

# Jaehong Kim

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RESEARCH INTERESTS	High Performance Networked Systems, Deep Learning based Video Delivery, Video Analytics	
EDUCATION	<b>Korea Advanced Institute of Science and Technology (KAIST)</b> Ph.D., in School of Electrical Engineering (Advisor: Prof. Dongsu Han)	FEB. 2020 ~ Present
	<b>Korea Advanced Institute of Science and Technology (KAIST)</b> M.S., in School of Electrical Engineering (Advisor: Prof. Dongsu Han)	AUG. 2018 ~ FEB. 2020
	<b>Korea Advanced Institute of Science and Technology (KAIST)</b> B.S., in School of Electrical Engineering (Cum Laude)	FEB. 2014 ~ AUG. 2018
PUBLICATIONS	<b>Conference</b> (* denotes equal contribution.) <ul style="list-style-type: none"><li>• <b>FlexPass: A Case for Flexible Credit-based Transport for Datacenter Networks</b> Hwijoon Lim, Jaehong Kim, Inho Cho, Keon Jang, Wei Bai and Dongsu Han <b>ACM EuroSys 2023</b> (to appear)</li><li>• <b>OutRAN: Co-optimizing for Flow Completion Time in Radio Access Network</b> Jaehong Kim, Yunheon Lee, Hwijoon Lim, Youngmok Jung, Song Min Kim, and Dongsu Han <b>ACM CoNEXT 2022</b> (Acceptance Rate 28/151: 18.5%, <b>Best paper award nominee</b>)</li><li>• <b>NeuroScaler: Neural Video Enhancement at Scale</b> Hyunho Yeo, Hwijoon Lim, Jaehong Kim, Yongmok Jung, Juncheol Ye and Dongsu Han <b>ACM SIGCOMM 2022</b> (Acceptance Rate 55/279: 19.7%)</li><li>• <b>Neural-Enhanced Live Streaming: Improving Live Video Ingest via Online Learning</b> Jaehong Kim*, Youngmok Jung*, Hyunho Yeo, Juncheol Ye and Dongsu Han <b>ACM SIGCOMM 2020</b> (Acceptance Rate 53/250: 21.2%)</li><li>• <b>Neural Adaptive Content-aware Internet Video Delivery</b> Hyunho Yeo, Youngmok Jung, Jaehong Kim, Jinwoo Shin and Dongsu Han <b>USENIX OSDI 2018</b> (Acceptance Rate 47/257: 18.2%)</li></ul>	
HONORS AND AWARDS	<ul style="list-style-type: none"><li>• <b>29th Samsung Humantech Paper Award</b> Silver Prize (2nd place, Lead-author), Communication &amp; Networks. Samsung Electronics, FEB. 2023</li><li>• <b>Google Conference Scholarship (APAC)</b> Google, DEC. 2022</li><li>• <b>CoNEXT'22 Student Travel Grant</b> NSF &amp; ACM, OCT. 2022</li><li>• <b>28th Samsung Humantech Paper Award</b> Gold Prize (1st place, Co-author), Communication &amp; Networks. Samsung Electronics, FEB. 2022</li><li>• <b>KAIST Breakthroughs of the Year 2021 Spring</b> KAIST, 2021</li><li>• <b>Donghwa Industry Moon Daewon AI Research Scholarship</b> KAIST, 2020</li><li>• <b>USENIX OSDI Student Grant</b> USENIX, 2018</li></ul>	
RESEARCH PROJECTS	<ul style="list-style-type: none"><li>• <b>Direct Volume Render Streaming</b> Implemented a DICOM 3D visualization app prototype for Oculus Quest2 using Nvidia <b>CloudXR</b> and Unity. Funded by INUCreative Inc. <a href="#">Demo video link (CloudXR)</a>, <a href="#">Demo video link (Unity)</a> APR. 2022 ~ JULY. 2022</li><li>• <b>Neural Video Enhancement at Scale</b> OCT. 2021 ~ DEC. 2021</li><li>• <b>Optimizing downlink scheduling in Radio Access Networks (OutRAN)</b> Designed a practical flow scheduler for LTE/5G xNodeBs that achieves low-latency for Interactive traffic. Implemented the system on top of <b>srsRAN</b> (i.e., open-source LTE/5G software radio suite) and <b>NS-3</b>. The scheduler can reduce webpage load time of Android phones up to <b>34%</b>. Funded by <b>Samsung Electronics Co., Ltd. Modem S/W R&amp;D Group</b>. AUG. 2020 ~ Present</li></ul>	

- **Deploying Credit-based Proactive Transport for Datacenter Networks** JULY. 2020 ~ JAN. 2021
- **Neural-enhanced Live Streaming (LiveNAS)** 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

- **OutRAN: Co-optimizing for Flow Completion Time in Radio Access Network**  
Conference talk at CoNEXT'22, Dec., 2022.
- **Neural-Enhanced Live Streaming: Improving Live Video Ingest via Online Learning**  
Virtual conference talk at SIGCOMM'20, Aug., 2020. [10 min talk video link](#), [20 min talk video link](#)
- **Neural Adaptive Content-aware Internet Video Delivery**  
Poster & Demo Session at OSDI'18, 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)