

Associate Professor, Korea University – School of Electrical Engineering, Seoul, Republic of Korea
– *Adjunct Professor*, Department of Communications Engineering; Department of Semiconductor Engineering; and
Department of Future Science and Technology Business (Graduate School)
– *Center Director (University ICT Research Center)*, Net-Zero CAFE Research Center
– *Director (Star-Lab, Software Technology Advanced Research)*, Quantum AI Empowered Second-Life Platform Technology Lab
• E-mail: joongheon@korea.ac.kr • WWW: <https://joongheon.github.io>

Educational Backgrounds

- **University of Southern California (USC) – Viterbi School of Engineering**, Los Angeles, California, USA
 - Ph.D. (08/2009–08/2014) in **Computer Science**, Thomas Lord Department of Computer Science (Advisor: *Prof. Andreas F. Molisch (Fellow of the IEEE)*, Ming Hsieh Department of Electrical and Computer Engineering) **Research Assistant, Communications, Information, Learning, and Quantum (CILQ) Group**
 - M.S. (05/2014) in **Computer Science** with specialization in **High Performance Computing and Simulations**
 - M.S. (05/2012) in **Electrical Engineering**
 - **Korea University – College of Informatics**, Seoul, Republic of Korea
 - M.S. (03/2004–02/2006) in **Computer Science and Engineering** (Advisor: *Prof. Wonjun Lee (Fellow of the IEEE)*, Department of Cyber Defense and Future Network Center)
 - B.S. (03/1999–02/2004) in **Computer Science and Engineering**
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Professional Affiliations

Full-Time Positions

- **Korea University**, Seoul, Republic of Korea
 - *Associate Professor* (03/2021–Present), *Assistant Professor* (09/2019–02/2021), School of Electrical Engineering
 - *Adjunct Professor* (03/2023–02/2028 (Expected)), Department of Communications Engineering (with **Samsung Electronics**)
 - *Adjunct Professor* (11/2022–02/2028 (Expected)), Department of Future Science and Technology Business (Graduate School)
 - *Adjunct Professor* (03/2021–02/2026 (Expected)), Department of Semiconductor Engineering (with **SK Hynix**)
 - R&D POSITIONS AND LEADERSHIP
 - * *Director* (07/2024–12/2031), **Quantum AI Empowered Second-Life Platform Technology Lab** SW Star-Lab (Software Technology Advanced Research), funded by IITP and the Ministry of Science and ICT
 - * *Center Director* (07/2024–12/2031), **Net-Zero CAFE Research Center** University ICT Research Center (ITRC), funded by IITP and the Ministry of Science and ICT
 - ADMINISTRATIVE POSITIONS
 - * *Steering Committee Member* (03/2023–Present), Department of Communications Engineering
 - * *Deputy Vice President* (02/2022–08/2024), Office of Academic Affairs
 - * *Dean* (06/2021–08/2023), Center for Teaching and Learning (CTL)
- **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), California, USA
 - *Systems Engineer* (03/2015–02/2016), WiGig & mmWave Standards and Advanced Technology (SAT) Team
 - *Standards Scientist* (07/2014–03/2015), WiGig & mmWave SAT Team
 - *Wireless Standards Engineer Intern* (09/2013–07/2014), WiGig & mmWave SAT Team
- **University of Southern California (USC) – Viterbi School of Engineering**, Los Angeles, California, 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 (CSI) (Advised by Prof. Andreas F. Molisch) (CSI is now re-organized as **Communications, Information, Learning, and Quantum (CILQ) Group**)
 - *Teaching Assistant* (01/2012–05/2013), Computer Science and Electrical Engineering Departments (CSCI455x and EE579)
- **LG Electronics CTO Office**, Seoul, Republic of Korea
 - *Research Engineer* (01/2006–08/2009), Multimedia Research Laboratory, Seocho R&D Campus
- **Korea University – Department of Computer Science and Engineering**, Seoul, Republic of Korea
 - *M.S. Research/Teaching Assistant* (03/2004–02/2006), Network Research Laboratory (Advised by Prof. Wonjun Lee)

Visiting Positions

- **University of Southern California (USC) – Viterbi School of Engineering**, Los Angeles, California, USA
 - *Visiting Scholar (On-Planning)*, Communications, Information, Learning, and Quantum (CILQ) Group, Ming Hsieh Department of Electrical and Computer Engineering (Host: Prof. Andreas F. Molisch)
- **InterDigital**, San Diego, California, 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

Academia (Membership, Editorial Boards, and Services)

- **IEEE**
 - Senior Member (2018–), Member (2006–2017)
 - Distinguished Lecturer (2022–2023), **IEEE Communications Society**
 - Editor (2023–), **IEEE Internet of Things Journal**
 - Associate Editor (2020–), **IEEE Transactions on Vehicular Technology** (Area: Vehicular Electronics and Systems)
 - Guest Editor, **Journal of Communications and Networks** (S.I. on Quantum Technologies for Communication Systems)
 - Guest Editor, **IEEE Communications Standards Magazine** (S.I. on Recent and Future Evolution of Wi-Fi)
 - **IEEE Vehicular Technology Society (VTS) Seoul Chapter**
 - * Chapter Assistant Administrator for Planning (2024–), Chapter Treasurer (2022–2023, 2020–2021)
 - * **IEEE VTS APWCS Organizing Committee: Finance Co-Chair** (2023), Finance Chair (2022), Finance Co-Chair (2021)

Awards and Honors

Research and Academic Excellence (International)

- **IEEE VTS Seoul Chapter Award (2024)** – *IEEE Vehicular Technology Society* (w/ G.S. Kim, S. Jung, S. Park)
"Quantum multi-agent reinforcement learning software design and visual simulations for multi-drone mobility control"
- **IEEE VTS Seoul Chapter Award (2024)** – *IEEE Vehicular Technology Society* (w/ J.Y. Shim)
"Diffusion-based quantum error mitigation using stochastic differential equation"
- **IEEE VTS Seoul Chapter Award (2023)** – *IEEE Vehicular Technology Society* (w/ S. Park)
"Quantum reinforcement learning for large-scale multi-agent decision-making in autonomous aerial networks"
- **IEEE Seoul Section Student Paper Contest, Bronze Paper Award (12/2023)** (w/ G.S. Kim, J. Chung, S.B. Son, H. Lee, H. Baek, S. Park)
"Aircraft taxi routing using reinforcement learning at Hartsfield Jackson Atlanta international airport"
- **Best Editor Award (2023)** – *ICT Express (Elsevier)* (07/2023)
- **Finalist (Top 25), AAAI Student Abstract and Poster Session – Oral Presentation Contest (2023)** (w/ H. Baek, et al)
"FV-Train: Quantum convolutional neural network training with a finite number of qubits by extracting diverse features"
- **IEEE ICTC Best Paper Award (2022)** – *IEEE Communications Society* (w/ J.-H. Lee, D.P. Selvam, A.F. Molisch)
"Reinforcement learning empowered massive IoT access in LEO-based non-terrestrial networks"
- **IEEE VTS Seoul Chapter Award (2022)** – *IEEE Vehicular Technology Society* (w/ H. Lee, S. Jung, J.-H. Kim, et al)
"DDPG-based deep reinforcement learning for loitering munition mobility control: Algorithm design and visualization"
- **Spotlight, Oral Presentation (2022)** – *ICML Workshop on Dynamic Neural Networks* (2022) (w/ S. Jung, J. Park, M. Bennis, et al)
"Slimmable quantum federated learning"
- **IEEE MMTC Best Journal Paper Award (2021)** – *IEEE Communications Society*
– M. Choi, A.F. Molisch, and J. Kim, "Joint Distributed Link Scheduling and Power Allocation for Content Delivery in Wireless Caching Networks," *IEEE Transactions on Wireless Communications*, 19(12):7810-7824, December 2020.
- **IEEE VTS Seoul Chapter Award (2021)** – *IEEE Vehicular Technology Society* (w/ S. Jung, J.-H. Kim, et al)
"Quantum scheduling for millimeter-wave observation satellite constellation"
- **IEEE VTS Seoul Chapter Award (2021)** – *IEEE Vehicular Technology Society* (w/ S. Jung, et al)
"Distributed and autonomous aerial data collection in smart city surveillance applications"
- **IEEE ICOIN Best Paper Award (2021)** – *IEEE Computer Society* (w/ S. Jung, J.-H. Kim, et al)
"Infrastructure-assisted cooperative multi-UAV deep reinforcement energy trading learning for big-data processing"
- **IEEE MMTC Outstanding Young Researcher Award (2020)** – *IEEE Communications Society*
- **IEEE Systems Journal Best Paper Award (2020)** – *IEEE Systems Council*
(Top 7 among 793 accepted papers in 2019 (Top 0.88%))
– 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 Seoul Section Student Paper Contest, Bronze Paper Award (2020)** (w/ S. Park)
"Reliable offloading target selection using deep reinforcement learning for large fire accident"
- **IEEE Seoul Section Student Paper Contest, Gold Paper Award (2019)** (w/ D. Kim, et al)
"Stabilized super-resolution deep learning adaptation for UAV-assisted mobile edges: A Lyapunov optimization approach"
- **IEEE VTS Seoul Chapter Award (2019)** – *IEEE Vehicular Technology Society* (w/ S. Park, D. Kwon, M. Shin)
"Joint offloading and streaming in mobile edges: A deep reinforcement learning approach"
- **Next Generation and Standards (NGS) Division Recognition Award (Q1/2005)** – *Intel Corporation*
For developing a 3-dual sector mmWave backhaul link software stack with mesh, relay, and load balancing capability for modular antenna array (MAA) proof-of-concept (POC)
- **Annenberg Graduate Fellowship Award (2009)** – *University of Southern California*
Awarded with Ph.D. Admission in Computer Science, Viterbi School of Engineering

