Soyi Jung

Ph.D. Candidate, Ajou University – Department of Electrical and Computer Engineering, Suwon, Republic of Korea
- Email: sogloomy@ajou.ac.kr

Research Interests

- **Big-Data Processing Platforms:** Computation Outsourcing for Distributed Big-Data Processing
- **Trust Computing:** Optimal Auction through Deep Learning
- **Distributed Systems Design and Analysis:** Lyapunov Optimization, Queuing Theory

Educational Backgrounds

- **Ajou University**, Suwon, Republic of Korea
  – Ph.D. (03/2016–02/2021), Department of Electrical and Computer Engineering (Advisor: Prof. Jae-Hyun Kim)
  – M.S. (03/2013–02/2015), Department of Electrical and Computer Engineering (Advisor: Prof. Jae-Hyun Kim)
  – B.S. (03/2009–02/2013), Department of Electrical and Computer Engineering

R&D Positions

- **Korea University – School of Electrical Engineering**, Seoul, Republic of Korea, and *Jointly with*
  University of California at Irvine – Donald Bren School of Information and Computer Sciences, Irvine, CA, USA
  – *Research Professor at Korea Univ. (03/2021–Present)*, Artificial Intelligence and Mobility Lab (Advisor: Prof. Joongheon Kim)
  – *Visiting Scholar at UC-Irvine (03/2021–Present)*, Advisor: Prof. Marco Levorato
- **Korea Testing and Research (KTR) Institute**, Gwacheon, Republic of Korea
  – *Researcher (03/2015–02/2016)*

Awards and Honors

- **Best Paper Award**, *IEEE ICOIN (IEEE International Conference on Information Networking)* 01/2021
  – Infrastructure-Assisted Cooperative Multi-UAV Deep Reinforcement Energy Trading Learning for Big-Data Processing.
- **ICT Paper Contest Award by Electronics Times**, *KIISE (Korean Institute of Information Scientists and Engineers)* 12/2019
  – Reducing Consecutive Collisions in Sensing Based Semi Persistent Scheduling for Cellular-V2X.
- **Bronze Paper Award**, *IEEE Seoul Section Student Paper Contest* 12/2019
  – Enhanced Resource Selection Algorithm of 3GPP C-V2X Communication.
- **Outstanding Paper Award**, *KICS (Korean Institute of Communications and Information Sciences)* 11/2017
  – Wireless Caching Algorithm Based on User's Context in Smallcell Environments.
- **Young Woman Researcher Award**, *WISET (Korea Center for Women in Science, Engineering, and Technology) and KICS (Korean Institute of Communications and Information Sciences)* 11/2015
- **Korea Regional Conference Paper Award**, *KICS (Korean Institute of Communications and Information Sciences)* 06/2015
  – Cache Algorithm using User's Context in Smallcell Environments.

R&D Projects

- **End-Edge-Cloud Big-Data Processing for Augmented Reality Applications** 03/2021–Present
  Funded by *Samsung Advanced Institute of Technology*
- **5G/Unmanned Vehicle Research Center (5G/UV-RC) – University IT Research Center (ITRC)** 06/2020–12/2020
  Funded by *Institute for Information and Communications Technology Promotion (IITP)*, PI: Hanyang University

International Publications

Ph.D. Dissertation

[PhD.01] **S. Jung**, *Energy-Efficient Scheduling and Optimization for Connected and Autonomous Vehicles*, Ph.D. Dissertation (Electrical and Computer Engineering), Ajou University, Suwon, Korea, February 2021.

Magazines and Journals (First or Corresponding Authored), correspondence mark: †

[JF.11.review] **S. Jung**, D. Mohaisen, J. Kim†, and J.-H. Kim†, "Truthful and Performance-Optimal Outsourcing Computing for Surveillance Analytics Platforms via Learning-based Auction," **IEEE Internet of Things Journal** (Under Review).

[JF.10.review] S. Park, **S. Jung**, H. Lee, J. Kim†, and J.-H. Kim†, "Large-Scale Water Quality Prediction using Federated Sensing and Learning: A Case Study with Green Tide Big-Data," **Sensors** (Under Review).

[JF.09.review] M. Shin, W. J. Yun, **S. Jung**†, S. Park, D. Mohaisen, J. Kim†, and J.-H. Kim†, "Cooperative Multi-Agent Deep Reinforcement Learning for Autonomous Surveillance Drones," **IEEE Transactions on Vehicular Technology** (Under Review).

