Joon Ha (James) Kim

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RESEARCH INTEREST

Networked Systems, In-Network Processing, AI for Systems, Distributed Systems

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST) **Daejeon, Korea**
B.S. Candidate in Department of Electrical Engineering (degree in June 2025) Sep. 2018 – Present
Cum. GPA 3.91 / 4.3 | Major GPA 4.04 / 4.3

University of Texas, Austin **Austin, Texas**
Exchange Student for Electrical and Computer Engineering (ECE) Aug. 2024 – Feb. 2025

American International School of Bucharest **Bucharest, Romania**
International Baccalaureate (44/45) - Graduated as Salutatorian Sep. 2016 – Jun. 2018

WORK / RESEARCH EXPERIENCE

University of Texas Networked Systems (UTNS) – Prof. Daehyeok Kim **Austin, Texas**
Undergraduate Research Intern Aug. 2024 – Present

Intelligent Network Architecture Lab (INA Lab) – Prof. Dongsu Han **Daejeon, Korea**
Undergraduate Research Intern Jun. 2023 – Aug. 2024
BlenDR: A novel RGB-D representation and delivery scheme for live 3D video streaming **[P-1]**
• Developed 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
• Optimized a bilateral filter used for RGB-D data smoothing used in the pre-processing before the video codec encoding step, offering a **89.6% improvement** in compression efficiency compared to Google DRACO
• Modified and improved the open-source module for video colorization, increasing the PSNR and SSIM values of the model's output by approximately 15% and allowing for various size of images and YUV-type as input, leading to a reduction of depth error by **8.7 x (RMSE)** and improving RGB quality by **3.18 dB (PSNR)**

BlenDR Fusion: BlenDR with real-time multi-camera fusion capabilities Mar. 2024 – Jul. 2024
• 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
• Improved BlenDR's practicality and usability to take advantage of 6-DoF motion of volumetric video
• Conducted evaluation tests to measure end-to-end latencies to prepapre for **submission for NSDI'25**

Samsung Electro-Mechanics **Suwon, Korea**
Undergraduate Intern Feb. 2023 – Mar. 2023
• 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.

Bio/Brain Medical Microsystems Lab – Prof. Hyunjoo Lee **Daejeon, Korea**
Undergraduate Research Intern (Notion Page) Jun. 2022 – Aug. 2022
• Studied the parametric changes needed to maximize the acoustic output pressure of capacitive micromachine ultrasonic transducers (CMUTs) in collapse mode operation compared with conventional mode.
• Conducted wet lab experiments to collect acoustic pressure data and customized MATLAB code to automate the hydrophone sweep across the CMUT for data collection

PUBLICATIONS

[P-1] Pushing the Limits of Live 3D Streaming with BlenDR
Jaehong Kim, Joon Ha Kim, Dongsu Han *Under Review*

PATENTS

Patent: Unified Compression Method for RGB and Depth Video in Live 3D Video Streaming — **Daejeon, Korea**
KR10-2023-0164365 (Filed) — Dec. 2023

HONORS / AWARDS

1st Korea-U.S. STEM Student Exchange Scholarship — **Seoul, Korea**
• Awarded with $9,000 by the *Minister of Trade, Industry and Energy* — May. 2024

National Science & Technology Scholarship — **Daejeon, Korea**
• Awarded with ₩500,000 to 3 students in KAIST by the *Minister of Science and ICT* — Nov. 2023

KAIST Salutatorian of the Department of Electrical Engineering — **Daejeon, Korea**
• Awarded with ₩800,000 for Exceptional Academic Achievement for the semester — Aug. 2023

KAIST Dean's List (x3) — **Daejeon, Korea**
• Awarded to the top 3% of the Department of Engineering (2023S / 2023F / 2024S) — '23S / '23F / '24S

U.S. Department of Defense Joint Service Commendation Medal (JSCM) — **Pyeongtaek, Korea**
• Awarded with Joint Service Commendation Medal from General Sullivan (USFK CoS) — Apr. 2022

ROKA Startup Competition (10th / 625 Teams) — **Pyeongtaek, Korea**
• Led a team of four, proposing the idea of a 3D dynamically updating cloud mapping system for self-driving vehicles with V2X and networking systems. — Oct. 2021

RESPONSABILITIES

Korea Augmentation to the United States Army Platoon Guide for USFK J-Staff — **Pyeongtaek, Korea**
• Operated as the Administrative Specialist for the USFK Chief of Staff, providing mission-critical support to the office, to General Sullivan, and to General LaCamera. — Feb. 2021 – Mar. 2022
• Operated as the J-Staff Platoon Guide, providing 25 KATUSAs for mental help and future advise, later awarded with the Best KATUSA of the Month of February '22.

KAIST Exchange Student Mentor — **Daejeon, Korea**
• Responsible for guiding and helping exchange students (e.g. coaching, advising) — Mar. 2020 – Jun. 2021

KAIST Proctor — **Daejeon, Korea**
• Responsible for helping a class of 30 freshmen get accustomed to KAIST — Aug. 2019 – Jun. 2020
• Taught bi-weekly classes, either holding activities or helping with coursework

KAIST Herald Head of Society — **Daejeon, Korea**
• Led five staff reporters for the only English Newspaper Organization at KAIST — Aug. 2019 – Jun. 2020
• Assigned roles and led weekly meetings for the monthly newspaper articles

ADDITIONAL INFORMATION

LANGUAGES: Korean (Native), English (Fluent), French (DELF B2)
• GRE 334/340 (Verbal Reasoning 164/170, Quantitative Reasoning 170/170, Analytical Writing 5.5/6.0)
• TOEFL 115/120 (Reading 28/30, Listening 29/30, Speaking 30/30, Writing 28/30)

PROGRAMMING: C++, C, CUDA, Python, JavaScript
SYSTEM: Verilog, Assembly (x86-64)
AI FRAMEWORK: PyTorch, TensorFlow

REFERENCE

Prof. Han, Dongsu (dongsu.han@gmail.com) Dr. Kim, Jaehong (jaehong950305@gmail.com)