

Highlights

Research Milestones

- **60 IEEE Journals** (published and accepted),
The Complete Journals List (totally, **104**) is as follows, <https://joongheon.github.io/publications-journals.html>
- **7 Top-Tier Conference Papers**, i.e., IEEE ICDCS (2022), IEEE INFOCOM (2022), IEEE ICDCS (2020), IJCAI (2019), IEEE ICDCS (2018), ACM Multimedia (2017), and ACM MobiSys (2010)
- **4584+ Citations** in Google Scholar Profile (H-index: 31+, i10-index 105+)
- **Outstanding Young Researcher Award (2020)**, IEEE Communications Society – Multimedia Communications Technical Committee
- **IEEE Systems Journal Best Paper Award (2020)**, Top 7 among 793 accepted papers in 2019 (0.88%)
- **6 Awards from IEEE Conferences and Contests**, i.e., IEEE ICOIN Best Paper Award (2021), IEEE Seoul Section Student Paper Contest Awards (1 in 2020; 1 in 2019), and IEEE VTS Seoul Chapter Awards (2 in 2021; 1 in 2019)
- **5 Tutorials at IEEE Conferences**, i.e., ICOIN (2022), ICUFN (2021), ICAIIC (2021), ICOIN (2019), and ICC (2018)
- **62+ Patents** are granted, and among them, **46 Granted Patents** are successfully adopted by 60 GHz Millimeter-Wave IEEE 802.11 Standards, i.e., IEEE 802.11ad and IEEE 802.11ay
- **16 Awards** from Local (Korean) Conferences and Contests
- **Research Funds (since March 2016)**: 5,467,384 USD \approx 5,467,384,000 KRW (except University Internal Funds)

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

- **Supervised 3 Postdoctoral Scholars**, now, tenure-track professors at Kyung Hee University (Korea) and Hallym University (Korea); and a postdoctoral scholar at the University of Southern California (United States, jointly advised by Prof. Andreas F. Molisch)
- **Supervised 1 Ph.D. and 5 M.S. Students**, now, researchers at LG Electronics, Hyundai, Naver, government agency, and startup
- **6 Best Teaching Awards at Korea University**, 3 awards are for top 5% (*Granite Tower (Seok-Tap) 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 for 17+ years
 - **Distinguished Lecturer, IEEE Communications Society (ComSoc)** (class of 2022–2023) IEEE ComSoc
 - **Associate Editor (2020–)**, *IEEE Transactions on Vehicular Technology* IEEE VTS
 - **Guest Editor (06/2022)**, *IEEE Communications Standards Magazine* (S.I. on Recent and Future Evolution of Wi-Fi) IEEE ComSoc
 - **IEEE Vehicular Technology Society (VTS)**, Seoul Chapter Treasurer for 3 years (2020–2023) IEEE VTS
 - **21+ Organizing Committee (OC) Contributions** for IEEE Conferences
 - **57+ Technical Program Committee (TPC) Contributions** for IEEE Conferences
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Educational Backgrounds

- **University of Southern California (USC) – Viterbi School of Engineering**, Los Angeles, California, USA
 - Ph.D. (08/2009–08/2014) in Computer Science (Advisor: *Prof. Andreas F. Molisch*, Fellow of the IEEE)
 - M.S. (05/2014) in Computer Science with specialization in High Performance Computing and Simulations
 - M.S. (05/2012) in Electrical Engineering
 - **Korea University**, Seoul, Republic of Korea
 - M.S. (03/2004–02/2006) in Computer Science and Engineering
 - B.S. (03/1999–02/2004) in Computer Science and Engineering
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R&D Positions

Full-Time Positions

- **Korea University – College of Engineering**, Seoul, Republic of Korea
 - Associate Professor (03/2021–Present), School of Electrical Engineering
 - Adjunct Professor (03/2023–Present), Department of Communication Engineering (with **Samsung Electronics**)
 - Adjunct Professor (03/2021–02/2023), Department of Semiconductor Engineering (with **SK Hynix**)
 - Assistant Professor (09/2019–02/2021), School of Electrical Engineering
 - R&D APPOINTMENTS
 - * Vice Director (10/2020–Present), Artificial Intelligence Engineering Research Center (KU-AIER)
- **Chung-Ang University – College of Computer Science and Software**, Seoul, Republic of Korea
 - Assistant Professor (03/2016–08/2019), School of Computer Science and Engineering
- **Intel Corporation – Platform Engineering Group**, Silicon Valley (Santa Clara), CA, USA
 - Systems Engineer (09/2013–02/2016), mmWave Standards and Advanced Technology (mSAT) Team (with Dr. Ali S. Sadri)
- **University of Southern California (USC) – Viterbi School of Engineering**, Los Angeles, CA, USA
 - Annenberg Graduate Fellow (08/2009), Awarded with Ph.D. admission in Computer Science from USC (2009)
 - Ph.D. Research Assistant (01/2011–08/2014), Communication Sciences Institute (Advised by Prof. Andreas F. Molisch)
 - Teaching Assistant (01/2012–05/2013), Computer Science and Electrical Engineering Departments (CSCI455x and EE579)

- **InterDigital**, San Diego, CA, USA
 - Intern (05/2012–08/2012), Wireless Systems Evolution Department
 - Subject Matter Expert in IEEE 802.11ad (01/2012–02/2012), Wireless Systems Evolution Department
- **LG Electronics CTO Office**, Seoul, Republic of Korea
 - Research Engineer (01/2006–08/2009), Multimedia Research Laboratory, Seocho R&D Campus

Industry, Advisory, and Consulting Positions

- **Blue Baikal**, Singapore
 - Advisor (01/2020–), Advisor in Technologies (Deep Learning & Information Security)
- **Samsung Electronics (C-Lab), Seoul National University R&D Center**, Seoul, Republic of Korea
 - Advisory Professor (02/2020–08/2020), Nonlinear Regression Deep Learning Algorithm Design and Implementation

Visiting Positions

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

Academia (Membership, Editorial Boards, and Services)

