

# Annie Hu

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## Education

### The University of Texas at Austin

Aug 2023 - May 2026

Bachelor of Science in Computer Science, Turing Scholars Honors Program (GPA: 4.0)

**Coursework:** Graduate Prediction Mechanisms in Computer Architecture, Honors Operating Systems (Fall 2024), Honors Computer Architecture, Honors Data Structures, Honors Discrete Math, Symbolic Programming (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

## 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