

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

Distinguished Lecturer (2022–2023), IEEE Communications Society

Associate Editor (2020–), IEEE Transactions on Vehicular Technology

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Highlights

Research Milestones

- **58 IEEE Journals**, including 25 *Communications Society (ComSoc)*, 8 *Computer Society*, and 9 *Vehicular Technology Society (VTS)* journals
- **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)
- **4399+ Citations** in Google Scholar Profile (H-index: 31+, i10-index 101+)
- **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 Contests (2020 and 2019), and IEEE VTS Seoul Chapter Awards (2 in 2021 and 1 in 2019)
- **5 Tutorials at IEEE Conferences**, i.e., ICOIN (2022), ICUFN (2021), ICAIIC (2021), ICOIN (2019), and ICC (2018)
- **61+ 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
- **15 Awards** from Local (Korean) Conferences and Contests
- **Research Funds (since March 2016)**: 3,557,670 USD \approx 3,557,670,000 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

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

R&D Positions

Full-Time Positions

- **Korea University – College of Engineering**, Seoul, Republic of Korea 09/2019–Present
 - Associate Professor (03/2021–Present), School of Electrical Engineering
 - Adjunct Professor (03/2023–Present), Department of Communication Engineering (Founded by **Samsung Electronics**)
 - Adjunct Professor (03/2021–02/2023), Department of Semiconductor Engineering (Founded by **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)
 - ADMINISTRATIVE APPOINTMENTS
 - * Dean (06/2021–Present), Center for Teaching and Learning (CTL)
 - * Deputy Vice President of Academic Affairs (02/2022–Present), Office of Academic Affairs
 - * Steering Committee (02/2022–Present), Department of Communication Engineering
 - * Steering Committee (07/2020–06/2022), Institute of Data Science (IDS)
 - * Steering Committee (06/2021–03/2022), Committee for Academic Affairs and Planning
- **Chung-Ang University – College of Computer Science and Software**, Seoul, Republic of Korea 03/2016–08/2019
 - Assistant Professor (03/2016–08/2019), School of Computer Science and Engineering

- **Intel Corporation – Platform Engineering Group**, Silicon Valley (Santa Clara), CA, USA 09/2013–02/2016
– *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 08/2009–08/2014
– *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 05/2012–08/2012
– *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 01/2006–08/2009
– *Research Engineer* (01/2006–08/2009), Multimedia Research Laboratory, Seocho R&D Campus

Industry, Advisory, and Consulting Positions as a Korea University Professor

- **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), for Prof. Seung-Hoon Hwang's Executive Board
 - * *Chapter Treasurer* (2020–2021), for Prof. Jae-Hyun Kim's Executive Board
 - * **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) (for Prof. Sungrae Cho's Executive Board)
 - *Vice Executive Director* (2022), International Conference 3 Division (IEEE APCC) (for Prof. Junsu Kim's Executive Board)
 - *Vice Executive Director* (2021), Intelligence Technology 2 Division (for Prof. Changhee Joo's Executive Board)
 - *Director* (2020), Intelligence Technology 2 Division (for Prof. Sungrae Cho's Executive Board)
 - *Director* (2018, 2019), Intelligence Technology Division (for Prof. Sungrae Cho's Executive Board)
 - *Director* (2017), ICT Convergence Division (for Prof. Sungrae Cho's Executive Board)
 - *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)
- **IEIE (Institute of Electronics and Information Engineers)**
 - *General Affair Manager* (2022), Telecommunication Society (for Prof. Myungsik Yoo's Executive Board)
 - *Co-Director* (2021)
 - *Editor*, **Journal of the Institute of Electronics and Information Engineers** (Area: Telecommunication)
- **KIISE (Korean Institute of Information Scientists and Engineers)**
 - *General Affair Manager* (2021), Information Network Society (for Prof. Sanghwan Lee's Executive Board)
 - *General Affair Manager in Academia* (2020), Information Network Society (for Prof. Sungrae Cho's Executive Board)
 - *Member*, Information Network Society
 - *Editor*, **Journal of KIISE** (Area: Information Network)
- **OSIA (Open Standards and ICT Association)**
 - *Vice President* (2022)
 - *Vice President* (2021)
 - *General Affair Manager* (2020)