- **IEEE**
 - Senior Member (2018–), Member (2006–2017)
 - Distinguished Lecturer (2022–2023), **IEEE Communications Society**
 - Associate Editor (2020–), **IEEE Transactions on Vehicular Technology** (Area: Vehicular Electronics and Systems)
 - Guest Editor (03/2022), **IEEE Communications Standards Magazine** (S.I. on Recent and Future Evolution of Wi-Fi)
 - **IEEE Vehicular Technology Society (VTS) Seoul Chapter**
 - * Chapter Treasurer (2022–Present)
 - * Chapter Treasurer (2020–2021)
 - * **IEEE VTS Asia Pacific Wireless Communications Symposium (APWCS) Organizing Committee: Finance Chair** (2022), Finance Co-Chair (2021)
 - **Elsevier**
 - Editor (2021–), **ICT Express** (Area: AI for ICT Applications)
 - Guest Editor (10/2022), **Computer Networks** (S.I. on Machine Learning (ML) and Artificial Intelligence (AI) for the Internet of Things, 5G, and Beyond)
 - Guest Editor (03/2022), **ICT Express** (S.I. on Artificial Intelligence and Machine Learning Approaches to Communication)
 - Guest Editor (03/2021), **ICT Express** (S.I. on Mobile and Edge Computing Systems)
 - **KICS (Korean Institute of Communications and Information Sciences)**
 - Life Member (2018–)
 - Vice Executive Director (2021, 2022), International Conference 1 Division (IEEE ICTC)
 - Vice Executive Director (2022), International Conference 3 Division (IEEE APCC)
 - Vice Executive Director (2021), Intelligence Technology 2 Division
 - Director (2020), Intelligence Technology 2 Division
 - Director (2018, 2019), Intelligence Technology Division
 - Director (2017), ICT Convergence Division
 - Board Member (01/2019–), KICS Technical Committee on Coding and Information Theory
 - Board Member (01/2019–), KICS Technical Committee on Military Communication
 - Board Member (06/2018–), KICS Technical Committee on Spectrum Sharing
 - Board Member (01/2017–), KICS Technical Committee on Mobile Communications
 - Board Member (01/2017–), KICS Technical Committee on Communication Networking
 - Editor, **The Journal of Korean Institute of Communications and Information Sciences**
 - Guest Editor (09/2019), **KICS Information and Communications Magazine** (S.I. on AI and Deep Learning)
 - **JCCI (Joint Conference on Communication and Information) Organizing Committee: General Affair Chair** (2022), Publication Chair (2021), Publication Chair (2020), Publication Chair (2019), Publication Chair (2018)
 - **KIISE (Korean Institute of Information Scientists and Engineers)**
 - Vice President (2022), Information Network Society
 - General Affair Manager (2021), Information Network Society
 - General Affair Manager in Academia (2020), Information Network Society
 - Member, Information Network Society
 - Editor, **Journal of KIISE** (Area: Information Network)
 - **IEIE (Institute of Electronics and Information Engineers)**
 - General Affair Manager (2022), Telecommunication Society
 - Co-Director (2021)
 - Editor, **Journal of the Institute of Electronics and Information Engineers** (Area: Telecommunication)
 - **OSIA (Open Standards and ICT Association)**
 - Vice President (2022), Vice President (2021), General Affair Manager (2020)
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Awards and Honors

Research and Academic Excellence (International)

- **Outstanding Young Researcher Award** – *IEEE Communications Society* 03/2022
IEEE Communications Society – Multimedia Communications Technical Committee (MMTC)
- **Distinguished Lecturer** (class of 2022–2023) – *IEEE Communications Society* 12/2021
- **IEEE VTS Seoul Chapter Award** – *IEEE Vehicular Technology Society* (with Y. Kwak, S. Jung, J.-H. Kim) 08/2021
"Quantum Scheduling for Millimeter-Wave Observation Satellite Constellation"
- **IEEE VTS Seoul Chapter Award** – *IEEE Vehicular Technology Society* (with H. Lee, S. Jung) 08/2021
"Distributed and Autonomous Aerial Data Collection in Smart City Surveillance Applications"
- **IEEE ICOIN 2021 Best Paper Award** – *IEEE Computer Society* (with S. Jung, W.J. Yun, J.-H. Kim) 01/2021
"Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing"
- **Bronze Paper Award** – *2020 IEEE Seoul Section Student Paper Contest* (with S. Park) 12/2020
"Reliable Offloading Target Selection using Deep Reinforcement Learning for Large Fire Accident"
- **IEEE Systems Journal Best Paper Award** – *IEEE Systems Council* (with M. Saad, J. Choi, D. Nyang, A. Mohaisen) 03/2020
"Towards Characterizing Blockchain-based Cryptocurrencies for Highly-Accurate Predictions"
- **Gold Paper Award** – *2019 IEEE Seoul Section Student Paper Contest* (with J. Yoo) 12/2019
"Stabilized Super-Resolution Deep Learning Adaptation for UAV-Assisted Mobile Edges: A Lyapunov Optimization Approach"
- **IEEE VTS Seoul Chapter Award** – *IEEE Vehicular Technology Society* (with S. Park, D. Kwon, M. Shin) 08/2019
"Joint Offloading and Streaming in Mobile Edges: A Deep Reinforcement Learning Approach"
- **Next Generation and Standards (NGS) Division Recognition Award** – *Intel Corporation* Q1/2015
For developing a 3-dual sector mmWave backhaul link software stack with mesh, relay, and load balancing capability for modular antenna array (MAA) proof-of-concept (POC)
- **Annenberg Graduate Fellowship Award** – *University of Southern California* 02/2009
Awarded with Ph.D. Admission – 4 Year Full Scholarship (\$30,000/year for 4 years, i.e., \$120,000)

Research and Academic Excellence (Korea Regional)

- **Haedong Paper Award – Encouragement Paper Award** – *2021 KICS Summer Conference* (with H. Baek, Y.J. Ha, M. Yoo, S. Jung) 06/2021
"Neural Architectural Nonlinear Pre-Processing for mmWave Radar-based Human Gesture Perception in On-Driving Scenarios"
- **Haedong Young Scholar Award** – *KICS and Haedong Foundation* 12/2018
For recognizing a researcher under the age of 40 who has made outstanding contributions to communication sciences R&D
- **Outstanding Research Paper Award** – *LG Electronics CTO Office, Multimedia Research Laboratory* 01/2008
Awarded Paper – W. Lee, E. Kim, J. Kim, I. Lee, and C. Lee, "Movement-Aware Vertical Handoff of WLAN and Mobile WiMAX for Seamless Ubiquitous Access," *IEEE Transactions on Consumer Electronics*, 53(4):1268-1275, November 2007.
- **RFID Expert Group President Award** – *The 3rd RFID/USN Research Paper Contest* 10/2007
- **ETRI President Award** – *The 2nd RFID/USN Research Paper Contest* 11/2006
- **Korea Association of RFID/USN (KARUS) President Award** – *The 1st RFID/USN Research Paper Contest* 10/2005
- **Scholarships for Academic Excellence** – *Korea University* Fall 1999, Fall 2000

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

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

Teaching and Supervision Excellence

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

Academic and University Services

- **Outstanding Contribution Award** – *KIIE Information Network Society* 02/2022

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

Business Administration

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

R&D Projects (Totally, 5,467,384 USD ≈ 5,467,384,000 KRW)

University/Center-Level Projects

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

Government-Funded Projects

- **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]

