

Highlights

Research Milestones

- **60 IEEE Journals** (published and accepted),
The Complete Journals List (totally, **104**) is as follows, <https://joongheon.github.io/publications-journals.html>
- **6 Top-Tier Conference Papers**, i.e., IEEE INFOCOM (2022), IEEE ICDCS (2020), IJCAI (2019), IEEE ICDCS (2018), ACM Multimedia (2017), and ACM MobiSys (2010)
- **4559+ Citations** in Google Scholar Profile (H-index: 31+, i10-index 105+)
- **Outstanding Young Researcher Award (2020)**, IEEE Communications Society – Multimedia Communications Technical Committee
- **IEEE Systems Journal Best Paper Award (2020)**, Top 7 among 793 accepted papers in 2019 (0.88%)
- **6 Awards from IEEE Conferences and Contests**, i.e., 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)
- **5 Tutorials at IEEE Conferences**, i.e., ICOIN (2022), ICUFN (2021), ICAIIC (2021), ICOIN (2019), and ICC (2018)
- **62+ 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
- **13 Awards** from Local (Korean) Conferences and Contests
- **Research Funds (since March 2016)**: 4,517,384 USD \approx 4,517,384,000 KRW (except University Internal Funds)

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

- **Supervised 3 Postdoctoral Scholars**, now, tenure-track professors at Kyung Hee University (Korea) and Hallym University (Korea); and a postdoctoral scholar at the University of Southern California (United States, jointly advised by Prof. Andreas F. Molisch)
- **Supervised 1 Ph.D. and 5 M.S. Students**, now, researchers at LG Electronics, Hyundai, Naver, government agency, and startup
- **4 Best Teaching Awards at Korea University**, 2 awards are for top 5% (*Granite Tower (Seok-Tap) Best Teaching Award*) and 2 awards are for top 20% (*Best Teaching Award*)

IEEE Society Academic Activities

- **Senior Member of the IEEE (2018–)** and IEEE Membership for 17+ years
 - **Distinguished Lecturer, IEEE Communications Society (ComSoc)** (class of 2022–2023) 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
 - **21+ Organizing Committee (OC) Contributions** for IEEE Conferences
 - **57+ Technical Program Committee (TPC) 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), School of Electrical Engineering
 - Adjunct Professor (03/2023–Present), Department of Communication Engineering (with **Samsung Electronics**)
 - Adjunct Professor (03/2021–02/2023), Department of Semiconductor Engineering (with **SK Hynix**)
 - Assistant Professor (09/2019–02/2021), School of Electrical Engineering
 - R&D APPOINTMENTS
 - * Vice Director (10/2020–Present), Artificial Intelligence Engineering Research Center (KU-AIER)
- **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

- **Blue Baikal**, Singapore
 - Advisor (01/2020–), Advisor in Technologies (Deep Learning & Information Security)
- **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

Visiting Positions

- **California State University, Long Beach – College of Engineering**, Long Beach, CA, USA
 - Visiting Scholar (01/2020), Department of Electrical Engineering (Host: Prof. Sean Kwon)
- **University of California, Irvine – Donald Bren School of Information and Computer Sciences**, Irvine, CA, USA
 - Visiting Scholar (08/2018), Department of Computer Science (Host: Prof. Marco Levorato)

Academia (Membership, Editorial Boards, and Services)

- **IEEE**
 - Senior Member (2018–), Member (2006–2017)
 - Distinguished Lecturer (2022–2023), **IEEE Communications Society**
 - 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 Asia Pacific Wireless Communications Symposium (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 Machine Learning (ML) and Artificial Intelligence (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 (03/2021), **ICT Express** (S.I. on Mobile and Edge Computing Systems)
 - **KICS (Korean Institute of Communications and Information Sciences)**
 - Life Member (2018–)
 - Vice Executive Director (2021, 2022), International Conference 1 Division (IEEE ICTC)
 - Vice Executive Director (2022), International Conference 3 Division (IEEE APCC)
 - Vice Executive Director (2021), Intelligence Technology 2 Division
 - Director (2020), Intelligence Technology 2 Division
 - Director (2018, 2019), Intelligence Technology Division
 - Director (2017), ICT Convergence Division
 - Board Member (01/2019–), KICS Technical Committee on Coding and Information Theory
 - Board Member (01/2019–), KICS Technical Committee on Military Communication
 - Board Member (06/2018–), KICS Technical Committee on Spectrum Sharing
 - Board Member (01/2017–), KICS Technical Committee on Mobile Communications
 - Board Member (01/2017–), KICS Technical Committee on Communication Networking
 - Editor, **The Journal of Korean Institute of Communications and Information Sciences**
 - Guest Editor (09/2019), **KICS Information and Communications Magazine** (S.I. on AI and Deep Learning)
 - **JCCI (Joint Conference on Communication and Information) Organizing Committee: General Affair Chair** (2022), Publication Chair (2021), Publication Chair (2020), Publication Chair (2019), Publication Chair (2018)
 - **KIISE (Korean Institute of Information Scientists and Engineers)**
 - Vice President (2022), Information Network Society
 - General Affair Manager (2021), Information Network Society
 - General Affair Manager in Academia (2020), Information Network Society
 - Member, Information Network Society
 - Editor, **Journal of KIISE** (Area: Information Network)
 - **IEIE (Institute of Electronics and Information Engineers)**
 - General Affair Manager (2022), Telecommunication Society
 - Co-Director (2021)
 - Editor, **Journal of the Institute of Electronics and Information Engineers** (Area: Telecommunication)
 - **OSIA (Open Standards and ICT Association)**
 - Vice President (2022), Vice President (2021), General Affair Manager (2020)
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Awards and Honors

Research and Academic Excellence (International)

