

Associate Professor, Korea University – School of Electrical Engineering, Seoul, Republic of Korea

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## Highlights

### Research Milestones

- **105 Journals** (Selected: *IEEE*, *Elsevier*, *Springer*, *Wiley*, *ITU*, and *Nature*), <https://sites.google.com/view/aimlab-kuee/publications/journals>
- **10 Top-Tier Conference Papers**, i.e., *INFOCOM* (2023, review), *ICDE* (2023, review), *AAAI* (2023, review), *CIKM* (2022), *INFOCOM* (2022), *ICDCS* (2020), *IJCAI* (2019), *ICDCS* (2018), *Multimedia* (2017), and *MobiSys* (2010)
- **5130+ Citations** in Google Scholar Profile (H-index: 33+, i10-index 121+)
- **IEEE MMTC Best Journal Paper Award (2021)**, *IEEE Communications Society*
- **IEEE MMTC Outstanding Young Researcher Award (2020)**, *IEEE Communications Society*
- **IEEE Systems Journal Best Paper Award (2020)**, Top 7 among 793 accepted papers in 2019 (0.88%)
- **7 Awards from IEEE Conferences and Contests**, i.e., *IEEE ICTC Best Paper Award* (2022), *IEEE ICOIN Best Paper Award* (2021), *IEEE Seoul Section Student Paper Contest Awards* (1 in 2020; 1 in 2019), and *IEEE VTS Seoul Chapter Awards* (2 in 2021; 1 in 2019)
- **6 Tutorials at IEEE Conferences**, i.e., *ICUFN* (2022), *ICOIN* (2022), *ICUFN* (2021), *ICAIIIC* (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
- **17 Awards** from Local (Korean) Conferences and Contests
- **Research Funds (since March 2016)**: 5,468,384 USD  $\approx$  5,468,384,000 KRW (except University Internal Funds)

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

- **Supervised 3 Postdoctoral Scholars**, tenure-track professors at Kyung Hee University (Korea) and Ajou University (Korea); and a postdoctoral scholar at the University of Southern California (USA, jointly advised by Prof. Andreas F. Molisch)
- **Supervised 1 Ph.D. and 5 M.S. Students**, researchers at LG Electronics, Hyundai, Naver, government agency, and startup
- **6 Best Teaching Awards at Korea University**, 3 awards are for top 5% (*Granite Tower Best Teaching Award*) and 3 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
  - **25+ Organizing Committee (OC) Contributions** for IEEE Conferences
  - **98+ 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 Communications 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 POSITIONS
    - \* 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

- **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 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* (06/2021), **ICT Express** (S.I. on Mobile and Edge Computing Systems) (*Best Special Issue Guest Editor Award* (2022))

## Awards and Honors

### Research and Academic Excellence (International)

- **IEEE ICTC Best Paper Award (2022)** – *IEEE Communications Society* (with J.-H. Lee, D.P. Selvam, A.F. Molisch)
  - J.-H. Lee, D.P. Selvam, A.F. Molisch, and J. Kim, "Reinforcement Learning Empowered Massive IoT Access in LEO-based Non-Terrestrial Networks," *IEEE ICTC*, Jeju, Korea, October 2022.
- **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* (with H. Lee)
  - "Deep Reinforcement Learning for Loitering Munition Mobility Control: Algorithm Design and Visualization"
- **Spotlight Presentation (2022)** – *ICML Workshop on Dynamic Neural Networks* (2022)
  - W.J. Yun, J.P. Kim, S. Jung, J. Park, M. Bennis, and J. Kim, "Slimmable Quantum Federated Learning," *ICML Workshop on Dynamic Neural Networks*, Baltimore, MD, USA, July 2022.
- **IEEE MMTC Best Journal Paper Award (2021)** – *IEEE Communications Society* (with 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* (with 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* (with H. Lee, S. Jung)
  - "Distributed and Autonomous Aerial Data Collection in Smart City Surveillance Applications"
- **IEEE ICOIN Best Paper Award (2021)** – *IEEE Computer Society* (with S. Jung, W.J. Yun, J.-H. Kim)
  - 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 ICOIN*, Jeju, Korea, January 2021.
- **IEEE MMTC Outstanding Young Researcher Award (2020)** – *IEEE Communications Society*
- **Bronze Paper Award (2020)** – *2020 IEEE Seoul Section Student Paper Contest* (with S. Park)
  - "Reliable Offloading Target Selection using Deep Reinforcement Learning for Large Fire Accident"
- **IEEE Systems Journal Best Paper Award (2020)** – *IEEE Systems Council* (with M. Saad, J. Choi, D. Nyang, A. Mohaisen)

