

# Park, Seonghoon

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## RESEARCH INTERESTS

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### Immersive mobile computing

I have been conducting research on techniques to address the challenges of delivering and processing immersive videos on mobile devices, such as large data sizes and computational overhead. In particular, I have worked on adaptive on-device super-resolution for mobile 360-degree video live streaming [c6], aiming to enhance video quality within time and resource constraints.

### On-device artificial intelligence

As mobile applications increasingly rely on deep neural network (DNN) models, efficient and accurate model execution on resource-constrained mobile devices has become critical. My research includes adaptive super-resolution techniques using multi-exit neural networks and neural architecture search (NAS) [c6], as well as real-time gaze tracking on smartphones [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. Additionally, I am 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

### Conference Papers

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

- [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

[u10] “Anonymized Paper (Immersive mobile computing)”

Co-first author

Under Review

[u9] “Anonymized Paper (Immersive mobile computing, Energy efficiency)”

First author

Under Review

[u8] “Anonymized Paper (Energy efficiency)”

First author

Under Review

[u7] “Anonymized Paper (On-device AI, Immersive mobile computing)”

First author

Under Review

[u6] “Anonymized Paper (On-device AI, Energy efficiency)”

First author

Under Revision

[u5] “Anonymized Paper (On-device AI)”

Co-author

Under Review

[u4] “Anonymized Paper (On-device AI)”

Co-author

Under Review

[u3] “Anonymized Paper (On-device AI, Immersive mobile 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

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

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### Peer Reviewer

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

## TEACHING EXPERIENCES

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System Programming (CSI 3107)

Teaching Assistant—Yonsei University, Seoul, Republic of Korea

Fall, 2024

System Programming (CSI 3107)

Teaching Assistant—Yonsei University, Seoul, Republic of Korea

Fall, 2020

Operating Systems (CSI3101)

Teaching Assistant—Yonsei University, Seoul, Republic of Korea

Spring, 2020

System Programming (CSI 3107)

Teaching Assistant—Yonsei University, Seoul, Republic of Korea

Fall, 2019

### 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