Industry-Funded Projects

- **Mapping between Real World and Virtual Reality (VR) for End-Edged Cloud Real-Time VR Servers** 09/2020–09/2024
Funded by *Samsung Electronics* – *Samsung Advanced Institute of Technology* [Grant: \$286,000; Primary-PI]
- **Cellular/Wi-Fi Handover Technology Development** 02/2022–12/2022
Funded by *LG Electronics CTO Division* – *Smart Mobility Lab., Advanced R&BD Center* [Grant: \$88,000; Primary-PI]
- **Distributed Learning System Design and Implementation for Clinical Applications** 02/2022–03/2022
Funded by *Cipherome* [Grant: \$15,000; Primary-PI]
- **Super-Resolution Performance Optimization in Mobile Platforms** 05/2020–08/2020
Funded by *Samsung SDS* [Grant: \$15,000; Primary-PI]
- **Deep Learning Algorithms for mVOC Concentration Analysis** 03/2020–06/2020
Funded by *Samsung Electronics* [Grant: \$12,000; Primary-PI]
- **Visual Recognition Software Implementation using Deep Learning Tools** 05/2019–11/2019
Funded by *Hyundai NGV* and *Hyundai/Kia Motors Company* [Grant: \$59,500; Primary-PI]
- **A Priori Techniques Research for Efficient Multi-Edge Computing** 06/2017–12/2017
Funded by *Samsung Electronics Software Center* [Grant: \$80,000; Co-PI]

Government-Funded Research Institute Projects

- **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: 4584+, H-Index: 31+, i10-Index: 105+; obtained from Google Scholar Profile (as of April 19, 2022)
- The Complete Journals List (totally, 104) is as follows, <https://joongheon.github.io/publications-journals.html>

Dissertation, Books, and Book Chapters

■ Ph.D. Dissertation

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

■ Books

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

■ Book Translation (from English to Korean)

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

■ Book Chapters

- S. Park, D. Kim, and J. Kim, "Dynamic Decision-Making for Stabilized Deep Learning Software Platforms," *Advances and Applications in Deep Learning*, IntechOpen, September 2020., (Editor: M.A. Aceves-Fernandez)
- A.F. Molisch, M. Ji, J. Kim, D. Burghal, and A.S. Tehrani, "Device-to-Device Communications," *Towards 5G: Applications, Requirements and Candidate Technologies*, Wiley, January 2017., (Editors: R. Vannithamby, S. Talwar)
- J. Kim, "Millimeter-Wave (mmWave) Medium Access Control: A Survey," *Opportunities in 5G Networks: A Research and Development Perspective*, CRC Press, April 2016., (Editor: F. Hu)
- J. Kim, "Millimeter-Wave (mmWave) Radio Propagation Characteristics," *Opportunities in 5G Networks: A Research and Development Perspective*, CRC Press, April 2016., (Editor: F. Hu)
- J. Kim, E. Kim, W. Lee, D. Kim, J. Choi, J. Jung, and C.K. Shin, "Weighted Localized Clustering: A Coverage-Aware Reader Collision Arbitration Protocol in RFID Networks," *Handbook on Mobile and Ubiquitous Computing: Status and Perspective*, CRC Press, October 2012., (Editors: L.T. Yang, E. Syukur, S.W. Loke)
- J. Kim, W. Lee, E. Kim, and T.K. Shih, "Coverage-Time Optimized Dynamic Clustering for Two-Tiered WM2Nets," *Wireless Mesh Networking*, McGraw-Hill, August 2008., (Editor: G. Aggelou)

Top-Tier Conferences and Journals/Magazines

■ Top-Tier and Awarded Conference Proceedings

- [ICDCS'22] W.J. Yun, Y. Kwak, J.P. Kim, H. Cho, S. Jung, J. Park, and J. Kim, "Quantum Multi-Agent Reinforcement Learning via Variational Quantum Circuit Design," *IEEE International Conference on Distributed Computing Systems (ICDCS)*, Bologna, Italy, July 2022.
- [INFOCOM'22] H. Baek, W.J. Yun, Y. Kwak, S. Jung, M. Ji, M. Bennis, J. Park, and J. Kim, "Joint Superposition Coding and Training for Federated Learning over Multi-Width Neural Networks," *IEEE International Conference on Computer Communications (INFOCOM)*, May 2022. (Acceptance Rate: 225/1129=19.93%)
- [APWCS'21] J. Kim, Y. Kwak, S. Jung, and J.-H. Kim, "Quantum Scheduling for Millimeter-Wave Observation Satellite Constellation," *IEEE VTS Asia Pacific Wireless Communications Symposium*, August 2021. (*IEEE VTS Seoul Chapter Award*)
- [APWCS'21] H. Lee, S. Jung, and J. Kim, "Distributed and Autonomous Aerial Data Collection in Smart City Surveillance Applications," *IEEE VTS Asia Pacific Wireless Communications Symposium*, August 2021. (*IEEE VTS Seoul Chapter Award*)
- [ICOIN'21] S. Jung, W.J. Yun, J. Kim, and J.-H. Kim, "Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing," *IEEE International Conference on Information Networking*, January 2021. (*Best Paper Award*)
- [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)*, November/December 2020. (Acceptance Rate: 105/584=17.98%)
- [APWCS'19] S. Park, J. Kim, D. Kwon, M. Shin, and J. Kim, "Joint Offloading and Streaming in Mobile Edges: A Deep Reinforcement Learning Approach," *IEEE VTS Asia Pacific Wireless Communications Symposium*, August 2019. (*IEEE VTS Seoul Chapter Award*)
- [IJCAI'19] M. Shin and J. Kim, "Randomized Adversarial Imitation Learning for Autonomous Driving," *International Joint Conference on Artificial Intelligence (IJCAI)*, August 2019. (Acceptance Rate: 850/4752=17.89%)
- [ICDCS'18] S. Ahn, J. Kim, E. Lim, W. Choi, A. Mohaisen, and S. Kang, "ShmCaffe: A Distributed Deep Learning Platform with Shared Memory Buffer for HPC Architecture," *IEEE International Conference on Distributed Computing Systems (ICDCS)*, July 2018. (Acceptance Rate: 78/378=20.63%)
- [MM'17] J. Koo, J. Yi, J. Kim, M.A. Hoque, and S. Choi, "REQUEST: Seamless Dynamic Adaptive Streaming over HTTP for Multi-Homed Smartphone under Resource Constraints," *ACM International Conference on Multimedia (MM)*, October 2017. (Acceptance Rate: 189/684=27.63%)
- [MobiSys'10] J. Paek, J. Kim, and R. Govindan, "Energy-Efficient Rate-Adaptive GPS-based Positioning for Smartphones," *ACM International Conference on Mobile Systems, Applications, and Services (MobiSys)*, June 2010. (Acceptance Rate: 25/126=19.84%), (*Citations: 613+*)