- **Outstanding Young Researcher Award** – *IEEE Communications Society* 03/2022
IEEE Communications Society – Multimedia Communications Technical Committee (MMTC)
- **Distinguished Lecturer** (class of 2022–2023) – *IEEE Communications Society* 12/2021
- **IEEE VTS Seoul Chapter Award** – *IEEE Vehicular Technology Society* (with Y. Kwak, S. Jung, J.-H. Kim) 08/2021
"Quantum Scheduling for Millimeter-Wave Observation Satellite Constellation"
- **IEEE VTS Seoul Chapter Award** – *IEEE Vehicular Technology Society* (with H. Lee, S. Jung) 08/2021
"Distributed and Autonomous Aerial Data Collection in Smart City Surveillance Applications"
- **IEEE ICOIN 2021 Best Paper Award** – *IEEE Computer Society* (with S. Jung, W.J. Yun, J.-H. Kim) 01/2021
"Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing"
- **Bronze Paper Award** – *2020 IEEE Seoul Section Student Paper Contest* (with S. Park) 12/2020
"Reliable Offloading Target Selection using Deep Reinforcement Learning for Large Fire Accident"
- **IEEE Systems Journal Best Paper Award** – *IEEE Systems Council* (with M. Saad, J. Choi, D. Nyang, A. Mohaisen) 03/2020
"Towards Characterizing Blockchain-based Cryptocurrencies for Highly-Accurate Predictions"
- **Gold Paper Award** – *2019 IEEE Seoul Section Student Paper Contest* (with J. Yoo) 12/2019
"Stabilized Super-Resolution Deep Learning Adaptation for UAV-Assisted Mobile Edges: A Lyapunov Optimization Approach"
- **IEEE VTS Seoul Chapter Award** – *IEEE Vehicular Technology Society* (with S. Park, D. Kwon, M. Shin) 08/2019
"Joint Offloading and Streaming in Mobile Edges: A Deep Reinforcement Learning Approach"
- **Next Generation and Standards (NGS) Division Recognition Award** – *Intel Corporation* Q1/2015
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** – *University of Southern California* 02/2009
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 Paper Award – Encouragement Paper Award** – *2021 KICS Summer Conference* (with H. Baek, Y.J. Ha, M. Yoo, S. Jung) 06/2021
"Neural Architectural Nonlinear Pre-Processing for mmWave Radar-based Human Gesture Perception in On-Driving Scenarios"
- **Haedong Young Scholar Award** – *KICS and Haedong Foundation* 12/2018
For recognizing a researcher under the age of 40 who has made outstanding contributions to communication sciences R&D
- **Outstanding Research Paper Award** – *LG Electronics CTO Office, Multimedia Research Laboratory* 01/2008
Awarded Paper – 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** – *The 3rd RFID/USN Research Paper Contest* 10/2007
- **ETRI President Award** – *The 2nd RFID/USN Research Paper Contest* 11/2006
- **Korea Association of RFID/USN (KARUS) President Award** – *The 1st RFID/USN Research Paper Contest* 10/2005
- **Scholarships for Academic Excellence** – *Korea University* Fall 1999, Fall 2000

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

- **Best Presentation Award** – *A3 Foresight Program (AI-Based Future IoT Technologies and Services Online Workshop)* (Awarded to H. Baek) 02/2022
- **2021 ICT Express Best Reviewer Award** – *ICT Express (Elsevier)* (Awarded to S. Park) 12/2021
- **Excellence Paper Award** – *2021 KICS Summer Conference* (with B. Lim, W.J. Yun, Y.-C. Ko) 06/2021
"Deep Learning Based Non-Orthogonal Pilot Design for Massive MIMO"
- **Excellence Paper Award (Undergraduate)** – *2021 KICS Summer Conference* (with G. Lee, W.J. Yun, S. Jung) 06/2021
"Deep Reinforcement Learning Visualization and Simulations using Unity-RL in an Autonomous Driving Environment"
- **Encouragement Paper Award** – *2020 KICS Fall Conference* (with W.J. Yun) 11/2020
"UAV Trajectory Optimization via Multi-Agent Deep Reinforcement Learning"
- **Encouragement Paper Award** – *2020 KICS Summer Conference* (with W.J. Yun) 08/2020
"3D Modeling and WebVR Implementation Using Azure Kinect, Open3D, and Three.js"
- **Encouragement Paper Award** – *2020 KICS Winter Conference* (with S. Oh, J. Choi) 02/2020
"Quantum Heuristic Solver using QAOA for the Maximum Independent Set Problem"
- **Encouragement Paper Award** – *2020 KICS Winter Conference* (with J. Kim) 02/2020
"Multi-Drone Scheduling for High-Reliable and High-Performance UAV-based Surveillance Networking"

Teaching and Supervision Excellence

- **Granite Tower (Seok-Tap) 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 (Seok-Tap) Best Teaching Award (Top 5%)** – *Korea University* (Computer Language and Lab, EGRN151) Fall 2019

Academic and University Services

- **Outstanding Contribution Award** – *KIIE Information Network Society* 02/2022
- **Outstanding Contribution Award** – *Open Standards and ICT Association (OSIA)* 12/2021
- **Outstanding Contribution Award** – *KICS* 11/2021
- **Appreciation Recognition** – *Daegu Gyeongbuk Institute of Science and Technology (DGIST)* 10/2021
- **Outstanding Contribution Award** – *KICS* 11/2019

- **Fellow Employee Recognition [#3081146]** – Intel Corporation 12/2014
- **Certificate of Appreciation** – Department of Computer Science, University of Southern California 09/2010

Business Administration

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

R&D Projects (Totally, 4,517,384 USD \approx 4,517,384,000 KRW)

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** 10/2020–12/2022
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) – University ITRC Project** 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 – University ITRC Project** 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 – University ITRC Project** 02/2020–05/2020
Funded by *Institute for ICT Promotion (IITP)* [2018-0-01396; Co-PI], PI: Kookmin University (Korea)

Government-Funded Projects

- **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]
- **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]

Industry-Funded Projects

- **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]
- **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]
- **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 NGV and Hyundai/Kia Motors Company* [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]

Government-Funded Research Institute Projects

- **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]
- **Autonomous Intelligent COA Search Methods for Cyber-Attacks** 12/2021–11/2022
Funded by *Agency for Defense Development (ADD)* [xxx, 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

- Citation: 4559+, H-Index: 31+, i10-Index: 105+; obtained from Google Scholar Profile (as of April 6, 2022)
- The Complete Journals List (totally, 104) is as follows, <https://joongheon.github.io/publications-journals.html>

