Boming Zhang

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EXPERIENCE

Research Assistant   Jul. 2024 - Present
The University of Georgia, advisor Prof. Le Guan   *Athens, GA*
- Developed and implemented an **LLVM pass plugin** and related tools to conduct advanced fuzz testing on communication protocols such as USB and 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*
- Develop a static code analysis product. Implement checkers and test cases for programming specifications based on **LLVM, and CppCheck**, utilizing **syntax trees, lexical analysis, and symbolic execution**.
- Submit bug report with analysis on llvm-project, which **reduces false-negative on 10% translation units**.
- Build multi-process unit test scripts. Boost the test time to **25x times faster** and detect 20+ false positive cases.
- Develop a VSCode extension to read protobuf results. Implement the i18n feature with Protobuf.

Research & Development Engineer Intern   Jun. 2021 - Feb. 2022
Shanghai Zhimian Weiye Technology, advisor Prof. Mian Li, Dr. Ruixiang Zheng   *Shanghai, China*
- Start from scratch, build a high perf. firefighting platform (Web + App) based on IoT data. Use FAHP algorithm to detect potential hazards and report **95% less false fire alarms in milliseconds response time**.
- Deploy the system on **the fire brigade of Shanghai Province**, connected with **over 7 million IoT devices**.
- Technical leader of 2 Undergraduate Innovation Practice Programs, developing full-stack web applications.

Teaching Assistant (Intro to OS, Intro to Comp.)   Sep. 2020 - Dec. 2020, Sep. 2021 - Dec. 2021
Shanghai Jiao Tong University, advisor Prof. Manuel Charlemagne   *Shanghai, China*
- Host **exam review sessions** and **weekly lab sessions** for at most 100 students. Grade labs and homework.
- Maintain online judge test cases and multiple servers for up to 150 students as part of the FOCS student system.

PROJECTS

AList (Github 30.3k stars) | *Golang, Go Gin, GORM, Solid.js, WebDAV, SMB, S3, FTP*   Nov. 2022 - May. 2023
- **3rd main contributor** of the project, which provides unified API and WebDAV of multiple storage protocols and cloud storage services to let the users manage their files and share resources. Implement multiple storage drivers.
- Design and implement the search feature, which is **the most highly requested feature** by users for years.

JOJ 2.0 | *Python3, Golang, PostgreSQL, Redis, LakeFS, Docker, CGroups, React.js*   Mar. 2021 - Aug. 2022
- Develop a distributed online judge system from scratch for various courses. Provide stable, secure, fast, well-documented online judge service with various integrations for **over 1000 students in the institute**.
- Build the judger's sandbox with **namespace and containerization** for isolation and accurate measurement.

FOCS student system & related tools | *Python3, Golang, Node.js, Docker, Nginx, Certbot*   Nov. 2018 - Present
- Develop new features and tools. Maintain the online service and software, including online judge, self-service Git, and CI platform for **over 300 students from 10 courses each term** to build, test, and grade their codes.
- Publish packages and scripts to provide CLI interface for automation. Have **200+ PyPI downloads per month**.
- Integrate Git service and online judge using CI platform, improve the submission speed by 4x times faster.

TECHNICAL SKILLS

Languages: Python3, Golang, (modern) C++, C (Linux), Shell, SQL, MQL, Typescript, LaTeX
Softwares: Git, Docker, Podman, PostgreSQL, MongoDB, Redis, Nginx, GitHub Actions, Drone.io, VSCode, Vim
Frameworks: FastAPI, SQLAlchemy, Go Gin, Go Fiber, GORM, Django, React.js, PyTest, NumPy, Electron

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: Intro to OS (A+), Methods and Tools for Big Data (A+), Data Structures and Algo. (A)
- **2020-2021 Undergraduate Excellent Scholarship**