

Highlights

Research Milestones

- **129 Journals** (among them, **92 IEEE Journals**), <https://sites.google.com/view/aimlab-kuee/publications/journals> – 104 Published / Accepted (among them, **69 IEEE**), **2** Under-Revision, and **23** Under-Review Journals
- **6046+ Citations** (H-index: 36+, i10-index 148+), obtained from Google Scholar Profile (as of March 23, 2023)
- **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%)
- **8 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 (1 in 2022; 2 in 2021; 1 in 2019)*
- **6 Tutorials at IEEE Conferences**, i.e., *ICUFN (2022)*, *ICOIN (2022)*, *ICUFN (2021)*, *ICAHC (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)**: 6,339,884 USD \approx 6,339,884,000 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 (03/2021–02/2023), Department of Semiconductor Engineering (with **SK Hynix**)
 - ADMINISTRATIVE POSITIONS
 - * Dean (06/2021–05/2023), **Center for Teaching and Learning (CTL)**
 - * Deputy Vice President (02/2022–), **Office of Academic Affairs**
- **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)

- **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, W.J. Yun, S. Jung, J.-H. Kim)
"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* (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 in Computer Science, Viterbi School of Engineering

Research and Academic Excellence (Korea Regional)

- **Haedong Paper Award (02/2023)** – KICS (w/ W.J. Yun, J.P. Kim, S. Jung, J. Park)
"Dynamic quantum federated learning framework at satellites and ground stations using slimable quantum neural networks"
- **Excellence Paper Award (02/2023)** – 2023 KICS Winter Conference (w/ G.S. Kim, H. Lee, S. Jung, J.-H. Kim)
- **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 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)
- **Haedong Young Scholar Award (2018)** – KICS and Haedong Foundation
For recognizing a researcher under the age of 40 who has made outstanding contributions to communication sciences R&D
- **Haedong Paper Award (06/2021)** – KICS (w/ H. Baek, Y.J. Ha, M. Yoo, S. Jung)
"Neural architectural nonlinear pre-processing for mmWave radar-based human gesture perception in on-driving scenarios"
- **Excellence Paper Award (06/2021)** – 2021 KICS Summer Conference (w/ B. Lim, 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)
- **Outstanding Paper Award (2008)** – LG Electronics CTO Office, Multimedia Research Laboratory
– W. Lee, E. Kim, J. Kim, I. Lee, and C. Lee, "Movement-Aware Vertical Handoff of WLAN and Mobile WiMAX for Seamless Ubiquitous Access," *IEEE Transactions on Consumer Electronics*, 53(4):1268-1275, November 2007.
- **RFID Expert Group President Award (2007)** – The 3rd RFID/USN Research Paper Contest
- **ETRI President Award (2006)** – The 2nd RFID/USN Research Paper Contest
- **Korea Association of RFID/USN (KARUS) President Award (2005)** – The 1st RFID/USN Research Paper Contest
- **Scholarships for Academic Excellence (Fall 1999, Fall 2000)** – *Korea University. Department of Computer Science and Engineering*

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

- **Best Presentation Awards (12/2022)** – A3 Foresight Program 2022 Workshop, Tokyo, Japan (AI-Based Future IoT Technologies and Services) (two awards for Soohyun Park and Chanyoung Park)
- **ICT Express Best Reviewer Award (2021)** – ICT Express (Elsevier) (for Soohyun Park)
- **ICT Express Best Reviewer Award (2021)** – ICT Express (Elsevier) (for Haemin Lee)
- **Best Presentation Award (02/2021)** – A3 Foresight Program 2021 Workshop, Online (AI-Based Future IoT Technologies and Services) (for Hankyul Baek)

