

Jaehong Kim

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RESEARCH INTEREST

AI for systems, AI for video streaming, Immersive video, Systems for large-scale AI, Networked systems

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST) Ph.D. Candidate in Electrical Engineering (Advisor: Dongsu Han)	Feb 2020 - Present
Korea Advanced Institute of Science and Technology (KAIST) M.S. in Electrical Engineering (Advisor: Dongsu Han)	Aug 2018 - Feb 2020
Korea Advanced Institute of Science and Technology (KAIST) B.S. in Electrical Engineering (Cum Laude)	Feb 2014 - Aug 2018

PUBLICATIONS

- (C1) **FlexPass: A Case for Flexible Credit-based Transport for Datacenter Networks**
Hwijoon Lim, Jaehong Kim, Inho Cho, Keon Jang, Wei Bai, and Dongsu Han
ACM EuroSys 2023 (Acceptance Rate 26/184 (Fall): 14.1%)
- (C2) **OutRAN: Co-optimizing for Flow Completion Time in Radio Access Network**
Jaehong Kim, Yunheon Lee, Hwijoon Lim, Youngmok Jung, Song Min Kim, and Dongsu Han
ACM CoNEXT 2022 (Acceptance Rate 28/151: 18.5%, **Best paper award nominee**)
- (C3) **NeuroScaler: Neural Video Enhancement at Scale**
Hyunho Yeo, Hwijoon Lim, Jaehong Kim, Youngmok Jung, Juncheol Ye, and Dongsu Han
ACM SIGCOMM 2022 (Acceptance Rate 55/281: 19.5%)
- (C4) **Neural-Enhanced Live Streaming: Improving Live Video Ingest via Online Learning**
Jaehong Kim*, Youngmok Jung*, Hyunho Yeo, Juncheol Ye, and Dongsu Han
ACM SIGCOMM 2020 (Acceptance Rate 53/250: 21.2%)
- (C5) **Neural Adaptive Content-aware Internet Video Delivery**
Hyunho Yeo, Youngmok Jung, Jaehong Kim, Jinwoo Shin, and Dongsu Han
USENIX OSDI 2018 (Acceptance Rate 47/257: 18.2%)
- (W1) **Neural Cloud Storage: Innovative Cloud Storage Solution for Cold Video**
Jinyeong Lim, Juncheol Ye, Jaehong Kim, Hwijoon Lim, Hyunho Yeo, and Dongsu Han
ACM HotStorage 2023

HONORS AND AWARDS

29th Samsung Humantech Paper Award	Silver Prize (2nd place), Communication & Networks.	Samsung, Feb 2023
Google Conference Scholarship		Google, Dec 2022
ACM CoNEXT Best paper award nomination & student grant		NSF&ACM, Dec 2022
28th Samsung Humantech Paper Award	Gold Prize (1st place), Communication & Networks.	Samsung, Feb 2022
KAIST Breakthrough of the Year		KAIST, 2021
Donghwa Industry Moon Daewon AI Research Scholarship		KAIST, 2020
USENIX OSDI Student Grant		USENIX, 2018

PROJECTS

- Neural-enhanced Live Volumetric Video Streaming** Nov 2022 - Present
- Designing a new live streaming system for live captured volumetric video powered by DNN.
- Cross-layer Optimization for 5G Radio Access Networks** Sep 2020 - Sep 2022
- Designed a new transport-layer scheduling for latency-sensitive traffic in 4G/5G networks.
 - Implemented the design on top of srsRAN gNodeB, which runs on USRP Software Defined Radios (SDR).
 - Reduced the webpage load time of Android phones up to **34%** outperforming legacy 4G/5G MAC schedulers.
- Neural-enhanced Live Video Streaming** Nov 2018 - Jul 2020
- Designed a live ingest system that enhances live video quality with online-trained super-resolution DNNs.
 - Implemented the client and ingest server with WebRTC, PyTorch, and ffmpeg.
 - Improved quality experience for live stream viewers up to **69%** or saved streamer's bandwidth usage by **45.9%**.
- Neural-enhanced Adaptive Video Streaming** Mar 2017 - Oct 2018
- Designed adaptive streaming that applies neural enhancement to video utilizing client computation.
 - Contributed to implementing an end-to-end system on top of MPEG DASH (dash.js) and TensorFlow as a student intern.
 - Improved user quality experience by **43.08%** or saved **17.13%** of network bandwidth.

SKILLS

Programming languages: C/C++, Python, Javascript **AI frameworks:** TensorFlow, PyTorch, TensorRT
Languages: Korean (native), English (fluent, IBT TOEFL 106) **Other skills:** dash.js, ffmpeg, NS-3 simulator, srsRAN, Docker, cuda

SERVICE AND TEACHING

Journal Review: IEEE/ACM transactions on networking **Teaching:** Teaching assistant (5 courses, 8 semesters)