CHUNGHA SUNG

sch8906[AT]gmail[DOT]com
https://chunghasung.org

EDUCATION

University of Southern California (USC) *Aug.2017 - Dec.2020 (expected)*
Ph.D. Candidate, Computer Science
Reliable and Secure Software Lab under Dr.Chao Wang

Virginia Polytechnic Institute and State University (Virginia Tech) *Aug.2014 - Dec.2016*
Master of Science, Electrical and Compute Engineering

Sung Kyun Kwan University (SKKU) *Mar.2007 - Aug.2013*
Bachelor of Science in Engineering, Semiconductor Systems Engineering
Parallel Architecture and Programming Language Lab (PAPL) under Dr.Jae W. Lee

Gangwon Science High School *Mar.2005 - Feb.2007*
Grade skipping and early graduation (1 year)

EXPERIENCE

Microsoft Research, Redmond, USA *May.2019 - Aug.2019*
Research Intern
- Mentors: Dr.Shuvendu Lahiri and Dr.Mark Marron
- Developed an automatic merge-conflict resolution framework in Microsoft Edge development process

MediaTek Inc., MA, USA *May.2018 - Aug.2018*
Internship in Compiler Interface team
- Mentor: Dr.Henry Cox
- Developed an instruction constraints verifier with a SMT solver
- Utilized fuzzing to provide a better testing process environment

Microsoft Research, India *May.2017 - Aug.2017*
Research Intern
- Mentors: Dr. Akash Lal and Dr. Kaushik Rajan
- Extended a Scope query optimization tool to support uninterpreted functions and various combinations of columns (F#, C#, Scope query)

Google Summer of Code *May.2013 - Sep.2013*
Participant
- Mentors: Dr.Jae W. Lee and Dr.Junghoon Lee
- Contributed to publishing a graphical open-source package named “RIGHT” in R project

Ahn Lab Inc., Korea *Jul.2012 - Aug.2012*
Software Development Intern
- Changed a boot loader sequence of server for making server maintenance easier

TEACHING

Software Engineering *Fall.2019*
Teaching Assistant *USC*
- Junior course (Instructor: Dr.Chao Wang, Course number: CSCI 310)

· Graded and led Android app projects throughout the semester for designing/developing an app in software engineering aspects

Data Structures and Object Oriented Design *Spring.2019*
Teaching Assistant *USC*
· Sophomore course (Instructor: Dr.Sandra Batista, Course number: CSCI 104)
· Led nine lab sessions, held office hours for eight projects, and graded two midterms and one final

Microcontroller Programming and Interfacing *Fall.2014*
Teaching Assistant *Virginia Tech*
· Sophomore course (Instructor: Dr.Jason S. Thweatt, Course number: ECE 2534)
· Managed lab sessions and graded course assignments on a microcontroller device

Digital Systems *Spring.2013*
Teaching Assistant & Course Producer *SKKU*
· Junior course (Instructor: Dr.Jae W. Lee)
· Made three ARM-core based sorting optimization projects with Verilog HDL and graded course assignments

Digital Logic Design Laboratory *Spring.2012*
Teaching Assistant & Course Producer *SKKU*
· Sophomore course (Instructor: Dr.Jae W. Lee)
· Made several course projects running on FPGA with VHDL and managed lab sessions

PUBLICATIONS

[ICSE-SEIP 2020] Towards Understanding and Fixing Upstream Merge Induced Conflicts in Divergent Forks: An Industrial Case Study
[Nominated as a best paper candidate]
Chungha Sung, Shuvendu Lahiri, Mike Kaufman, Pallavi Choudhury and Chao Wang
Proceedings of the IEEE/ACM 42nd International Conference on Software Engineering: Software Engineering in Practice, pages 172-181.

[ASE 2019] Debreach: Mitigating Compression Side Channels via Static Analysis and Transformation
Brandon Paulsen, **Chungha Sung**, Peter A.H. Peterson and Chao Wang
Proceedings of the 34th IEEE/ACM International Conference on Automated Software Engineering, pages 899-911.

[FSE 2019] Mitigating Power Side Channels during Compilation
Jingbo Wang, **Chungha Sung** and Chao Wang
Proceedings of the 27th ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering, pages 590-601.

[ASE 2018] Datalog-based Scalable Semantic Diffing of Concurrent Programs
Chungha Sung, Shuvendu Lahiri, Constantin Enea and Chao Wang
Proceedings of the 33rd ACM/IEEE International Conference on Automated Software Engineering, pages 656-666.

[ASE 2018] CANAL: A Cache Timing Analysis Framework via LLVM Transformation
Chungha Sung, Brandon Paulsen and Chao Wang
Proceedings of the 33rd ACM/IEEE International Conference on Automated Software Engineering, pages 904-907.

[ASE 2017] Modular Verification of Interrupt-driven Software
Chungha Sung, Markus Kusano, and Chao Wang

Proceedings of the 32nd IEEE/ACM International Conference on Automated Software Engineering, pages 206-216.

[FSE 2016] Static DOM Event Dependency Analysis for Testing Web Applications
Chungha Sung, Markus Kusano, Nishant Sinha and Chao Wang
Proceedings of the 2016 24th ACM SIGSOFT International Symposium on Foundations of Software Engineering, pages 447-459.

POSTERS

[ICSE 2020] Towards Understanding and Fixing Upstream Merge Induced Conflicts in Divergent Forks: An Industrial Case Study
Chungha Sung, Shuvendu Lahiri, Mike Kaufman, Pallavi Choudhury, Jessica Wolk and Chao Wang
IEEE/ACM 42nd International Conference on Software Engineering, Seoul, Korea, July 2020.

[UseR 2014] RIGHT: an HTML canvas and JavaScript-based interactive data visualization package for linked graphics
ChungHa Sung, TaeJoon Song, Jae W. Lee and Junghoon Lee
The R User Conference, UCLA, Los Angeles, California, July 2014

SERVICES

Student Helper for Organization

- CAV 2020, ATVA 2018

(External) Reviewer

- FMCAD 2020, ASE 2020, IET Software 2020, ICSE 2020, FSE 2019, ICSE 2019, SAS 2018, TSE 2018, ICSE 2017, FORM 2017, FMCAD 2017, RV 2017, ISSTA 2017, ICSE 2016, SETTA 2016, TurstSoft 2016, FMCAD 2016, ATVA 2016, ICECCS 2016, TASE 2016

AWARDS

LG Electronics industrial scholarship recipient	*May.2017*
ACM SIGSOFT travel grant for FSE	*Nov.2016*
Travel award for CAV	*July.2016*
First prize for graduation thesis and project award in SKKU	*June.2013*
Full Merit-based Awards from SKKU for Full Academic Years	*Mar.2007 - Aug.2013*
Dean's List award in SKKU	*Apr.2012*
Scholarship from Samsung Electronics	*Mar.2007 - Feb.2009*

KEYWORDS

Program Analysis, Program Languages, Software Testing, Software Verification, Software Reliability, Software Maintenance, Automatic Repair, Concurrent programs, Multi-threaded programs, Web applications, embedded systems, C/C++, Python, Java, JavaScript, C#, F#, LLVM, Clang, Compiler front-end, SMT solver, Datalog