- M. Saad, J. Choi, D. Nyang, J. Kim, and A. Mohaisen, "Towards Characterizing Blockchain-based Cryptocurrencies for Highly-Accurate Predictions," *IEEE Systems Journal*, 14(1):321-332, March 2020.
- **Gold Paper Award (2019)** – 2019 IEEE Seoul Section Student Paper Contest (with 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 (with S. Park, D. Kwon, M. Shin)  
"Joint Offloading and Streaming in Mobile Edges: A Deep Reinforcement Learning Approach"
- **Next Generation and Standards (NGS) Division Recognition Award (Q1/2005)** – Intel Corporation  
For developing a 3-dual sector mmWave backhaul link software stack with mesh, relay, and load balancing capability for modular antenna array (MAA) proof-of-concept (POC)
- **Annenberg Graduate Fellowship Award (2009)** – University of Southern California  
Awarded with Ph.D. Admission – 4 Year Full Scholarship (\$30,000/year for 4 years, i.e., \$120,000)

#### Research and Academic Excellence (Korea Regional)

- **Haedong Young Scholar Award (2018)** – KICS and Haedong Foundation  
For recognizing a researcher under the age of 40 who has made outstanding contributions to communication sciences R&D
- **Outstanding Paper Award (2008)** – LG Electronics CTO Office, Multimedia Research Laboratory  
– W. Lee, E. Kim, J. Kim, I. Lee, and C. Lee, "Movement-Aware Vertical Handoff of WLAN and Mobile WiMAX for Seamless Ubiquitous Access," *IEEE Transactions on Consumer Electronics*, 53(4):1268-1275, November 2007.
- **RFID Expert Group President Award (2007)** – The 3rd RFID/USN Research Paper Contest
- **ETRI President Award (2006)** – The 2nd RFID/USN Research Paper Contest
- **Korea Association of RFID/USN (KARUS) President Award (2005)** – The 1st RFID/USN Research Paper Contest
- **Scholarships for Academic Excellence (Fall 1999, Fall 2000)** – Korea University. Department of Computer Science and Engineering

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

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

#### Teaching and Supervision Excellence

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

#### Academic and University Services

- **Outstanding Contribution Award (02/2022)** – KIISE Information Network Society
- **Outstanding Contribution Award (12/2021)** – Open Standards and ICT Association (OSIA)
- **Outstanding Contribution Award (11/2021)** – KICS
- **Appreciation Recognition (10/2021)** – Daegu Gyeongbuk Institute of Science and Technology (DGIST)
- **Outstanding Contribution Award (11/2019)** – KICS
- **Fellow Employee Recognition [#3081146] (12/2014)** – Intel Corporation
- **Certificate of Appreciation (09/2010)** – Department of Computer Science, University of Southern California

#### Business Administration

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

### **R&D Projects (Totally, 5,468,384 USD $\approx$ 5,468,384,000 KRW)**

#### 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]
- **Research Trends in Digital Twin Applications to Autonomous Driving** 03/2022–04/2022  
Funded by Hyundai NGV [Grant: \$1,000; Primary-PI]



- **Distributed Learning System Design and Implementation for Clinical Applications** 02/2022–03/2022  
Funded by *Cipherome* [Grant: \$15,000; Primary-PI]
- **Super-Resolution Performance Optimization in Mobile Platforms** 05/2020–08/2020  
Funded by *Samsung SDS* [Grant: \$15,000; Primary-PI]
- **Deep Learning Algorithms for mVOC Concentration Analysis** 03/2020–06/2020  
Funded by *Samsung Electronics* [Grant: \$12,000; Primary-PI]
- **Visual Recognition Software Implementation using Deep Learning Tools** 05/2019–11/2019  
Funded by *Hyundai 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]

