Boming Zhang

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EXPERIENCE

Project Contributor

Jul. 2024 - Present

The University of Georgia, advisor Prof. Le Guan

Athens, GA

• Developing an **LLVM pass plugin** for advanced fuzz testing on communication protocols (USB, Bluetooth) for ARM32 embedded devices.

Software Engineer (Intern, Full-Time)

Feb. 2022 - Jul. 2022, Nov. 2022 - Jul. 2023

Naive Systems, advisor Xiao Jia, Kevin Sun

Shanghai, China

- Developed a static code analysis product using LLVM, focusing on system-level programming specifications.
- Implemented checkers utilizing syntax trees, lexical analysis, and symbolic execution for code analysis.
- Contributed to LLVM, submitting a bug report that reduced false-negatives by 10% in translation units.
- Optimized multi-process unit testing, achieving a 25x speedup in test execution time.

Full Stack Development Engineer Intern

Jun. 2021 - Feb. 2022

Shanghai Zhimian Weiye Technology, advisor Prof. Mian Li, Dr. Ruixiang Zheng

Shanghai, China

- Start from scratch, built a high perf. firefighting platform (Web + App) based on IoT data. Used FAHP algorithm to detect potential hazards and report 95% less false fire alarms in milliseconds response time.
- Scaled the system to handle data from over 7 million IoT devices, while keeping high availability.
- Deployed the system on the fire brigade of Shanghai Province.

Teaching Assistant (Intro to OS, Intro to Computers and Programming)

Fall 2020, Fall 2021

Shanghai, China

- $Shanghai\ Jiao\ Tong\ University,\ advisor\ Prof.\ Manuel\ Charlemagne$
 - Maintain online judge test cases and multiple servers for up to 150 students as part of the FOCS student system.

• Conducted lab sessions on operating systems concepts, including process management, memory allocation.

PROJECTS

Joint Online Judge | Python3, Golang, PostgreSQL, Redis, Docker, CGroups, React.js

Mar. 2021 - Present

- Led a team of 6 undergraduate students to develop and maintain a distributed online judge system. Provide stable, secure, fast, well-documented online judge service with various integrations for over 1000 students.
- Built secure sandbox using Linux namespaces and containerization for process isolation.
- Established development workflows, coordinated feature implementations, and mentored team members on system design and best practices of software engineering.

AList (Github 42.3k stars) | Golang, Go Gin, GORM, Solid.js, WebDAV, SMB, S3, FTP Nov. 2022 - May. 2023

- 3rd main contributor, focusing on implementing and optimizing storage drivers for various protocols.
- Designed and implemented a high-performance search feature, handling large-scale virtual file systems efficiently.
- Analyzed low-level protocols and network packets to improve system performance and security.

FOCS student system | Python3, Golang, Node.js, Docker, Nginx

Nov. 2018 - Present

- Maintained a comprehensive academic platform including online judge, Git service with CI platform for **over 300 students from 10 courses each term** to build, test, and grade their codes.
- Improving Git service and online judge integration with CI platform and scripts for 4x faster submissions.
- Developed CLI tools for system automation, garnering 200+ monthly downloads on PyPI.

TECHNICAL SKILLS

Languages: Python3, Golang, C, (moderm) C++, LLVM IR, Javascript, Assembly, Shell, SQL

Systems & Tools: Linux, Git, Docker, LLVM, GDB, Valgrind, Wireshark

Databases & Services: PostgreSQL, MongoDB, Redis, Nginx, GitHub Actions, Drone.io

EDUCATION

The University of Georgia (School of Computing)

Aug. 2023 - Present

MSc in Computer Science (GPA 3.9/4.0)

Athens, GA

• Relevant Coursework: Software Engineering (A), Privacy-Preserving Data Analysis (A), Data Mining (A)

Shanghai Jiao Tong University (UM-SJTU Joint Institute, ABET acred.) Sept. 2018 - Aug. 2022

BEng in Electrical and Computer Engineering (minor in Computer Science, GPA 4.0/4.0) Shanghai, China

- Relevant Coursework: Operating Systems (A+), Computer Architecture (A), Data Structures and Algorithms (A)
- 2020-2021 Undergraduate Excellent Scholarship