Dissertation, Books, and Book Chapters

■ Ph.D. Dissertation

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

■ Books

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

■ Book Translation (from English to Korean)

- J. Choi, J. Kim, J. No, C. Sohn, D. Ahn, H. Ahn, H. Lee, and H. Jung, *Programming in ANSI C*, Haksan Media, January 2021 (8th Edition, ISBN: 979-1185294315)., Originally written by E. Balagurusamy (Publisher: McGraw Hill, ISBN: 978-9351343202, January 2019)

■ Book Chapters

- S. Park, D. Kim, and J. Kim, "Dynamic Decision-Making for Stabilized Deep Learning Software Platforms," *Advances and Applications in Deep Learning*, IntechOpen, September 2020., (Editor: M.A. Aceves-Fernandez)
- A.F. Molisch, M. Ji, J. Kim, D. Burghal, and A.S. Tehrani, "Device-to-Device Communications," *Towards 5G: Applications, Requirements and Candidate Technologies*, Wiley, January 2017., (Editors: R. Vannithamby, S. Talwar)
- J. Kim, "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, "Millimeter-Wave (mmWave) Radio Propagation Characteristics," *Opportunities in 5G Networks: A Research and Development Perspective*, CRC Press, April 2016., (Editor: F. Hu)
- J. Kim, E. Kim, W. Lee, D. Kim, J. Choi, J. Jung, and C.K. Shin, "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, W. Lee, E. Kim, and T.K. Shih, "Coverage-Time Optimized Dynamic Clustering for Two-Tiered WM2Nets," *Wireless Mesh Networking*, McGraw-Hill, August 2008., (Editor: G. Aggelou)

Top-Tier Conferences and Journals/Magazines

■ Top-Tier Conference Proceedings

- [Review] H. Lee, C. Park, W.J. Yun, J.-H. Kim, S. Jung, and J. Kim, "(Under Review)," **IEEE International Conference on Mobile Ad-Hoc and Smart Systems (MASS)**, Denver, CO, USA, October 2022.

- [Review] W.J. Yun, M. Shin, D. Mohaisen, S. Jung, J.-K. Kim, and J. Kim, "(Under Double Blind Review)," **International Joint Conference on Artificial Intelligence and European Conference on Artificial Intelligence (IJCAI-ECAI)**, Vienna, Austria, July 2022.
- [Review] W.J. Yun, Y. Kwak, J.P. Kim, H. Cho, S. Jung, J. Park, and J. Kim, "Quantum Multi-Agent Reinforcement Learning via Variational Quantum Circuit Design," **IEEE International Conference on Distributed Computing Systems (ICDCS)**, Bologna, Italy, July 2022.
- [INFOCOM'22] H. Baek, W.J. Yun, Y. Kwak, S. Jung, M. Ji, M. Bennis, J. Park, and J. Kim, "Joint Superposition Coding and Training for Federated Learning over Multi-Width Neural Networks," **IEEE International Conference on Computer Communications (INFOCOM)**, Virtual, May 2022. (*Acceptance Rate: 225/1129=19.93%*)
- [ICDCS'20] Ü. Meteriz, N.F. Yildiran, J. Kim, and D. Mohaisen, "Understanding the Potential Risks of Sharing Elevation Information on Fitness Applications," **IEEE International Conference on Distributed Computing Systems (ICDCS)**, Virtual, November/December 2020. (*Acceptance Rate: 105/584=17.98%*)
- [IJCAI'19] M. Shin and J. Kim, "Randomized Adversarial Imitation Learning for Autonomous Driving," **International Joint Conference on Artificial Intelligence (IJCAI)**, Macau, China, August 2019. (*Acceptance Rate: 850/4752=17.89%*)
- [ICDCS'18] S. Ahn, J. Kim, E. Lim, W. Choi, A. Mohaisen, and S. Kang, "ShmCaffe: A Distributed Deep Learning Platform with Shared Memory Buffer for HPC Architecture," **IEEE International Conference on Distributed Computing Systems (ICDCS)**, Vienna, Austria, July 2018. (*Acceptance Rate: 78/378=20.63%*)
- [MM'17] J. Koo, J. Yi, J. Kim, M.A. Hoque, and S. Choi, "REQUEST: Seamless Dynamic Adaptive Streaming over HTTP for Multi-Homed Smartphone under Resource Constraints," **ACM International Conference on Multimedia (MM)**, Mountain View, CA, USA, October 2017. (*Acceptance Rate: 189/684=27.63%*)
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■ IEEE Journals and Magazines, 65 publications

◀ Revision ▶

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- [TNNLS.minor] W.J. Yun, M. Shin, D. Mohaisen, K. Lee, and J. Kim, "Hierarchical Deep Reinforcement Learning-based Propofol Infusion Assistant Framework in Anesthesia," *IEEE Transactions on Neural Networks and Learning Systems*, (Minor Revision, 26-Apr-2022).
- [TVT.major] B. Lim, W.J. Yun, J. Kim, and Y.-C. Ko, "Joint Pilot Design and Channel Estimation using Deep Residual Learning for Multi-Cell Massive MIMO under Hardware Impairments," *IEEE Transactions on Vehicular Technology*, (Review after 1st Revision, 28-Mar-2022).
- [TITS.major] W.J. Yun, S. Park, J. Kim, and D. Mohaisen, "Self-Configurable Stabilized Real-Time Detection Learning for Autonomous Driving Applications," *IEEE Transactions on Intelligent Transportation Systems*, (Review after 2nd Revision, 26-Feb-2022).
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- [TMC'22.05] J. Yi, S. Kim, J. Kim, and S. Choi, "Supremo: Cloud-Assisted Low-Latency Super-Resolution in Mobile Devices," *IEEE Transactions on Mobile Computing*, 21(5):1847-1860, May 2022.
- [ISJ'22.03] E. Boo, J. Kim, and J. Ko, "LiteZKP: Lightning Zero-Knowledge Proof-based Blockchains for IoT and Edge Platforms," *IEEE Systems Journal*, 16(1):112-123, March 2022.
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- [TVT'21.08] S. Jung, J. Kim, M. Levorato, C. Cordeiro, and J.-H. Kim, "Infrastructure-Assisted On-Driving Experience Sharing for

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- [JCN'20.02] S. Han, J.-W. Choi, and J. Kim, "Numerical Approximation of Millimeter-Wave Frequency Sharing between Cellular Systems and Fixed Service Systems," *IEEE/KICS Journal of Communications and Networks*, 22(1):37–45, February 2020.

