Annie Hu

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Education

The University of Texas at Austin, GPA 4.0 Aug 2023 - May 2026
Bachelor of Science in Computer Science, Turing Scholars Honors Program
Coursework: Graduate Prediction Mechanisms in Computer Architecture, Honors Operating Systems (Planned Fall 2024), Honors Computer Architecture, Honors Data Structures, Honors Discrete Math, Symbolic Programming (Planned Fall 2024)

Experience

Jane Street, Insight Software Engineering Fellow – New York, NY Aug 2024

- Selected as 1 of 24 students to learn OCaml and develop a simulated stock exchange trading bot in Python

Roblox, Software Engineer Intern – San Mateo, CA May 2024 – Aug 2024

- Built a full-stack web tool to investigate violative 3D content, aggregating data from multiple backend sources into a centralized display. Took end-to-end ownership of design and implementation
- Conducted interviews with stakeholders to gather product requirements and created a technical specifications document
- Developed a service providing APIs for real-time information retrieval used in frontend tools and backfills, focusing on fast onboarding, maintainability, and scalability for future contributors
- Designed and implemented an easily extensible front-end view in React to support new data sources while supporting search, filtering, and rich media display
- **Technologies:** TypeScript, Python, React, Nomad, FastAPI, Elasticsearch, Kibana, Grafana, Docker

EquipmentShare, Software Engineer Intern – Remote June 2023 – Aug 2023

- Ported an entire tax transaction Python project involving AWS Lambdas to TypeScript/Node.js
- Applied functional programming concepts with fp-ts and io-ts to refactor tax commands in TypeScript
- Migrated infrastructure from AWS CloudFormation to AWS Cloud Development Kit (CDK), upgrading SNS topics and SQS queues to ensure FIFO order and deduplication in transaction messaging
- Verified functionality by writing Jest unit tests with mocks and by monitoring AWS CloudWatch logs
- **Technologies:** TypeScript, Node.js, AWS (Lambda, SNS, SQS, CDK, CloudWatch), Jest, fp-ts, io-ts

Personal Projects

Sieve | *C++, Python, gem5* April 2024

- Designed an innovative combination of filtering and sandboxing prefetching techniques in microcomputer architecture, achieving a performance improvement of up to 4.15% in IPC on the GAP and PARSEC benchmarks
- Implemented the first generalizable perceptron-based prefetch filter that can be applied to any underlying prefetcher, and even multiple underlying prefetchers
- Enabled underlying prefetchers to provide relevant metadata as custom feature input to the multi-perspective hashed perceptron predictor to improve the filter's decision-making ability and overall system performance

Fun Compiler | *Rust, C, ARM Assembly* April 2024

- Designed a compiler for a custom pythonic programming language (called Fun) supporting iteration, control flow, functions, anonymous functions, and pointers
- Generated ARM-assembly instructions and implemented optimizations such as constant folding and tail call recursion, reducing average runtimes for equivalent interpreted programs by over 90%

Technical Skills

Languages: Python, Java, C/C++, JavaScript, TypeScript, Rust, OCaml, SQL, x86-64/ARM Assembly
Frameworks: React, Django, PostgreSQL, Nomad, Docker, Node.js, FastAPI
Tools: Grafana, Elasticsearch, Kibana, AWS (Lambda, SNS, SQS, CDK, CloudWatch)

Activities

Turing Scholars Student Association, Executive Board Corporate Chair March 2024 – Present

- Organize community socials and coordinate with companies to host corporate recruiting events for 200+ Turing Scholars

The Ohio State University, Teaching Assistant – Columbus, OH Jan 2021 – Aug 2023

- Graded for 11 unique sections and over 400 students for 4 courses: Software Components, Software Development and Design, Low-Level Programming and Computer Organization, and Survey of Artificial Intelligence: Basic Techniques
- Supervised a team of Teaching Assistants (TAs) as Head TA: delegating grading responsibilities, creating rubrics to ensure consistent grading, and streamlining the grading process through the creation of bash scripts
- **Technologies:** Java, C, x86-64 Assembly, Bash Scripting, JUnit Testing