Awards and Honors

Research and Academic Excellence (International)

- **Distinguished Lecturer, IEEE Communications Society (ComSoc)** (class of 2022–2023) 12/2021
- **IEEE Vehicular Technology Society (VTS) Seoul Chapter Award** (with Y. Kwak, S. Jung, J.-H. Kim) 08/2021
"Quantum Scheduling for Millimeter-Wave Observation Satellite Constellation"
- **IEEE Vehicular Technology Society (VTS) Seoul Chapter Award** (with H. Lee, S. Jung) 08/2021
"Distributed and Autonomous Aerial Data Collection in Smart City Surveillance Applications"
- **Best Paper Award – 2021 IEEE International Conference on Information Networking (ICOIN)** (with S. Jung, W.J. Yun, and 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 Vehicular Technology Society (VTS) Seoul Chapter Award** (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)

- **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"
- **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"
- **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"
- **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
- **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 for Students (while they are under Joongheon Kim's supervision)

- **2021 ICT Express Best Reviewer Award – ICT Express (Elsevier)** (Awarded to Soohyun Park) 12/2021

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 – KIISE 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 in the Sales Promotion – Hyundai/Kia Motors Company** 02/2004

R&D Projects (Totally, 3,557,670 USD \approx 3,557,670,000 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: \$70,000 (1 yr); 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: \$15,995; 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

- **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: \$78,000 (1 yr); 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: \$258,500; 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: \$503,250; 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]
- **LTE/WiFi Vertical Handover Design and Implementation** 02/2022–09/2022
Funded by *LG Electronics CTO Division – Smart Mobility Lab., Advanced R&BD Center* [Grant: \$xx,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: \$100,000 (1 yr); Co-PI]
- **Autonomous Intelligent COA Search Methods for Cyber-Attacks** mm/2021–mm/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: 4399+, H-Index: 31+, i10-Index: 101+; obtained from Google Scholar Profile (as of February 12, 2022)

Dissertation, Books, and Book Chapters

■ Ph.D. Dissertation

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

■ Books

- 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

- J. Kim, et. al., "Convergence of 6G and Wi-Fi Networks," *Fundamentals of 6G Communications and Networking*, Springer., (Editors: X. Lin, J. Zhang, Y. Liu, J. Kim)
- J. Kim, et. al., "UAV Networking," *Fundamentals of 6G Communications and Networking*, Springer., (Editors: X. Lin, J. Zhang, Y. Liu, J. Kim)
- J. Kim, et. al., "AI-Native Network Architecture," *Fundamentals of 6G Communications and Networking*, Springer., (Editors: X. Lin, J. Zhang, Y. Liu, J. Kim)
- J. Kim, et. al., "Semantic Communications and Networking," *Fundamentals of 6G Communications and Networking*, Springer., (Editors: X. Lin, J. Zhang, Y. Liu, J. Kim)
- J. Kim, et. al., "Network Disaggregation," *Fundamentals of 6G Communications and Networking*, Springer., (Editors: X. Lin, J. Zhang, Y. Liu, J. Kim)
- 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 IEEE Journals/Magazines

■ Top-Tier Conference Proceedings

- [IJCAI'22] 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.
- [MMSys'22] M. Yoo, H. Baek, S. Jung, A.F. Molisch, and J. Kim, "(Under Review)," **ACM Multimedia Systems Conference (MM-Sys)**, Athlone, Ireland, June 2022.