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- [TMC'19.07] J. Koo, J. Yi, J. Kim, M.A. Hoque, and S. Choi, "Seamless Dynamic Adaptive Streaming in LTE/Wi-Fi Integrated Network under Smartphone Resource Constraints," *IEEE Transactions on Mobile Computing*, 18(7):1647–1660, July 2019.
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- [TIE'19.02] L. Park, S. Jeong, J. Kim, and S. Cho, "Joint Geometric Unsupervised Learning and Truthful Auction for Local Energy Market," *IEEE Transactions on Industrial Electronics*, 66(2):1499–1508, February 2019.

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- [JSAC'18.11] N.-N. Dao, D.-N. Vu, W. Na, J. Kim, and S. Cho, "SGCO: Stabilized Green Crosshaul Orchestration for Dense IoT

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◀ 2017 ▶

- [TII'17.12] L. Park, Y. Jang, S. Cho, and J. Kim, "Residential Demand Response for Renewable Energy Resources in Smart Grid Systems," *IEEE Transactions on Industrial Informatics*, 13(6):3165–3173, December 2017.
- [IOTJ'17.10] J. Kim and W. Lee, "Feasibility Study of 60 GHz Millimeter-Wave Technologies for Hyperconnected Fog Computing Applications," *IEEE Internet of Things Journal*, 4(5):1165–1173, October 2017.
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◀ 2016 ▶

- [TVT'16.12] J. Kim, S.-C. Kwon, and G. Choi, "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, December 2016.
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- [TON'16.08] J. Kim, G. Caire, and A.F. Molisch, "Quality-Aware Streaming and Scheduling for Device-to-Device Video Delivery," *IEEE/ACM Transactions on Networking*, 24(4):2319–2331, August 2016., (**Best Reading Papers in Device-to-Device Communications by IEEE Communications Society**), (**Citations: 130+**)

◀ 2007–2015 ▶

- [TII'15.12] J. Kim, "Energy-Efficient Dynamic Packet Downloading for Medical IoT Platforms," *IEEE Transactions on Industrial Informatics*, 11(6):1653–1659, December 2015.
- [TSMC'15.11] J. Kim and W. Lee, "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.
- [JCN'14.10] J. Kim and A.F. Molisch, "Fast Millimeter-Wave Beam Training with Receive Beamforming," *IEEE/KICS Journal of Communications and Networks*, 16(5):512–522, October 2014.
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- [TBC'13.09] J. Kim, Y. Tian, S. Mangold, and A.F. Molisch, "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.
- [TCE'07.11] 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., (**Outstanding Research Paper Award (2018) – LG Electronics CTO Office, Multimedia Research Laboratory**), (**Citations: 113+**)
- [TCE'07.05] J. Kim, W. Lee, E. Kim, D.-W. Kim, and H. Kim, "Coverage-Time Optimized Dynamic Clustering of Networked Sensors for Pervasive Home Networking," *IEEE Transactions on Consumer Electronics*, 53(2):433–441, May 2007.
- [CL'07.01] J. Kim, W. Lee, E. Kim, D. Kim, and K. Suh, "Optimized Transmission Power Control of Interrogators for Collision Arbitration in UHF RFID Systems," *IEEE Communications Letters*, 11(1):22–24, January 2007.

Conference Contributions

■ Selected – (1) Workshops in Top-Tier Conferences, (2) Awarded Contributions, and (3) Highly Cited Contributions

- [MMSys.review] H. Baek, R. Lee, J.-Y. Kim, Y.K. Lee, S. Jung, and J. Kim, "(Under Double Blind Review)," *ACM Multimedia Systems Conference (Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV))*, Athlone, Ireland, June 2022.
- [APWCS'21] J. Kim, Y. Kwak, S. Jung, and J.-H. Kim, "Quantum Scheduling for Millimeter-Wave Observation Satellite Constellation," *IEEE VTS Asia Pacific Wireless Communications Symposium*, Virtual, August 2021. (**IEEE VTS Seoul Chapter Award**)
- [APWCS'21] H. Lee, S. Jung, and J. Kim, "Distributed and Autonomous Aerial Data Collection in Smart City Surveillance Applications," *IEEE VTS Asia Pacific Wireless Communications Symposium*, Virtual, August 2021. (**IEEE VTS Seoul Chapter Award**)
- [ICML'21] H. Baek, W.J. Yun, J. Park, S. Jung, J. Kim, M. Ji, and M. Bennis, "Communication and Energy Efficient Slimmable Federated Learning via Superposition Coding and Successive Decoding," *International Conference on Machine Learning (Workshop on Federated Learning for User Privacy and Data Confidentiality)*, Virtual, July 2021.

