Chang Min Park

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INTERESTS

Mobile Systems, UI Automation, Platform API Virtualization, and Automated testing system.

TECHNICAL SKILLS

Android(System, Platform API, and App Devleopment), Soot API, Firebase Realtime Database, Shell, Java, Python, C++, and Linux OS

EDUCATION

University at Buffalo, The State University of New York

- Ph.D. in Computer Science and Engineering — Aug '17 – Present
  - Advisor: Prof. Steven Y. Ko
  - Focus: Mobile computing and applications.
- B.S. in Computer Science — Aug '11 – May '17
  - Magna Cum Laude
  - Jun '13 – Mar '15: Served Military Service in Republic of Korea

Yonsei University, Republic of Korea

- SUNY Study Abroad Program — Summer '12

Relevant Courses: Advanced Computer System, Advanced Programming Language, Operating System, Realtime Embed System, Data Structure, Modern Network Concepts, Data Intensive Computing, and Computer Security.

RESEARCH OVERVIEW

Currently, I'm working on two projects below.

- **Immix** garbage collection is powerful and well-known, but Dart VM, that Google's new framework Flutter uses, has generation garbage collection. My goal is implementing the Immix garbage collection in Dart VM and anlyzing its performance.
- **AR Authentication on Mobile** can be solved by using TrustZone feature that has two separate environments, normal and secure. Depending on user's authentication level, a mobile device should be able to authenticate augmented objects. I'm currently working on implementing authentication of AR using TrustZone enabled board.

Over the course from my undergraduate to Ph.D., I have focused on mobile systems and automation.

- **Gesto** is a system that enables task automation for Android apps using gestures and voice commands. Using this system, a user can record a UI action sequence for an app, choose a gesture or a voice command to activate the UI action sequence, and later trigger the UI action sequence by the corresponding gesture/voice command.
- **Reptor** enables open innovation in mobile platforms. Our technique allows third-party developers to modify, instrument, or extend platform API calls and deploy their modifications seamlessly. The uniqueness of our technique is that it enables modifications completely at the app layer without requiring any platform-level changes.
- **Mimic** is an automated UI compatibility testing system for Android apps. Mimic is designed specifically for comparing the UI behavior of an app across different devices, different Android versions, and different app versions.

RESEARCH EXPERIENCE

University at Buffalo, The State University of New York

- Ph.D. Research Assistant, RMS Lab — Aug '18 – Present
  - Project: Mapping UI Events to Gestures and Voice, and Automated Testing System.
- Undergraduate Research Assistant, RMS Lab — May '16 – Aug '17
  - Project: Android Platform API Virtualization

TEACHING EXPERIENCE

University at Buffalo, The State University of New York

- CSE421/521: Operating Systems — Aug '17 – May '18
  - Design and Implementation of Operating Systems
  - Project: Pintos Programming

PUBLICATIONS

CONFERENCES

[1] Chang Min Park, Taeyeon Ki, Ali Ben Ali, Nikhil Sunil Pawar, Karthik Dantu, Steven Y. Ko, and Lukasz Ziarek, "Gesto: Mapping UI Events to Gestures and Voice" forthcoming in *Proceedings of 11th ACM SIGCHI Symposium on Engineering Interactive Computing Systems (EICS) Jun 2019.*

[2] Taeyeon Ki, Alexander Simeonov, Bhavika Pravin Jain, Chang Min Park, Keshav Sharma, Karthik Dantu, Stevn Y. Ko, and Lukasz Ziarek, "Reptor: Enabling API Virtualization on Android for Platform Openness" in *Proceedings of the 15th Annual International Conference on Mobile Systems (MobiSys) Jun 2017*.

[3] Taeyeon Ki, Chang Min Park, Karthik Dantu, Stevn Y. Ko, and Lukasz Ziarek, "Mimic: UI Compatibility Testing System for Android Apps" submitted in *Proceedings of the 41th International Conference on Software Engineering (ICSE) . 2019*

JOURNALS

[1] Chang Min Park, Taeyeon Ki, Ali Ben Ali, Nikhil Sunil Pawar, Karthik Dantu, Steven Y. Ko, and Lukasz Ziarek, "Gesto: Mapping UI Events to Gestures and Voice" forthcoming in *Journal Proceedings of the ACM on Human-Computer Interaction - EICS 2019.*

[2] Taeyeon Ki, Alexander Simeonov, Chang Min Park, Karthik Dantu, Stevn Y. Ko, and Lukasz Ziarek, "Reptor: Enabling API Virtualization on Android for Platform Openness" submitted in *ACM Transactions on Software Engineering and Methodology (TOSEM) 2018*.

POSTERS AND DEMOS

POSTERS

[1] Chang Min Park, Taeyeon Ki, Ali Ben Ali, Karthik Dantu, Steven Y. Ko, and Lukasz Ziarek, "Enabling Dynamic Gesture Mapping with UI Events" in *UB Graduate Research Conference and Alumni Symposium Sep 2017.*

DEMOS

[1] Chang Min Park, Taeyeon Ki, Karthik Dantu, Steven Y. Ko, and Lukasz Ziarek, "Demo: Enabling Dynamic Gesture Mapping with UI Events" in *Proceedings of the 15th Annual International Conference on Mobile Systems (MobiSys) Jun 2017*.

[2] Taeyeon Ki, Alexander Simeonov, Chang Min Park, Karthik Dantu, Steven Y. Ko, and Lukasz Ziarek, "Demo: Reptor: Enabling API Virtualization on Android for Platform Openness" in *Proceedings of the 15th Annual International Conference on Mobile Systems (MobiSys) Jun 2017*.

[3] Taeyeon Ki, Alexander Simeonov, Chang Min Park, Karthik Dantu, Steven Y. Ko, and Lukasz Ziarek, "Demo: Fully Automated UI Testing System for Large-scale Android Apps Using Multiple Devices" in *Proceedings of the 15th Annual International Conference on Mobile Systems (MobiSys) Jun 2017*.

HONORS & AWARDS

- Dean's Fellowship Award along with a Full Financial Aid — 2017 – 2018
  For exceptional graduate students who have potential for an outstanding graduate career.
- CSE Undergraduate Award for Research, University at Buffalo — May 2017
  Awarded to one graduating senior who has done exceptional research with a UB CSE faculty.
- Dean's List, University at Buffalo — 2012

ACTIVITIES

Tau Beta Pi Engineering Honor Society, University at Buffalo

- Member — 2016 – 2017