■ IEEE Journals and Magazines, 64 publications

◀ Revision ▶

- [TMC.major] U. Meteriz, N.F. Yildiran, J. Kim, and D. Mohaisen, "Learning Location from Shared Elevation Profiles in Fitness Apps: A Privacy Perspective," *IEEE Transactions on Mobile Computing*, (1st Revision, 21-Jun-2021).
- [TNNLS.minor] W.J. Yun, M. Shin, D. Mohaisen, K. Lee, and J. Kim, "Hierarchical Deep Reinforcement Learning-based Propofol Infusion Assistant Framework in Anesthesia," *IEEE Transactions on Neural Networks and Learning Systems*, (Minor Revision, 26-Apr-2022).
- [TVT.major] B. Lim, W.J. Yun, J. Kim, and Y.-C. Ko, "Joint Pilot Design and Channel Estimation using Deep Residual Learning for Multi-Cell Massive MIMO under Hardware Impairments," *IEEE Transactions on Vehicular Technology*, (Review after 1st Revision, 28-Mar-2022).
- [TITS.major] W.J. Yun, S. Park, J. Kim, and D. Mohaisen, "Self-Configurable Stabilized Real-Time Detection Learning for Autonomous Driving Applications," *IEEE Transactions on Intelligent Transportation Systems*, (Review after 2nd Revision, 26-Feb-2022).

◀ 2022 ▶

- [TII'22.10] W.J. Yun, S. Park, J. Kim, M. Shin, S. Jung, D. Mohaisen, and J.-H. Kim, "Cooperative Multi-Agent Deep Reinforcement Learning for Reliable Surveillance via Autonomous Multi-UAV Control," *IEEE Transactions on Industrial Informatics*, 18(10):ppp-ppp, October 2022.
- [ISJ'22.09] N.-N. Dao, T. Phan, U. Sa'ad, J. Kim, T. Bauschert, D.-T. Do, and S. Cho, "Securing Heterogeneous IoT with Intelligent DDoS Attack Behavior Learning," *IEEE Systems Journal*, 16(3):ppp-ppp, September 2022.
- [JCN'22.06] W.J. Yun, M. Shin, S. Jung, S. Kwon, and J. Kim, "Parallelized and Randomized Adversarial Imitation Learning for Safety-Critical Self-Driving Vehicles," *IEEE/KICS Journal of Communications and Networks*, 24(3):ppp-ppp, June 2022.
- [CSM'22.06] E. Au, L. Wilhelmsson, T. Baykas, and J. Kim, "Recent and Future Evolution of Wi-Fi," *IEEE Communications Standards Magazine*, v(n):ppp-ppp, June 2022.
- [TMC'22.05] J. Yi, S. Kim, J. Kim, and S. Choi, "Supremo: Cloud-Assisted Low-Latency Super-Resolution in Mobile Devices," *IEEE Transactions on Mobile Computing*, 21(5):1847–1860, May 2022.
- [TVT'22.05] K. Kim, J.-H. Lee, S. Jung, J. Kim, and J.-H. Kim, "Stabilized Detection Accuracy Maximization using Adaptive SAR Image Processing in LEO Networks," *IEEE Transactions on Vehicular Technology*, 71(5):ppp-ppp, May 2022.
- [ISJ'22.03] E. Boo, J. Kim, and J. Ko, "LiteZKP: Lightning Zero-Knowledge Proof-based Blockchains for IoT and Edge Platforms," *IEEE Systems Journal*, 16(1):112–123, March 2022.
- [TVT'22.02] W.J. Yun, D. Kwon, M. Choi, J. Kim, G. Caire, and A.F. Molisch, "Quality-Aware Deep Reinforcement Learning for Streaming in Infrastructure-Assisted Connected Vehicles," *IEEE Transactions on Vehicular Technology*, 71(2):2002–2017, February 2022.