- [MMSys'22] H. Baek, J.-Y. Kim, S. Y.K. Lee, Jung, and J. Kim, "(Under Review)," **ACM Multimedia Systems Conference (MMSys)**, Athlone, Ireland, June 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%)
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- [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 INFOCOM'21 (Demo)*.
- [ICPR'20] J.Y. Shim, [J. Kim](#), and J.-K. Kim, "S2I-Bird: Sound-to-Image Generation of Bird Species using Generative Adversarial Networks," *IEEE ICPR'20*.
- [QTM'20] J. Choi, S. Oh, S. Park, and [J. Kim](#), "A Quantum Approach to the Minimum Dominating Set Problem," *QTM'20*.
- [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," *ICML'20 (Workshop on Federated Learning for User Privacy and Data Confidentiality)*.
- [ICC'20] M. Choi, A.F. Molisch, and [J. Kim](#), "User Scheduling and Power Allocation for Content Delivery in Caching Helper Networks," *IEEE ICC'20*.

- [WCNC'20] M. Choi, A.F. Molisch, D.-J. Han, J. Kim, and J. Moon, "Cache Allocations for Consecutive Requests of Categorized Contents: Service Provider's Perspective," *IEEE WCNC'20*.
- [GLOBECOM'19] D. Kwon and J. Kim, "Multi-Agent Deep Reinforcement Learning for Cooperative Connected Vehicles," *IEEE GLOBECOM'19*.
- [ICCV'19] D. Kim and J. Kim, "Deep Multi-modal Unsupervised Pen Pressure Stylization," *IEEE ICCV'19 (Demo)*.
- [QTM'19] J. Choi and J. Kim, "A Quantum Approach to Max-Weight Independent Set Problem," *QTM'19*.
- [5GWF'19] K.W. Sung, E. Mutafungwa, R. Jantti, M. Choi, J. Jeon, D. Kim, J. Kim, J. Cost-Requena, A. Nordlow, S. Sharma, G. Destino, Y. Deng, T. Mahmoodi, M. Ullmann, A. Nahler, Y. Kyung, S. Kim, S. Seo, and S.-L. Kim, "PriMO-5G: Making Firefighting Smarter with Immersive Videos through 5G," *IEEE 5GWF'19*.
- [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 APWCS'19. (IEEE Vehicular Technology Society (VTS) Seoul Chapter Award)*
- [IJCNN'19] D. Kim, J. Kim, J. Kwon, and T.-H. Kim, "Depth-Controllable Very Deep Super-Resolution Network," *IEEE IJCNN'19*.
- [IJCNN'19] M. Shin and J. Kim, "Adversarial Imitation Learning via Random Search," *IEEE IJCNN'19*.
- [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 DSN'19 (Supplemental Volume)*.
- [MobiSys'19] D. Kwon, S. Park, and J. Kim, "Poster: Multi-Agent Deep Reinforcement Learning for Connected Vehicles," *ACM MobiSys'19 (Poster)*.
- [MobiSys'19] J. Kim and J. Kim, "Demo: Light-Weight Programming Language for Blockchain," *ACM MobiSys'19 (Demo)*.
- [ICML'19] M. Shin and J. Kim, "Adversarial Imitation Learning via Random Search in Lane Change Decision-Making," *ICML'19 (Workshop on Artificial Intelligence for Autonomous Driving)*.
- [ICC'19] M. Choi, D. Kim, D.-J. Han, J. Kim, and J. Moon, "Probabilistic Caching Policy for Categorized Contents and Consecutive User Demands," *IEEE ICC'19*.
- [ICBC'19] M. Saad, L. Njilla, C.A. Kamhoua, J. Kim, D. Nyang, and A. Mohaisen, "Mempool Optimization for Defending Against DDoS Attacks in PoW-based Blockchain Systems," *IEEE ICBC'19. (19.61%)*
- [CCS'18] S. Yoo, H. Kim, and J. Kim, "Secure Compute-VM: Secure Big Data Processing with SGX and Compute Accelerators," *ACM CCS'18 (Workshop on System Software for Trusted Execution)*.
- [SMC'18] D. Kim, J. Kwon, and J. Kim, "Low-Complexity Online Model Selection with Lyapunov Control for Reward Maximization in Stabilized Real-Time Deep Learning Platforms," *IEEE SMC'18*.
- [MobiSys'18] M. Shin, J. Kim, A. Mohaisen, J. Park, and K.H. Lee, "Neural Network Syntax Analyzer for Embedded Standardized Deep Learning," *ACM MobiSys'18 (Workshop on Embedded and Mobile Deep Learning)*.
