Theory and Applications Workshop*, February 2014. (J. Kim, A. Turci, G. Caire, A.F. Molisch)
[\(ITA Graduation Day Talk\)](#)
- [MobiCom'13] Adaptive Video Streaming for Device-to-Device Mobile Platforms, *ACM MobiCom Extended Abstract*, October 2013. (J. Kim, F. Meng, P. Chen, H.E. Egilmez, D. Bethanabhotla, A.F. Molisch, M.J. Neely, G. Caire, A. Ortega)
- [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, September 2013. (J. Kim, Y. Tian, S. Mangold, A.F. Molisch)
- [IET'13.02] Distributed Stochastic Buffering for Enterprise WLAN Architectures, *IET Electronics Letters*, 49(4):302-304, February 2013. (J. Kim, E.-S. Ryu)
- [MobiSys'10] Energy-Efficient Rate-Adaptive GPS-based Positioning for Smartphones, *ACM International Conference on Mobile Systems, Applications, and Services*, June 2010. (J. Paek, J. Kim, R. Govindan) (**Acceptance Ratio: 19.84% (25/126)**)
- [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, November 2007. (W. Lee, E. Kim, J. Kim, I. Lee, C. Lee)
[\(LG Electronics Outstanding Paper Award\)](#)
- [TCE'07.05] Coverage-Time Optimized Dynamic Clustering of Networked Sensors for Pervasive Home Networking, *IEEE Transactions on Consumer Electronics*, 53(2):433-441, May 2007. (J. Kim, W. Lee, E. Kim, D.-W. Kim, H. Kim)
- [CL'07.01] Optimized Transmission Power Control of Interrogators for Collision Arbitration in UHF RFID Systems, *IEEE Communications Letters*, 11(1):22-24, January 2007. (J. Kim, W. Lee, E. Kim, D. Kim, K. Suh)