Teaching and Supervision Excellence

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

Academic and University Services

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

Business Administration

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

R&D Projects (Totally, 6,339,884 USD ≈ 6,339,884,000 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 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* [Grant: \$110,000; Primary-PI]
- Routing Algorithms for LEO Satellite Networks** 12/2022–08/2023
Funded by *Solvit System* [Grant: \$27,500; Primary-PI]
- Optimal Positioning Algorithms for Wide-Area Relaying Networks** 12/2022–08/2023
Funded by *Solvit System* [Grant: \$22,000; Primary-PI]
- Distributed Learning Algorithms to Build AI Models with Multi-Center Clinical Data** 11/2022–02/2023
Funded by *Cipherome* [Grant: \$12,000; Primary-PI]
- Cellular/Wi-Fi Handover Technology Development** 02/2022–12/2022
Funded by *LG Electronics CTO Division – Smart Mobility Lab., Advanced R&BD Center* [Grant: \$88,000; Primary-PI]
- Research Trends in Digital Twin Applications to Autonomous Driving** 03/2022–04/2022
Funded by *Hyundai NGV* [Grant: \$1,000; Primary-PI]
- Distributed Learning System Design and Implementation for Clinical Applications** 02/2022–03/2022
Funded by *Cipherome* [Grant: \$15,000; Primary-PI]
- Super-Resolution Performance Optimization in Mobile Platforms** 05/2020–08/2020
Funded by *Samsung SDS* [Grant: \$15,000; Primary-PI]
- Deep Learning Algorithms for mVOC Concentration Analysis** 03/2020–06/2020
Funded by *Samsung Electronics (C-Lab)* [Grant: \$12,000; Primary-PI]
- Visual Recognition Software Implementation using Deep Learning Tools** 05/2019–11/2019
Funded by *Hyundai Motors Company (Hyundai NGV)* [Grant: \$59,500; Primary-PI]
- A Priori Techniques Research for Efficient Multi-Edge Computing** 06/2017–12/2017
Funded by *Samsung Electronics (Software Center)* [Grant: \$80,000; 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]

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

- **6046+ Citations** (H-index: 36+, i10-index 148+), obtained from Google Scholar Profile (as of March 23, 2023)
- Totally, **129** journals, <https://sites.google.com/view/aimlab-kuee/publications/journals>
– **92** IEEE publications, among them, **59** 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

■ Conferences – Top-Tiers and Awarded/Honored

- [AAAI'23] Quantum Multi-Agent Meta Reinforcement Learning, [AAAI \(2023\)](#). (W.J. Yun, J. Park, [J. Kim](#))
- [AAAI'23] FV-Train: Quantum Convolutional Neural Network Training with a Finite Number of Qubits by Extracting Diverse Features, *AAAI Student Abstract and Poster (2023)*. (H. Baek, W.J. Yun, [J. Kim](#)) ([Finalist \(Top 25\)](#), [Oral Presentation Contest](#))
- [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](#))
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- [APWCS'22] DDPG-based Deep Reinforcement Learning for Loitering Munition Mobility Control: Algorithm Design and Visualization, *IEEE VTS APWCS (2022)*. (H. Lee, W.J. Yun, S. Jung, J.-H. Kim, [J. Kim](#)) ([IEEE VTS Seoul Chapter Award](#))
- [ICML'22] Slimmable Quantum Federated Learning, *ICML Workshop on Dynamic Neural Networks (2022)*. (W.J. Yun, J.P. Kim, S. Jung, J. Park, M. Bennis, [J. Kim](#)) ([Spotlight](#), [Oral Presentation](#))
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- [ICOIN'21] Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing, *IEEE ICOIN (2021)*. (S. Jung, W.J. Yun, [J. Kim](#), J.-H. Kim) ([Best Paper Award](#))
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- [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)
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- [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)