- [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 SECON'18 (Abstract)*.
- [AsiaCCS'18] S. Kim and J. Kim, "POSTER: Mining with Proof-of-Probability in Blockchain," *ACM AsiaCCS'18 (Extended Abstract)*.
- [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 ICSE'18 (Companion Volume)*.
- [ICASSP'18] K.S. Kim, D. Kwon, Y. Kim, J. Kim, and J. Kim, "Self-Adaptive Machine Learning Operating Systems for Security Applications," *IEEE ICASSP'18*.
- [SOSP'17] D. Kim, J.Y. Bang, and J. Kim, "A Reliable, Self-Adaptive Face Identification Framework via Lyapunov Optimization," *ACM SOSP'17 (Workshop on A.I. Systems)*.
- [PAC'17] J. Kim, Y.J. Mo, W. Lee, and D. Nyang, "Dynamic Security-Level Maximization for Stabilized Parallel Deep Learning Architectures in Surveillance Applications," *IEEE PAC'17*.
- [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'16 (Abstract)*.
- [INFOCOM'16] J. Kim, "Buffer-Stable Adaptive Per-Module Power Allocation for Energy-Efficient Millimeter-Wave Modular Antenna Array (MAA) Platforms," *IEEE INFOCOM'16 (Abstract)*.
- [EuCAP'16] R. Weiler, W. Keusgen, A. Maltsev, T. Kuhne, A. Pudneyev, L. Xian, J. Kim, and M. Peter, "Millimeter-Wave Outdoor Access Shadowing Mitigation using Beamforming Arrays," *IEEE EuCAP'16*.
- [GLOBECOM'15] J. Kim, L. Xian, R. Arefi, and A.S. Sadri, "60 GHz Frequency Sharing Study between Fixed Service Systems and Small-Cell Systems with Modular Antenna Arrays," *IEEE GLOBECOM'15 (Workshop on Millimeter-Wave Backhaul and Access)*.
- [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 SOSP'15 (Workshop on Power-Aware Computing and Systems (HotPower))*.
- [IMS'15] J. Kim, L. Xian, A. Maltsev, R. Arefi, and A.S. Sadri, "Study of Coexistence between 5G Small-Cell Systems and Systems of the Fixed Service at 39 GHz Band," *IEEE IMS'15*.
- [GLOBECOM'14] J. Kim, L. Xian, A. Maltsev, R. Arefi, and A.S. Sadri, "Required Frequency Rejection in 39 GHz Millimeter-Wave Small Cell Systems," *IEEE GLOBECOM'14 (Industry Program)*.
- [ICC'14] J. Kim and A.F. Molisch, "Quality-Aware Millimeter-Wave Device-to-Device Multi-Hop Routing for 5G Cellular Networks," *IEEE ICC'14*.
- [ITA'14] J. Kim, A. Turci, G. Caire, and A.F. Molisch, "Joint Scheduling and Stochastic Streaming for Device-to-Device Video Delivery," *IEEE ITA'14 (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 MobiCom'13 (Demo)*.
- [ICC'13] J. Kim, Y. Tian, S. Mangold, and A.F. Molisch, "Quality-Aware Coding and Relaying for 60 GHz Real-Time Wireless Video Broadcasting," *IEEE ICC'13*.
- [RWS'13] J. Kim and A.F. Molisch, "Enabling Gigabit Services for IEEE 802.11ad-Capable High-Speed Train Networks," *IEEE RWS'13*.
- [PIMRC'11] J. Kim, Y. Tian, A.F. Molisch, and S. Mangold, "Joint Optimization of HD Video Coding Rates and Unicast Flow Control for IEEE 802.11ad Relaying," *IEEE PIMRC'11*.
- [CCNC'10] S. Tiraspolosky, B. Jeon, J. Kim, A. Rubtsov, A. Flaksman, and V. Ermolayev, "mmWave SVD-based Beamformed MIMO Communication Systems," *IEEE CCNC'10*.
- [CCNC'09] J. Kim and B. Jeon, "Optimal Beaconing for 60 GHz Millimeter Wave," *IEEE CCNC'09*.
- [CCNC'09] J. Kim and B. Jeon, "Demonstration of Display Sharing over Multi-Gbps Wireless Video and Audio Network," *IEEE CCNC'09*.
- [COMSWARE'08] J. Kim and W. Lee, "Cooperative Relaying Strategies for Multi-Hop Wireless Sensor Networks," *IEEE COMSWARE'08*.
- [CIT'06] D. Shin, W. Lee, B.-N. Park, J. Kim, C. Shin, and C. Shin, "A Power Balanced Multipath Routing Protocol in Wireless Ad-Hoc Sensor