#### 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) – 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)* [xxx, 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)* [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: **5130+**, H-Index: 33+, i10-Index: 121+; obtained from Google Scholar Profile (as of September 12, 2022)
- Totally, **105** journals, <https://sites.google.com/view/aimlab-kuee/publications/journals>  
– **51** publications are in **IEEE Magazines and ComSoc/VTs Journals**, among **78** IEEE publications
- **10** top-conference and **2** honored/awarded papers, i.e., *INFOCOM* (2023, review), *ICDE* (2023, review), *AAAI* (2023, review), *CIKM* (2022), *ICML Workshop* (2022, Spotlight), *ICOIN* (2021, Best Paper Award), *INFOCOM* (2022), *ICDCS* (2020), *IJCAI* (2019), *ICDCS* (2018), *MM* (2017), *MobiSys* (2010)
- **143** IEEE/ACM Conferences, <https://sites.google.com/view/aimlab-kuee/publications/conferences>

#### 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)

#### Selected Papers, i.e., (i) Selected Journals/Magazines and (ii) Top-Tier/Honored/Awarded Conference Papers

##### ■ Learning and Optimization for Mobility, Networks, Multimedia, and Internet-of-Things

[TNSM.review] W.J. Yun, J. Park, and **J. Kim**, "(Double Blind Review)," **IEEE Transactions on Network and Service Management**, (01-Oct-2022).

- [TVT.review] H. Lee, W.J. Yun, S. Jung, J.-H. Kim, and J. Kim, "Autonomous Multi-Drone Mobility Control for Multi-Target Loitering Munition: A Deep Reinforcement Learning Approach," **IEEE Transactions on Vehicular Technology**, (15-Oct-2022).
- [TVT.review] S. Park, S. Jung, and J. Kim, "Learning-based Distributed Delivery Scheduling in Autonomous Personal Aerial Vehicle Applications," **IEEE Transactions on Vehicular Technology**, (15-Oct-2022).
- [TVT.review] C. Park, H. Lee, W.J. Yun, S. Jung, C. Cordeiro, and J. Kim, "Coordinated Multi-Agent Deep Reinforcement Learning for Reliable and Autonomous Mobile Access via Multi-UAV Control," **IEEE Transactions on Vehicular Technology**, (01-Oct-2022).
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- [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)*, July 2018.
- [Access'18.05] S. Ahn, J. Kim, E. Lim, and S. Kang, "Soft Memory Box: A Virtual Shared Memory Framework for Fast Deep Neural Network Training in Distributed High Performance Computing," *IEEE Access*, 6:26493–26504, May 2018.
- [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., (*Citations: 100+*), (*IEEE Industrial Electronics Society, Representative Journal*)
- [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., (*IEEE Industrial Electronics Society, Representative Journal*)
- [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., (*IEEE Systems, Man, and Cybernetics Society, Representative Journal*)
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## 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)
  - **6 Japanese Patents:** (JP 5584209), (JP 5584205), (JP 5580308), (JP 5508403), (JP 5368573), (JP 5364785)
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## Teaching Experience, Research Supervision, and Professional Activities

### Teaching Experience

#### ■ Korea University – Graduate Courses, Faculty Member

- IT R&D Policies 1 (ECE723): Fall 2020
- Design and Analysis of Wireless Communication Systems (ECE721): Spring 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), Graduate School of Engineering and Technology: Fall 2022
- Wireless Network 1 (ITH524), Graduate School of Engineering and Technology: Spring 2021

#### ■ Korea University – Undergraduate Courses, Faculty Member

- Introduction to Artificial Intelligence (IWC420): 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 2022, 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 2022