- [ICOIN'21] S. Jung, W.J. Yun, J. Kim, and J.-H. Kim, "Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing," *IEEE International Conference on Information Networking*, Jeju, Korea, January 2021. (**Best Paper Award**)
- [ICML'20] M. Shin, C. Hwang, J. Kim, J. Park, M. Bennis, and S.-L. Kim, "XOR Mixup: Privacy-Preserving Data Augmentation for One-Shot Federated Learning," *International Conference on Machine Learning (Workshop on Federated Learning for User Privacy and Data Confidentiality)*, Virtual, July 2020.
- [APWCS'19] S. Park, J. Kim, D. Kwon, M. Shin, and J. Kim, "Joint Offloading and Streaming in Mobile Edges: A Deep Reinforcement Learning Approach," *IEEE VTS Asia Pacific Wireless Communications Symposium*, Singapore, August 2019. (**IEEE VTS Seoul Chapter Award**)
- [ICML'19] M. Shin and J. Kim, "Adversarial Imitation Learning via Random Search in Lane Change Decision-Making," *International Conference on Machine Learning (Workshop on A.I. for Autonomous Driving (AIAD))*, Long Beach, CA, USA, June 2019.
- [CCS'18] S. Yoo, H. Kim, and J. Kim, "Secure Compute-VM: Secure Big Data Processing with SGX and Compute Accelerators," *ACM Conference on Computer and Communications Security (Workshop on System Software for Trusted Execution (SysTEX))*, Toronto, Canada, October 2018.
- [MobiSys'18] M. Shin, J. Kim, A. Mohaisen, J. Park, and K.H. Lee, "Neural Network Syntax Analyzer for Embedded Standardized Deep Learning," *ACM International Conference on Mobile Systems, Applications, and Services (Workshop on Embedded and Mobile Deep Learning (EMDL))*, Munich, Germany, June 2018.
- [SOSP'17] D. Kim, J.Y. Bang, and J. Kim, "A Reliable, Self-Adaptive Face Identification Framework via Lyapunov Optimization," *ACM Symposium on Operating Systems Principles (Workshop on A.I. Systems)*, Shanghai, China, October 2017.
- [SOSP'15] S. Yoo, Y. Shim, S. Lee, S.-A. Lee, and J. Kim, "A Case for Bad big.LITTLE Switching: How to Scale Power-Performance in SI-HMP," *ACM Symposium on Operating Systems Principles (Workshop on Power-Aware Computing and Systems (HotPower))*, Monterey, CA, USA, October 2015.
- [ICC'14] J. Kim and A.F. Molisch, "Quality-Aware Millimeter-Wave Device-to-Device Multi-Hop Routing for 5G Cellular Networks," *IEEE International Conference on Communications (ICC)*, Sydney, Australia, June 2014. (**Citations: 50+**)
- [ICCCN'05] J. Kim, W. Lee, J. Yu, J. Myung, E. Kim, and C. Lee, "Effect of Localized Optimal Clustering for Reader Anti-Collision in RFID Networks: Fairness Aspect to the Readers," *IEEE International Conference on Computer Communications and Networks (ICCCN)*, San Diego, CA, USA, October 2005. (**Citations: 60+**)

■ Selected Abstracts in Top-Tier Conferences

- [DSN'21] J. Kim, S. Park, S. Jung, and S. Yoo, "Spatio-Temporal Split Learning," *IEEE/IFIP Int'l Conference on Dependable Systems and Networks (DSN)*, Virtual, June 2021.
- [INFOCOM'21] G. Lee, W.J. Yun, S. Jung, J. Kim, and J.-H. Kim, "Visualization of Deep Reinforcement Autonomous Aerial Mobility Learning Simulations," *IEEE Int'l Conference on Computer Communications (INFOCOM)*, Virtual, May 2021.
- [QTML'20] J. Choi, S. Oh, S. Park, and J. Kim, "A Quantum Approach to the Minimum Dominating Set Problem," *Quantum Techniques for Machine Learning (QTML)*, Virtual, November 2020.
- [ICCV'19] D. Kim and J. Kim, "Deep Multi-modal Unsupervised Pen Pressure Stylization," *IEEE/CVF Int'l Conference on Computer Vision (ICCV)*, Seoul, Korea, November 2019.
- [QTML'19] J. Choi and J. Kim, "A Quantum Approach to Max-Weight Independent Set Problem," *Quantum Techniques for Machine Learning (QTML)*, Daejeon, Korea, October 2019.
- [DSN'19] J. Jeon, J. Kim, J. Kim, K. Kim, A. Mohaisen, and J.-K. Kim, "Privacy-Preserving Deep Learning Computation for Geo-Distributed Medical Big-Data Platforms," *IEEE/IFIP Int'l Conference on Dependable Systems and Networks (DSN)*, Portland, OR, USA, June 2019.
- [MobiSys'19] D. Kwon, S. Park, and J. Kim, "Poster: Multi-Agent Deep Reinforcement Learning for Connected Vehicles," *ACM Int'l Conference on Mobile Systems, Applications, and Services (MobiSys)*, Seoul, Korea, June 2019.
- [MobiSys'19] J. Kim and J. Kim, "Demo: Light-Weight Programming Language for Blockchain," *ACM Int'l Conference on Mobile Systems, Applications, and Services (MobiSys)*, Seoul, Korea, June 2019.
- [SECON'18] H. Lee, M. Shin, K.S. Kim, Y. Kang, and J. Kim, "Recipient-Oriented Transaction for Preventing Double Spending Attacks in Private Blockchain," *IEEE Int'l Conference on Sensing, Communication, and Networking (SECON)*, Hong Kong, China, June 2018.
- [AsiaCCS'18] S. Kim and J. Kim, "POSTER: Mining with Proof-of-Probability in Blockchain," *ACM Asia Conference on Computer and Communications Security (AsiaCCS)*, Incheon, Korea, June 2018.
- [ICSE'18] S. Ahn, J. Kim, and S. Kang, "Poster: A Novel Shared Memory Framework for Distributed Deep Learning in High-Performance Computing Architecture," *IEEE/ACM Int'l Conference on Software Engineering (ICSE)*, Gothenburg, Sweden, May/June 2018.
- [SIGCOMM'16] S.H. Jeong, A.R. Kang, J. Kim, H.K. Kim, and A. Mohaisen, "A Longitudinal Analysis of .i2p Leakage in the Public DNS Infrastructure," *ACM SIGCOMM*, Florianopolis, Brazil, August 2016.
- [INFOCOM'16] J. Kim, "Buffer-Stable Adaptive Per-Module Power Allocation for Energy-Efficient Millimeter-Wave Modular Antenna Array (MAA) Platforms," *IEEE Int'l Conference on Computer Communications (INFOCOM)*, San Francisco, CA, USA, April 2016.
- [ITA'14] J. Kim, A. Turci, G. Caire, and A.F. Molisch, "Joint Scheduling and Stochastic Streaming for Device-to-Device Video Delivery," *IEEE Information Theory and Applications Workshop (ITA)*, San Diego, CA, USA, February 2014. (Graduation Day Talk)
- [MobiCom'13] J. Kim, F. Meng, P. Chen, H.E. Egilmez, D. Bethanabhotla, A.F. Molisch, M.J. Neely, G. Caire, and A. Ortega, "Demo: Adaptive Video Streaming for Device-to-Device Mobile Platforms," *ACM Int'l Conference on Mobile Computing and Networking (MobiCom)*, Miami, FL, USA, September/October 2013.