Research and Academic Excellence (Korea Regional)

- **HFR Paper Award (Area: Quantum Technologies and Quantum Communications) (11/2023)** – *KICS* (w/ S. Park, H. Baek)
"Quantum multi-agent reinforcement learning for multi-metaverse adaptive streaming in hybrid quantum-classical networks"
- **Korea Electronics Technology Institute (KETI) President Award (06/2023)** – *2023 KICS Summer Conference* (w/ H. Lee, S. Park)
"Grid environment design and grouping for optimal relay station placement"
- **Haedong Paper Award (02/2023)** – *KICS* (w/ S. Jung, J. Park, et al)
"Dynamic quantum federated learning framework at satellites and ground stations using slimmable quantum neural networks"

- **Excellence Paper Award (02/2023)** – 2023 KICS Winter Conference (w/ H. Lee, S. Jung, J.-H. Kim, et al)
"Self-learning-based hybrid MAC for military UAV networks"
- **Insung Research Grant Award (01/2023)** – Korea University
For recognizing Korea University professors in research excellence during the first 3 years at Korea University (Top 5%)
- **Excellence Paper Award (02/2022)** – 2022 KIISE Summer Workshop on Computer Communications (SWCC) (w/ H. Lee, S. Jung)
- **Excellence Paper Award (02/2022)** – 2022 KICS Winter Conference (w/ Y.K. Lee, S. Jung, et al)
"Trends in neural architecture search for object detection"
- **Haedong Young Scholar Award (2018)** – KICS and Haedong Foundation
For recognizing a researcher under the age of 40 who has made outstanding contributions to communication sciences R&D
- **Haedong Paper Award (06/2021)** – KICS (w/ H. Baek, S. Jung, et al)
"Neural architectural nonlinear pre-processing for mmWave radar-based human gesture perception in on-driving scenarios"
- **Excellence Paper Award (06/2021)** – 2021 KICS Summer Conference (w/ B. Lim, Y.-C. Ko, et al)
"Deep learning based non-orthogonal pilot design for massive MIMO"
- **Excellence Paper Award (Undergraduate) (06/2021)** – 2021 KICS Summer Conference (w/ S. Jung, et al)
"Deep reinforcement learning visualization and simulations using Unity-RL in an autonomous driving environment"
- **Encouragement Paper Award (11/2020)** – 2020 KICS Fall Conference
"UAV trajectory optimization via multi-agent deep reinforcement learning"
- **Encouragement Paper Award (06/2020)** – 2020 KICS Summer Conference
"3D modeling and WebVR implementation using Azure Kinect, Open3D, and Three.js"
- **Encouragement Paper Award (02/2020)** – 2020 KICS Winter Conference
"Quantum heuristic solver using QAOA for the maximum independent set problem"
- **Encouragement Paper Award (02/2020)** – 2020 KICS Winter Conference
"Multi-drone scheduling for high-reliable and high-performance UAV-based surveillance networking"
- **Outstanding Paper Award (2008)** – LG Electronics CTO Office, Multimedia Research Laboratory
– W. Lee, E. Kim, J. Kim, I. Lee, and C. Lee, "Movement-Aware Vertical Handoff of WLAN and Mobile WiMAX for Seamless Ubiquitous Access," *IEEE Transactions on Consumer Electronics*, 53(4):1268-1275, November 2007.
- **RFID Expert Group President Award (2007)** – The 3rd RFID/USN Research Paper Contest
- **ETRI President Award (2006)** – The 2nd RFID/USN Research Paper Contest
- **Korea Association of RFID/USN (KARUS) President Award (2005)** – The 1st RFID/USN Research Paper Contest
- **Scholarships for Academic Excellence (Fall 1999, Fall 2000)** – Korea University, Department of Computer Science and Engineering

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

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

Teaching and Supervision Excellence

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

Academic and University Services

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

R&D Projects (Totally, 16,359,784 USD ≈ 16,359,784,000 KRW)

Industry-Funded Projects

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|---|-----------------|
| • Advancement Technology Development for Torpedo Deception Strategies in Submarines
Funded by <i>LIG Nex1</i> [Grant: \$700,000; Primary-PI] | 11/2022–11/2026 |
| • Advancement Technology Development for Submarine Target Identification and Engagement Support Intelligence
Funded by <i>LIG Nex1</i> [Grant: \$300,000; Primary-PI] | 11/2022–11/2026 |

- **Mapping between Real World and Virtual Reality (VR) for End-Edged Cloud Real-Time VR Servers** 09/2020–09/2025
Funded by *Samsung Advanced Institute of Technology* [Grant: \$325,000; Primary-PI]
- **Research on Learning-based Swarm Mission Planning Algorithms** 03/2024–02/2025
Funded by *LIG Nex1* [Grant: \$110,000; Primary-PI]
- **Quantum Machine Learning-based Objection Detection for Point Cloud and its Acceleration** 12/2022–04/2024
Funded by *Hyundai Motors Group* [Grant: \$110,000; Primary-PI]
- **Routing Algorithms for LEO Satellite Networks** 12/2022–08/2023
Funded by *Solvit System* [Grant: \$27,500; Primary-PI]
- **Optimal Positioning Algorithms for Wide-Area Relaying Networks** 12/2022–08/2023
Funded by *Solvit System* [Grant: \$22,000; Primary-PI]
- **Distributed Learning Algorithms to Build AI Models with Multi-Center Clinical Data** 11/2022–02/2023
Funded by *Cipherome* [Grant: \$12,000; Primary-PI]
- **Cellular/Wi-Fi Handover Technology Development** 02/2022–12/2022
Funded by *LG Electronics CTO Division – Smart Mobility Lab., Advanced R&BD Center* [Grant: \$88,000; Primary-PI]
- **Research Trends in Digital Twin Applications to Autonomous Driving** 03/2022–04/2022
Funded by *Hyundai NGV* [Grant: \$1,000; Primary-PI]
- **Distributed Learning System Design and Implementation for Clinical Applications** 02/2022–03/2022
Funded by *Cipherome* [Grant: \$15,000; Primary-PI]
- **Super-Resolution Performance Optimization in Mobile Platforms** 05/2020–08/2020
Funded by *Samsung SDS* [Grant: \$15,000; Primary-PI]
- **Deep Learning Algorithms for mVOC Concentration Analysis** 03/2020–06/2020
Funded by *Samsung Electronics (C-Lab)* [Grant: \$12,000; Primary-PI]
- **Visual Recognition Software Implementation using Deep Learning Tools** 05/2019–11/2019
Funded by *Hyundai Motors Company (Hyundai NGV)* [Grant: \$59,500; Primary-PI]
- **A Priori Techniques Research for Efficient Multi-Edge Computing** 06/2017–12/2017
Funded by *Samsung Electronics (Software Center)* [Grant: \$80,000]

