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**, manipulating IR, for advanced fuzz testing on embedded device protocols.

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 100+ checkers utilizing **syntax trees, lexical analysis, 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 during CI, 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 performance 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 7M+ IoT devices** with 99.99% uptime and 10ms response time.
- Deployed the system on **the fire brigade of Shanghai Province**, protecting 20M+ residents.

Teaching Assistant (Intro to OS, Intro to Computers and Programming) Fall 2020, Fall 2021
Shanghai Jiao Tong University, advisor Prof. Manuel Charlemagne *Shanghai, China*
- Conducted weekly lab sessions on operating systems concepts, including process management, memory allocation.
- Resolved 200+ technical issues through office hours and online support channels.

PROJECTS

Joint Online Judge | *Python3, Golang, PostgreSQL, Redis, Grafana, Docker, React.js* Mar. 2021 - Present
- **Led a team of 10+ students** to develop and maintain **a distributed online judge system** with analytic tools. Provide online judge service for **1k+ students** and **10k+ submissions monthly**.
- Built secure sandbox using **Linux namespaces and containerization** for process isolation.
- Established workflows, coordinated feature implementations, and mentored team members on system design.

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, Github Actions* Nov. 2018 - Present
- Managed an academic platform with online judge, Git service, and CI for **2k+ students across 10 courses** to build, test, and grade code, while architecting and maintaining critical infrastructure.
- Improved 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.
- Improved system uptime to 99.99% by implementing automated health checks and failover mechanisms.

TECHNICAL SKILLS

Languages: Python3, Golang, C, (modern) C++, LLVM IR, JavaScript, Assembly, Shell, SQL
Systems & Tools: Linux, Git, Docker, LLVM, GDB, Valgrind, Wireshark, Ghidra, GNU Make, CMake, Linux perf
Frameworks & Libraries: FastAPI, Django, SQLAlchemy, Go Gin, GORM, React.js, Svelte, Protocol Buffers
Databases & Services: PostgreSQL, MongoDB, Redis, Nginx, GitHub Actions, Grafana, Drone.io, Jenkins

EDUCATION

The University of Georgia (School of Computing) Aug. 2023 - May. 2025 (Expected)
*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**