■ Learning and Informatics

- [ISJ] [\(REVIEW: 02-NOV-2022\)](#) Two-Stage Architectural Fine-Tuning with Neural Architecture Search using Early-Stopping, *IEEE Systems Journal*. (Y. Kim, W.J. Yun, Y.K. Lee, S. Jung, J. Kim)
- [MTAP] [\(REVIEW: 26-JUL-2022\)](#) Audio-to-Visual Cross-Modal Generation of Birds, *Multimedia Tools and Applications (Springer)*. (J.Y. Shim, J. Kim, J.-K. Kim)
- [MTAP] [\(MAJOR REVISION: 01-DEC-2022\)](#) Stabilized Performance Maximization for GAN-based Real-Time Authentication Image Generation over Internet, *Multimedia Tools and Applications (Springer)*. (J.Y. Shim, S. Jung, J. Kim, J.-K. Kim)
- [CIBM] [\(MAJOR REVISION: 26-NOV-2022\)](#) Deep Reinforcement Learning-based Propofol Infusion with a 3,000-subject Dataset in Anesthesia, *Computers in Biology and Medicine (Elsevier)*. (W.J. Yun, M. Shin, S. Jung, J. Ko, H.-C. Lee, J. Kim)
- [TITS.accept] Self-Configurable Stabilized Real-Time Detection Learning for Autonomous Driving Applications, *IEEE Transactions on Intelligent Transportation Systems*, v(n):ppp-ppp, Month Year. (W.J. Yun, S. Park, J. Kim, D. Mohaisen)
- [TNNLS.accept] Hierarchical Deep Reinforcement Learning-based Propofol Infusion Assistant Framework in Anesthesia, *IEEE Transactions on Neural Networks and Learning Systems*, v(n):ppp-ppp, Month Year. (W.J. Yun, M. Shin, D. Mohaisen, K. Lee, J. Kim)
- [CIKM'22] Hierarchical Reinforcement Learning using Gaussian Random Trajectory Generation in Autonomous Furniture Assembly, *ACM Conference on Information and Knowledge Management*, October 2022. (W.J. Yun, D. Mohaisen, S. Jung, J.-K. Kim, 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, October 2022. (W.J. Yun, S. Park, J. Kim, M. Shin, S. Jung, D. Mohaisen, J.-H. Kim)
- [SR'22.01] Feasibility Study of Multi-Site Split Learning for Privacy-Preserving Medical Systems under Data Imbalance Constraints in COVID-19, X-Ray, and Cholesterol Dataset, *Scientific Reports (Nature)*, 12:1534, January 2022. (Y.J. Ha, G. Lee, M. Yoo, S. Jung, S. Yoo, J. 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, September 2021. (Y.J. Ha, M. Yoo, G. Lee, S. Jung, S. Choi, J. Kim, S. Yoo)
- [DSN'21] Spatio-Temporal Split Learning, *IEEE/IFIP DSN Supplemental Volume*, June 2021. (S. Park, S. Jung, M. Choi, 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, March 2021. (D. Kim, D. Kwon, L. Park, J. Kim, S. Cho)
- [ICML'20] XOR Mixup: Privacy-Preserving Data Augmentation for One-Shot Federated Learning, *ICML Workshop on Federated Learning for User Privacy and Data Confidentiality*, July 2020. (M. Shin, C. Hwang, J. Kim, J. Park, M. Bennis, S.-L. 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, May 2020. (M. Shin, D. Choi, J. Kim)
- [JAIHC'20.01] A Novel Network Virtualization based on Data Analytics in Connected Environment, *Journal of Ambient Intelligence and Humanized Computing (Springer)*, 11(1):75-86, January 2020. (K.-H.N. Bui, S. Cho, J.J. Jung, J. Kim, O.-J. Lee, W. Na)
- [ICCV'19] Deep Multi-modal Unsupervised Pen Pressure Stylization, *IEEE/CVF ICCV Demo*, November 2019. (D. Kim, J. Kim)
- [IJCAI'19] Randomized Adversarial Imitation Learning for Autonomous Driving, *International Joint Conference on Artificial Intelligence*, August 2019. (M. Shin, J. Kim) (**Acceptance Ratio: 17.89% (850/4752)**)
- [DSN'19] Privacy-Preserving Deep Learning Computation for Geo-Distributed Medical Big-Data Platforms, *IEEE/IFIP DSN Supplemental Volume*, June 2019. (J. Jeon, J. Kim, J. Kim, K. Kim, A. Mohaisen, J.-K. Kim)
- [ICML'19] Adversarial Imitation Learning via Random Search in Lane Change Decision-Making, *ICML Workshop on AI for Autonomous Driving*, June 2019. (M. Shin, J. Kim)
- [TIE'19.02] Joint Geometric Unsupervised Learning and Truthful Auction for Local Energy Market, *IEEE Transactions on Industrial Electronics*, 66(2):1499–1508, February 2019. (L. Park, S. Jeong, J. Kim, S. Cho)
- [MobiSys'18] Neural Network Syntax Analyzer for Embedded Standardized Deep Learning, *ACM MobiSys Workshop on Embedded and Mobile Deep Learning*, June 2018. (M. Shin, J. Kim, A. Mohaisen, J. Park, K.H. Lee)
- [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, May 2018. (S. Ahn, J. Kim, E. Lim, S. Kang)
- [TII'17.12] Residential Demand Response for Renewable Energy Resources in Smart Grid Systems, *IEEE Transactions on Industrial Informatics*, 13(6):3165–3173, December 2017. (L. Park, Y. Jang, S. Cho, J. Kim)
- [TII'15.12] Energy-Efficient Dynamic Packet Downloading for Medical IoT Platforms, *IEEE Transactions on Industrial Informatics*, 11(6):1653–1659, December 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, November 2015. (J. Kim, W. Lee)

Patents (Granted), totally, 66

- **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)
- **21 Korean Patents:** (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)

