Yahui Sun

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EDUCATION

Texas A&M University, College Station, TX — 2018 - 2020 Dec (Expected)
M.S. in Computer Science. 4.0/4.0. — Advisor: Prof. Jeff Huang

Wuhan University, Wuhan, China — 2014 - 2018
B.Sc. in Computer Science. 3.7/4.0.

INTERNSHIP EXPERIENCE

▶ **Microsoft**, Research Intern, Azure Sphere Team, *Redmond, WA* — June 2020 - Sep 2020

Developed and evaluated the compiler of Checked C, an open-source system-level programming language that extends C with *memory safety* guarantees. Implemented in LLVM and Clang (C++).

- Developed the static analysis to find invalid pointer bounds and improved compiler error messages. This allows more buffer overruns to be detected *at compile time* rather than runtime.
- Evaluated the usability of Checked C on musl-libc, a widely used Linux C runtime, by porting the network library to Checked C. Converted 2K LOC. Found 4 compiler bugs.
- Worked with UMD to test their porting tool that automatically converts C code to Checked C.

▶ **RusselCloud**, Software Engineering Intern, *Shanghai, China* — Apr 2018 – June 2018

Developed the frontend (VueJS) and backend (Django, Kubernetes, AWS) for RussellCloud, a deep learning platform for training and deploying deep learning models in the cloud.

▶ **Eyepetizer**, Software Engineering Intern, *Beijing, China* — Dec 2017 – Apr 2018

Developed web services (webpy, redis, Docker) for automatically generating and monitoring customizable WeChat mini-apps.

▶ **Baidu**, Software Engineering Intern, Search Recommendation Team, *Beijing, China* — July 2017 – Sep 2017

Developed interactive gadgets embedded in Baidu Search pages in JS & PHP to engage Baidu search users without leaving the search page.

- Developed interactive Search Page gadgets with millions of daily clicks.
- Improved the log parsing and aggregation infrastructure on Hadoop for the Search Recommendation team.

RESEARCH EXPERIENCE

▶ **Parasol Lab**, Research Assistant, Texas A&M University, *College Station, TX* — Aug 2018 – Present

Focusing on automatic detection of concurrency and security bugs in Go, C/C++ programs.

- **Detecting use-after-free in browsers**. Designed and implemented a dynamic tool to detect concurrent use-after-free bugs in C/C++ programs. The tool is more effective than ThreadSanitizer on real-world benchmarks including Google Chromium, at a comparable performance cost.
- **Race condition detection in Go**. Designed and implemented a dynamic tool to find high-level race conditions in Go programs. Found 5 new race conditions in industry-sized codebases such as Kubernetes, CockroachDB. 3 races in Kubernetes have been confirmed and fixed by developers.
- **Automatic race and deadlock detection in Go**. Currently leading a team of 5 students to develop an automatic tool for detecting race and deadlock in Go programs.

SPECIALTIES

Languages: C/C++, Go, Python, Javascript, Java, Bash, Rust, AWK, Ruby, PHP, Lisp.
Tools and Frameworks: Git, Docker, LLVM, Clang, CMake, Z3, libFuzzer, CBMC.
Web Development: VueJS, AngularJS, Webpy, Postgres, D3, Webpack, Redis, Java Spring, AWS.

AWARDS & PROFESSIONAL SERVICE

Travel Grant for ACM POPL *Programming Language Mentoring Workshop* — 2020
Artifact Evaluation Committee Member for ACM PLDI Conference — 2019
Conference Reviewers: OOPSLA 2020, PPoPP 2020, ICSE 2019-2020, FSE 2019-2020, PLDI 2019