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, 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 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 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 6 undergraduate students** to develop and maintain a distributed online judge system based on Gitea Actions. Provide online judge service for **1000+ students** and **10000+ 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*   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.
- 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, perf
Frameworks & Libraries: Django, FastAPI, SQLAlchemy, Go Gin, Go Fiber, GORM, React.js, Protocol Buffers
Databases & Services: PostgreSQL, MongoDB, Redis, Nginx, GitHub Actions, Drone.io, Jenkins

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**