Teaching Experience, Research Supervision, and Professional Activities

Teaching Experience

■ Korea University – Graduate Courses, Faculty Member

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

■ Korea University – Undergraduate Courses, Faculty Member

- Introduction to Artificial Intelligence (IWC420): Winter 2022 (12/2022–01/2023), Winter 2021 (12/2021–01/2022)
- Data Communications (KECE316): Fall 2020
- Digital System Design and Laboratory (KECE210): Fall 2020
- Probability and Random Process (KECE209): 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 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%*)
- 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%*)

■ 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

Research Collaboration and Supervision

- **Postdoctoral Scholars**
 - **Dr. Minseok Choi** (09/2018–02/2019, *Jointly with USC* (co-advised by Prof. Andreas F. Molisch)), *Professor at Kyung Hee University*, Korea
 - **Dr. Soyi Jung** (03/2021–08/2021, *Jointly with UC-Irvine* (co-advised by Prof. Marco Levorato)), *Professor at Ajou University*, Korea
 - **Dr. Ju-Hyung Lee** (08/2021–Present, *Jointly with USC* (co-advised by Prof. Andreas F. Molisch))
- **Ph.D. Course Students and Alumni**
 - **Soohyun Park** (*active*, 03/2019–08/2023 (expected)), *Postdoctoral Scholar at Korea University*, Korea
 - **Haemin Lee** (*active*, 09/2020–02/2024 (expected)), *Postdoctoral Scholar at Yonsei University*, Korea
 - **Won Joon Yun** (*active*, 03/2021–08/2024 (expected))
 - **Hankyul Baek** (*active*, 03/2021–08/2024 (expected)), *Postdoctoral Scholar at Korea University*, Korea
 - **Hyunsoo Lee** (*active*, 03/2021–)
 - **Chanyoung Park** (*active*, 09/2022–)
 - **Gyu Seon Kim** (*active*, 03/2023–)
- **M.S. Course Students and Alumni**
 - *Academia:* **Jae Pyoung Kim** (*active*, 03/2023–Present)
 - *Industry:* **Kyeongseon Kim** (09/2017–08/2019, Upstage), **Dohyun Kwon** (03/2018–02/2020, Hyundai Motors Group), **Dohyun Kim** (03/2018–02/2020, Naver Corporation), **MyungJae Shin** (03/2018–02/2020, mofl (Startup)), **Jaeho Choi** (03/2019–02/2021, Korea Meteorological Administration (Military Service Exception)), **Youngkee Kim** (*active*, 03/2021–02/2023, Korea Electronics Technology Institute (KETI)), **Minjae Yoo** (*inactive*, 03/2021–Present), **Seok Bin Son** (*active*, 03/2022–Present)
- **B.S. Course Students and Alumni, Undergraduate Interns**
 - *Academia:* **Soohyun Park** (Ph.D. Student at Korea University), **Won Joon Yun** (Ph.D. Student at Korea University), **Jae Pyoung Kim** (M.S. Student at Korea University), **Hyunhee Cho** (*active*), **Hyomin Ahn** (M.S. Student at the University of California at Los Angeles (UCLA)), **Rhoan Lee** (*active*), **Chanyoung Park** (Ph.D. Student at Korea University), **Gyu Seon Kim** (Ph.D. Student at Korea University), **Dohyun Lim** (*active*), **Kyunglyul Baek** (*active*)
 - *Industry:* **Nawon Kim** (SK Hynix), **Seongmin Kim** (KEB Hana Bank), **Si Yun Kim** (LG U+), **Yejin Kim** (CJ OliveNetworks), **Yeong Jong Mo** (Samsung Electronics), **Miji Park** (LG CNS), **Inhui Yeo** (LG Innotek), **Sangjin Lee** (SK Hynix), **Cheol Lee** (Naver, *after the M.S. degree from Chung-Ang University*), **Sunjun Hwang** (Samsung Electronics, *after the M.S. degree from Seoul National University*)
- **Ph.D. Course Students and Alumni (Tight Collaboration for Ph.D. Dissertation)**
 - **Dr. Seungyo Ryu** (Primary Advisor: Prof. Dongseung Kim at Korea University), *Researcher at LG Electronics*, Korea
- **Intel Corporation (Santa Clara, California, USA), Graduate Interns**
 - **Dr. Minseok Choi**, Ph.D. in EE from KAIST (02/2016–07/2016), now with **Kyung Hee University**, Korea
 - **Dr. Hidekazu Shimodaira**, Ph.D. in EEE from Tokyo Institute of Technology (07/2015–12/2015), now with **NTT DOCOMO**, Japan
- **USC Viterbi School of Engineering (Los Angeles, California, USA), Graduate Students**
 - **Feiyu Meng**, M.S. in EE from USC (Summer 2013, Fall 2013), now with **Apple**, Silicon Valley, CA, USA
 - **Vivek Sankaravadivel**, M.S. in EE from USC (Spring 2011, Fall 2011), now with **Uber**, Silicon Valley, CA, USA