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- [TVT.wip] ([WIP](#), [Review since 20-Mar-2023](#)) Age-of-Information Aware Contents Caching and Distribution for Connected Vehicles, [IEEE Transactions on Vehicular Technology](#). (S. Park, C. Park, S. Jung, M. Choi, [J. Kim](#))
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- [JSAC'18.11] SGCO: Stabilized Green Crosshaul Orchestration for Dense IoT Offloading Services, *IEEE Journal on Selected Areas in Communications*, 36(11):2538–2548 (2018). (N.-N. Dao, D.-N. Vu, W. Na, J. Kim, S. Cho)
- [JSAC'18.06] Wireless Video Caching and Dynamic Streaming under Differentiated Quality Requirements, *IEEE Journal on Selected Areas in Communications*, 36(6):1245–1257 (2018). (M. Choi, J. Kim, J. Moon)
- [Access'18.05] Soft Memory Box: A Virtual Shared Memory Framework for Fast Deep Neural Network Training in Distributed High Performance Computing, *IEEE Access*, 6:26493–26504 (2018). (S. Ahn, J. Kim, E. Lim, S. Kang)
- [TVT'18.04] Adaptive Detector Selection for Queue-Stable Word Error Rate Minimization in Connected Vehicle Receiver Design, *IEEE Transactions on Vehicular Technology*, 67(4):3635–3639 (2018). (M. Choi, J. Kim, J. Moon)
- [IOTI'18.02] Energy-Efficient Mobile Charging for Wireless Power Transfer in Internet of Things Networks, *IEEE Internet of Things Journal*, 5(1):79–92 (2018). (W. Na, J. Park, C. Lee, K. Park, J. Kim, S. Cho)
- ◀ 2017 ▶
- [TII'17.12] Residential Demand Response for Renewable Energy Resources in Smart Grid Systems, *IEEE Transactions on Industrial Informatics*, 13(6):3165–3173 (2017). (L. Park, Y. Jang, S. Cho, J. Kim) (Citations: 100+)
- [IOTI'17.10] Feasibility Study of 60 GHz Millimeter-Wave Technologies for Hyperconnected Fog Computing Applications, *IEEE Internet of Things Journal*, 4(5):1165–1173 (2017). (J. Kim, W. Lee)
- [Access'17.09] A Software-based Monitoring Framework for Time-Space Partitioned Avionics Systems, *IEEE Access*, 5:19132–19143 (2017). (C. Shin, C. Lim, J. Kim, H. Roh, W. Lee)
- [JRTIP'17.09] QoS Optimal Real-Time Video Streaming in Distributed Wireless Image-Sensing Platforms, *Journal of Real-Time Image Processing (Springer)*, 13(3):547–556 (2017). (J. Kim, E.-S. Ryu)
- [Access'17.08] Energy-Efficient Stabilized Automatic Control for Multicore Baseband in Millimeter-Wave Systems, *IEEE Access*, 5:16584–16591 (2017). (J. Kim, J.-J. Lee, J.-K. Kim, W. Lee)
- [PLoS'17.08] Adaptive MCS Selection and Resource Planning for Energy-Efficient Communication in LTE-M based IoT Sensing Platform, *PLoS ONE*, 12(8):e0182527 (2017). (N.-N. Dao, M. Park, J. Kim, S. Cho)
- [IJDSN'17.08] Distributed and Reliable Decision-Making for Cloud-Enabled Mobile Service Platforms, *International Journal of Distributed Sensor Networks*, 13(8):1–9 (2017). (J. Kim, A. Mohaisen)
- [Access'17.06] Adaptive Resource Balancing for Serviceability Maximization in Fog Radio Access Networks, *IEEE Access*, 5:14548–14559 (2017). (N.-N. Dao, J. Lee, D.-N. Vu, J. Paek, J. Kim, S. Cho, K. Chung, C. Keum)
- [IJAP'17.06] 60GHz Modular Antenna Array Link Budget Estimation with WiGig Baseband and Millimeter-Wave Specific Attenuation, *International Journal of Antenna and Propagation*, 2017:9073465 (2017). (J. Kim, L. Xian, A.S. Sadri)
- [VTM'17.03] The Useful Impact of Carrier Aggregation: A Measurement Study in South Korea for Commercial LTE-Advanced Networks, *IEEE Vehicular Technology Magazine*, 12(1):55–62 (2017). (S. Lee, S. Hyeon, J. Kim, H. Roh, W. Lee)
- [MIS'17.03] Strategic Control of 60GHz Millimeter-Wave High-Speed Wireless Links for Distributed Virtual Reality Platforms, *Mobile Information Systems*, 2017:5040347 (2017). (J. Kim, J.-J. Lee, W. Lee)
- ◀ 2016 ▶
- [TVT'16.12] Performance of Video Streaming in Infrastructure-to-Vehicle Telematic Platforms With 60-GHz Radiation and IEEE 802.11ad Baseband, *IEEE Transactions on Vehicular Technology*, 65(12):10111–10115 (2016). (J. Kim, S. Kwon, G. Choi)
- [Access'16.12] Numerical Simulation Study for Frequency Sharing between Micro-Cellular Systems and Fixed Service Systems in Millimeter-Wave Bands, *IEEE Access*, 4:9847–9859 (2016). (J. Kim, L. Xian, A.S. Sadri)
- [PLoS'16.12] Achievable Rate Estimation of IEEE 802.11ad Visual Big-Data Uplink Access in Cloud-Enabled Surveillance Applications, *PLoS ONE*, 11(12):e0167447 (2016). (J. Kim, J.-K. Kim)
- [IJAP'16.12] Enhanced Next Generation Millimeter-Wave Multicarrier System with Generalized Frequency Division Multiplexing, *International Journal of Antenna and Propagation*, 2016:9269567 (2016). (H. Shimodaira, J. Kim, A.S. Sadri)
- [TON'16.08] Quality-Aware Streaming and Scheduling for Device-to-Device Video Delivery, *IEEE/ACM Transactions on Networking*, 24(4):2319–2331 (2016). (J. Kim, G. Caire, A.F. Molisch) (Citations: 160+) (Best Reading Papers in Device-to-Device Communications by IEEE Communications Society)
- [JRTIP'16.08] Stochastic Stable Buffer Control for Quality-Adaptive HEVC Video Transmission in Enterprise WLAN Architectures, *Journal of Real-Time Image Processing (Springer)*, 12(2):465–471 (2016). (J. Kim, E.-S. Ryu)
- [PLoS'16.08] Adaptive Suspicious Prevention for Defending DoS Attacks in SDN-Based Convergent Networks, *PLoS ONE*, 11(8):e0160375 (2016). (N.-N. Dao, J. Kim, M. Park, S. Cho)
- ◀ 2007–2015 ▶
- [TII'15.12] Energy-Efficient Dynamic Packet Downloading for Medical IoT Platforms, *IEEE Transactions on Industrial Informatics*, 11(6):1653–1659 (2015). (J. Kim)
- [TSMC'15.11] Stochastic Decision Making for Adaptive Crowdsourcing in Medical Big-Data Platforms, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 45(11):1471–1476 (2015). (J. Kim, W. Lee)
- [MTAP'15.10] Interference Impacts on 60 GHz Real-Time Online Video Streaming in Wireless Smart TV Platforms, *Multimedia Tools and Applications (Springer)*, 74(19):8613–8629 (2015). (J. Kim, S.-N. Hong)
- [IJEC'15.07] Error Concealment Mode Signaling for Robust Mobile Video Transmission, *International Journal of Electronics and Communications (Elsevier)*, 69(7):1070–1073 (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 (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 (2015). (J. Kim, S.-N. Hong)
- [JCN'14.10] Fast Millimeter-Wave Beam Training with Receive Beamforming, *Journal of Communications and Networks*, 16(5):512–522 (2014). (J. Kim, A.F. Molisch) (Citations: 100+)