University/Center-Level Projects

- **Net-Zero CAFE (Connectivity and Autonomy for Future Ecosystem) Research Center – ITRC** 07/2024–12/2031
Funded by *Institute for ICT Promotion (IITP)* [IITP-2024-RS-2024-00436887, Grant: \$7,500,000], PI: Korea University (Korea)
Center Director
- **Intelligent 6G Wireless Access System Research Center – 6G AI Research Center** 04/2021–12/2025
Funded by *Institute for ICT Promotion (IITP)* [2021-0-00467, Grant: \$154,000 (2 yrs)], PI: Korea University (Korea)
- **Nano UAV Intelligence Systems Research Lab (NUiSRL) – ADD Military Special Research Center** 10/2020–08/2023
Funded by *Agency for Defense Development (ADD)* [UD200027ED, Grant: \$130,000], PI: Kwangwoon University (Korea)
- **5G/Unmanned Vehicle Research Center (5G/UV-RC) – ITRC** 06/2020–12/2022
Funded by *Institute for ICT Promotion (IITP)* [2020-0-01637, Grant: \$55,709], PI: Hanyang University (Korea)
Part Lead
- **Human Resource Development for the Biomedical Unstructured Big Data Analysis – ITRC** 08/2018–12/2021
Funded by *Institute for ICT Promotion (IITP)* [2018-0-01833], PI: Seoul National University Hospital (Korea)
- **Intelligent Internet of Energy (IoE) Data Research Center – ITRC** 02/2020–05/2020
Funded by *Institute for ICT Promotion (IITP)* [2018-0-01396], PI: Kookmin University (Korea)

Government-Funded Projects

- **Quantum AI Empowered Second-Life Platform Technology** 07/2024–12/2031
Funded by *IITP – SW Star-Lab (Software Technology Advanced Research)* [RS-2024-00439803, Grant: \$1,500,000]
- **6GARROW: 6G AI-Native Integrated RAN-Core Networks** 09/2024–08/2027
Funded by *Institute for ICT Promotion (IITP)* [xxx, Grant: \$330,000]
- **AI Bots Collaborative Platform and Self-Organizing Artificial Intelligence Technology Development** 04/2022–12/2026
Funded by *Institute for ICT Promotion (IITP)* [2022-0-00907, Grant: \$950,000]
- **Development of AI Learning Platform for Intelligent Excavators based on Expert Work Data** 04/2023–12/2026
Funded by *Korea Evaluation Institute of Industrial Technology (KEIT)*
(Primary-PI: Prof. Soyi Jung at Ajou University)
- **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]
- **Development of Integrated Development Framework that supports Automatic Neural Network Generation and Deployment optimized for Runtime Environment** 04/2021–12/2024
Funded by *Institute for ICT Promotion (IITP)* [2018-0-00170, Grant: \$270,000]
- **Korea-Japan Joint Seminar Project for Generative and Multi-Modal AI Technologies** 10/2023–09/2024
Funded by *National Research Foundation of Korea (International Research Collaboration)* [Grant: \$50,000; 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: \$251,000]
- **Integrated Perception Technology Developments for Public Safety Platforms** 06/2019–05/2023
Funded by *National Research Foundation of Korea* [2019M3E3A1084054, Grant: \$400,000]

- **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]
- **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]
- **Distributed Secure Platform for Scalable Clinical OMOP CDM Models** 04/2019–12/2020
Funded by *Ministry of Health and Welfare* [HI19C0572, Grant: \$90,000]
- **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]
- **mmWave High-Speed Networking Platform Design for Next-Generation Convergence Services** 06/2016–05/2019
Funded by *National Research Foundation of Korea* [2016R1C1B1015406, Grant: \$150,000; Primary-PI]
– Selected as **Initial Innovation Lab** [Grant: \$60,000]
- **Feasibility Study of 60 GHz IEEE 802.11ad for Virtual Reality (VR) Platforms** 04/2017–12/2017
Funded by *Institute for ICT Promotion (IITP)* [Grant: \$33,333; Primary-PI]

Government-Funded Research Institute Projects

- **Quantum Reinforcement Learning for Satellite Backhaul Routing in Disaster Networks** 05/2024–11/2024
Funded by *Electronics and Telecommunications Research Institute* [Grant: \$40,000; Primary-PI]
- **Research on Quantum Multi-Agent Reinforcement Learning Stability (Research on Multi-Agent Reinforcement Learning Exploration, Communication, Training Strategy)** 09/2023–01/2024
Funded by *Electronics and Telecommunications Research Institute*
(Primary-PI: Prof. Soohyun Park at Sookmyung Women's University)
- **NOMA-based Resource Allocation Research in Space-Air-Ground Integrated Networks** 09/2023–11/2023
Funded by *Electronics and Telecommunications Research Institute* [Grant: \$20,900; Primary-PI]
- **Autonomous Intelligent COA Search Methods for Cyber-Attacks** 12/2021–11/2022
Funded by *Agency for Defense Development (ADD)* [UI210009XD, Grant: \$100,000; Primary-PI]
- **Fundamental Research on LEO Satellite Access Protocols in Non-Territorial Networks** 04/2021–11/2021
Funded by *Electronics and Telecommunications Research Institute*
(Primary-PI: Prof. Soyi Jung at Ajou University)
- **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 (A Development of Driving Decision Engine for Autonomous Driving using Driving Experience Information)** 04/2020–10/2020
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 (Human-Agent Cooperation Algorithm Design in Multi-Agent Environment)** 04/2020–08/2020
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]
- **Measurement and Analysis of Multi-Task GPU Scheduling Delays (A Development of Driving Decision Engine for Autonomous Driving using Driving Experience Information)** 05/2019–10/2019
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 (A Development of Driving Decision Engine for Autonomous Driving using Driving Experience Information)** 05/2018–10/2018
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 (Development of HPC System for Accelerating Large-Scale Deep Learning)** 04/2018–10/2018
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 (A Development of Driving Decision Engine for Autonomous Driving using Driving Experience Information)** 09/2017–11/2017
Funded by *Electronics and Telecommunications Research Institute* [17HS2720 (IITP 2017-0-00068), Grant: \$40,000; Primary-PI]

Awards and Fellowship Funds

- **Insung Research Grant Award (2023) – Korea University** 03/2023–02/2024
For recognizing Korea University professors in research excellence during the first 3 years at Korea University (Top 5%)
Awarded Project Title: **Quantum Machine Learning for Autonomous Mobility Systems**
Awarded Project Fund: \$20,000

- **Annenberg Graduate Fellowship Award (2009)** – *University of Southern California*
Awarded with Ph.D. Admission in Computer Science, Viterbi School of Engineering
Awarded Fund: 4 Year Full Scholarship (Tuition Waiver and \$120,000 Stipend (\$30,000/year for 4 years))

08/2009–06/2013

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

- **8342+ Citations** (H-index: 43+, i10-index 186+), obtained from Google Scholar Profile (as of September 10, 2024)
- **149** journals and **13** top-tier conferences, <https://sites.google.com/view/aimlab-kuee/publications>
– **114** IEEE journals/magazines, among them, **81** publications are in **IEEE Magazines and ComSoc/VTSS/ITSS Journals**

Dissertation, Books, and Book Chapters

■ Ph.D. Dissertation

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

■ Books and Book Editing

- *Fundamentals of 6G Communications and Networking*, Springer (2023). (Editors: X. Lin, J. Zhang, Y. Liu, [J. Kim](#))