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 Conference Tutorials and Special Session Talks**
 - **IEEE ICUFN 2022 Tutorial** (Barcelona, Spain, 07/2022), *A Paradigm Shift in Future Networks with Quantum Deep Learning*
 - **IEEE ICOIN 2022 Tutorial** (Online, 01/2022), *Advanced Deep Learning Methods for Autonomous Mobility*
 - **IEEE ICUFN 2021 Tutorial** (Jeju, Korea, 08/2021), *Distributed and Split Deep Learning: Theory and Applications*
 - **IEEE ICAIIC 2021 Tutorial** (Online, 04/2021), *Multi-Agent Deep Reinforcement Learning for Connected and Autonomous Vehicles*
 - **IEEE ICTC 2019 Special Session Talk** (Jeju, Korea, 10/2019), *Advanced Deep Learning Methods and Their Applications to Distributed and Network Platforms*
 - **IEEE ICOIN 2019 Tutorial** (Kuala Lumpur, Malaysia, 01/2019), *Distributed Platform Research for Emerging Deep Learning Applications*
 - **IEEE ICC 2018 Tutorial** (Kansas City, MO, USA, 05/2018), *Securing the Internet of Things: A Machine Learning Approach (Making Machine Learning Practical)*, Joint Presentation with Prof. Aziz Mohaisen (University of Central Florida, Orlando, FL, USA)
- **Korean (Local) Conference Tutorials and Special Session Talks**
 - **2022 KIPS Fall Conference Tutorial** (Chuncheon, 11/2022), *Quantum Deep Learning Basics*

- 2022 Korea A.I. Conference Tutorial (Jeju, 09/2022), *Trends in Deep Reinforcement Learning*
- 2022 KICS Summer Conference Tutorial (Jeju, 06/2022), *Quantum Multi-Agent Deep Reinforcement Learning*
- 2022 KIEES Winner Conference Tutorial (Online, 02/2022), *Deep Learning Theory and Implementation*
- 2021 Korea A.I. Conference Tutorial (Jeju, 09/2021), *Understanding the Potential Risks of Sharing Elevation Information on Fitness Applications*
- 2021 JCCI Mobile Machine Learning Special Session (Online, 04/2021), *Multi-Agent Deep Reinforcement Learning for Autonomous Vehicles*
- 2020 Korea A.I. Conference Tutorial (Jeju, 12/2020), *Randomized Adversarial Imitation Learning for Autonomous Driving*
- 2020 KICS Fall Conference Tutorial (Seoul, 11/2020), *Trends in Multi-Agent Deep Reinforcement Learning for Distributed Computing*
- 2020 KICS Summer Conference Tutorial (Jeju, 08/2020), *Deep Learning Computation for Economic Theory and Its Applications*
- 2020 KICS Winter Conference Tutorial (Kangwon, 02/2020), *Deep Learning Applications to Computer Networking*
- 2020 KICS Winter Conference Tutorial (Kangwon, 02/2020), *Deep Neural Network Basics*
- 2019 KICS Fall Conference Special Session Talk (Seoul, 11/2019), *AI Methods for Network and Mobility Platform*
- 2019 IEK Hyundai Motors Special Session (Jeju, 06/2019), *Explainable AI (XAI) and Imitation Learning for Automotive Applications*
- 2019 KIPS Spring Conference Tutorial (Seoul, 05/2019), *Deep Learning Basics and Representative Models*
- 2019 KICS Winter Conference Tutorial (Kangwon, 01/2019), *Deep Learning Methods for Advanced Network*
- 2017 KICS Summer Conference Tutorial (Jeju, 06/2017), *GPU Computing Platforms and Software for Deep Learning*
- 2017 KCC Summer Conference Special Session (Jeju, 06/2017), *Dynamic Control and Software for Next-Generation Distributed Platforms*
- 2017 KICS Winter Conference Tutorial (Kangwon, 01/2017), *Machine Learning Techniques for Mobile Computing*