- [IET'14.10] Quality of Video Streaming in 38 GHz Millimetre-Wave Heterogeneous Cellular Networks, *IET Electronics Letters*, 50(21):1526–1528 (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 (2014). (S.-N. Hong, J. Kim)
 - [CL'14.07] A Low-Complexity Algorithm for Neighbor Discovery in Wireless Networks, *IEEE Communications Letters*, 18(7):1119–1122 (2014). (S.-N. Hong, J. Kim)
 - [CL'14.03] Fast and Low-Power Link Setup for IEEE 802.15.3c Multi-Gigabit/s Wireless Sensor Networks, *IEEE Communications Letters*, 18(3):455–458 (2014). (J. Kim, A. Mohaisen, J.-K. Kim)
 - [IJDSN'14.03] Quality Analysis of Massive High-Definition Video Streaming in Two-Tiered Embedded Camera-Sensing Systems, *International Journal of Distributed Sensor Networks*, 10(3):1–9 (2014). (J. Kim, E.-S. Ryu)
 - [TBC'13.09] Joint Scalable Coding and Routing for 60 GHz Real-Time Live HD Video Streaming Applications, *IEEE Transactions on Broadcasting*, 59(3):500–512 (2013). (J. Kim, Y. Tian, S. Mangold, A.F. Molisch)
 - [IET'13.02] Distributed Stochastic Buffering for Enterprise WLAN Architectures, *IET Electronics Letters*, 49(4):302–304 (2013). (J. Kim, E.-S. Ryu)
 - [TCE'07.11] Movement-Aware Vertical Handoff of WLAN and Mobile WiMAX for Seamless Ubiquitous Access, *IEEE Transactions on Consumer Electronics*, 53(4):1268–1275 (2007). (W. Lee, E. Kim, J. Kim, I. Lee, C. Lee) (Citations: 110+) (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 (2007). (J. Kim, W. Lee, E. Kim, D.-W. Kim, H. Kim)
 - [CL'07.01] Optimized Transmission Power Control of Interrogators for Collision Arbitration in UHF RFID Systems, *IEEE Communications Letters*, 11(1):22–24 (2007). (J. Kim, W. Lee, E. Kim, D. Kim, K. Suh)
- **Conferences – GLOBECOM/ICC/VTC and Workshops/Demos/Posters in Top-Tiers**
- [ICC'23] Multi-Agent Deep Reinforcement Learning for Efficient Passenger Delivery in Urban Air Mobility, *ICC (2023)*. (C. Park, S. Park, G.S. Kim, S. Jung, J.-H. Kim, 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 (2023)*. (H. Baek, W.J. Yun, J. Kim)
 - [ICDCS'22] AoI-Aware Markov Decision Policies for Caching, *ICDCS Ph.D. Student Symposium (2022)*. (S. Park, S. Jung, M. Choi, J. Kim)
 - [ICDCS'22] Quality-Aware Real-Time Augmented Reality Visualization under Delay Constraints, *ICDCS Poster (2022)*. (R. Lee, S. Park, S. Jung, J. Kim)
 - [VTC'22-Spring] Adaptive and Stabilized Streaming for Edge-Assisted Connected Vehicles under Heterogeneous Computing Constraints, *VTC (2022-Spring)*. (R. Lee, H. Lee, S. Park, J. Kim)
 - [VTC'22-Spring] Random Access Protocol Learning in LEO Satellite Networks via Reinforcement Learning, *VTC (2022-Spring)*. (J.-H. Lee, H. Seo, J. Park, M. Bennis, J. Kim, Y.-C. Ko)
 - [ICML'21] Communication and Energy Efficient Slimmable Federated Learning via Superposition Coding and Successive Decoding, *ICML Workshop on Federated Learning for User Privacy and Data Confidentiality (2021)*. (H. Baek, W.J. Yun, S. Jung, M. Ji, J. Kim, J. Park, M. Bennis)
 - [DSN'21] Spatio-Temporal Split Learning, *DSN Supplemental Volume (2021)*. (S. Park, S. Jung, M. Choi, J. Kim)