Patents (Granted), totally 62

- **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)
- **17 Korean Patents:** (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)

Teaching Experience and Research Supervision

Teaching Experience

- **Korea University – Graduate Courses (Department of Electrical and Computer Engineering), Faculty Member**
 - *IT R&D Policies 1 (ECE723)*: Fall 2020
 - *Design and Analysis of Wireless Communication Systems (ECE721)*: Spring 2021
 - *Smart Mobile Platform (ECE654)*: Fall 2021, Fall 2020, Fall 2019
 - *Wireless and Mobile Networks (ECE522)*: Spring 2020
 - *Wireless Network 1 (ITH524), Graduate School of Engineering and Technology*: Spring 2021
- **Korea University – Undergraduate Courses (College of Engineering (EGRN), School of Electrical Engineering (KECE), and Department of Semiconductor Engineering (SEMI)), Faculty Member**
 - *Data Communications (KECE316)*: Fall 2020
 - *Digital System Design and Laboratory (KECE210)*: Fall 2020
 - *Probability and Random Process (KECE209)*: Spring 2022, Spring 2021 (*Best Teaching Award, Top 20%*), Spring 2020
 - *Digital System (KECE207)*: Spring 2020
 - *Computer Language and Laboratory (EGRN151)*: Fall 2021, Fall 2020 (*Best Teaching Award, Top 20%*), Fall 2019 (*Granite Tower (Seok-Top) Best Teaching Award, Top 5%*)
 - *Object-Oriented Programming (SEMI104)*: Fall 2021
 - *Introduction to Computers (SEMI103)*: Spring 2021 (*Granite Tower (Seok-Top) Best Teaching Award, Top 5%*)
- **Korea University – General Education and International Winter Campus (IWC), Faculty Member**
 - *Future Mobility Technology (GEQR075)*: Spring 2022
 - *Introduction to Artificial Intelligence (IWC420)*: Winter 2021 (12/2021–01/2022)
- **Chung-Ang University – Graduate Courses (College of Computer Science and Software), Faculty Member**
 - *Optimal Design Theory and Applications*: Spring 2019, Spring 2018, Spring 2017
 - *Topics in Computer Science and Engineering*: Fall 2018, Fall 2017, Fall 2016
- **Chung-Ang University – Undergraduate Courses (College of Computer Science and Software), Faculty Member**
 - *Numerical Analysis*: Spring 2019
 - *Compiler Design*: Spring 2019, Spring 2018, Spring 2017
 - *Principles of Programming Languages*: Fall 2018, Fall 2017, Fall 2016
 - *Algorithm Analysis*: Fall 2016
 - *Operating Systems*: Spring 2017, Spring 2016
 - *Calculus*: Spring 2017, Spring 2016
 - *Mobile Application Development*: 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 Annamaram**
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 **University of Southern California** (co-advised by Prof. Andreas F. Molisch)
(Ph.D. Advisor: Prof. Jaekyun Moon at Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea)
Currently, *Assistant Professor* at **Kyung Hee University**, Suwon, Korea
 - **Dr. Soyi Jung** (03/2021–08/2021), jointly with **University of California at Irvine** (co-advised by Prof. Marco Levorato)
(Ph.D. Advisor: Prof. Jae-Hyun Kim at Ajou University, Suwon, Korea)
Currently, *Assistant Professor* at **Hallym University**, Chuncheon, Korea
 - **Dr. Ju-Hyung Lee** (08/2021–), jointly with **University of Southern California** (co-advised by Prof. Andreas F. Molisch)
(Ph.D. Advisor: Prof. Young-Chai Ko at Korea University, Seoul, Korea)
- **Ph.D. Course Students and Alumni**
 - **Soo Hyun Park** (03/2019–02/2024 (expected))
 - **Haemin Lee** (09/2020–02/2025 (expected))
 - **Won Joon Yun** (03/2021–08/2024 (expected))
 - **Yunseok Kwak** (03/2021–)
 - **Hyunsoo Lee** (03/2021–)
 - **Hankyul Baek** (03/2021–)
 - **Seok Bin Son** (03/2022–)
 - **Jae Pyoung Kim** (03/2023–)
- **Ph.D. Course Students and Alumni (Tight Collaboration for Ph.D. Dissertation)**
 - **Minseok Choi** (Advisor: Prof. Jaekyun Moon at KAIST), *Professor* at **Kyung Hee University**, Suwon, Korea
 - **Laihyuk Park** (Advisor: Prof. Sungrae Cho at CAU), *Professor* at **Seoul National University of Science and Technology**, Seoul, Korea
 - **Shinyoung Ahn** (Advisor: Prof. Sungwon Kang at KAIST), *Researcher* at **ETRI**, Daejeon, Korea
 - **Jonghoe Koo** (Advisor: Prof. Sunghyun Choi at SNU), *Researcher* at **Samsung Research**, Seoul, Korea

- **Seungyo Ryu** (Advisor: Prof. Dongseung Kim at Korea University), *Researcher* at **LG Electronics**, Changwon, Korea
- **Soyi Jung** (Advisor: Prof. Jae-Hyun Kim at Ajou University), *Professor* at **Hallym University**, Chuncheon, Korea
- **Joo Yong Shim** (Advisor: Prof. Jong-Kook Kim at Korea University)

■ M.S. Course Students and Alumni

- **Kyeongseon Kim** (09/2017–08/2019), *Researcher* at **LG Electronics AI Research**, Seoul, Korea
- **Dohyun Kwon** (03/2018–02/2020), *Researcher* at **Hyundai Motors Group**, Uiwang, Korea
- **Dohyun Kim** (03/2018–02/2020), *Researcher* at **Naver Corporation**, Seongnam, Korea
- **MyungJae Shin** (03/2018–02/2020), *Engineer* at **mofl** (startup), Daejeon, Korea
- **Jaeho Choi** (03/2019–02/2021), *Researcher (Military Service Exception)* at **Korea Meteorological Administration**, Seoul, Korea
- **Youngkee Kim** (03/2021–02/2023), *Researcher* at **Korea Electronics Technology Institute (KETI)**, Seongnam, Korea
- **Minjae Yoo** (03/2021–02/2023)
- **Yoo Jeong (Anna) Ha** (03/2021–)