■ Book Chapters

- *Fundamentals of 6G Communications and Networking*, Springer (2023).
 - Chapter 30. Network Security and Trustworthiness, (S. Jung, S. Park, S.B. Son, H. Lee, [J. Kim](#))
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 - Chapter 28. Convergence of 6G and Wi-Fi Networks, (H. Lee, S. Park, M. Yoo, C. Park, H. Baek, [J. Kim](#))
 - Chapter 26. UAV Communications and Networks, (S. Park, J.-H. Lee, S. Jung, [J. Kim](#))
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 - Chapter 17. Millimeter-Wave (mmWave) Radio Propagation Characteristics, ([J. Kim](#))
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- [INFOCOM'25] (Notification: 06-Dec-2024) (Double Blind Review), **INFOCOM (2025)**. (C. Im, S. Park, W. Lee, [J. Kim](#))
- [INFOCOM'25] (Notification: 06-Dec-2024) (Double Blind Review), **INFOCOM (2025)**. (G.S. Kim, E.J. Roh, S. Park, [J. Kim](#))
- [NOMS'25] (Notification: 20-Dec-2024) Joint Multi-Agent Reinforcement Learning and Message-Passing for Distributed Multi-UAV Network Management using Conflict Graphs, **NOMS (2025)**. (Y. Cho, H. Lee, S. Park, [J. Kim](#))
- [ICASSP'25] Quantum Reinforcement Learning for Coordinated Satellite Systems, **ICASSP (2025)**. (G.S. Kim, S.Y.-C. Chen, S. Park, [J. Kim](#))
- [AAAI'25] (Notification: 09-Dec-2024) (Double Blind Review), **AAAI (2025)**. (J.Y. Shim, X. Piao, [J. Kim](#), J.-K. Kim)
- [AAAI'25] (Notification: 09-Dec-2024) (Double Blind Review), **AAAI (2025)**. (G.S. Kim, E.J. Roh, S. Park, [J. Kim](#))
- [CIKM'24] Hands-On Introduction to Quantum Machine Learning (Tutorial), **CIKM (2024)**. (S. Y.-C. Chen, [J. Kim](#))
- [WiOpt'24] Advanced Taxiing Path Guidance using Multi-Agent Reinforcement Learning for Air Traffic Management, **WiOpt (2024)**. (S. Lee, G.S. Kim, S. Park, [J. Kim](#))
- [CIKM'23] Quantum Split Learning for Privacy-Preserving Information Management, **CIKM (2023)**. (S. Park, H. Baek, [J. Kim](#)) (*Acceptance Ratio (short): 27.44% (152/554)*)
- [CIKM'23] Logarithmic Dimension Reduction for Quantum Neural Networks, **CIKM (2023)**. (H. Baek, S. Park, [J. Kim](#)) (*Acceptance Ratio (short): 27.44% (152/554)*)

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- [**WiOpt'22**] Cooperative Video Quality Adaptation for Delay-Sensitive Dynamic Streaming using Adaptive Super-Resolution, **WiOpt (2022)**. (M. Choi, W.J. Yun, [J. Kim](#))
- [**INFOCOM'22**] Joint Superposition Coding and Training for Federated Learning over Multi-Width Neural Networks, **INFOCOM (2022)**. (H. Baek, W.J. Yun, Y. Kwak, S. Jung, M. Ji, M. Bennis, J. Park, [J. Kim](#)) (*Acceptance Ratio: 19.93% (225/1129)*)
- [**ICPR'21**] S2I-Bird: Sound-to-Image Generation of Bird Species using Generative Adversarial Networks, **ICPR (2021)**. (J.Y. Shim, [J. Kim](#), J.-K. Kim)
- [**ICDCS'20**] Understanding the Potential Risks of Sharing Elevation Information on Fitness Applications, **ICDCS (2020)**. (Ü. Meteriz, N.F. Yildiran, [J. Kim](#), D. Mohaisen) (*Acceptance Ratio: 17.98% (105/584)*)
- [**IJCAI'19**] Randomized Adversarial Imitation Learning for Autonomous Driving, **IJCAI (2019)**. (M. Shin, [J. Kim](#)) (*Acceptance Ratio: 17.89% (850/4752)*)
- [**ICBC'19**] Mempool Optimization for Defending Against DDoS Attacks in PoW-based Blockchain Systems, **ICBC (2019)**. (M. Saad, L. Njilla, C. Kamhoua, [J. Kim](#), D. Nyang, A. Mohaisen) (**Citations: 100+**)
- [**ICDCS'18**] ShmCaffe: A Distributed Deep Learning Platform with Shared Memory Buffer for HPC Architecture, **ICDCS (2018)**. (S. Ahn, [J. Kim](#), E. Lim, W. Choi, A. Mohaisen, S. Kang) (*Acceptance Ratio: 20.63% (78/378)*)
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■ Journals and Magazines

◀ Review ▶

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- [**CIM.review**] (Review since 25-Aug-2024) (Double Blind Review), **IEEE Computational Intelligence Magazine**. ([J. Kim](#), E.J. Roh, C. Im, S. Park)
- [**TVT.review**] (Review since 20-Aug-2024) Learning-based Aircraft Taxi Routing: Empirical Evaluation Study for Hartsfield-Jackson Atlanta International Airport, **IEEE Transactions on Vehicular Technology**. (G.S. Kim, S. Lee, S. Park, [J. Kim](#))
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- [**TETC.review**] (Review since 26-Jun-2024) Reliable Transpilation Control for Cloud-based Quantum Learning Systems, **IEEE Transactions on Emerging Topics in Computing**. (J. Y. Shim, X. Piao, S. Park, [J. Kim](#), J.-K. Kim)
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- [**CM.review**] (Review since 06-Jun-2024) Sustainable Quantum Multi-Agent Cooperative Learning: Algorithms and Software Methods, **IEEE Communications Magazine**. (S. Park, [J. Kim](#))
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- [**TIV.revision**] Quantum Multi-Agent Reinforcement Learning for Joint Cube-Satellites and High-Altitude Long-Endurance Aerial Vehicles in SAGIN, **IEEE Transactions on Intelligent Vehicles**. (G.S. Kim, Y. Cho, S. Park, S. Jung, [J. Kim](#))
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■ Conferences – Top-Conference Related, Awarded/Honored, Highly-Cited (Selected)