■ Industry Presentations (Selected)

- International: Huawei Research Center (Text-Aware Image Understanding Workshop) (Online, 11/2021), Ericsson-LG (R&D Hackathon / AI Learning Challenge – Keynote Speech) (Seoul, Korea, 05/2021), Huawei Research Center (Deep Learning/Machine Learning for Computer Vision) (Online, 09/2020), Huawei Research Center (Fundamental and Applied Problems of Machine Learning) (Nizhny Novgorod, Russia, 12/2019), City University of Hong Kong (Hong Kong, 11/2018), Intel Communications and Devices Group (iCDG) [Cellular Modem TechTalk] (Santa Clara, CA, USA, 01/2016), Nokia Research Center at Berkeley (Berkeley, CA, USA, 08/2014), Qualcomm Research Center (San Diego, CA, USA, 02/2014)
- Korea: 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 Edge mmWave Backhaul and Access; Mobile World Congress (MWC) 2016 (Barcelona, Spain, 02/2016)
- mmWave MAA Client Access & Backhaul Platform; Intel 360 degree 2016 (Anaheim, CA, 02/2016)
- mmWave Modular Antenna Array Client Access & Backhaul Platform; Intel Asia Innovation Summit 2015 (Taipei, Taiwan, 10/2015)
- Enabling 5G Densification; 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)

■ Demonstration at Academic Conferences

- Quantum Multi-Agent Reinforcement Learning via Variational Quantum Circuit Design; IEEE ICDCS 2022 (Bologna, Italy, 07/2022)
- Visualization of Deep Reinforcement Autonomous Aerial Mobility Learning Simulations; IEEE INFOCOM 2021 (Online, 05/2021)
- Deep Multi-modal Unsupervised Pen Pressure Stylization; IEEE/CVF ICCV 2019 (Seoul, Korea, 11/2019)
- Light-Weight Programming Language for Blockchain; ACM MobiSys 2019 (Seoul, Korea, 06/2019)
- mmWave MAA Client Access & Backhaul Platform; IEEE GLOBECOM 2015 (Industry Demonstration ID-14) (San Diego, CA, 12/2015)
- mmWave Modular Antenna Array for Next-Generation Wireless Networks; IEEE GLOBECOM 2014 (Expo) (Austin, TX, USA, 12/2014)
- Adaptive Video Streaming for Device-to-Device Mobile Platforms; ACM MobiCom 2013 (Miami, FL, USA, 10/2013)