◀ 2021 ▶

- [ISJ'21.09] S. Jung, J. Kim, and J.-H. Kim, "Intelligent Active Queue Management for Stabilized QoS Guarantees in 5G Mobile Networks," *IEEE Systems Journal*, 15(3):4293–4302, September 2021.
- [Access'21.09] Y.J. Ha, M. Yoo, G. Lee, S. Jung, S.W. Choi, J. Kim, and S. Yoo, "Spatio-Temporal Split Learning for Privacy-Preserving Medical Platforms: Case Studies with COVID-19 CT, X-Ray, and Cholesterol Data," *IEEE Access*, 9:121046–121059, September 2021.
- [TVT'21.08] S. Jung, J. Kim, M. Levorato, C. Cordeiro, and J.-H. Kim, "Infrastructure-Assisted On-Driving Experience Sharing for Millimeter-Wave Connected Vehicles," *IEEE Transactions on Vehicular Technology*, 70(8):7307–7321, August 2021.
- [TMC'21.06] A. Malik, K.S. Kim, J. Kim, and W.-Y. Shin, "A Personalized Preference Learning Framework for Caching in Mobile Networks," *IEEE Transactions on Mobile Computing*, 20(6):2124–2139, June 2021.
- [TVT'21.06] S. Jung, W.J. Yun, M. Shin, J. Kim, and J.-H. Kim, "Orchestrated Scheduling and Multi-Agent Deep Reinforcement Learning for Cloud-Assisted Multi-UAV Charging Systems," *IEEE Transactions on Vehicular Technology*, 70(6):5362–5377, June 2021.
- [Access'21.06] S. Park, M. Choi, W.-Y. Shin, and J. Kim, "Joint Mobile Charging and Coverage-Time Extension for Unmanned Aerial Vehicles," *IEEE Access*, 9:94053–94063, June 2021.
- [PIEEE'21.05] J. Park, S. Samarakoon, A. Elgabli, J. Kim, M. Bennis, S.-L. Kim, and M. Debbah, "Communication-Efficient and Distributed Learning Over Wireless Networks: Principles and Applications," *Proceedings of the IEEE*, 109(5):796–819, May 2021.
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- [JCN'21.04] D. Kim, S. Park, J. Kim, J.y. Bang, and S. Jung, "Stabilized Adaptive Sampling Control for Reliable Real-Time Learning-based Surveillance Systems," *IEEE/KICS Journal of Communications and Networks*, 23(2):129–137, April 2021.
- [JCN'21.04] M. Choi, M. Shin, and J. Kim, "Dynamic Video Delivery using Deep Reinforcement Learning for Device-to-Device Underlaid Cache-Enabled Internet-of-Vehicle Networks," *IEEE/KICS Journal of Communications and Networks*, 23(2):117–128, April 2021.
- [ISJ'21.03] D. Kim, D. Kwon, L. Park, J. Kim, and S. Cho, "Multiscale LSTM-Based Deep Learning for Very-Short-Term Photovoltaic Power Generation Forecasting in Smart City Energy Management," *IEEE Systems Journal*, 15(1):346–354, March 2021.
- ◀ 2020 ▶
- [TWC'20.12] 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.
- [IOTJ'20.10] D. Kwon, J. Jeon, S. Park, J. Kim, and S. Cho, "Multiagent DDPG-Based Deep Learning for Smart Ocean Federated Learning IoT Networks," *IEEE Internet of Things Journal*, 7(10):9895–9903, October 2020.
- [JCN'20.08] D. Kwon, J. Kim, D. Mohaisen, and W. Lee, "Self-Adaptive Power Control with Deep Reinforcement Learning for Millimeter-Wave Internet-of-Vehicles Video Caching," *IEEE/KICS Journal of Communications and Networks*, 22(4):326–337, August 2020.
- [Access'20.06] M. Choi and J. Kim, "Blind Signal Classification Analysis and Impact on User Pairing and Power Allocation in Nonorthogonal Multiple Access," *IEEE Access*, 8:100916–100929, June 2020.
- [TII'20.05] M. Shin, D.-H. Choi, and J. Kim, "Cooperative Management for PV/ESS-Enabled Electric-Vehicle Charging Stations: A Multiagent Deep Reinforcement Learning Approach," *IEEE Transactions on Industrial Informatics*, 16(5):3493–3503, May 2020.
- [ISJ'20.03] 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., (*IEEE Systems Journal Best Paper Award, Top 7 among 793 accepted papers in 2019: 0.88%*)
- [JCN'20.02] S. Han, J.-W. Choi, and J. Kim, "Numerical Approximation of Millimeter-Wave Frequency Sharing between Cellular Systems and Fixed Service Systems," *IEEE/KICS Journal of Communications and Networks*, 22(1):37–45, February 2020.
- ◀ 2019 ▶
- [TWC'19.12] M. Choi, A. No, M. Ji, and J. Kim, "Markov Decision Policies for Dynamic Video Delivery in Wireless Caching Networks," *IEEE Transactions on Wireless Communications*, 18(12):5705–5718, December 2019.
- [TWC'19.10] M. Choi, J. Kim, and J. Moon, "Dynamic Power Allocation and User Scheduling for Power-Efficient and Delay-Constrained Multiple Access Networks," *IEEE Transactions on Wireless Communications*, 18(10):4846–4858, October 2019.
- [IOTJ'19.10] L. Park, C. Lee, J. Kim, A. Mohaisen, and S. Cho, "Two-Stage IoT Device Scheduling with Dynamic Programming for Energy Internet Systems," *IEEE Internet of Things Journal*, 6(5):8782–8791, October 2019.
- [TVT'19.10] M. Choi, D. Yoon, and J. Kim, "Blind Signal Classification for Non-Orthogonal Multiple Access in Vehicular Networks," *IEEE Transactions on Vehicular Technology*, 68(10):9722–9734, October 2019.
- [TCAD'19.09] W. Lee, T. Kang, J.-J. Lee, K. Han, J. Kim, and M. Pedram, "TEI-ULP: Exploiting Body Biasing to Improve the TEI-Aware Ultra-Low Power Methods," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 38(9):1758–1770, September 2019.
- [TMC'19.07] J. Koo, J. Yi, J. Kim, M.A. Hoque, and S. Choi, "Seamless Dynamic Adaptive Streaming in LTE/Wi-Fi Integrated Network under Smartphone Resource Constraints," *IEEE Transactions on Mobile Computing*, 18(7):1647–1660, July 2019.
- [TVT'19.05] M. Shin, J. Kim, and M. Levorato, "Auction-Based Charging Scheduling With Deep Learning Framework for Multi-Drone Networks," *IEEE Transactions on Vehicular Technology*, 68(5):4235–4248, May 2019.
- [CM'19.03] L. Park, S. Jeong, D.S. Lakew, J. Kim, and S. Cho, "New Challenges of Wireless Power Transfer and Secured Billing for Internet of Electric Vehicles," *IEEE Communications Magazine*, 57(3):118–124, March 2019.