 - [INFOCOM'21] Visualization of Deep Reinforcement Autonomous Aerial Mobility Learning Simulations, *INFOCOM Demo (2021)*. (G. Lee, W.J. Yun, S. Jung, J. Kim, J.-H. Kim)
 - [ICML'20] XOR Mixup: Privacy-Preserving Data Augmentation for One-Shot Federated Learning, *ICML Workshop on Federated Learning for User Privacy and Data Confidentiality (2020)*. (M. Shin, C. Hwang, J. Kim, J. Park, M. Bennis, S.-L. Kim)
 - [ICC'20] User Scheduling and Power Allocation for Content Delivery in Caching Helper Networks, *ICC (2020)*. (M. Choi, A.F. Molisch, J. Kim)
 - [GLOBECOM'19] Multi-Agent Deep Reinforcement Learning for Cooperative Connected Vehicles, *GLOBECOM (2019)*. (D. Kwon, J. Kim)
 - [ICCV'19] Deep Multi-modal Unsupervised Pen Pressure Stylization, *ICCV Demo (2019)*. (D. Kim, J. Kim)
 - [DSN'19] Privacy-Preserving Deep Learning Computation for Geo-Distributed Medical Big-Data Platforms, *DSN Supplemental Volume (2019)*. (J. Jeon, J. Kim, J. Kim, K. Kim, A. Mohaisen, J.-K. Kim)
 - [MobiSys'19] Multi-Agent Deep Reinforcement Learning for Connected Vehicles, *MobiSys Poster (2019)*. (D. Kwon, S. Park, J. Kim)
 - [MobiSys'19] Light-Weight Programming Language for Blockchain, *MobiSys Demo (2019)*. (J. Kim, J. Kim)
 - [ICML'19] Adversarial Imitation Learning via Random Search in Lane Change Decision-Making, *ICML Workshop on AI for Autonomous Driving (2019)*. (M. Shin, J. Kim)
 - [ICC'19] Probabilistic Caching Policy for Categorized Contents and Consecutive User Demands, *ICC (2019)*. (M. Choi, D. Kim, D.-J. Han, J. Kim, J. Moon)
 - [CCS'18] Secure Compute-VM: Secure Big Data Processing with SGX and Compute Accelerators, *CCS Workshop on System Software for Trusted Execution (2018)*. (S. Yoo, H. Kim, J. Kim)
 - [MobiSys'18] Neural Network Syntax Analyzer for Embedded Standardized Deep Learning, *MobiSys Workshop on Embedded and Mobile Deep Learning (2018)*. (M. Shin, J. Kim, A. Mohaisen, J. Park, K.H. Lee)
 - [SECON'18] Recipient-Oriented Transaction for Preventing Double Spending Attacks in Private Blockchain, *SECON Poster (2018)*. (H. Lee, M. Shin, K.S. Kim, Y. Kang, J. Kim)
 - [AsiaCCS'18] Mining with Proof-of-Probability in Blockchain, *AsiaCCS Poster (2018)*. (S. Kim, J. Kim)
 - [ICSE'18] A Novel Shared Memory Framework for Distributed Deep Learning in High-Performance Computing Architecture, *ICSE Companion Volume (2018)*. (S. Ahn, J. Kim, S. Kang)
 - [SOSP'17] A Reliable, Self-Adaptive Face Identification Framework via Lyapunov Optimization, *SOSP Workshop on AI Systems (2017)*. (D. Kim, J. Kim, J.Y. Bang)
 - [SIGCOMM'16] A Longitudinal Analysis of .i2p Leakage in the Public DNS Infrastructure, *SIGCOMM Poster (2016)*. (S.H. Jeong, A.R. Kang, J. Kim, H.K. Kim, A. Mohaisen)
 - [INFOCOM'16] Buffer-Stable Adaptive Per-Module Power Allocation for Energy-Efficient Millimeter-Wave Modular Antenna Array (MAA) Platforms, *INFOCOM Poster (2016)*. (J. Kim)
 - [GLOBECOM'15] 60 GHz Frequency Sharing Study between Fixed Service Systems and Small-Cell Systems with Modular Antenna Arrays, *GLOBECOM*