Networks," *IEEE CIT'06*.

- [VTC'06] J. Kim, J. Choi, and W. Lee, "Energy-Aware Distributed Topology Control for Coverage-Time Optimization in Clustering-Based Heterogeneous Sensor Networks," *IEEE VTC'06-Spring*.
- [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 ICCCN'05*. (32.17%)
- [VTC'05] J. Kim, S. Kim, D. Kim, W. Lee, and E. Kim, "Low-Energy Localized Clustering: An Adaptive Cluster Radius Configuration Scheme for Topology Control in Wireless Sensor Networks," *IEEE VTC'05-Spring*.

■ ICTC, ICOIN, ICUFN, ICAIIC Contributions

- [ICOIN'22] "The Credibility Cryptocurrency Valuation: Statistical Learning Analysis for Influencer Tweets," *ICOIN'22*.
- [ICOIN'22] "Stable Marriage Matching for Traffic-Aware Space-Air-Ground Integrated Networks: A Gale-Shapley Algorithmic Approach," *ICOIN'22*.
- [ICTC'21] "Introduction to Quantum Reinforcement Learning: Theory and PennyLane-based Implementation," *ICTC'21*.
- [ICTC'21] "Autonomous Aerial Mobility Learning for Drone-Taxi Flight Control," *ICTC'21*.
- [ICTC'21] "Trends in Neural Architecture Search: Towards the Acceleration of Search," *ICTC'21*.
- [ICUFN'21] "Quantum Neural Networks: Concepts, Applications, and Challenges," *ICUFN'21*.
- [ICUFN'21] "Trends in Blockchain and Federated Learning for Data Sharing in Distributed Platforms," *ICUFN'21*.
- [ICUFN'21] "Trends in LEO Satellite Handover Algorithms," *ICUFN'21*.
- [ICUFN'21] "Secure Aerial Surveillance using Split Learning," *ICUFN'21*.
- [ICOIN'21] "Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing," *ICOIN'21*. (**Best Paper Award**)
- [ICOIN'21] "Quantum Convolutional Neural Network for Resource-Efficient Image Classification: A Quantum Random Access Memory (QRAM) Approach," *ICOIN'21*.
- [ICOIN'21] "A Tutorial on Quantum Graph Recurrent Neural Network (QGRNN)," *ICOIN'21*.
- [ICOIN'21] "Proper Cost Hamiltonian Design for Combinatorial Optimization Problems: A Boolean Function Approach," *ICOIN'21*.
- [ICOIN'21] "Non-Local Self-Attention Mechanism for Real-Time Context Embedding Deep Shadow Removal Network," *ICOIN'21*.
- [ICOIN'21] "Performance Comparison of SRCNN, VDSR, and SRDenseNet Deep Learning Models in Embedded Autonomous Driving Platforms," *ICOIN'21*.
- [ICOIN'21] "On the Tradeoff Between Computation-Time and Learning-Accuracy in GAN-Based Super-Resolution Deep Learning," *ICOIN'21*.
- [ICOIN'21] "Auction-based Truthful Distributed Resource Allocation for Smart Grid Systems," *ICOIN'21*.
- [ICOIN'21] "Auction-Based Deep Learning Computation Offloading for Truthful Edge Computing: A Myerson Auction Approach," *ICOIN'21*.
- [ICOIN'21] "Access Management using Vickrey-Clarke-Groves Auction in Terrestrial-Drone Networks," *ICOIN'21*.
- [ICOIN'21] "Joint Behavioral Cloning and Reinforcement Learning Method for Propofol and Remifentanyl Infusion in Anesthesia," *ICOIN'21*.
- [ICOIN'21] "Performance Evaluation of Consensus Protocols in Blockchain-based Audit Systems," *ICOIN'21*.
- [ICOIN'21] "Efficient Data Delivery in Content-Centric Network with Stronger Privacy of Publisher," *ICOIN'21*.
- [ICOIN'21] "Bitcoin Price Forecasting via Ensemble-based LSTM Deep Learning Networks," *ICOIN'21*.
