Jiwon Sung

Personal Website | jiwonsung00@gmail.com | Google Scholar

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST)

Feb. 2024 – Present

4.12/4.3 GPA

Ulsan National Institute of Science and Technology (UNIST)

Feb. 2018 - Feb. 2024

B.S. in Electrical Engineering | Summa Cum Laude | 4.15/4.3 GPA (Ranked 1/51)

Ulsan, Korea

Daejeon, Korea

Research Interests

M.S. in Electrical Engineering

Wireless Communications, Estimation, Sensing, Statistical Signal Processing, and Machine Learning

Advisor: Prof. Jinseok Choi

RESEARCH EXPERIENCE

TASC Lab

Aug. 2025 – Present

Purdue University | Advisor: Prof. David J. Love West Lafayette, IN, USA

Near-Field Velocity Sensing on an Extended Target

• TBD

SIC-X LAB

July 2023 – Aug. 2025

KAIST | Advisor: Prof. Jinseok Choi Daejeon, Korea

Power-Efficient Rate-Splitting Multiple Access (RSMA) Precoding

• Developed a power-efficient and low-complexity MIMO-RSMA beamforming design that jointly optimizes the precoder, the set of active antennas, and the transmit power for a given total power budget at a base station

• Numerical results show a new insight: medium-resolution DACs with $8 \sim 11$ bits may be more power efficient than low-resolution DACs with $3 \sim 5$ bits when utilizing the full potential of the available power at the base station

Time-Interleaved ADC (TI-ADC) Mismatch Error Estimation and Compensation

- Developed a hybrid calibration algorithm for correcting offset, gain, and timing mismatch errors in TI-ADCs using the extended Kalman filter for estimation and a combination of a truncated fractional delay filter and a high-pass filter for compensation
- Our algorithm achieves superior bit error rates, does not require FIR filter coefficient optimizations, and is the first work in the literature to model time-varying mismatch errors

InfoLab Mar. 2023 – July 2023

KAIST | Advisor: Prof. Si-Hyeon Lee

Daejeon, Korea

Local Differential Privacy (LDP) in Graph Data

- Applied LDP to decentralized graph data such that privacy is preserved while maintaining local graph statistics
- Proposed a degree-preserving asymmetric bit-flipping scheme that satisfies edge-LDP constraints
- Numerical results show that the proposed method produced good results for coreness, a metric that quantifies users' influence in a graph
- Our method could be applied to scenarios where the task is to find potential super-spreaders in an epidemic outbreak using people's sensitive data so that the limited supply of vaccines is used on the most influential people

Lab. of Advanced Imaging Tech.

Apr. 2022 – Aug. 2022

UNIST | Advisor: Prof. Jaejun Yoo Ulsan, Korea

Image-to-Image Translation

- Studied generative adversarial networks (GANs) in the context of image-to-image translation
- Tried to make improvements on *TUNIT*, a multi-domain image-to-image translation paper that uses unlabeled datasets, by eliminating the "number of domains" hyperparameter using the Incremental DBSCAN algorithm

Journal Articles

- Jiwon Sung, Seokjun Park, and Jinseok Choi, "Power-Constrained and Quantized MIMO-RSMA Systems with Imperfect CSIT: Joint Precoding, Antenna Selection, and Power Control", *IEEE Transactions on Wireless Communications* (submitted)
- **Jiwon Sung** and Jinseok Choi, "A New Interpretation of the Time-Interleaved ADC Mismatch Problem: A Tracking-Based Hybrid Calibration Approach", *IEEE Signal Processing Letters* (accepted)

International Conference Papers

- **Jiwon Sung**, Seokjun Park, and Jinseok Choi, "Joint Optimization for Power-Constrained MIMO Systems: Is Low-Resolution DAC Still Optimal?," 2025 IEEE 101st Vehicular Technology Conference (VTC2025-Spring), Oslo, Norway, 2025 (accepted)
- Seokjun Park, Jiwon Sung, Jinseok Choi, Jeonghun Park, and Wonjae Shin, "Maximizing Energy and Spectral Efficiency Tradeoff in MISO-RSMA Systems Under Coarse Quantization," 2024 32nd European Signal Processing Conference (EUSIPCO), Lyon, France, 2024, pp. 857-861

Work Experience

UNIST

Air Force Operations Command (AFOC) Oct. 2020 - Mar. 2022 Military Interpreter (English-Korean) Pyeongtaek, Korea AWARDS AND SCHOLARSHIPS Feb. 2024 - Feb. 2026Government-Sponsored Scholarship • Near-full-tuition & stipend scholarship Feb. 2020 – Feb. 2024 National Science and Technology Scholarship • Full-tuition & stipend scholarship 2018, 2019, 2020-Spring, 2022-Fall Semester Award • Awarded to the top students with the highest GPA scores Feb. 2018 – Feb. 2024 Academic Performance Scholarship • Full-tuition scholarship

TEACHING AND MENTORING EXPERIENCE

Feb. 2025 – June 2025
Daejeon, Korea
Sep. 2024 – Dec. 2024
Daejeon, Korea

• Advised an undergraduate student's thesis research

Global Educational Program for Samsung Semiconductor (TA)

• Research topic: joint channel and time-interleaved ADC mismatch compensation in OFDM systems

KAIST	Daejeon, Korea
Aramco Coding School	Aug. 2022 – Nov. 2022
Saudi Arabian Oil Company	Ulsan, Korea

June 2024 – June 2025

Ulsan, Korea

• Developed an iOS application for protecting the environment with middle school students

A.I. 4.0 Studio May 2022 - Nov. 2022 UNIST Ulsan, Korea • Implemented pix2pix (image-to-image translation with cGAN) with high school students using Tensorflow

Calculus I (TA)

War. 2020 – June 2020

UNIST

Ulsan, Korea

Freshman English Camp (TA)

Jan. 2020

UNIST Ulsan, Korea
Contemporary Philosophy (TA)
Sep. 2019 – Dec. 2019

UNIST
Ulju-gun Science Mentoring for the Gifted
Ulsan, Korea
Jan. 2019

• Taught algebra for middle school students during a 3-week camp