Conference Activities and Services

■ Organizing Committee (OC) Activities

- IEEE WiOpt: 2022 (Organizer, Caching, Computing and Delivery in Wireless Networks Workshop (CCDWN))
- IEEE GLOBECOM: 2015 (Organizer, Workshop on Millimeter-Wave Backhaul and Access (mmWave))
- IEEE ICC: 2022 (Patronage Chair)
- IEEE ICTC: 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: 2022 (Workshop Chair), 2021 (Workshop Chair), 2021 (Workshop Organizing Chair, Artificial Intelligence Emerging Applications (AIEA) Workshop)
- IEEE ICAIIC: 2019 (Publication Chair)
- IEEE VTS APWCS: 2022 (Finance Chair), 2021 (Finance Co-Chair), 2017 (Publication Vice Chair)
- IEEE ICOIN: 2023 (Workshop Co-Chair), 2023 (Workshop Organizing Chair, Workshop on Artificial Intelligence and Mobility), 2022 (Workshop Organizing Chair, Workshop on Artificial Intelligence and Mobility), 2021 (Workshop Organizing Chair, Workshop on Artificial Intelligence and Mobility), 2020 (Workshop Organizing Chair, Workshop on Artificial Intelligence and Mobility)
- IEEE ICASSP: 2018 (Special Session Organizing Chair, Special Session on Cybersecurity and Privacy)
- IEEE APCC: 2022 (Local Arrangement Chair)
- IEEE ICEIC: 2021 (Local Arrangement Chair)
- ACM CoNEXT: 2019 (Poster Session Chair)

■ Technical Program Committee (TPC) Chair-Level Activities

- CCNC: 2022 (Track Chair for T7 (Security, Privacy and Content Protection))
- ICTC: 2022 (TPC Vice Chair for Administration)
- ICAIIC: 2023 (TPC Co-Chair), 2022 (TPC Co-Chair), 2021 (TPC Co-Chair), 2020 (TPC Co-Chair), 2019 (TPC Co-Chair)
- ICOIN: 2021 (TPC Vice Chair), 2020 (TPC Vice Chair), 2019 (TPC Vice Chair), 2018 (TPC Vice Chair)

- **NAS:** 2019 (Track Co-Chair for Network Track)
 - **GLOBECOM:** 2015 (TPC Chair for the *Workshop on Millimeter-Wave Backhaul and Access*)
 - **Technical Program Committee (TPC) Non-Chair-Level Activities**
 - **2023:** ICC (Wireless Communications Symposium), ICC (Integrated Sensing and Communication Track), ICC (Reconfigurable Intelligent Surfaces and Smart Environments Track), WCNC, ICOIN, IE
 - **2022:** GLOBECOM (Selected Areas in Communications – Machine Learning for Communications), MASS, ICC (Wireless Communications Symposium), WCNC, VTC-Fall, COMNETSAT, ICAIIC, ICTC, ICUFN, ICOIN, IPDPS (*Heterogeneity in Computing Workshop*), ICC, WCSP, CyberneticsCom, ICEIC, MSN (Track 3: Security, Privacy, Trust, and Blockchain), ICNGC
 - **2021:** GLOBECOM (Selected Areas in Communications – Machine Learning for Communications), GLOBECOM (IoTSN), ICC (Wireless Communications Symposium), ICCCN, MSN, COMNETSAT, ICTC, ICTC (*Workshop on Intelligent 6G Communication Systems*), ICTC (*Workshop on KU-AIER (Korea University, A.I. Engineering Research)*), WCNC, ICC, IGESSC, ICAIIC, ICUFN, ICOIN, MASS, EuCAP, ICEIC, ICNGC, ITC-CSCC
 - **2020:** GLOBECOM (Ad-hoc and Sensor Networks Symposium), ICTC, WCNC, WCNC (*Workshop on Aerial Communications in 5G and Beyond Networks*), IGESSC, ICUFN, ICOIN, Blockchain, ICC, COMNETSAT
 - **2019:** ICTC, ICC, IGESSC, ICUFN, VTC-Spring, ICDCS (Distributed Green Computing & Energy Management), NAS (Network Track), Blockchain, MobiHoc, EuCAP, IE, WISA, SecureComm, ICPADS (Security & Dependable Computing)
 - **2018:** ICTC, IGESSC, ICUFN, WCSP, APWCS, ICOIN, AsiaCCS (*Workshop on Security in Cloud Computing*), SigTelCom, ATC, IE
 - **2017:** ICUFN, ICTC, IE
 - **2016:** ICUFN, VTC-Spring
 - **2015:** VTC-Spring, EuCAP
 - **2014:** VTC-Fall
 - **2012:** MASS (*Workshop on Internet of Things Technology and Architectures*)
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References

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 - URL: <https://wides.usc.edu/founder.html>