- [ICOIN'21] "Generative Adversarial Attacks on Fingerprint Recognition Systems," *ICOIN'21*.
- [ICTC'20] "On the Performance of Generative Adversarial Network (GAN) Variants: A Clinical Data Study," *ICTC'20*.
- [ICTC'20] "3D Modeling and WebVR Implementation using Azure Kinect, Open3D, and Three.js," *ICTC'20*.
- [ICTC'20] "A Tutorial on Quantum Convolutional Neural Networks (QCNN)," *ICTC'20*.
- [ICTC'20] "Video Placements and Dynamic Streaming Services in Wireless Caching Networks," *ICTC'20*.
- [ICTC'20] "Economic Theoretic LEO Satellite Coverage Control: An Auction-based Framework," *ICTC'20*.
- [ICTC'20] "Reinforced Edge Selection using Deep Learning for Robust Surveillance in Unmanned Aerial Vehicles," *ICTC'20*.
- [ICTC'20] "Kirchhoff's Circuit Law Applications to Graph Simplification in Search Problems," *ICTC'20*.
- [ICAIIC'20] "Power Demand Forecasting Using Long Short-Term Memory Neural Network for Smart Grid," *ICAIIC'20*.
- [ICAIIC'20] "RNN-based Deep Learning for One-Hour Ahead Load Forecasting," *ICAIIC'20*.
- [ICOIN'20] "The Useful Quantum Computing Techniques for Artificial Intelligence Engineers," *ICOIN'20*.
- [ICOIN'20] "Learning-Based Dot-Grid Alignment for Projection Distortion Correction," *ICOIN'20*.
- [ICOIN'20] "Privacy-Sensitive Parallel Split Learning," *ICOIN'20*.
- [ICOIN'20] "Fast and Reliable Offloading via Deep Reinforcement Learning for Mobile Edge Video Computing," *ICOIN'20*.
- [ICTC'19] "A Tutorial on Quantum Approximate Optimization Algorithm (QAOA): Fundamentals and Applications," *ICTC'19*.
- [ICTC'19] "Overview of Distributed Federated Learning: Research Issues, Challenges, and Biomedical Applications," *ICTC'19*.
- [ICAIIC'19] "Cyclic Parameter Sharing for Privacy-Preserving Distributed Deep Learning Platforms," *ICAIIC'19*.
- [ICAIIC'19] "Hardness on Style Transfer Deep Learning for Rococo Painting Masterpieces," *ICAIIC'19*.
- [ICOIN'19] "Optimal Trajectory Learning for UAV-BS Video Provisioning System: A Deep Reinforcement Learning Approach," *ICOIN'19*.
- [ICTC'18] "Opportunistic Medium Access for Hyper-Dense Beamformed IEEE 802.11ax Wireless Networks," *ICTC'18*.
- [ICTC'18] "Very Short-Term Photovoltaic Power Generation Forecasting with Convolutional Neural Networks," *ICTC'18*.
- [ICUFN'18] "Detecting Selfish Backoff Attack in IEEE 802.15.4 CSMA/CA using Logistic Classification," *ICUFN'18*.
- [ICOIN'18] "Proactive Detection of Algorithmically Generated Malicious Domains," *ICOIN'18*.
- [ICOIN'18] "Distributed Dynamic Power-Aware Buffering for Multi-Gbps Video Streaming in IEEE 802.11ad Fast Session Transfer," *ICOIN'18*.
- [ICOIN'18] "High-Dimensional Statistical Supervised Learning for Extracting Information in Steganography," *ICOIN'18*.
- [ICOIN'18] "Top-Down Parsing for Neural Network Exchange Format (NNEF) in TensorFlow-based Deep Learning Computation," *ICOIN'18*.
- [ICUFN'17] "Performance of Deep Learning Computation with TensorFlow Software Library in GPU-Capable Multi-Core Computing Platforms," *ICUFN'17*.
- [ICTC'15] "Feasibility Study of Stochastic Streaming with 4K UHD Video Traces," *ICTC'15*.
- [ICTC'15] "Towards Robust UHD Video Streaming Systems using Scalable High Efficiency Video Coding," *ICTC'15*.