#### ■ Chung-Ang University – College of Computer Science and Software, Faculty Member

- Optimal Design Theory and Applications (Graduate Course): Spring 2019, Spring 2018, Spring 2017
- Topics in Computer Science and Engineering (Graduate Course): Fall 2018, Fall 2017, Fall 2016
- Numerical Analysis (Undergraduate Course): Spring 2019
- Compiler Design (Undergraduate Course): Spring 2019, Spring 2018, Spring 2017
- Principles of Programming Languages (Undergraduate Course): Fall 2018, Fall 2017, Fall 2016
- Algorithm Analysis (Undergraduate Course): Fall 2016
- Operating Systems (Undergraduate Course): Spring 2017, Spring 2016
- Calculus (Undergraduate Course): Spring 2017, Spring 2016
- Mobile Application Development (Undergraduate Course): 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 **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 **Ajou University**, Suwon, 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

- **Soohyun Park** (03/2019–08/2023 (expected)), *Postdoctoral Scholar* at **Korea University**, Seoul, Korea  
– Dissertation Title: “Learning and Optimization for Data Science Methods in Connected Mobility” (Tentative)
- **Haemin Lee** (09/2020–02/2024 (expected))
- **Won Joon Yun** (03/2021–08/2024 (expected))
- **Hankyul Baek** (03/2021–)
- **Hyunsoo Lee** (03/2021–)
- **Chanyoung Park** (09/2022–)

### ■ 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 **Ajou University**, Suwon, 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 **Upstage**, Seongnam, Korea
- **Dohyun Kwon** (03/2018–02/2020), *Researcher* at **Hyundai Motors Group**, Ulsan, 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
- **Seok Bin Son** (03/2022–)
- **Jae Pyoung Kim** (03/2023–)

### ■ 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

## 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)

## IEEE/ACM Conference Activities and Services (Selected)

### ■ Organizing Committee (OC) Activities

- **WiOpt: 2022** (Organizer, *Caching, Computing and Delivery in Wireless Networks Workshop (CCDWN)*)
- **GLOBECOM: 2015** (Organizer, *Workshop on Millimeter-Wave Backhaul and Access (mmWave)*)
- **ICC: 2022** (Patronage Chair)



- **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)
- **ICUFN:** 2022 (Workshop Chair), 2021 (Workshop Chair), 2021 (Workshop Organizing Chair, *Artificial Intelligence Emerging Applications (AIEA) Workshop*)
- **ICAIIC:** 2019 (Publication Chair)
- **APWCS:** 2022 (Finance Chair), 2021 (Finance Co-Chair), 2017 (Publication Vice Chair)
- **ICOIN:** 2023 (Workshop Co-Chair), 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*)
- **ICASSP:** 2018 (Special Session Organizing Chair, *Special Session on Cybersecurity and Privacy*)
- **APCC:** 2022 (Local Arrangement Chair)
- **ICEIC:** 2021 (Local Arrangement Chair)
- **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 (WC Symposium), ICC (ISAC Track), ICC (RISSE Track), WCNC, ICOIN, IE
- **2022:** GLOBECOM (SAC MLC), MASS, ICC (WC Symposium), WCNC, COMNETSAT, ICAIIC, ICTC, ICUFN, ICOIN, IPDPS (*Heterogeneity in Computing Workshop*), ICC, WCSP, CyberneticsCom, ICEIC, MSN (Track 3: Security, Privacy, Trust, and Blockchain), ICNGC
- **2021:** GLOBECOM (SAC MLC), GLOBECOM (IoT/N), ICC (WC 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
- **2020:** GLOBECOM (AHSN), ICTC, WCNC, WCNC (*Workshop on Aerial Communications in 5G and Beyond Networks*), IGESSC, ICUFN, ICOIN, Blockchain, ICC, COMNETSAT
- **2019:** ICTC, ICC, IGESSC, ICUFN, VTC-Spring, ICDCS (Distributed Green Computing & Energy Management), NAS (Network Track), Blockchain, MobiHoc, EuCAP, IE, WISA, SecureComm, ICPADS (Security & Dependable Computing)
- **2018:** ICTC, IGESSC, ICUFN, WCSP, APWCS, ICOIN, AsiaCCS (*Workshop on Security in Cloud Computing*), SigTelCom, ATC, IE
- **2017:** ICUFN, ICTC, IE
- **2016:** ICUFN, VTC-Spring
- **2015:** VTC-Spring, EuCAP
- **2014:** VTC-Fall
- **2012:** MASS (*Workshop on Internet of Things Technology and Architectures*)

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## References

- **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>