[JF.08.review] **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** (Under Review).

[JF.07.review] W. J. Yun, Y.J. Ha, **S. Jung**[†], J. Kim[†], and J.-H. Kim[†], "Multi-Agent Deep Reinforcement Autonomous Drone Mobility Learning for Smart City Services," **IEEE Vehicular Technology Magazine** (Under Review).

[JF.06.review] M. Shin, W.J. Yun, **S. Jung**, S. Park, D. Mohaisen, J. Kim, and J.-H. Kim[†], "Cooperative Multi-Agent Deep Reinforcement Learning for Autonomous Surveillance Drones," **IEEE Transactions on Vehicular Technology** (Under Review).

[JF.05.revision] **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** (Major Revision).

[JF.04.revision] **S. Jung**, M. Levorato, J. Kim[†], and J.-H. Kim[†], "Self-Adaptive Learning Outsourcing Decision Making for Edge-Assisted UAV Networks," **IEEE Systems Journal** (Major Revision).

[JF.03] **S. Jung**, J. Kim, and J.-H. Kim[†], "Intelligent Active Queue Management for Stabilized QoS Guarantees in 5G Mobile Networks," **IEEE Systems Journal**, v(n):ppp–ppp, June 2021 (Online Published)., DOI: 10.1109/JSYST.2020.3014231

[JF.02] **S. Jung**, J. Kim, and J.-H. Kim[†], "Joint Message-Passing and Convex Optimization Framework for Energy-Efficient Surveillance UAV Scheduling," **Electronics**, 9(9):1475, September 2020., DOI: 10.3390/electronics9091475

[JF.01] **S. Jung**, S.-H. Lee, and J.-H. Kim[†], "Reliability Control Framework for Random Access of Massive IoT Devices," **IEEE Access**, 7:49928–49937, April 2019., DOI: 10.1109/ACCESS.2019.2911089

Magazines and Journals (Co-Authored)

[JC.02.revision] W.J. Yun, **S. Jung**, J. Kim[†], and J.-H. Kim[†], "Distributed Deep Reinforcement Learning for Autonomous Aerial eVTOL Mobility in Drone Taxi Applications, ," **ICT Express** (Major Revision).

[JC.01] S.-H. Lee, **S. Jung**, and J.-H. Kim[†], "Dynamic Resource Allocation of the Random Access for MTC Devices," **ETRI Journal**, 39(4):546-557, August 2017., DOI: 10.4218/etrij.17.0116.0825

Conferences

[C.06] **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," in *Proc. International Conference on Information Networking (ICOIN)*, Jeju, Korea, January 2021.

[C.05] **S. Jung**, P. Yeng, T. Q. S. Quek, and J.-H. Kim, "Belief Propagation based Scheduling for Energy Efficient Multi-drone Monitoring System," in *Proc. International Conference on ICT Convergence (ICTC)*, Jeju, Korea, October 2020.

[C.04] **S. Jung**, H.-R. Cheon, and J.-H. Kim, "Reducing Consecutive Collisions in Sensing Based Semi Persistent Scheduling for Cellular-V2X," in *Proc. IEEE Vehicular Technology Conference (VTC-Fall)*, Hawaii, USA, September 2019.

[C.03] S.-H. Lee, **S. Jung**, and J.-H. Kim, "Adaptive Resource Allocation and Congestion Control Algorithm for Massive Devices in LTE-A," in *Proc. IEEE Wireless Communications and Networking Conference (WCNC)*, Barcelona, Spain, April 2018.

[C.02] S.-S. Yoo, S.-H. Lee, **S. Jung**, and J.-H. Kim, "Performance Evaluation of Random Access Response Estimation Scheme for IoT Communications," in *Proc. IEEE International Conference on Communications (ICC)*, Paris, France, May 2017.

[C.01] J.-K. Kim, **S. Jung**, K.-H. Lee, and J.-H. Kim, "Frame Aggregation Scheme based on Voice Quality in VoIP System," in *Proc. International Conference on Electronics, Information, and Communication (ICEIC)*, Bali, Indonesia, January 2013.

Teaching Experience

Seoul Woman's University – Department of Information Security, *Part-Time Lecturer*

- **Department of Information Security – Undergraduate Courses**: *Computer Algorithm* (Fall 2020)
- **Department of Information Security – Undergraduate Courses**: *Digital Forensics* (Fall 2020)

References

- *Available upon request.*