Patents (Granted), totally 61

- **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)

- **16 Korean Patents:** (KR 102340895), (KR 102293287), (KR 102244380), (KR 102240442), (KR 102240425), (KR 102234007), (KR 102178895), (KR 102167344), (KR 102052835), (KR 102015429), (KR 101663613), (KR 101619964), (KR 101606951), (KR 101567829), (KR 101558017), (KR 100779165)
- **7 European Patents:** (EP 3255730), (EP 2441203), (EP 2422578), (EP 2343836), (EP 2282601), (EP 2262342), (EP 2260669)
- **11 Chinese Patents:** (CN 107634349), (CN 102461318), (CN 102461050), (CN 102388658), (CN 102349340), (CN 102342162), (CN 102318430), (CN 102318425), (CN 102204115), (CN 102132602), (CN 102057739)
- **6 Japanese Patents:** (JP 5584209), (JP 5584205), (JP 5580308), (JP 5508403), (JP 5368573), (JP 5364785)

Teaching Experience 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 (*Best Teaching Award, Top 20%*), 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**
 - **Soohyun Park** (03/2019–08/2023 (expected))
 - **Haemin Lee** (09/2020–08/2024 (expected))
 - **Won Joon Yun** (03/2021–08/2024 (expected))
 - **Hankyul Baek** (03/2021–)
 - **Yoo Jeong (Anna) Ha** (03/2021–)
 - **Yunseok Kwak** (03/2021–)
 - **Hyunsoo Lee** (03/2021–)

■ Ph.D. Course Students and Alumni (Co-Supervision and Tight Collaboration for Dissertations)

- **Minseok Choi** (Advisor: Prof. Jaekyun Moon at KAIST), *Professor at Kyung Hee University*, Korea
- **Laihyuk Park** (Advisor: Prof. Sungrae Cho at CAU), *Professor at Seoul National University of Science and Technology*, Korea
- **Shinyoung Ahn** (Advisor: Prof. Sungwon Kang at KAIST), *Researcher at Electronics and Telecomm. Research Institute (ETRI)*, Korea
- **Jonghoe Koo** (Advisor: Prof. Sunghyun Choi at SNU), *Researcher at Samsung Research*, Korea
- **Seungyo Ryu** (Advisor: Prof. Dongseung Kim at Korea Univ.), *Researcher at LG Electronics*, Korea
- **Soyi Jung** (Advisor: Prof. Jae-Hyun Kim at Ajou Univ.), *Professor at Hallym University*, Korea
- **Joo Yong Shim** (Advisor: Prof. Jong-Kook Kim at Korea Univ.)