- [APWCS'24] Quantum Multi-Agent Reinforcement Learning Software Design and Visual Simulations for Multi-Drone Mobility Control, *APWCS (2024)*. ([S. Park](#), [G. S. Kim](#), [S. Jung](#), [J. Kim](#))
- [APWCS'24] Diffusion-based Quantum Error Mitigation using Stochastic Differential Equation, *APWCS (2024)*. ([J.Y. Shim](#), [J. Kim](#))
- [IJCAI'24] Quantum Error Mitigation in Open Systems using Diffusion Models: Stochastic Differential Equation and Schrödinger Bridge Approaches, *IJCAI Workshop on Quantum Algorithms, Optimization, and AI (2024)*. ([J.Y. Shim](#), [J. Kim](#))
- [IJCAI'24] Depth-Controllable Quantum Federated Learning, *IJCAI Workshop on Quantum Algorithms, Optimization, and AI (2024)*. ([S. Park](#), [H. Baek](#), [J. Park](#), [M. Bennis](#), [S. Jung](#), [J. Kim](#))
- [IJCAI'24] Realizing Cooperative Global Internet Services for Space-Air-Ground Integrated Networks: A Quantum Multi-Agent Reinforcement Learning Framework, *IJCAI Workshop on Quantum Algorithms, Optimization, and AI (2024)*. ([G.S. Kim](#), [Y. Cho](#), [S. Park](#), [S. Jung](#), [J. Kim](#))
- [IJCAI'24] Multi-Channel Quantum Convolutional Neural Network, *IJCAI Workshop on Quantum Algorithms, Optimization, and AI (2024)*. ([E.J. Roh](#), [J.Y. Shim](#), [S. Park](#), [J. Kim](#))
- [IJCAI'24] Quantum Style Transfer in Hybrid Quantum-Classical Computing, *IJCAI Workshop on Quantum Algorithms, Optimization, and AI (2024)*. ([E.J. Roh](#), [J.Y. Shim](#), [S. Park](#), [J. Kim](#))
- [IJCAI'24] Shifting from Knowledge to Infidelity Distillation for Fast and Accurate Distributed Quantum Machine Learning, *IJCAI Workshop on Quantum Algorithms, Optimization, and AI (2024)*. ([J. Kim](#), [S. Oh](#), [J. Park](#), [H. Baek](#), [H. Lee](#), [J. Kim](#), [S.-L. Kim](#))
- [APWCS'23] Quantum Reinforcement Learning for Large-Scale Multi-Agent Decision-Making in Autonomous Aerial Networks, *APWCS (2023)*. ([S. Park](#), [J. Kim](#)) ([IEEE VTS Seoul Chapter Award](#))
- [ICDCS'23] EQuaTE: Efficient Quantum Train Engine Design and Demonstration for Dynamic Software Analysis, *ICDCS Demo (2023)*. ([S. Park](#), [H. Feng](#), [W.J. Yun](#), [C. Park](#), [Y.K. Lee](#), [S. Jung](#), [J. Kim](#))
- [ICDCS'23] Multi-Site Clinical Federated Learning Using Recursive and Attentive Models and NVFlare, *ICDCS Demo (2023)*. ([W.J. Yun](#), [S. Kim](#), [J. Kim](#))
- [ICDCS'23] Coordinated Multi-Agent Reinforcement Learning for Unmanned Aerial Vehicle Swarms in Autonomous Mobile Access Applications, *ICDCS Poster (2023)*. ([C. Park](#), [H. Lee](#), [W. J. Yun](#), [S. Park](#), [S. Jung](#), [J. Kim](#))
- [AAAI'23] 3D Scalable Quantum Convolutional Neural Networks for Point Cloud Data Processing in Classification Applications, *AAAI Workshop on AI to Accelerate Science and Engineering (2023)*. ([H. Baek](#), [W.J. Yun](#), [J. Kim](#))
- [AAAI'23] FV-Train: Quantum Convolutional Neural Network Training with a Finite Number of Qubits by Extracting Diverse Features, *AAAI Student Abstract and Poster (2023)*. ([H. Baek](#), [W.J. Yun](#), [J. Kim](#)) ([Finalist, Oral Presentation Contest](#))
- [ICTC'22] Reinforcement Learning Empowered Massive IoT Access in LEO-based Non-Terrestrial Networks, *ICTC (2022)*. ([J.-H. Lee](#), [D.P. Selvam](#), [A.F. Molisch](#), [J. Kim](#)) ([Best Paper Award](#))
- [APWCS'22] DDPG-based Deep Reinforcement Learning for Loitering Munition Mobility Control: Algorithm Design and Visualization, *APWCS (2022)*. ([H. Lee](#), [W.J. Yun](#), [S. Jung](#), [J.-H. Kim](#), [J. Kim](#)) ([IEEE VTS Seoul Chapter Award](#))
- [ICML'22] Slimmable Quantum Federated Learning, *ICML Workshop on Dynamic Neural Networks (2022)*. ([W.J. Yun](#), [J.P. Kim](#), [S. Jung](#), [J. Park](#), [M. Bennis](#), [J. Kim](#)) ([Spotlight, Oral Presentation](#))
- [ICDCS'22] Quantum Multi-Agent Reinforcement Learning via Variational Quantum Circuit Design, *ICDCS Demo (2022)*. ([W.J.](#)

Yun, Y. Kwak, J.P. Kim, H. Cho, S. Jung, J. Park, [J. Kim](#))

- [ICDCS'22] Quality-Aware Real-Time Augmented Reality Visualization under Delay Constraints, **ICDCS Poster (2022)**. (R. Lee, S. Park, S. Jung, [J. Kim](#))
- [ICDCS'22] AoI-Aware Markov Decision Policies for Caching, **ICDCS Ph.D. Student Symposium (2022)**. (S. Park, S. Jung, M. Choi, [J. Kim](#))
- [APWCS'21] Quantum Scheduling for Millimeter-Wave Observation Satellite Constellation, **APWCS (2021)**. ([J. Kim](#), Y. Kwak, S. Jung, J.-H. Kim) (**IEEE VTS Seoul Chapter Award**)
- [APWCS'21] Distributed and Autonomous Aerial Data Collection in Smart City Surveillance Applications, **APWCS (2021)**. (H. Lee, S. Jung, [J. Kim](#)) (**IEEE VTS Seoul Chapter Award**)
- [ICML'21] Communication and Energy Efficient Slimmable Federated Learning via Superposition Coding and Successive Decoding, **ICML Workshop on Federated Learning for User Privacy and Data Confidentiality (2021)**. (H. Baek, W.J. Yun, S. Jung, M. Ji, [J. Kim](#), J. Park, M. Bennis)
- [DSN'21] Spatio-Temporal Split Learning, **DSN Supplemental Volume (2021)**. ([J. Kim](#), S. Park, S. Jung, S. Yoo)
- [INFOCOM'21] Visualization of Deep Reinforcement Autonomous Aerial Mobility Learning Simulations, **INFOCOM Demo (2021)**. (G. Lee, W. J. Yun, S. Jung, [J. Kim](#), J.-H. Kim)
- [ICOIN'21] Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing, **ICOIN (2021)**. (S. Jung, W.J. Yun, [J. Kim](#), J.-H. Kim) (**Best Paper Award**)
- [QTM'20] A Quantum Approach to the Minimum Dominating Set Problem, **QTM (2020)**. (J. Choi, S. Oh, S. Park, [J. Kim](#))
- [ICTC'20] A Tutorial on Quantum Convolutional Neural Networks (QCNN), **ICTC (2020)**. (S. Oh, J. Choi, [J. Kim](#)) (**Citations: 100+**)
- [ICML'20] XOR Mixup: Privacy-Preserving Data Augmentation for One-Shot Federated Learning, **ICML Workshop on Federated Learning for User Privacy and Data Confidentiality (2020)**. (M. Shin, C. Hwang, [J. Kim](#), J. Park, M. Bennis, S.-L. Kim) (**Citations: 100+**)
- [ICCV'19] Deep Multi-modal Unsupervised Pen Pressure Stylization, **ICCV Demo (2019)**. (D. Kim, [J. Kim](#))
- [QTM'19] A Quantum Approach to Max-Weight Independent Set Problem, **QTM (2020)**. (J. Choi, [J. Kim](#))
- [APWCS'19] Joint Offloading and Streaming in Mobile Edges: A Deep Reinforcement Learning Approach, **APWCS (2019)**. (S. Park, J. Kim, D. Kwon, M. Shin, [J. Kim](#)) (**IEEE VTS Seoul Chapter Award**)
- [DSN'19] Privacy-Preserving Deep Learning Computation for Geo-Distributed Medical Big-Data Platforms, **DSN Supplemental Volume (2019)**. (J. Jeon, J. Kim, [J. Kim](#), K. Kim, A. Mohaisen, J.-K. Kim)
- [MobiSys'19] Multi-Agent Deep Reinforcement Learning for Connected Vehicles, **MobiSys Poster (2019)**. (D. Kwon, S. Park, [J. Kim](#))
- [MobiSys'19] Light-Weight Programming Language for Blockchain, **MobiSys Poster (2019)**. (J. Kim, [J. Kim](#))
- [ICML'19] Adversarial Imitation Learning via Random Search in Lane Change Decision-Making, **ICML Workshop on AI for Autonomous Driving (2019)**. (M. Shin, [J. Kim](#))
- [CCS'18] Secure Compute-VM: Secure Big Data Processing with SGX and Compute Accelerators, **CCS Workshop on System Software for Trusted Execution (2019)**. (S. Yoo, H. Kim, [J. Kim](#))
- [MobiSys'18] Neural Network Syntax Analyzer for Embedded Standardized Deep Learning, **MobiSys Workshop on Embedded and Mobile Deep Learning (2019)**. (M. Shin, [J. Kim](#), A. Mohaisen, J. Park, K. H. Lee)
- [SECON'18] Recipient-Oriented Transaction for Preventing Double Spending Attacks in Private Blockchain, **SECON Poster (2018)**. (H. Lee, M. Shin, K. S. Kim, Y. Kang, [J. Kim](#))
- [AsiaCCS'18] POSTER: Mining with Proof-of-Probability in Blockchain, **AsiaCCS Poster (2018)**. (S. Kim, [J. Kim](#))
- [ICSE'18] A Novel Shared Memory Framework for Distributed Deep Learning in High-Performance Computing Architecture, **ICSE Companion Volume (2018)**. (S. Ahn, [J. Kim](#), S. Kang)
- [SOSP'17] A Reliable, Self-Adaptive Face Identification Framework via Lyapunov Optimization, **SOSP Workshop on AI Systems (2017)**. (D. Kim, [J. Kim](#), J.Y. Bang)
- [SIGCOMM'16] A Longitudinal Analysis of .i2p Leakage in the Public DNS Infrastructure, **SIGCOMM Poster (2016)**. (S. H. Jeong, A. R. Kang, [J. Kim](#), H. K. Kim, A. Mohaisen)
- [INFOCOM'16] Buffer-Stable Adaptive Per-Module Power Allocation for Energy-Efficient Millimeter-Wave Modular Antenna Array (MAA) Platforms, **INFOCOM Poster (2016)**. ([J. Kim](#))
- [SOSP'15] A Case for Bad big.LITTLE Switching: How to Scale Power-Performance in SI-HMP, **SOSP Workshop on Power-Aware Computing and Systems (2015)**. (S. Yoo, Y. Shim, S. Lee, S.-A. Lee, [J. Kim](#))
- [ITA'14] Joint Scheduling and Stochastic Streaming for Device-to-Device Video Delivery, **ITA Workshop (2014)**. ([J. Kim](#), A. Turci, G. Caire, A.F. Molisch) (**ITA Graduation Day Talk**)
- [MobiCom'13] Adaptive Video Streaming for Device-to-Device Mobile Platforms, **MobiCom Demo (2013)**. ([J. Kim](#), F. Meng, P. Chen, H.E. Egilmez, D. Bethanabhotla, A.F. Molisch, M.J. Neely, G. Caire, A. Ortega)

