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RESEARCH INTERESTS

On-device artificial intelligence

As mobile applications increasingly utilize deep neural network (DNN) models, efficient and accurate execution of the models becomes crucial. My research has specifically focused on super-resolution techniques for mobile 360-degree video live streaming using multi-exit neural networks [c6] and real-time gaze tracking on mobile devices [c3].

Energy-aware mobile systems

Reducing energy consumption has consistently been a crucial concern for mobile devices. I have participated in research on energy optimization for native [c1], web [c2], and game applications [j1] on smartphones. Additionally, I am interested in energy-aware on-device machine learning and machine learning-based energy optimization strategies.

Cross-device computing

With the growing prevalence of multiple personal computing devices, cross-device computing has garnered significant attention. However, existing techniques often face challenges related to platform dependency. My research has addressed this issue by leveraging the meta-platform characteristics in web applications [c5, c7].

EDUCATION

Yonsei University—Seoul, Republic of Korea

Mar. 2018 – Aug. 2025 (Expected)

Ph.D. Candidate in Computer Science and Engineering

Mobile Embedded Systems Lab., supervised by Prof. Hojung Cha

Yonsei University—Seoul, Republic of Korea

Mar. 2014 – Feb. 2018

B.S in Computer Science

PUBLICATIONS (PEER-REVIEWED)

* Co-primary authors

Conference Papers

NRF denotes the top CS conference list from National Research Foundation of Korea.

[c8] “Anonymized Paper (Conditionally Accepted)”

Chanyoung Jung, Jeho Lee, Gunjoong Kim, Jiwon Kim, [Seonghoon Park](#), Hojung Cha

The 23rd Annual International Conference on Mobile Systems, Applications and Services ([MobiSys '25](#))

[c7] “Vulture: Cross-Device Web Experience with Fine-Grained Graphical User Interface Distribution”

[Seonghoon Park](#), Jeho Lee, Yonghun Choi, and Hojung Cha

IEEE INFOCOM 2024 – IEEE Conference on Computer Communications ([INFOCOM '24](#))

May 20–23, 2024. Vancouver, Canada. IEEE (NRF IF: 4; Acceptance rate: 19.6%)

[c6] “OmniLive: Super-Resolution Enhanced 360° Video Live Streaming for Mobile Devices”

[Seonghoon Park](#)*, Yeonwoo Cho*, Hyungchol Jun, Jeho Lee, and Hojung Cha

The 21st Annual International Conference on Mobile Systems, Applications and Services ([MobiSys '23](#))

June 18–22, 2023. Helsinki, Finland. ACM (NRF IF: 3; Acceptance rate: 20.7%)

[c5] “Crow API: Cross-device I/O Sharing in Web Applications”

[Seonghoon Park](#), Jeho Lee, and Hojung Cha

IEEE INFOCOM 2023 – IEEE Conference on Computer Communications ([INFOCOM '23](#))

May 17–20, 2023. New York, NY, USA. IEEE (NRF IF: 4; Acceptance rate: 19.2%)

[c4] “WebMythBusters: An In-depth Study of Mobile Web Experience”

[Seonghoon Park](#), Yonghun Choi, and Hojung Cha

IEEE INFOCOM 2021 – IEEE Conference on Computer Communications ([INFOCOM '21](#))

May 10–13, 2021. Virtual Conference. IEEE (NRF IF: 4; Acceptance rate: 19.7%)

[c3] “GAZEL: Runtime Gaze Tracking for Smartphones”

Joonbeom Park, [Seonghoon Park](#), and Hojung Cha

The 19th International Conference on Pervasive Computing and Communications ([PerCom '21](#))

March 22–26, 2021. Virtual Conference. IEEE (NRF IF: 3; Acceptance rate: 10.6% for full papers)

[c2] “Optimizing Energy Efficiency of Browsers in Energy-Aware Scheduling-enabled Mobile Devices”

Yonghun Choi, [Seonghoon Park](#), and Hojung Cha

The 25th Annual International Conference on Mobile Computing and Networking ([MobiCom '19](#))

October 21–25, 2019. Los Cabos, Mexico. ACM (NRF IF: 4; Acceptance rate: 19.0%)

[c1] “Graphics-aware Power Governing for Mobile Devices”

Yonghun Choi, [Seonghoon Park](#), and Hojung Cha

The 17th Annual International Conference on Mobile Systems, Applications, and Services ([MobiSys '19](#))

June 17–21, 2019. Seoul, South Korea. ACM (NRF IF: 3; Acceptance rate: 22.7%)

Journal Papers

[j1] “Optimizing Energy Consumption of Mobile Games”

Yonghun Choi, [Seonghoon Park](#), Seunghyeok Jeon, and Hojung Cha

IEEE Transactions on Mobile Computing, Vol. 21, Issue 10, Oct. 2022, pp 3744–3756. (JCR 2022 IF: 7.9)