- [TIE'19.02] L. Park, S. Jeong, J. Kim, and S. Cho, "Joint Geometric Unsupervised Learning and Truthful Auction for Local Energy Market," *IEEE Transactions on Industrial Electronics*, 66(2):1499–1508, February 2019.
- ◀ 2018 ▶
- [IOT'18.12] S. Jeong, W. Na, J. Kim, and S. Cho, "Internet of Things for Smart Manufacturing System: Trust Issues in Resource Allocation," *IEEE Internet of Things Journal*, 5(6):4418–4427, December 2018.
- [JSAC'18.11] N.-N. Dao, D.-N. Vu, W. Na, J. Kim, and S. Cho, "SGCO: Stabilized Green Crosshaul Orchestration for Dense IoT Offloading Services," *IEEE Journal on Selected Areas in Communications*, 36(11):2538–2548, November 2018.
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- [TVT'18.04] M. Choi, J. Kim, and J. Moon, "Adaptive Detector Selection for Queue-Stable Word Error Rate Minimization in Connected Vehicle Receiver Design," *IEEE Transactions on Vehicular Technology*, 67(4):3635–3639, April 2018.
- [IOT'18.02] W. Na, J. Park, C. Lee, K. Park, J. Kim, and S. Cho, "Energy-Efficient Mobile Charging for Wireless Power Transfer in Internet of Things Networks," *IEEE Internet of Things Journal*, 5(1):79–92, February 2018.
- ◀ 2017 ▶
- [TII'17.12] L. Park, Y. Jang, S. Cho, and J. Kim, "Residential Demand Response for Renewable Energy Resources in Smart Grid Systems," *IEEE Transactions on Industrial Informatics*, 13(6):3165–3173, December 2017.
- [IOT'17.10] J. Kim and W. Lee, "Feasibility Study of 60 GHz Millimeter-Wave Technologies for Hyperconnected Fog Computing Applications," *IEEE Internet of Things Journal*, 4(5):1165–1173, October 2017.
- [Access'17.09] C. Shin, C. Lim, J. Kim, H. Roh, and W. Lee, "A Software-based Monitoring Framework for Time-Space Partitioned Avionics Systems," *IEEE Access*, 5:19132–19143, September 2017.
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- ◀ 2016 ▶
- [TVT'16.12] J. Kim, S.-C. Kwon, and G. Choi, "Performance of Video Streaming in Infrastructure-to-Vehicle Telematic Platforms With 60-GHz Radiation and IEEE 802.11ad Baseband," *IEEE Transactions on Vehicular Technology*, 65(12):10111–10115, December 2016.
- [Access'16.12] J. Kim, L. Xian, and A.S. Sadri, "Numerical Simulation Study for Frequency Sharing between Micro-Cellular Systems and Fixed Service Systems in Millimeter-Wave Bands," *IEEE Access*, 4:9847–9859, December 2016.
- [TON'16.08] J. Kim, G. Caire, and A.F. Molisch, "Quality-Aware Streaming and Scheduling for Device-to-Device Video Delivery," *IEEE/ACM Transactions on Networking*, 24(4):2319–2331, August 2016., (**Best Reading Papers in Device-to-Device Communications by IEEE Communications Society**), (**Citations: 130+**)
- ◀ 2007–2015 ▶
- [TII'15.12] J. Kim, "Energy-Efficient Dynamic Packet Downloading for Medical IoT Platforms," *IEEE Transactions on Industrial Informatics*, 11(6):1653–1659, December 2015.
- [TSMC'15.11] J. Kim and W. Lee, "Stochastic Decision Making for Adaptive Crowdsourcing in Medical Big-Data Platforms," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 45(11):1471–1476, November 2015.
- [JCN'14.10] J. Kim and A.F. Molisch, "Fast Millimeter-Wave Beam Training with Receive Beamforming," *IEEE/KICS Journal of Communications and Networks*, 16(5):512–522, October 2014.
- [CL'14.09] S.-N. Hong and J. Kim, "Joint Coding and Stochastic Data Transmission for Uplink Cloud Radio Access Networks," *IEEE Communications Letters*, 18(9):1619–1622, September 2014.
- [CL'14.07] S.-N. Hong and J. Kim, "A Low-Complexity Algorithm for Neighbor Discovery in Wireless Networks," *IEEE Communications Letters*, 18(7):1119–1122, July 2014.
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- [TBC'13.09] J. Kim, Y. Tian, S. Mangold, and A.F. Molisch, "Joint Scalable Coding and Routing for 60 GHz Real-Time Live HD Video Streaming Applications," *IEEE Transactions on Broadcasting*, 59(3):500–512, September 2013.
- [TCE'07.11] W. Lee, E. Kim, J. Kim, I. Lee, and C. Lee, "Movement-Aware Vertical Handoff of WLAN and Mobile WiMAX for Seamless Ubiquitous Access," *IEEE Transactions on Consumer Electronics*, 53(4):1268–1275, November 2007., (**Outstanding Research Paper Award (2018) – LG Electronics CTO Office, Multimedia Research Laboratory**), (**Citations: 113+**)
- [TCE'07.05] J. Kim, W. Lee, E. Kim, D.-W. Kim, and H. Kim, "Coverage-Time Optimized Dynamic Clustering of Networked Sensors for Pervasive Home Networking," *IEEE Transactions on Consumer Electronics*, 53(2):433–441, May 2007.
- [CL'07.01] J. Kim, W. Lee, E. Kim, D. Kim, and K. Suh, "Optimized Transmission Power Control of Interrogators for Collision Arbitration in UHF RFID Systems," *IEEE Communications Letters*, 11(1):22–24, January 2007.

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)

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
- *Advanced Topics in Socialware IT (ECE545):* Spring 2022
- *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 ([Granite Tower \(Seok-Top\) Best Teaching Award, Top 5%](#)), Fall 2020 ([Best Teaching Award, Top 20%](#)), Fall 2019 ([Granite Tower \(Seok-Top\) Best Teaching Award, Top 5%](#))
- *Object-Oriented Programming (SEMI104):* Fall 2021 ([Best Teaching Award, Top 20%](#))
- *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 – 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 **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** (03/2019–02/2024 (expected))
- **Haemin Lee** (09/2020–02/2025 (expected))
- **Won Joon Yun** (03/2021–08/2024 (expected))
- **Yunseok Kwak** (03/2021–)
- **Hyunsoo Lee** (03/2021–)
- **Hankyul Baek** (03/2021–)
- **Seok Bin Son** (03/2022–)

- Jae Pyoung Kim (03/2023–)
- **Ph.D. Course Students and Alumni (Tight Collaboration for Ph.D. Dissertation)**
 - Minseok Choi (Advisor: Prof. Jaekyun Moon at KAIST), *Professor* at **Kyung Hee University**, Suwon, Korea
 - Laihyuk Park (Advisor: Prof. Sungrae Cho at CAU), *Professor* at **Seoul National University of Science and Technology**, Seoul, Korea
 - Shinyoung Ahn (Advisor: Prof. Sungwon Kang at KAIST), *Researcher* at **ETRI**, Daejeon, Korea
 - Jonghoe Koo (Advisor: Prof. Sunghyun Choi at SNU), *Researcher* at **Samsung Research**, Seoul, Korea
 - Seungyo Ryu (Advisor: Prof. Dongseung Kim at Korea University), *Researcher* at **LG Electronics**, Changwon, Korea
 - Soyi Jung (Advisor: Prof. Jae-Hyun Kim at Ajou University), *Professor* at **Hallym University**, Chuncheon, Korea
 - Joo Yong Shim (Advisor: Prof. Jong-Kook Kim at Korea University)
- **M.S. Course Students and Alumni**
 - Kyeongseon Kim (09/2017–08/2019), *Researcher* at **LG Electronics AI Research**, Seoul, Korea
 - Dohyun Kwon (03/2018–02/2020), *Researcher* at **Hyundai Motors Group**, Uiwang, Korea
 - Dohyun Kim (03/2018–02/2020), *Researcher* at **Naver Corporation**, Seongnam, Korea
 - MyungJae Shin (03/2018–02/2020), *Engineer* at **mofl** (startup), Daejeon, Korea
 - Jaeho Choi (03/2019–02/2021), *Researcher (Military Service Exception)* at **Korea Meteorological Administration**, Seoul, Korea
 - Youngkee Kim (03/2021–02/2023), *Researcher* at **Korea Electronics Technology Institute (KETI)**, Seongnam, Korea
 - Minjae Yoo (03/2021–02/2023)
 - Yoo Jeong (Anna) Ha (03/2021–)
- **Intel Corporation (Santa Clara, California, USA), Graduate Interns**
 - Minseok Choi, Ph.D. in EE from KAIST (02/2016–07/2016), now with **Kyung Hee University**, Suwon, Korea
 - Hidekazu Shimodaira, Ph.D. in EEE from Tokyo Institute of Technology (07/2015–12/2015), now with **NTT DOCOMO**, Tokyo, Japan
- **USC Viterbi School of Engineering (Los Angeles, California, USA), Graduate Students**
 - Feiyu Meng, M.S. in EE from USC (Summer 2013, Fall 2013), now with **Apple**, Silicon Valley, CA, USA
 - Vivek Sankaravadivel, M.S. in EE from USC (Spring 2011, Fall 2011), now with **Uber**, Silicon Valley, CA, USA

Professional Activities

Talks and Presentations (Selected)

