Park, Seonghoon

Ph.D. Candidate, Mobile Embedded Systems Lab., Department of Computer Science, Yonsei University

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Research Interests

Cross-device computing

Users today own multiple computing devices, so cross-device computing between personal devices has drawn much attention. In general, techniques for cross-device computing pose a platform dependency problem. I have conducted research that addresses the dependency problem by exploiting the meta-platform characteristics of web applications.

On-device machine learning

With the increasing popularity of mobile applications employing DNN models, the techniques for efficiently and accurately running the models on mobile devices become important. Specifically, I have researched super-resolution for mobile 360-degree video live streaming and runtime gaze tracking on mobile devices.

Energy-aware mobile systems

Reducing energy consumption has long been a critical issue for mobile devices. I have participated in research on energy optimization for native, web, and game applications on mobile devices. I am also interested in energy-aware on-device machine learning and machine learning-based energy optimization.

Education

Yonsei University, Seoul, Republic of Korea Mar. 2018 – Present
Ph.D. Candidate in Computer Science
Mobile Embedded Systems Lab., Advised by Prof. Hojung Cha

Yonsei University, Seoul, Republic of Korea Mar. 2014 – Feb. 2018
B.S in Computer Science

Conference Papers (Peer-Reviewed)

NRF list denotes the top CS conference list from National Research Foundation of Korea.
* indicates co-primary authors.

[1] **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)*
To Appear (NRF list IF: 4; Acceptance rate: 19.6%)

[2] **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 list IF: 3; Acceptance rate: 20.7%)*

[3] **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 list IF: 4; Acceptance rate: 19.2%)*

[4] **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 list IF: 4; Acceptance rate: 19.7%)*

[5] **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 list IF: 3; Acceptance rate: 10.6% for full papers)*

[6] **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 list IF:4; Acceptance rate: 19.0%)*

[7] **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 list IF:3; Acceptance rate: 22.7%)*

JOURNAL PAPERS (PEER-REVIEWED)

[1] **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)*

ORAL PRESENTATIONS

[1] **OmniLive: Super-Resolution Enhanced 360° Video Live Streaming for Mobile Devices**
MobiSys '23, June 21, 2023, Helsinki, Finland

[2] **Crow API: Cross-device I/O Sharing in Web Applications**
INFOCOM '23, May 19, 2023, New York, NY, USA

[3] **WebMythBusters: An In-depth Study of Mobile Web Experience** *(Invited)*
Top Conference Session at Korea Software Congress 2021 *(KSC 2021)*
December 21, 2021, Pyeongchang, Republic of Korea

[4] **WebMythBusters: An In-depth Study of Mobile Web Experience**
INFOCOM '21, May 13, 2023, Virtual Conference

RESEARCH PROJECTS

Task relation graph prediction based on RNN Mar. 2023 – Present
Samsung Electronics

Development of High-Assurance (≥EAL6) Secure Microkernel Apr. 2018 – Present
Institute for Information &communications Technology Promotion (IITP), Ministry of Science and ICT, Republic of Korea

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

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

TEACHING EXPERIENCES

Teaching Assistant at Department of Computer Science, Yonsei University Fall semester, 2020
System Programming (CSI3107)

Teaching Assistant at Department of Computer Science, Yonsei University Spring semester, 2020
Operating Systems (CSI3101)

Teaching Assistant at Department of Computer Science, Yonsei University Fall semester, 2019
System Programming (CSI3107)

Teaching Assistant at Department of Computer Science, Yonsei University Spring semester, 2019
Operating Systems (CSI3101)

Teaching Assistant at Department of Computer Science, Yonsei University Fall semester, 2018
System Programming (CSI3107)

Teaching Assistant at Department of Computer Science, Yonsei University Spring semester, 2018
Operating Systems (CSI3101)

After School Teacher & Mentor at Hanyang University High School Fall semester, 2015
Android Programming for Hanyang Application Developers (HAD)

After School Teacher & Mentor at Hanyang University High School Spring semester, 2015
Android Programming for Hanyang Application Developers (HAD)

ACADEMIC SERVICES

Peer Reviewer

- IEEE Transactions on Mobile Computing (TMC)

AWARDS AND HONORS

Honors, Department of Computer Science, Yonsei University Fall semester, 2017

Honors, Department of Computer Science, Yonsei University Spring semester, 2017

Honors, Department of Computer Science, Yonsei University Fall semester, 2014

Honors, Department of Computer Science, Yonsei University Spring semester, 2014

TECHNICAL SKILLS

Language

- Korean (Native)
- English
  - TOEIC: 960/990

Programming Skills

- Programming languages
  - C, C++, Python, JavaScript, Java
  - A little experience with Haskell, Kotlin, and Rust
- Machine learning frameworks
  - PyTorch, TensorFlow, TensorFlow Lite, TensorFlow.js
- Web frameworks and web applications
  - Node.js, Flask, Web extensions
- Android applications
- OS kernels (Android kernel, ChibiOS/RT microkernel)