Under Review/Revision

- [u9] “Anonymized Paper (Mobile video streaming)”
Co-first author
Under Revision (Conference)
- [u8] “Anonymized Paper (On-device AI, Energy-aware mobile systems)”
First author
Under Review (Conference)
- [u7] “Anonymized Paper (On-device AI, Mobile video streaming)”
First author
Under Review (Conference)
- [u6] “Anonymized Paper (Energy-aware mobile systems)”
First author
Under Review (Conference)
- [u5] “Anonymized Paper (Energy-harvesting systems, On-device AI)”
First author
Under Review (Conference)
- [u4] “Anonymized Paper (On-device AI)”
Co-author
Under Review (Conference)
- [u3] “Anonymized Paper (On-device AI, Mobile video streaming)”
Co-author
Under Revision
- [u2] “Photovoltaic Energy-Harvesting Sensor Management using AR-assisted Digital Twin”
Daeyong Kim, Seonghoon Park, Rhan Ha, and Hojung Cha
Under Review at IEEE Transactions on Mobile Computing
- [u1] “MAUI: Enhancing Assistive Web Interaction through GUI Abstraction”
Jeho Lee, Seonghoon Park, Yoonha Cha, and Hojung Cha
Under Review at IEEE Transactions on Human Machine Systems

ORAL PRESENTATIONS

- Vulture: Cross-Device Web Experience with Fine-Grained Graphical User Interface Distribution
Main Technical Session C-11 at IEEE INFOCOM 2024—Vancouver, Canada *May. 23, 2024*
- OmniLive: Super-Resolution Enhanced 360° Video Live Streaming for Mobile Devices
Main Conference Session 7 at ACM MobiSys 2023—Helsinki, Finland *Jun. 21, 2023*
- Crow API: Cross-device I/O Sharing in Web Applications
Main Technical Session E-8 at IEEE INFOCOM 2023—New York, NY, USA *May. 19, 2023*
- WebMythBusters: An In-depth Study of Mobile Web Experience (*Invited*)
Top Conference Session I at Korea Software Congress 2021—Pyeongchang, Republic of Korea *Dec. 21, 2021*
- WebMythBusters: An In-depth Study of Mobile Web Experience
Main Technical Session F-9 at INFOCOM '21—Virtual Conference *May. 13, 2021*

RESEARCH PROJECTS

Development of AI-powered Real-time Cross-device 360-degree Video Sharing Technique	Sep. 2024 – Present
National Research Foundation of Korea (NRF), Republic of Korea	
Development of On-device DNN Inference System for Real-time 3D Perception with Mobile 360-degree Camera	May. 2024 – Present
National Research Foundation of Korea (NRF), Republic of Korea	
Development of High-Assurance (\geq EAL6) Secure Microkernel	Apr. 2018 – Present
IITP, Republic of Korea	
Task Relation Graph Prediction based on RNN	Mar. 2023 – Feb. 2024
Samsung Electronics, Republic of Korea	
Development of Energy Management Techniques for Batteryless IoT System	Mar. 2019 – Feb. 2022
National Research Foundation of Korea (NRF), Republic of Korea	
Highly Flexible Device Profiling and Analysis System for Web Experiences Measurement	Nov. 2017 – Dec. 2020
National Research Foundation of Korea (NRF), Republic of Korea	
System Software for Mobile Device Power Management to Improve Available Time by 30%	Jan. 2017 – Aug. 2018
Samsung Science & Technology Foundation, Samsung Electronics, Republic of Korea	

ACADEMIC SERVICES

Peer Reviewer

- IEEE Transactions on Mobile Computing (TMC): 2023, 2024

TEACHING EXPERIENCES

System Programming (CSI 3107)	Fall, 2024
Teaching Assistant—Yonsei University, Seoul, Republic of Korea	
System Programming (CSI 3107)	Fall, 2020
Teaching Assistant—Yonsei University, Seoul, Republic of Korea	
Operating Systems (CSI3101)	Spring, 2020
Teaching Assistant—Yonsei University, Seoul, Republic of Korea	
System Programming (CSI 3107)	Fall, 2019
Teaching Assistant—Yonsei University, Seoul, Republic of Korea	
Operating Systems (CSI3101)	

Teaching Assistant—Yonsei University, Seoul, Republic of Korea

Spring, 2019

System Programming (CSI 3107)

Teaching Assistant—Yonsei University, Seoul, Republic of Korea

Fall, 2018

Operating Systems (CSI3101)

Teaching Assistant—Yonsei University, Seoul, Republic of Korea

Spring, 2018

AWARDS AND HONORS

Ph.D. Fellowship

National Research Foundation of Korea (NRF), Republic of Korea

Sep. 2024 – Aug. 2025

Honors

Department of Computer Science, Yonsei University, Seoul, Republic of Korea

Fall, 2017

Honors

Department of Computer Science, Yonsei University, Seoul, Republic of Korea

Spring, 2017

Honors

Department of Computer Science, Yonsei University, Seoul, Republic of Korea

Fall, 2014

Honors

Department of Computer Science, Yonsei University, Seoul, Republic of Korea

Spring, 2014

TECHNICAL SKILLS

Language

- Korean (Native)
- English

Programming Skills

- Machine learning frameworks
 - PyTorch, TensorFlow, TensorFlow Lite, TensorFlow.js
- Android applications
- Operating systems
 - Android kernel, Android framework
 - ChibiOS/RT microkernel
- Web programming
 - Web applications with Node.js, Flask, etc.
 - Web extensions