

# Park, Seonghoon

Ph.D. Candidate, Mobile Embedded System Lab., Department of Computer Science, Yonsei University  
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## RESEARCH INTERESTS

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### 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.

## EDUCATION

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**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)

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\* Co-primary authors

### 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](#))  
To *Apper*. 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

- [u9] “Anonymized Paper (Mobile immersive computing)”  
Co-first author  
Under Review
- [u8] “Anonymized Paper (Mobile immersive computing, Energy efficiency)”  
First author  
Under Review
- [u7] “Anonymized Paper (Energy efficiency)”  
First author  
Under Review
- [u6] “Anonymized Paper (Mobile immersive computing)”  
First author  
Under Review
- [u5] “Anonymized Paper (On-device AI, Energy efficiency)”  
First author  
Under Revision
- [u4] “Anonymized Paper (On-device AI)”  
Co-author  
Under Revision
- [u3] “Anonymized Paper (Mobile immersive computing)”  
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

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- 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

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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

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### Peer Reviewer

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

## TEACHING EXPERIENCES

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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

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### 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

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### 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