■ Conferences – Top-Conference Related, Awarded/Honored, Highly-Cited (Selected)

- [ICC'23] Multi-Agent Deep Reinforcement Learning for Efficient Passenger Delivery in Urban Air Mobility, **ICC (2023)**. (C. Park, S. Park, G. S. Kim, S. Jung, J.-H. Kim, [J. Kim](#))
- [APWCS'22] Trends in 3D Point Cloud Contents Sampling in Mobile AR/VR Platforms, **APWCS (2022)**. (H. Baek, H. Lee, J.-Y. Kim, S. Jung, M. Choi, [J. Kim](#))
- [VTC'22] Adaptive and Stabilized Streaming for Edge-Assisted Connected Vehicles under Heterogeneous Computing Constraints, **VTC (2022)**. (R. Lee, H. Lee, S. Park, [J. Kim](#))
- [VTC'22] Random Access Protocol Learning in LEO Satellite Networks via Reinforcement Learning, **VTC (2022)**. (J.-H. Lee, H. Seo, J. Park, M. Bennis, [J. Kim](#), Y.-C. Ko)
- [ISWCS'21] Attention-based Reinforcement Learning for Real-Time UAV Semantic Communication, **ISWCS (2021)**. (W. J. Yun, B. Lim, S. Jung, Y.-C. Ko, J. Park, [J. Kim](#), M. Bennis)

- [ICC'20] User Scheduling and Power Allocation for Content Delivery in Caching Helper Networks, **ICC (2020)**. (M. Choi, A. F. Molisch, J. Kim, M. Bennis)
- [WCNC'20] Cache Allocations for Consecutive Requests of Categorized Contents: Service Provider's Perspective, **WCNC (2020)**. (M. Choi, A. F. Molisch, D.-J. Han, J. Kim, J. Moon)
- [GLOBECOM'19] Multi-Agent Deep Reinforcement Learning for Cooperative Connected Vehicles, **GLOBECOM (2019)**. (D. Kwon, J. Kim)
- [ICC'19] Probabilistic Caching Policy for Categorized Contents and Consecutive User Demands, **ICC (2019)**. (M. Choi, D. Kim, D.-J. Han, J. Kim, J. Moon)
- [GLOBECOM'15] 60 GHz Frequency Sharing Study between Fixed Service Systems and Small-Cell Systems with Modular Antenna Arrays, **GLOBECOM Workshop on Millimeter-Wave Backhaul and Access (2015)**. (J. Kim, L. Xian, R. Arefi, A.S. Sadri)
- [GLOBECOM'14] Required Frequency Rejection in 39 GHz Millimeter-Wave Small Cell Systems, **GLOBECOM Industry Program/Poster (2014)**. (J. Kim, L. Xian, A. Maltsev, R. Arefi, A.S. Sadri)
- [ICC'14] Quality-Aware Millimeter-Wave Device-to-Device Multi-Hop Routing for 5G Cellular Networks, **ICC (2014)**. (J. Kim, A.F. Molisch)
- [ICC'13] Quality-Aware Coding and Relaying for 60 GHz Real-Time Wireless Video Broadcasting, **ICC (2013)**. (J. Kim, Y. Tian, S. Mangold, A.F. Molisch)
- [PIMRC'11] Joint Optimization of HD Video Coding Rates and Unicast Flow Control for IEEE 802.11ad Relaying, **PIMRC (2011)**. (J. Kim, Y. Tian, A.F. Molisch, S. Mangold)
- [CCNC'10] mmWave SVD-based Beamformed MIMO Communication Systems, **CCNC (2010)**. (S. Tiraspolsky, B. Jeon, J. Kim, A. Rubtsov, A. Flaksman, V. Ermolayev)
- [CCNC'09] Optimal Beaconing for 60 GHz Millimeter Wave, **CCNC (2009)**. (J. Kim, B. Jeon)
- [CCNC'09] Demonstration of Display Sharing over Multi-Gbps Wireless Video and Audio Network, **CCNC (2009)**. (J. Kim, B. Jeon)
- [COMSWARE'08] Cooperative Relaying Strategies for Multi-Hop Wireless Sensor Networks, **COMSWARE (2008)**. (J. Kim, W. Lee)
- [VTC'06] Energy-Aware Distributed Topology Control for Coverage-Time Optimization in Clustering-Based Heterogeneous Sensor Networks, **VTC (2006)**. (J. Kim, J. Choi, W. Lee)
- [VTC'05] Low-Energy Localized Clustering: An Adaptive Cluster Radius Configuration Scheme for Topology Control in Wireless Sensor Networks, **VTC (2005)**. (J. Kim, S. Kim, D. Kim, W. Lee, E. Kim)

Patents (Granted), *totally*, 71

- **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)
- **26 Korean Patents:** (KR 102573880), (KR 102523056), (KR 102522930), (KR 102500352), (KR 102492736), (KR 102472809), (KR 102444449), (KR 102442891), (KR 102433897), (KR 102370599), (KR 102340895), (KR 102293287), (KR 102244380), (KR 102240442), (KR 102240425), (KR 102234007), (KR 102178895), (KR 102167344), (KR 102052835), (KR 102015429), (KR 101663613), (KR 101619964), (KR 101606951), (KR 101567829), (KR 101558017), (KR 100779165)
- **7 European Patents:** (EP 3255730), (EP 2441203), (EP 2422578), (EP 2343836), (EP 2282601), (EP 2262342), (EP 2260669)
- **11 Chinese Patents:** (CN 107634349), (CN 102461318), (CN 102461050), (CN 102388658), (CN 102349340), (CN 102342162), (CN 102318430), (CN 102318425), (CN 102204115), (CN 102132602), (CN 102057739)
- **6 Japanese Patents:** (JP 5584209), (JP 5584205), (JP 5580308), (JP 5508403), (JP 5368573), (JP 5364785)

Research Supervision and Teaching Experience

Research Supervision

■ Ph.D. Students and Alumni (Korea University, Department of Electrical and Computer Engineering)

- **Dr. Soohyun Park** ('19.03–'23.08 (MS-PhD), '23.09–'24.02 (Postdoc)), *Professor* at **Sookmyung Women's University**, Seoul, Korea
- **Dr. Hankyul Baek** ('21.03–'24.02 (MS-PhD), '24.03–'25.08 (Postdoc)), *Active Member*
- **Hyunsoo Lee** ('21.03–), *Active Member*
- **Seok Bin Son** ('22.09–), *Active Member*
- **Gyu Seon Kim** ('23.03–), *Active Member*
- **Sungjoon Lee** ('24.03–), *Active Member*
- **Emily Jimin Roh** ('24.03–), *Active Member*

