

Jaehong Kim

CONTACT	Ph.D Candidate School of Electrical Engineering, KAIST <i>Phone:</i> (+82)10-4105-7379 <i>Email:</i> jaehong950305@gmail.com <i>Webpage:</i> https://jaykim305.github.io/	Kim Byung Ho IT Building (N1) #817 KAIST, 291 Daehak-ro, Yuseong-gu, Daejeon 305-701, Republic of Korea
RESEARCH INTERESTS	High Performance Networked Systems, Deep Learning based Video Delivery, Video Analytics	
EDUCATION	Korea Advanced Institute of Science and Technology (KAIST) Ph.D., in School of Electrical Engineering (Advisor: Prof. Dongsu Han)	FEB. 2020 ~ Present
	Korea Advanced Institute of Science and Technology (KAIST) M.S., in School of Electrical Engineering (Advisor: Prof. Dongsu Han)	AUG. 2018 ~ FEB. 2020
	Korea Advanced Institute of Science and Technology (KAIST) B.S., in School of Electrical Engineering (Cum Laude)	FEB. 2014 ~ AUG. 2018
PUBLICATIONS	Conference (* denotes equal contribution.) <ul style="list-style-type: none">• Co-optimizing for Flow Completion Time in Radio Access Network Jaehong Kim, Yunheon Lee, Hwijoon Lim, Youngmok Jung, Song Min Kim, and Dongsu Han <i>ACM CoNEXT 2022</i> (Acceptance Rate 29/151: 19.2%)• NeuroScaler: Neural Video Enhancement at Scale Hyunho Yeo, Hwijoon Lim, Jaehong Kim, Yongmok Jung, Juncheol Ye and Dongsu Han <i>ACM SIGCOMM 2022</i> (Acceptance Rate 55/279: 19.7%)• Neural-Enhanced Live Streaming: Improving Live Video Ingest via Online Learning Jaehong Kim*, Youngmok Jung*, Hyunho Yeo, Juncheol Ye and Dongsu Han <i>ACM SIGCOMM 2020</i> (Acceptance Rate 53/250: 21.2%)• Neural Adaptive Content-aware Internet Video Delivery Hyunho Yeo, Youngmok Jung, Jaehong Kim, Jinwoo Shin and Dongsu Han <i>USENIX OSDI 2018</i> (Acceptance Rate 47/257: 18.2%)	
HONORS AND AWARDS	<ul style="list-style-type: none">• 28th Samsung Humantech Paper Award Gold Prize (Co-author), Communication & Networks.• KAIST Breakthroughs of the Year 2021 Spring• Donghwa Industry Moon Daewon AI Research Scholarship• USENIX OSDI Student Grant	Samsung Electronics, FEB. 2022 KAIST, 2021 KAIST, 2020 USENIX, 2018
RESEARCH PROJECTS	<ul style="list-style-type: none">• Direct Volume Render Streaming Implemented a DICOM 3D visualization app prototype for Oculus Quest2 using Nvidia CloudXR and Unity. Funded by INUCreative Inc. Demo video link (CloudXR), Demo video link (Unity)• Neural Video Enhancement at Scale• Optimizing downlink scheduling in Radio Access Networks Designed a practical flow scheduler for LTE/5G xNodeBs that achieves low-latency for Interactive traffic. Implemented the system on top of srsRAN (i.e., open-source LTE/5G software radio suite) and NS-3. The scheduler can reduce webpage load time of Android phones up to 34%. Funded by Samsung Electronics Co., Ltd. Modem S/W R&D Group.• Deploying Credit-based Proactive Transport for Datacenter Networks• Neural-enhanced Live Streaming (LiveNAS)	APR. 2022 ~ JULY. 2022 OCT. 2021 ~ DEC. 2021 AUG. 2020 ~ Present JULY. 2020 ~ JAN. 2021 NOV. 2018 ~ JULY. 2020

Designed a new live ingest system that enhances the origin live stream's quality with online-trained super-resolution DNNs at the ingest server. The system delivers up to 69% QoE improvement. Implemented client, server with **WebRTC**, **PyTorch** and **ffmpeg**. Led the project as a **team leader**.

- **Neural-enhanced Adaptive Streaming (NAS)** Nov. 2017 ~ Oct. 2018
Designed a new video delivery system that integrates super-resolution DNNs with adaptive streaming.
Implemented **dash.js** that handles DNN integrated ABR and super-resolution on MPEG video chunks.

INVITED
TALKS

- **Neural-Enhanced Live Streaming: Improving Live Video Ingest via Online Learning**
Conference talk at SIGCOMM, Aug., 2020. [10 min talk video link](#), [20 min talk video link](#)
- **Neural Adaptive Content-aware Internet Video Delivery**
Poster & Demo Session at OSDI, Oct., 2018. [Demo video link](#)

TEACHING
EXPERIENCE

Teaching Assistant

- **Advanced Computer Networking and Cloud Computing (EE618)** SPRING 2021
- **Network Programming (EE324)** FALL 2020, FALL 2021
- **SK Hynix ASK Program** AUG. 2020
- **Systems and Applications of Artificial Intelligence and Machine Learning (EE793)** SPRING 2020
- **Programming Structures for Electrical Engineering (EE209)** SPRING&FALL 2019, SPRING&FALL 2022

PROFICIENT
SKILLS

Programming Languages: C, C++, Python, UNIX shell scripting, Latex, JavaScript
Tools & Frameworks: dash.js, ffmpeg, NS-3 Simulator, srsRAN, Docker, Azure Kinect
Deep Learning Frameworks: Tensorflow, PyTorch
Languages: Korean (native), English (IBT TOEFL 106, test date: 2015.08.22)