■ M.S. Course Students and Alumni

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

■ 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

Professional Activities

Talks and Presentations (Selected)

■ IEEE Distinguished Lectures

- *Federated Learning for Medical and Mobile Platforms: Motivation, Challenges, and Potential Solutions*
IEEE Systems Council – IEEE Coastal Los Angeles Section Chapter
California State University, Long Beach (Long Beach, CA, USA, 01/2020), Hosted by Prof. Sean Kwon and Prof. Henry Yeh

■ IEEE Conference Tutorials and Special Session Talks

- *Advanced Deep Learning Methods for Autonomous Mobility*
IEEE ICOIN 2022 Tutorial – IEEE Computer Society (Online, 01/2022)
- *Distributed and Split Deep Learning: Theory and Applications*
IEEE ICUFN 2021 Tutorial – IEEE Communications Society (Jeju, Korea, 08/2021)
- *Multi-Agent Deep Reinforcement Learning for Connected and Autonomous Vehicles*
IEEE ICAIIC 2021 Tutorial – IEEE Communications Society (Online, 04/2021)
- *Advanced Deep Learning Methods and Their Applications to Distributed and Network Platforms*
IEEE ICTC 2019 Special Session Talk – IEEE Communications Society (Jeju, Korea, 10/2019)
- *Distributed Platform Research for Emerging Deep Learning Applications*
IEEE ICOIN 2019 Tutorial – IEEE Computer Society (Kuala Lumpur, Malaysia, 01/2019)
- *Securing the Internet of Things: A Machine Learning Approach (Making Machine Learning Practical)*
IEEE ICC 2018 Tutorial – IEEE Communications Society (Kansas City, MO, USA, 05/2018)
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 (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)**: 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)**: 2021 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility (AIM)*), 2020 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility (AIM)*)
- **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) Activities

- **IEEE GLOBECOM (IEEE Communications Society)**: 2021, 2020, 2015 (Chair, *Workshop on Millimeter-Wave Backhaul and Access (mmWave)*)
- **IEEE ICC (IEEE Communications Society)**: 2022, 2021
- **IEEE CCNC (IEEE Communications Society)**: 2022 (Track Chair)
- **IEEE ICTC (IEEE Communications Society)**: 2021, 2021 (*Workshop on Intelligent 6G Communication Systems*), 2020, 2019, 2018
- **IEEE WCNC (IEEE Communications Society)**: 2022, 2021, 2020, 2020 (*Workshop on Aerial Communications in 5G and Beyond Networks (AERCOMM)*)

- IEEE COMNETSAT (*IEEE Communications Society*): 2021
 - IEEE ICC (IEEE Communications Society): 2021, 2019
 - IEEE IGSSC (*IEEE Communications Society*): 2021, 2020, 2019, 2018
 - IEEE ICAIIC (*IEEE Communications Society*): 2022 (Co-Chair), 2021 (Co-Chair), 2020 (Co-Chair), 2019 (Co-Chair)
 - 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 (Vice Co-Chair), 2020 (Vice Co-Chair), 2020 (*Workshop on Artificial Intelligence and Mobility (AIM)*), 2019 (Vice Co-Chair), 2018 (Vice Co-Chair)
 - IEEE ICDCS (*IEEE Computer Society*): 2019
 - IEEE MASS (*IEEE Computer Society*): 2021, 2012 (*Workshop on Internet of Things Technology and Architectures (IoTech)*)
 - IEEE NAS (*IEEE Computer Society*): 2019 (Co-Chair)
 - IEEE IPDPS (*IEEE Computer Society*): 2022 (*Heterogeneity in Computing Workshop (HCW)*)
 - IEEE Blockchain (*IEEE Computer Society*): 2020, 2019
 - ACM MobiHoc: 2019
 - ACM AsiaCCS: 2018 (*Workshop on Security in Cloud Computing (SCC)*)
 - IEEE ITC-CSCC: 2021
 - EuCAP: 2021, 2019, 2015
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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>