Workshop on Millimeter-Wave Backhaul and Access (2015). (J. Kim, L. Xian, R. Arefi, A.S.Sadri)

- [SOSP'15] A Case for Bad big.LITTLE Switching: How to Scale Power-Performance in SI-HMP, SOSP Workshop on Power-Aware Computing and Systems (2015). (S. Yoo, Y. Shim, S. Lee, S.-A. Lee, J. Kim)
- [GLOBECOM'14] Required Frequency Rejection in 39 GHz Millimeter-Wave Small Cell Systems, GLOBECOM Industry Program (2014). (J. Kim, L. Xian, A. Maltsev, R. Arefi, A.S.Sadri)
- [ICC'14] Quality-Aware Millimeter-Wave Device-to-Device Multi-Hop Routing for 5G Cellular Networks, ICC (2014). (J. Kim, A.F. Molisch)
- [MobiCom'13] Adaptive Video Streaming for Device-to-Device Mobile Platforms, MobiCom Demo (2013). (J. Kim, F. Meng, P. Chen, H.E. Egilmez, D. Bethanabhotla, A.F. Molisch, M.J. Neely, G. Caire, A. Ortega)
- [ICC'13] Quality-Aware Coding and Relaying for 60 GHz Real-Time Wireless Video Broadcasting, ICC (2013). (J. Kim, Y. Tian, S. Mangold, A.F. Molisch)
- [VTC'06-Spring] Energy-Aware Distributed Topology Control for Coverage-Time Optimization in Clustering-Based Heterogeneous Sensor Networks, VTC (2006-Spring). (J. Kim, J. Choi, W. Lee)
- [VTC'05-Spring] Low-Energy Localized Clustering: An Adaptive Cluster Radius Configuration Scheme for Topology Control in Wireless Sensor Networks, VTC (2005-Spring). (J. Kim, S. Kim, D. Kim, W. Lee, E. Kim)

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

■ 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, Naver), 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), MASS, 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, WSP, 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, ICCS, 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

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