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

- **Minseok Choi**, Ph.D. in EE from KAIST (02/2016–07/2016), now with **Kyung Hee University**, Suwon, Korea
- **Hidekazu Shimodaira**, Ph.D. in EEE from Tokyo Institute of Technology (07/2015–12/2015), now with **NTT DOCOMO**, Tokyo, 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

Professional Activities

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 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*
- **SISA 2020 Keynote Speech** (Seoul, Korea, 12/2020), *Trust Computing with Learning-based Auction for Distributed Systems*
- **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)

■ Invited Talks at World-Wide Universities and Research Institutes

- *Spatio-Temporal Slit Learning for Privacy-Preserving OCR Applications*
Huawei Research Center (Text-Aware Image Understanding Workshop) (Online, 11/2021)
- *AI/ML Technologies in Beyond 5G/6G*
Ericsson-LG (R&D Hackathon / AI Learning Challenge – Keynote Speech) (Seoul, Korea, 05/2021)
- *XOR Mixup: Privacy-Preserving Data Augmentation for One-Shot Federated Learning*
Huawei Research Center (Deep Learning/Machine Learning for Computer Vision) (Online, 09/2020)
- *Deep Reinforcement Learning Research and Its Applications to Networks*
Huawei Research Center (Fundamental and Applied Problems of Machine Learning) (Nizhny Novgorod, Russia, 12/2019)
- *Enabling Delay-Sensitive Robust Distributed Blockchain Mining via Econometric Methods*
City University of Hong Kong (Hong Kong, 11/2018), Hosted by Prof. Cong Wang
- *Frequency Sharing Study between 5G Micro-Cellular Systems and Fixed Service Systems in Millimeter-Wave Bands*
Intel Communications and Devices Group (iCDG) [Cellular Modem TechTalk] (Santa Clara, CA, USA, 01/2016)
- *Status of Millimeter-Wave and Device-to-Device Research*
Nokia Research Center at Berkeley (Berkeley, CA, USA, 08/2014)
- *Advanced Device-to-Device Video Streaming: Theory and Implementation*
Qualcomm Research Center (San Diego, CA, USA, 02/2014)

■ Invited Talks at Korean Research Institutes

- *A.I. Technology Trends and Applications*; **Korea Meteorological Administration** (Online, 09/2021)
- *Deep Reinforcement Learning: Trends and Applications*; **SK Telecom (SKT)** (Seoul, Korea, 06/2021)
- *Trends in AI R&D for Edge/Mobile Platforms*; **SK Hynix** (Icheon, Korea, 09/2020)
- *Lyapunov Optimization and AI Applications to Mobility Platforms*; **Naver Labs - Robotics Lab** (Pankyo, Korea, 06/2020)
- *Distributed AI: Trends and Issues*; **ETRI** (Daejeon, Korea, 05/2020)
- *Federated Learning and Imitation Learning*; **ETRI** (Kwangju, Korea, 02/2020)
- *Federated and Imitation Learning*; **KT AI Tech Center** (Seoul, Korea, 12/2019)
- *Adversarial Imitation Learning and Federated Learning*; **ETRI** (Daejeon, Korea, 12/2019)
- *Distributed Learning and Deep Reinforcement Learning*; **ETRI** (Daejeon, Korea, 12/2019)
- *mmWave Radar and Sensors: Theory and Applications*; **LG Electronics** (Seoul, Korea, 11/2019)
- *Advanced Topics in Machine/Deep Learning*; **Posco ICT** (Pankyo, Korea, 11/2019)
- *mmWave Communications and Radar: Theory and Applications*; **ETRI** (Daejeon, Korea, 11/2019)
- *Network Performance Enhancement via Deep Reinforcement Learning*; **LG U+** (Seoul, Korea, 10/2019)
- *AI Seminar: Foundations and Business Cases*; **SK Broadband** (Seoul, Korea, 10/2019)

