

Joon Ha Kim

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Research Interest

Networked Systems, Distributed Systems, In-Network Processing, System for ML

Education

- | | |
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| Korea Advanced Institute of Science and Technology , Electrical Engineering | Sep 2018 – Jun 2025
(Expected) |
| <ul style="list-style-type: none"> • Salutatorian of the School of Electrical Engineering of KAIST for 2023 Fall • Relevant Coursework: [EE209]System Programming, [EE323]Computer Networks, [EE312] Computer Architecture, [EE415]Operating Systems | GPA: 3.91/4.3
Major GPA: 4.04/4.3 |
| University of Texas at Austin , Electrical and Computer Engineering | Aug 2024 – Dec 2024 |
| <ul style="list-style-type: none"> • Relevant Coursework: [CS395T]Advanced Topics in Computer Networks | Exchange Program |

Experience

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|---|---------------------|
| UT Networked Systems (PI: Prof. Kim, Daehyeok) , Visiting Researcher | Austin, TX |
| <ul style="list-style-type: none"> • FENNEC: Network packet trace generator for distributed learning simulations <ul style="list-style-type: none"> - Discovered the lack of network fidelity in the distributed learning simulator, ASTRA-sim, with ns-3 as its network back-end. - Implemented the testbed environment to allow point-to-point representations of collective communication operations on ns-3. | Aug 2024 – Jan 2025 |
| Intelligent Network Architecture (PI: Prof. Han, Dongsu) , Undergraduate Researcher | Daejeon, KR |
| <ul style="list-style-type: none"> • BlenDR: A novel RGB-D representation and delivery scheme for live 3D video streaming, offering 95.5% better compression efficiency than Google DRACO <ul style="list-style-type: none"> - Designed the end-to-end implementation for both the client and sender-side, mounted on a NGINX Server with the RTMP Protocol, allowing for real-time performance using Azure Kinect attached to a Jetson device. [P-1] • BlenDR Fusion: BlenDR with multi-camera fusion capabilities <ul style="list-style-type: none"> - Designed a new multi-angle fusion technique mounted on BlenDR, allowing for multi-view 3D point cloud reconstruction, synchronously captured from multiple Azure Kinect cameras using ICP and stereo calibration. | Jun 2023 – Sep 2024 |
| Samsung Electro-Mechanics , Undergraduate Intern | Suwon, KR |
| <ul style="list-style-type: none"> • Developed a data-interpreting and visualization program in Python that analyzes, and graphs collected data from a MLCC (Multilayer Ceramic Capacitor) manufacturing machine for the Margin Formation (MF) process. • Proposed a more time efficient path for the MF machine - potentially cutting the manufacturing time by 4.63%, using the self-developed Python program. | Jan 2023 – Feb 2023 |

Publications

- | | |
|---|---------------------|
| [P1] Pushing the Limits of Live 3D Streaming with BlenDR | Sep 2024 |
| Jaehong Kim, Joon Ha Kim , Yungheon Lee, Dongsu Han | Under Review |

Patents

- | | |
|--|-------------|
| Unified Compression Method for RGB and Depth Video in Live 3D Video Streaming | Dec 2023 |
| KR10-2023-0164365 (Filed) | Daejeon, KR |

Honors and Awards

Korea-U.S. STEM Student Exchange Scholarship

Awarded to 90 students across the country with \$9,000 for the 2024 Fall Semester Exchange Program

Ministry of Trade, Industry and Energy

National Science Technology Scholarship

Awarded with ₩500,000 to 3 students in KAIST for academic performance

Ministry of Science and ICT

KAIST Salutatorian of the School of Electrical Engineering

Awarded with ₩800,000 for Exceptional Academic Achievement for the semester

KAIST

KAIST Dean's List (x2)

Awarded to the top 3% of the Department of Engineering

KAIST

ROKA Startup Competition

- Finished 10th out of 625 teams.
- Led a team of four, proposing the idea of a 3D dynamically updating cloud map-
ping system for self-driving vehicles with V2X and networking systems

ROK Army

Mentoring Experience

United States Forces Korea J-Staff KATUSA Platoon Guide

Provided 25 KATUSAs with counseling and assisting with post military planning, later awarded with the Best KATUSA of the Month of February '22

Pyeongtaek, KR
Feb 2021 - Mar 2022

KAIST Proctor

Taught bi-weekly classes, either holding activities or helping with coursework to help a class of 30 freshmen get accustomed to KAIST

Daejeon, KR
Aug 2019 - Jun 2020

KAIST Exchange Student Mentor

Responsible for guiding and helping exchange students (e.g. counseling, advising)

Daejeon, KR
Mar 2020 - Jun 2021

KAIST Herald, Head of Society

Led five staff reporters for the only English Newspaper Organization at KAIST, and led weekly meetings for monthly newspaper articles

Daejeon, KR
Aug 2019 - Jun 2020

Additional Information

Programming Languages: C++, C, CUDA, Python, Javascript, Rust

HDL: Verilog, Assembly

AI Frameworks: PyTorch, TensorFlow

Misc.: ns-3, NetAnim, ASTRA-sim, FFmpeg