- **IEEE Distinguished Lectures**
 - *Federated Learning for Medical and Mobile Platforms: Motivation, Challenges, and Potential Solutions*
California State University, Long Beach (Long Beach, CA, USA, 01/2020), Hosted by Prof. Sean Kwon and Prof. Henry Yeh
IEEE Systems Council – IEEE Coastal Los Angeles Section Chapter
- **IEEE Conference Tutorials and Special Session Talks**
 - **IEEE ICOIN 2022 Tutorial** (Online, 01/2022), *Advanced Deep Learning Methods for Autonomous Mobility*
 - **IEEE ICUFN 2021 Tutorial** (Jeju, Korea, 08/2021), *Distributed and Split Deep Learning: Theory and Applications*
 - **IEEE ICALIC 2021 Tutorial** (Online, 04/2021), *Multi-Agent Deep Reinforcement Learning for Connected and Autonomous Vehicles*
 - **SISA 2020 Keynote Speech** (Seoul, Korea, 12/2020), *Trust Computing with Learning-based Auction for Distributed Systems*
 - **IEEE ICTC 2019 Special Session Talk** (Jeju, Korea, 10/2019), *Advanced Deep Learning Methods and Their Applications to Distributed and Network Platforms*
 - **IEEE ICOIN 2019 Tutorial** (Kuala Lumpur, Malaysia, 01/2019), *Distributed Platform Research for Emerging Deep Learning Applications*
 - **IEEE ICC 2018 Tutorial** (Kansas City, MO, USA, 05/2018), *Securing the Internet of Things: A Machine Learning Approach (Making Machine Learning Practical)*, Joint Presentation with Prof. Aziz Mohaisen (University of Central Florida, Orlando, FL, USA)
- **Invited Talks at World-Wide Universities and Research Institutes**
 - *Spatio-Temporal Slit Learning for Privacy-Preserving OCR Applications*
Huawei Research Center (Text-Aware Image Understanding Workshop) (Online, 11/2021)
 - *AI/ML Technologies in Beyond 5G/6G*
Ericsson-LG (R&D Hackathon / AI Learning Challenge – Keynote Speech) (Seoul, Korea, 05/2021)
 - *XOR Mixup: Privacy-Preserving Data Augmentation for One-Shot Federated Learning*
Huawei Research Center (Deep Learning/Machine Learning for Computer Vision) (Online, 09/2020)
 - *Deep Reinforcement Learning Research and Its Applications to Networks*
Huawei Research Center (Fundamental and Applied Problems of Machine Learning) (Nizhny Novgorod, Russia, 12/2019)
 - *Enabling Delay-Sensitive Robust Distributed Blockchain Mining via Econometric Methods*
City University of Hong Kong (Hong Kong, 11/2018), Hosted by Prof. Cong Wang
 - *Frequency Sharing Study between 5G Micro-Cellular Systems and Fixed Service Systems in Millimeter-Wave Bands*
Intel Communications and Devices Group (iCDG) [Cellular Modem TechTalk] (Santa Clara, CA, USA, 01/2016)
 - *Status of Millimeter-Wave and Device-to-Device Research*
Nokia Research Center at Berkeley (Berkeley, CA, USA, 08/2014)
 - *Advanced Device-to-Device Video Streaming: Theory and Implementation*
Qualcomm Research Center (San Diego, CA, USA, 02/2014)
- **Invited Talks at Korean Research Institutes**
 - *A.I. Technology Trends and Applications; Korea Meteorological Administration* (Online, 09/2021)
 - *Deep Reinforcement Learning: Trends and Applications; SK Telecom (SKT)* (Seoul, Korea, 06/2021)
 - *Trends in AI R&D for Edge/Mobile Platforms; SK Hynix* (Icheon, Korea, 09/2020)
 - *Lyapunov Optimization and AI Applications to Mobility Platforms; Naver Labs - Robotics Lab* (Pankyo, Korea, 06/2020)
 - *Distributed AI: Trends and Issues; ETRI* (Daejeon, Korea, 05/2020)
 - *Federated Learning and Imitation Learning; ETRI* (Kwangju, Korea, 02/2020)
 - *Federated and Imitation Learning; KT AI Tech Center* (Seoul, Korea, 12/2019)
 - *Adversarial Imitation Learning and Federated Learning; ETRI* (Daejeon, Korea, 12/2019)

- *Distributed Learning and Deep Reinforcement Learning*; **ETRI** (Daejeon, Korea, 12/2019)
- *mmWave Radar and Sensors: Theory and Applications*; **LG Electronics** (Seoul, Korea, 11/2019)
- *Advanced Topics in Machine/Deep Learning*; **Posco ICT** (Pankyo, Korea, 11/2019)
- *mmWave Communications and Radar: Theory and Applications*; **ETRI** (Daejeon, Korea, 11/2019)
- *Network Performance Enhancement via Deep Reinforcement Learning*; **LG U+** (Seoul, Korea, 10/2019)
- *AI Seminar: Foundations and Business Cases*; **SK Broadband** (Seoul, Korea, 10/2019)
- *Deep Learning Methods for Advanced Networks*; **Korea Electronics Technology Institute (KETI)** (Pankyo, Korea, 02/2019)
- *Making Deep Neural Network Practical in Resource Constrained Computing Systems*; **ETRI** (Daejeon, Korea, 02/2018)
- *Dynamic Optimization for Reliable and Robust Deep Learning Systems*; **ETRI** (Daejeon, Korea, 02/2018)
- *Adaptive Lyapunov Control for Stabilized Learning Platforms*; **ETRI** (Daejeon, Korea, 07/2017)
- *GPU Computing Platforms and Software for Deep Learning*; **ETRI** (Daejeon, Korea, 07/2017)
- *Trends in Energy IT in Big-Data Era*; **Korea Electric Power Corporation (KEPCO) Research Institute** (Daejeon, Korea, 05/2017)
- *Stochastic Control of 60 GHz Links for Distributed Virtual Reality Network Platforms*; **ETRI** (Daejeon, Korea, 11/2016)
- *5G Wireless Platforms: Standards and Hardware/Software Prototyping*; **ETRI** (Daejeon, Korea, 10/2016)
- *Millimeter-Wave Radio Propagation, Beam Management, Systems, and Embedded Prototyping*; **ETRI** (Daejeon, Korea, 08/2016)
- *Intel's 5G Research with Millimeter-Wave Modular Antenna Arrays*; **ETRI** (Daejeon, Korea, 10/2014)
- *Issues and Solutions for Millimeter-Wave Network Technologies*; **Samsung Electronics - Memory Business** (Hwasung, Korea, 01/2013)