■ M.S. Students and Alumni

- **Kyeongseon Kim** [Chung-Ang Univ., Computer Science and Engineering] ('17.09–'19.08), POSTECH (was with Upstage, LG AI Research)
- **Dohyun Kwon** [Chung-Ang Univ., Computer Science and Engineering] ('18.03–'20.02), Hyundai Motors Group
- **Dohyun Kim** [Chung-Ang Univ., Computer Science and Engineering] ('18.03–'20.02), Naver Webtoon
- **MyungJae Shin** [Chung-Ang Univ., Computer Science and Engineering] ('18.03–'20.02), Naver
- **Jaeho Choi** [Chung-Ang Univ., Computer Science and Engineering] ('19.03–'21.02), Korea Meteorological Administration
- **Jaehyun Chung** [Korea Univ., Electrical and Computer Engineering] ('23.09–), *Active*
- **Yeryeong Cho** [Korea Univ., Electrical and Computer Engineering] ('24.03–), *Active*
- **Chaemoon Im** [Korea Univ., Electrical and Computer Engineering] ('24.03–), *Active*

■ Postdoctoral Scholars

- **Dr. Minseok Choi** ('18.09–'19.02, jointly with Prof. Andreas F. Molisch (USC)), *Professor* at **Kyung Hee University**, Yong-In, Korea
- **Dr. Soyi Jung** ('21.03–'21.08, jointly with Prof. Marco Levorato (UC-Irvine)), *Professor* at **Ajou University**, Suwon, Korea
- **Dr. Ju-Hyung Lee** ('22.03–'23.02, jointly with Prof. Andreas F. Molisch (USC)), *Principal Researcher* at **Nokia**, Sunnyvale, CA, USA
- **Dr. Ijaz Ahmad** (11/2023–, jointly with Prof. Seokjoo Shin (Chosun Univ.)), *Active Member*
- **Dr. Joo Yong Shim** (03/2024–, jointly with Prof. Jong-Kook Kim (Korea Univ.)), *Active Member*

■ Ph.D. Students and Alumni (Tight Collaboration for Ph.D. Dissertation)

- Dr. Seungyo Ryu (Primary Advisor: Prof. Dongseung Kim at Korea Univ.), *Researcher* at **LG Electronics**, Changwon, Korea

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

- Dr. Minseok Choi, Ph.D. in EE from KAIST ('16.02-'16.07), now with **Kyung Hee University**, Korea
- Dr. Hidekazu Shimodaira, Ph.D. in EEE from Tokyo Institute of Technology ('15.07-'15.12), now with **NTT DOCOMO**, Japan

■ USC Viterbi School of Engineering (Los Angeles, California, USA), *Graduate Students*

- Feiyu Meng, M.S. in EE from USC (Summer 2013, Fall 2013), now with **Apple**, Silicon Valley, CA, USA
- Vivek Sankaravadivel, M.S. in EE from USC (Spring 2011, Fall 2011), now with **Uber**, Silicon Valley, CA, USA

Teaching Experience

■ Korea University – Graduate Courses, *Faculty Member*

- IT R&D Policies 1 (ECE723): Fall 2020
- Design and Analysis of Wireless Communication Systems (ECE721): Spring 2021
- Sensor Networks (ECE662): Spring 2023
- Advanced Network Theory (ECE657): Fall 2022
- Smart Mobile Platform (ECE654): Fall 2023, Fall 2021, Fall 2020, Fall 2019
- Advanced Topics in Socialware IT (ECE545): Spring 2022
- Queueing Theory 1 (ECE527): Fall 2024
- Wireless and Mobile Networks (ECE522): Spring 2024, Spring 2020
- Wireless Network 2 (ITH525): Fall 2022
- Wireless Network 1 (ITH524): Spring 2021

■ Korea University – Undergraduate Courses, *Faculty Member*

- Introduction to Artificial Intelligence (IWC420): Winter 2023-2024, Winter 2022-2023, Winter 2021-2022
- Introduction to Computer Science (IWC293): Winter 2023-2024
- Data Communications (KECE316): Fall 2020
- Digital System Design and Laboratory (KECE210): Fall 2020
- Probability and Random Process (KECE209): Spring 2024, Spring 2023, Spring 2022 (*Best Teaching Award, Top 20%*), Spring 2021 (*Best Teaching Award, Top 20%*), Spring 2020
- Digital System (KECE207): Spring 2020
- Computer Language and Laboratory (EGRN151): Fall 2024, Fall 2023, Fall 2022, Fall 2021 (*Granite Tower Best Teaching Award, Top 5%*), Fall 2020 (*Best Teaching Award, Top 20%*), Fall 2019 (*Granite Tower Best Teaching Award, Top 5%*)
- Introduction to Communication/Computing (COMM105): Spring 2024, Spring 2023
- Object-Oriented Programming (SEMI104): Fall 2021 (*Best Teaching Award, Top 20%*)
- Introduction to Computers (SEMI103): Spring 2021 (*Granite Tower Best Teaching Award, Top 5%*)
- Future Mobility Technology (GEQR075): Spring 2023, Spring 2022 (*Granite Tower Best Teaching Award, Top 5%*)
- Data Science and Artificial Intelligence (GECT003): Fall 2024 (2 classes)
- SW Programming Basics (GECT002): Spring 2024 (3 classes)

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

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

■ University of Southern California – Viterbi School of Engineering, *Teaching Assistant*

- Wireless and Mobile Networks Design and Lab [EE579] (Spring 2013), Lectured by **Professor Murali Annavaram**
Graduate Course dedicated to Android Mobile Platform Research and Programming
- Programming Systems Design [CSci455x] (Spring 2012, Fall 2012)
Undergraduate Course dedicated to Object-Oriented Programming (Java and C++) and Advanced Data Structures

Professional Academic Activities

Academic Conference, Workshop, Forum, Symposium Organization (Selected)

■ Organizing Committee (OC) Activities

- IEEE WiOpt: 2024 (Workshop Chair), 2022 (Organizer, *Caching, Computing and Delivery in Wireless Networks Workshop*)
- IEEE GLOBECOM: 2015 (Organizer, *Workshop on Millimeter-Wave Backhaul and Access*)
- IEEE ICC: 2022 (Patronage Chair)
- IEEE VTS APWCS: 2023 (Finance Co-Chair), 2022 (Finance Chair), 2021 (Finance Co-Chair), 2017 (Publication Vice Chair)
- IEEE ICASSP: 2018 (Special Session Organizing Chair, *Special Session on Cybersecurity and Privacy*)
- IEEE APCC: 2022 (Local Arrangement Chair)
- ACM CoNEXT: 2019 (Poster Session Chair)
- IEEE ICTC: 2023 (Workshop Co-Chairs), 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: 2024 (Workshop Chair), 2023 (Workshop Chair), 2022 (Workshop Chair), 2021 (Workshop Chair), 2021 (Workshop Organizing Chair, *Artificial Intelligence Emerging Applications (AIEA) Workshop*)

- IEEE ICOIN: 2024 (Workshop Chair), 2023 (Workshop Co-Chair), 2023 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*), 2022 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*), 2022 (Finance Co-Chairs), 2021 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*), 2020 (Workshop Organizing Chair, *Workshop on Artificial Intelligence and Mobility*)
- IEEE ICEIC: 2021 (Local Arrangement Chair)
- IEEE ICAIIC: 2019 (Publication Chair)
- **Quantum Machine Learning**
 - IEEE ICASSP 2025: Organizer, *Workshop on Quantum Machine Learning in Signal Processing and Artificial Intelligence*
 - IEEE Quantum Week 2024: Organizer, *Workshop on Quantum Computing and Reinforcement Learning*
 - IJCAI 2024: Organizer, *Workshop on Quantum Algorithms, Optimization, and Artificial Intelligence*