- *Deep Learning Methods for Advanced Networks*; **Korea Electronics Technology Institute (KETI)** (Pankyo, Korea, 02/2019)
 - *Making Deep Neural Network Practical in Resource Constrained Computing Systems*; **ETRI** (Daejeon, Korea, 02/2018)
 - *Dynamic Optimization for Reliable and Robust Deep Learning Systems*; **ETRI** (Daejeon, Korea, 02/2018)
 - *Adaptive Lyapunov Control for Stabilized Learning Platforms*; **ETRI** (Daejeon, Korea, 07/2017)
 - *GPU Computing Platforms and Software for Deep Learning*; **ETRI** (Daejeon, Korea, 07/2017)
 - *Trends in Energy IT in Big-Data Era*; **Korea Electric Power Corporation (KEPCO) Research Institute** (Daejeon, Korea, 05/2017)
 - *Stochastic Control of 60 GHz Links for Distributed Virtual Reality Network Platforms*; **ETRI** (Daejeon, Korea, 11/2016)
 - *5G Wireless Platforms: Standards and Hardware/Software Prototyping*; **ETRI** (Daejeon, Korea, 10/2016)
 - *Millimeter-Wave Radio Propagation, Beam Management, Systems, and Embedded Prototyping*; **ETRI** (Daejeon, Korea, 08/2016)
 - *Intel's 5G Research with Millimeter-Wave Modular Antenna Arrays*; **ETRI** (Daejeon, Korea, 10/2014)
 - *Issues and Solutions for Millimeter-Wave Network Technologies*; **Samsung Electronics - Memory Business** (Hwasung, Korea, 01/2013)
- **Tutorials and Special Session Talks at Korean Research Societies**
- *Multi-Agent Deep Reinforcement Learning for Autonomous Vehicles*; **2021 JCCI Mobile Machine Learning Special Session** (Online, 04/2021)
 - *Trends in Multi-Agent Deep Reinforcement Learning for Distributed Computing*; **2020 KICS Fall Conference Tutorial** (Seoul, Korea, 11/2020)
 - *Deep Learning Computation for Economic Theory and Its Applications*; **2020 KICS Summer Conference Tutorial** (Yong Pyong, Korea, 08/2020)
 - *Deep Learning Applications to Computer Networking*; **2020 KICS Winter Conference Tutorial** (Yong Pyong, Korea, 02/2020)
 - *Deep Neural Network Basics*; **2020 KICS Winter Conference Tutorial** (Yong Pyong, Korea, 02/2020)
 - *Artificial Intelligence Methods for Networks*; **2019 KICS Fall Conference Special Session Talk** (Seoul, Korea, 11/2019)
 - *Explainable AI (XAI) and Imitation Learning for Automotive Applications*; **2019 IEEK Hyundai Motors Special Session** (Jeju, Korea, 06/2019)
 - *Deep Learning Basics and Representative Models*; **2019 KIPS Spring Conference Tutorial** (Seoul, Korea, 05/2019)
 - *Deep Learning Methods for Advanced Network*; **2019 KICS Winter Conference Tutorial** (Yong Pyong, Korea, 01/2019)
 - *GPU Computing Platforms and Software for Deep Learning*; **2017 KICS Summer Conference Tutorial** (Jeju, Korea, 06/2017)
 - *Dynamic Control and Software for Next-Generation Distributed Platforms*; **2017 KCC Special Session on New Research** (Jeju, Korea, 06/2017)
 - *Machine Learning Techniques for Mobile Computing*; **2017 KICS Winter Conference Tutorial** (Jungsun, Korea, 01/2017)
- **Exhibition/Demonstration at Conferences and Public R&D Events**
- *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)
 - *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 MAA Client Access & Backhaul Platform*; **IEEE GLOBECOM 2015 (Industry Demonstration ID-14)** (San Diego, CA, 12/2015)
 - *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)
 - *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 GLOBECOM (IEEE Communications Society)**: 2015 (Organizer, *Workshop on Millimeter-Wave Backhaul and Access (mmWave)*)
- **IEEE ICC (IEEE Communications Society)**: 2022 (Patronage Chair)
- **IEEE ICTC (IEEE Communications Society)**: 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 (IEEE Communications Society)**: 2022 (Workshop Chair), 2021 (Workshop Chair), 2021 (Workshop Organizing Chair, *Artificial Intelligence Emerging Applications (AIEA) Workshop*)
- **IEEE ICAIIC (IEEE Communications Society)**: 2019 (Publication Chair)
- **IEEE VTS APWCS (IEEE Vehicular Technology Society)**: 2022 (Finance Chair), 2021 (Finance Co-Chair), 2017 (Publication Vice Chair)
- **IEEE ICOIN (IEEE Computer Society)**: 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 (IEEE Signal Processing Society)**: 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**

- **IEEE CCNC 2022 (IEEE Communications Society)**: Track Chair for T7 (*Security, Privacy and Content Protection*)
- **IEEE ICTC 2022 (IEEE Communications Society)**: TPC Vice Chair for Administration
- **IEEE ICAIIC 2022 (IEEE Communications Society)**: TPC Co-Chair
- **IEEE ICOIN 2021 (IEEE Computer Society)**: TPC Vice Chair
- **IEEE ICAIIC 2021 (IEEE Communications Society)**: TPC Co-Chair
- **IEEE ICOIN 2020 (IEEE Computer Society)**: TPC Vice Chair
- **IEEE ICAIIC 2020 (IEEE Communications Society)**: TPC Co-Chair
- **IEEE NAS 2019 (IEEE Computer Society)**: Track Co-Chair for Network Track
- **IEEE ICOIN 2019 (IEEE Computer Society)**: TPC Vice Chair
- **IEEE ICAIIC 2019 (IEEE Communications Society)**: TPC Co-Chair
- **IEEE ICOIN 2018 (IEEE Computer Society)**: TPC Vice Chair
- **IEEE GLOBECOM 2015 (IEEE Communications Society)**: TPC Chair for the *Workshop on Millimeter-Wave Backhaul and Access*

■ **Technical Program Committee (TPC) Non-Chair-Level Activities**

- IEEE GLOBECOM (IEEE Communications Society): 2021, 2020
- IEEE ICC (IEEE Communications Society): 2022, 2021
- IEEE ICTC (IEEE Communications Society): 2021, 2021 (Workshop on Intelligent 6G Communication Systems), 2021 (Workshop on KU-AIER (Korea University, A.I. Engineering Research)), 2020, 2019, 2018
- IEEE WCNC (IEEE Communications Society): 2022, 2021, 2020, 2020 (Workshop on Aerial Communications in 5G and Beyond Networks)
- IEEE COMNETSAT (IEEE Communications Society): 2021
- IEEE ICC (IEEE Communications Society): 2021, 2019
- IEEE IGESSC (IEEE Communications Society): 2021, 2020, 2019, 2018
- IEEE ICAIIC (IEEE Communications Society): 2022, 2021
- IEEE ICUFN (IEEE Communications Society): 2022, 2021, 2020, 2019, 2018, 2016
- IEEE WCSP (IEEE Communications Society): 2018
- IEEE VTC (IEEE Vehicular Technology Society): 2019-Spring, 2016-Spring, 2015-Spring, 2014-Fall
- IEEE VTS APWCS (IEEE Vehicular Technology Society): 2018
- IEEE ICOIN (IEEE Computer Society): 2022, 2021, 2020, 2018
- IEEE ICDCS (IEEE Computer Society): 2019
- IEEE MASS (IEEE Computer Society): 2021, 2012 (Workshop on Internet of Things Technology and Architectures)
- IEEE NAS (IEEE Computer Society): 2019
- IEEE IPDPS (IEEE Computer Society): 2022 (Heterogeneity in Computing Workshop)
- IEEE Blockchain (IEEE Computer Society): 2020, 2019
- ACM MobiHoc: 2019
- ACM AsiaCCS: 2018 (Workshop on Security in Cloud Computing)
- IEEE ITC-CSCC: 2021
- EuCAP: 2021, 2019, 2015

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>