Jonathan Yuanheng Zhao

📞 872-297-4332 | ✉ jonathan.zhaoyh@gmail.com | 🔗 yh-zhao | 🏠 Menlo Park, CA

Education

University of Chicago	*Chicago, IL*
M.S. IN COMPUTER SCIENCE	*Sep 2021 - Jun 2022*
University of Washington	*Seattle, WA*
B.S. IN APPLIED & COMPUTATIONAL MATHEMATICAL SCIENCE	*Sep 2017 - Jun 2021*
Honors: Annual Dean's List (2017 - 2020)	

Experience

SambaNova Systems Inc *Jul 2022 - Mar 2023*
Software Engineer (AI Compiler, MLIR, Python, C++) *Palo Alto, CA*
• Interacted and worked with compiler teams at varying layers on the intermediate representations (IRs) using MLIR/LLVM, to ensure reliable dataflow of a custom ML compiler for compiling PyTorch/TensorFlow models running on customized chips.
• Migrated an intermediate compilation process towards an in-memory code generation, enhancing the performance by about 35% for the stage with strengthened security.
• Improved and optimized analysis and transform passes used for calculating data layout constraints and modifying IRs, facilitating the compilation success of about 10 various models like GPT-3 and BERT.
• Added legalization and unit tests into various stages, enhancing stability and robustness of the compiler.

University of Washington *Oct 2019 - Oct 2020*
Research Assistant, Make4all Lab (Data Collection & Data Analysis, Python) *Seattle, WA*
• Analyzed survey and biometric data collected for the UW EXP Study, a student health and wellness study.
• Developed codebooks to accurately describe data collected in various phases from 2018-2020 for use in the study, supporting with data analysis and interpretation and drawing meaningful insights from the data.

Shantou University *Sep 2019*
Research Assistant, Guangdong Digital Signal and Image Processing Lab (Genetic Programming) *Guangdong, CHINA*
• Revised and optimized a control parameters estimation process which regulates swarm aggregation behaviors through Genetic Programming (Python DEAP), which significantly improved the performance of the simulation by 40%.

Shanghai Shudan Information Technology *Jun - Aug 2019*
Python Developer Intern (Web Scraping, Flask, Redis) *Shanghai, CHINA*
• Designed and developed web crawlers using Selenium, Beautiful Soup, and XPath, which efficiently extracted and validated over 5000 data items daily from scraping various dynamically rendered websites for supporting our social sentiment analysis.
• Developed features bypassing anti-scraping technologies (e.g., dynamic user agents, proxies) for a Scrapy-based distributed web crawler. Successfully increased the number of websites it's able to gather data from about 150 to over 200.
• Implemented a dynamic proxy pool using Flask and Redis and connected it to one of the Scrapy downloader middleware.
• Improved unit test set coverage from 45% to 85% in a codebase of over 18000 lines of production code.

Personal Projects

Genomics Analysis Service (AWS, DynamoDB, Python) *Mar - May 2022*
• Built a fully functional and scalable SaaS-based application for genomics data analysis by implementing both front and back ends, and leveraging AWS features including EC2, object storage (S3, Glacier), message queues (SQS with SNS), elastic load balancer (ELB), and email service (SES), persistence of application achieved via DynamoDB.

GoLite Compiler (Golang) GitHub *Oct - Dec 2021*
• Implemented a multi-pass compiler for a subset of Golang that we called GoLite. Co-authored scanner, recursive-descent parser, semantic analyzer, intermediate code (ILOC) generator, and code generation (Armv8) from scratch.

Husky Map (JAVA, React, Spark) *Nov 2019*
• Implemented the backend for a campus map of UW's Seattle campus for searching, finding, and planning routes.

Skills

Languages: C++, Python, Java, Go, SQL, TypeScript
Skills: MLIR/LLVM, Angular, Docker, FastAPI, Flask, Git, jQuery, Redis, Selenium, Sklearn, Spring Boot, TensorFlow, ZeroMQ