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/ACM Conference Tutorials and Special Session Talks**
 - **ACM CIKM 2024 Tutorial**, *Hands-On Introduction to Quantum Machine Learning*, Joint Presentation with Dr. Samuel Yen-Chi Chen (Wells Fargo, New York, NY, USA)
 - **ICIT 2024 Tutorial**, *Quantum Reinforcement Learning: Concepts, Models, and Applications*
 - **IEEE ICUFN 2022 Tutorial**, *A Paradigm Shift in Future Networks with Quantum Deep Learning*
 - **IEEE ICOIN 2022 Tutorial**, *Advanced Deep Learning Methods for Autonomous Mobility*
 - **IEEE ICUFN 2021 Tutorial**, *Distributed and Split Deep Learning: Theory and Applications*
 - **IEEE ICAIIC 2021 Tutorial**, *Multi-Agent Deep Reinforcement Learning for Connected and Autonomous Vehicles*
 - **IEEE ICT 2019 Special Session Talk**, *Advanced Deep Learning Methods and Their Applications to Distributed and Network Platforms*
 - **IEEE ICOIN 2019 Tutorial**, *Distributed Platform Research for Emerging Deep Learning Applications*
 - **IEEE ICC 2018 Tutorial**, *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)
- **Industry Presentations (Selected)**
 - *International*: Huawei Research Center (Text-Aware Image Understanding Workshop) (Online, 11/2021), Ericsson-LG (R&D Hackathon / AI Learning Challenge – Keynote Speech) (Seoul, Korea, 05/2021), Huawei Research Center (Deep Learning/Machine Learning for Computer Vision) (Online, 09/2020), Huawei Research Center (Fundamental and Applied Problems of Machine Learning) (Nizhny Novgorod, Russia, 12/2019), City University of Hong Kong (Hong Kong, 11/2018), Intel Communications and Devices Group (iCDG) [Cellular Modem TechTalk] (Santa Clara, CA, USA, 01/2016), Nokia Research Center at Berkeley (Berkeley, CA, USA, 08/2014), Qualcomm Research Center (San Diego, CA, USA, 02/2014)
 - *Korea*: LIG Nex1 (Pankyo), Solvit System (Seoul), Korea Institute of Machinery & Materials (Daejeon), Korea Meteorological Administration (Seoul), Hyundai NGV (Seoul), SK Telecom (SKT) (Seoul), Agency for Defense Development (ADD) (Seoul), SK Hynix (Icheon), Naver Labs - Robotics Lab (Pankyo), ETRI (Daejeon), KT AI Tech Center (Seoul), LG Electronics (Seoul), Posco ICT (Pankyo), LG U+ (Seoul), SK Broadband (Seoul), Korea Electronics Technology Institute (KETI) (Pankyo), Korea Electric Power Corporation (KEPCO) Research Institute (Daejeon), Samsung Electronics (Hwasung)
- **Demonstration at Academic Conferences**
 - IEEE ICDCS 2023 (Hong Kong, China), *EQuaTE: Efficient Quantum Train Engine Design and Demonstration for Dynamic Software Analysis*
 - IEEE ICDCS 2023 (Hong Kong, China), *Multi-Site Clinical Federated Learning using NLP Models and NVFlare*
 - IEEE ICDCS 2022 (Bologna, Italy), *Quantum Multi-Agent Reinforcement Learning via Variational Quantum Circuit Design*
 - IEEE INFOCOM 2021 (Online), *Visualization of Deep Reinforcement Autonomous Aerial Mobility Learning Simulations*
 - IEEE/CVF ICCV 2019 (Seoul, Korea), *Deep Multi-modal Unsupervised Pen Pressure Stylization*
 - ACM MobiSys 2019 (Seoul, Korea), *Light-Weight Programming Language for Blockchain*
 - IEEE GLOBECOM 2015 (Industry Demonstration ID-14) (San Diego, CA, USA), *mmWave MAA Client Access & Backhaul Platform*
 - IEEE GLOBECOM 2014 (Expo) (Austin, TX, USA), *mmWave Modular Antenna Array for Next-Generation Wireless Networks*
 - ACM MobiCom 2013 (Miami, FL, USA), *Adaptive Video Streaming for Device-to-Device Mobile Platforms*
- **Prototyping at Industry Exhibitions**
 - **Mobile World Congress (MWC) 2016** (Barcelona, Spain, 02/2016), *Mobile Edge mmWave Backhaul and Access*
 - **Intel 360 degree 2016** (Anaheim, CA, 02/2016), *mmWave MAA Client Access & Backhaul Platform*
 - **Intel Asia Innovation Summit 2015** (Taipei, Taiwan, 10/2015), *mmWave Modular Antenna Array Client Access & Backhaul Platform*
 - **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), *Enabling 5G Densification*

Technical Program Committee (TPC)

- **Chair-Level Activities (Selected)**
 - CCNC: 2022 (Track Chair, T7 (Security, Privacy and Content Protection))
 - NAS: 2019 (Track Co-Chair, Network Track)
 - GLOBECOM: 2015 (TPC Chair, *Workshop on Millimeter-Wave Backhaul and Access*)
- **General Activities (Selected)**
 - IEEE ICC: 2024 (Selected Areas in Communications – Integrated Sensing and Communication Track), 2024 (Selected Areas in Communications – Reconfigurable Intelligent Surfaces and Smart Environments Track), 2023 (Wireless Communications Symposium), 2023 (Selected Areas in Communications – Integrated Sensing and Communication Track), 2023 (Selected Areas in Communications – Reconfigurable Intelligent Surfaces and Smart Environments Track), 2022 (Wireless Communications Symposium), 2022, 2021 (Wireless Communications Symposium)

- **IEEE GLOBECOM:** 2022 (Selected Areas in Communications – Machine Learning for Communications), 2021 (Selected Areas in Communications – Machine Learning for Communications), 2021 (IoTSN), 2020 (Ad-hoc and Sensor Networks Symposium)
- **IEEE MASS:** 2024 (Algorithms and Theory Track), 2023, 2022, 2021, 2012 (Workshop on Internet of Things Technology and Architectures)
- **IEEE Quantum Week:** 2024 (Quantum Machine Learning Track)
- **ACM MobiHoc:** 2019
- **IEEE ICCCN:** 2021
- **IEEE WCNC:** 2023, 2022, 2021, 2020, 2020 (Workshop on Aerial Communications in 5G and Beyond Networks)
- **IEEE PIMRC:** 2024 (Track 1: PHY & Fundamentals), 2024 (Workshop on Secured, Intelligent, and Collaborative Cell-free Networking for 6G and Beyond)
- **IEEE ICDCS:** 2019 (Distributed Green Computing & Energy Management)
- **IEEE VTC:** 2022-Fall, 2019-Spring, 2016-Spring, 2015-Spring, 2014-Fall
- **IJCAI:** 2024 (Workshop on Quantum Algorithms, Optimization, and Artificial Intelligence)
- *Others:* 2025 (ICOIN, ICTC), 2024 (COMNETSAT, ICTC, GESS, ICOIN), 2022 (MSN (Track 3: Security, Privacy, Trust, and Blockchain), ICTC, ICCS, IPDPS (Heterogeneity in Computing Workshop), ICUFN, WCSP, COMNETSAT, CyberneticsCom, ICEIC, ICNGC), 2021 (MSN, ICTC, ICCS, ICUFN, EuCAP, COMNETSAT, ICAIIC, IGESSC, ICEIC, ICNGC, ITC-CSCC), 2020 (ICTC, ICUFN, ICCS, COMNETSAT, Blockchain, ICAIIC, IGESSC), 2019 (ICTC, ICUFN, ICCS, Blockchain, EuCAP, IGESSC, NAS (Network Track), ICPADS (Security & Dependable Computing), WISA, SecureComm, IE), 2018 (ICTC, ICUFN, IGESSC, APWCS, AsiaCCS (Workshop on Security in Cloud Computing), ATC, SigTelCom, WCSP, IE), 2017 (ICTC, ICUFN, IE), 2016 (ICUFN), 2015 (EuCAP)

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, CA, USA)
 - Professor of Electrical and Computer Engineering at the University of Southern California (Los Angeles, CA, USA)
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