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RESEARCH INTERESTS

Mobile immersive computing

Immersive videos, such as omnidirectional and volumetric videos, can provide interactive and engaging experiences on mobile devices, but their large data sizes and computational demands pose significant technical challenges. I have explored techniques to maximize video quality under time and resource constraints, such as adaptive on-device super-resolution for live 360-degree videos [c6].

On-device artificial intelligence

As mobile applications increasingly employ deep neural networks (DNNs), efficient and accurate execution on resource-constrained mobile devices has become critical. My research focuses on enabling such efficiency across various DNN tasks on mobile platforms, including vision foundation models for AR [c8], super-resolution for omnidirectional video streaming [c6], and real-time gaze tracking [c3].

Energy-aware mobile systems

Reducing energy consumption has consistently been a crucial concern for mobile devices. I have researched energy optimization for native [c1], web [c2], and game applications [j1] on smartphones. I am also interested in energy-efficient on-device AI techniques and AI-based energy optimization strategies.

EXPERIENCES

Postdoctoral Researcher

Sep. 2025 (*Expected*) –

Virginia Tech, VA, USA

Supervisors:

- Prof. Lingjia Liu (Department of Electrical and Computer Engineering)
- Prof. Bo Ji (Department of Computer Science)

EDUCATION

Ph.D. in Computer Science and Engineering

Mar. 2018 – Aug. 2025 (*Expected*)

Yonsei University, Seoul, Republic of Korea

- Advisor: Prof. Hojung Cha (Mobile Embedded Systems Lab.)
- Thesis: Providing Resource-Optimized User Experiences in Networked Mobile Systems

B.S in Computer Science and Engineering

Mar. 2014 – Feb. 2018

Yonsei University, Seoul, Republic of Korea

Conference Papers

- [c8] “ARIA: Optimizing Vision Foundation Model Inference on Heterogeneous Mobile Processors for Augmented Reality”
Chanyoung Jung*, Jeho Lee*, Gunjoong Kim, Jiwon Kim, [Seonghoon Park](#), and Hojung Cha
The 23rd Annual International Conference on Mobile Systems, Applications and Services ([MobiSys '25](#))
June 23–27, 2025. Anaheim, California, US. ACM. (Acceptance rate: 18.0%)
- [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. (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. (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. (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. (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. (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. (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. (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.

Under Review/Revision

[u8] “Anonymized Paper (Mobile immersive computing, Energy efficiency)”

[First author](#)

Under Review (Conference)

[u7] “Anonymized Paper (Energy efficiency)”

[First author](#)

Under Review (Conference)

[u6] “Anonymized Paper (Mobile immersive computing)”

[First author](#)

Under Review (Conference)

[u5] “Anonymized Paper (Mobile immersive computing)”

[Co-first author](#)

Under Review (Conference)

[u4] “Anonymized Paper”

Co-author

Under Revision

[u3] “Anonymized Paper (On-device AI)”

Co-author

Under Revision (Conference)

[u2] “Duration-Aware Sound Event Detection on Ultra-Low-Power Sensor Devices”

[Seonghoon Park](#), Junick Ahn, Daeyong Kim, and Hojung Cha

Under Review (Journal)

[u1] “MAUI: Enhancing Assistive Web Interaction through GUI Abstraction”

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

Under Review (Journal)

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
National Research Foundation of Korea (NRF), Republic of Korea *Sep. 2024 – Present*

Development of On-device DNN Inference System for Real-time 3D Perception with Mobile 360-degree Camera
National Research Foundation of Korea (NRF), Republic of Korea *May. 2024 – Present*

Development of High-Assurance (\geq EAL6) Secure Microkernel
IITP, Republic of Korea *Apr. 2018 – Present*

Task Relation Graph Prediction based on RNN
Samsung Electronics, Republic of Korea *Mar. 2023 – Feb. 2024*

Development of Energy Management Techniques for Batteryless IoT System
National Research Foundation of Korea (NRF), Republic of Korea *Mar. 2019 – Feb. 2022*

Highly Flexible Device Profiling and Analysis System for Web Experiences Measurement
National Research Foundation of Korea (NRF), Republic of Korea *Nov. 2017 – Dec. 2020*

System Software for Mobile Device Power Management to Improve Available Time by 30%
Samsung Science & Technology Foundation, Samsung Electronics, Republic of Korea *Jan. 2017 – Aug. 2018*

ACADEMIC SERVICES

Peer Reviewer

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

TEACHING EXPERIENCES

System Programming (CSI 3107)
Teaching Assistant—Yonsei University, Seoul, Republic of Korea *Fall 2024, Fall 2020, Fall 2019, Fall 2018*

Operating Systems (CSI3101)
Teaching Assistant—Yonsei University, Seoul, Republic of Korea *Spring 2020, Spring 2019, 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 *2017 Fall, 2017 Spring, 2014 Fall, 2014 Spring*

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