■ Tutorials and Special Session Talks at Korean Research Societies

- *Multi-Agent Deep Reinforcement Learning for Autonomous Vehicles*; **2021 JCCI Mobile Machine Learning Special Session** (Online, 04/2021)
- *Trends in Multi-Agent Deep Reinforcement Learning for Distributed Computing*; **2020 KICS Fall Conference Tutorial** (Seoul, Korea, 11/2020)
- *Deep Learning Computation for Economic Theory and Its Applications*; **2020 KICS Summer Conference Tutorial** (Yong Pyong, Korea, 08/2020)
- *Deep Learning Applications to Computer Networking*; **2020 KICS Winter Conference Tutorial** (Yong Pyong, Korea, 02/2020)
- *Deep Neural Network Basics*; **2020 KICS Winter Conference Tutorial** (Yong Pyong, Korea, 02/2020)
- *Artificial Intelligence Methods for Networks*; **2019 KICS Fall Conference Special Session Talk** (Seoul, Korea, 11/2019)
- *Explaining AI (XAI) and Imitation Learning for Automotive Applications*; **2019 IEK Hyundai Motors Special Session** (Jeju, Korea, 06/2019)
- *Deep Learning Basics and Representative Models*; **2019 KIPS Spring Conference Tutorial** (Seoul, Korea, 05/2019)
- *Deep Learning Methods for Advanced Network*; **2019 KICS Winter Conference Tutorial** (Yong Pyong, Korea, 01/2019)
- *GPU Computing Platforms and Software for Deep Learning*; **2017 KICS Summer Conference Tutorial** (Jeju, Korea, 06/2017)
- *Dynamic Control and Software for Next-Generation Distributed Platforms*; **2017 KCC Special Session on New Research** (Jeju, Korea, 06/2017)
- *Machine Learning Techniques for Mobile Computing*; **2017 KICS Winter Conference Tutorial** (Jungsun, Korea, 01/2017)

■ Exhibition/Demonstration at Conferences and Public R&D Events

- *Visualization of Deep Reinforcement Autonomous Aerial Mobility Learning Simulations*; **IEEE INFOCOM 2021** (Online, 05/2021)
- *Deep Multi-modal Unsupervised Pen Pressure Stylization*; **IEEE/CVF ICCV 2019** (Seoul, Korea, 11/2019)
- *Light-Weight Programming Language for Blockchain*; **ACM MobiSys 2019** (Seoul, Korea, 06/2019)
- *Mobile Edge mmWave Backhaul and Access*; **Mobile World Congress (MWC) 2016** (Barcelona, Spain, 02/2016)
- *mmWave MAA Client Access & Backhaul Platform*; **Intel 360 degree 2016** (Anaheim, CA, 02/2016)
- *mmWave MAA Client Access & Backhaul Platform*; **IEEE GLOBECOM 2015 (Industry Demonstration ID-14)** (San Diego, CA, 12/2015)
- *mmWave Modular Antenna Array Client Access & Backhaul Platform*; **Intel Asia Innovation Summit 2015** (Taipei, Taiwan, 10/2015)
- *Enabling 5G Densification*; **Intel Developer Forum (IDF) 2015** (San Francisco, CA, USA, 08/2015)
- *Enabling 5G Densification*; **Intel Design and Test Technology Conference (DTTC) 2015** (Portland, OR, USA, 08/2015)
- *Enabling 5G Densification*; **Mobile World Congress (MWC) 2015** (Barcelona, Spain, 03/2015)
- *mmWave Modular Antenna Array for Next-Generation Wireless Networks*; **IEEE GLOBECOM 2014 (Expo)** (Austin, TX, USA, 12/2014)
- *Adaptive Video Streaming for Device-to-Device Mobile Platforms*; **ACM MobiCom 2013** (Miami, FL, USA, 10/2013)

Conference Activities and Services

■ Organizing Committee (OC) Activities

- **IEEE GLOBECOM (IEEE Communications Society)**: 2015 (Organizer, *Workshop on Millimeter-Wave Backhaul and Access (mmWave)*)
- **IEEE ICC (IEEE Communications Society)**: 2022 (Patronage Chair)
- **IEEE ICTC (IEEE Communications Society)**: 2022 (TPC Vice Chair for Administration, a.k.a., Secretary), 2021 (Workshop Organizer, *Workshop on KU-AIER (Korea University, A.I. Engineering Research)*), 2021 (Secretary), 2020 (Secretary), 2020 (Special Session Organizing Chair, *Special Session on KU-AIER (Korea University, A.I. Engineering Research)*), 2019 (Secretary), 2018 (Secretary)
- **IEEE ICUFN (IEEE Communications Society)**: 2022 (Workshop Chair), 2021 (Workshop Chair), 2021 (Workshop Organizing Chair, *Artificial Intelligence Emerging Applications (AIEA) Workshop*)
- **IEEE ICAIIC (IEEE Communications Society)**: 2019 (Publication Chair)
- **IEEE VTS APWCS (IEEE Vehicular Technology Society)**: 2022 (Finance Chair), 2021 (Finance Co-Chair), 2017 (Publication Vice Chair)
- **IEEE ICOIN (IEEE Computer Society)**: 2022 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*), 2021 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*), 2020 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*)
- **IEEE ICASSP (IEEE Signal Processing Society)**: 2018 (Special Session Organizing Chair, *Special Session on Cybersecurity and Privacy*)
- **IEEE APCC**: 2022 (Local Arrangement Chair)
- **IEEE ICEIC**: 2021 (Local Arrangement Chair)
- **ACM CoNEXT**: 2019 (Poster Session Chair)

■ Technical Program Committee (TPC) Chair-Level Activities

- **IEEE CCNC 2022 (IEEE Communications Society)**: Track Chair for T7 (*Security, Privacy and Content Protection*)
- **IEEE ICTC 2022 (IEEE Communications Society)**: TPC Vice Chair for Administration
- **IEEE ICAIIC 2022 (IEEE Communications Society)**: TPC Co-Chair
- **IEEE ICOIN 2021 (IEEE Computer Society)**: TPC Vice Chair
- **IEEE ICAIIC 2021 (IEEE Communications Society)**: TPC Co-Chair
- **IEEE ICOIN 2020 (IEEE Computer Society)**: TPC Vice Chair
- **IEEE ICAIIC 2020 (IEEE Communications Society)**: TPC Co-Chair

- IEEE NAS 2019 (*IEEE Computer Society*): Track Co-Chair for Network Track
- IEEE ICOIN 2019 (*IEEE Computer Society*): TPC Vice Chair
- IEEE ICAIIC 2019 (*IEEE Communications Society*): TPC Co-Chair
- IEEE ICOIN 2018 (*IEEE Computer Society*): TPC Vice Chair
- IEEE GLOBECOM 2015 (*IEEE Communications Society*): TPC Chair for the *Workshop on Millimeter-Wave Backhaul and Access*

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

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

References

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