Matthew Habtezgi

267-616-6874 mhabtezgi56@gmail.com linkedin.com/matthewhabtezgi github.com/mhbtz1

Education

Massachusetts Institute of Technology *4.5/5.0* Expected May 2025

SB. Computer Science and Engineering, Mathematics *Cambridge, MA*

- **Relevant Coursework:** Design and Analysis of Algorithms (6.1220), Inference and Information (6.7800), Advanced NLP (6.8611), Operating Systems Engineering (6.1810), Computer Architecture (6.1910), Theory of Computation (18.4041)
- **Relevant Teaching Experience:** 6.101 (Fundamentals of Programming) Lab Assistant, 6.100A+B(Intro to CS and Programming w/ Python and Intro to Data Science w/ Python) Lab Assistant, 6.3900 (Introduction to Machine Learning) HKN Tutor

Experience

Structify Feb 2024 -

Machine Learning Engineer *Brooklyn, NY*

- Implementing data pipelines for collecting multimodal text-image data for SFT and DPO datasets and scalable recommendation systems utilizing vector, graph, and relational databases.
- Implemented API endpoints, observability and general business logic on our Rust backend. Used Python for data collection / augmentation, and adding custom logic to our Python SDK, and customer specific programs.

Amazon Web Services June 2023 – Sept 2023

Software Engineer Intern *Cupertino, CA*

- Worked for AWS Hardware Engineering Services in the BIOS+UEFI Firmware Development team working on optimizing hardware interrupts from CPU-BMC communication over SSIF interface on Intel-based baremetal servers.
- Worked with Linux kernel to profile interrupts, firmware test automation, and AWS services. Used C, Python, x86 Assembly with embedded Linux, AWS CDK and SQL. Improved kernel level code and optimized hardware interrupt processing by a 15 percent margin.

MIT CSAIL - PL+V Lab Sept 2023 -

Research Intern *Cambridge, MA*

- Worked on the Koika project writing code for verifying security properties on multiprocessor machines using Coq. Working on another project formally verifying tensor compilers on C programs in the fall.

Cryptoclear Jan 2022 - Nov 2022

Software Engineer *Cambridge, MA*

- Developed gradient boosting models, hyperparameter tuning methods and bagging classifiers in model construction. Used Apache Spark and Parquet for data engineering and developing ETL pipelines to aid with inference and building training datasets. Used Go-Ethereum for fetching blockchain data and other Web3 technologies.

Projects

Parallel/Concurrent SAT Solver | *C++*

- Developed a parallel SAT Solver in Python based on conflict-driven clause learning to solve general n by n Flow Free puzzles
- Used camera feed with OpenCV for preprocessing of images to build puzzle datasets for testing and for real-time inference

ChessGPT | *React, Typescript*

- Created a React SPA frontend and a Typescript backend that allows for playing chess, but with a GPT bot (using GPT-4o-mini) as an autonomous chess agent.
- Used REST API architecture, standard React design patterns, and an Express.js Typescript backend

HTTP Packet Load Balancer | *Golang, React*

- Implemented an HTTP load balancer service in Golang from scratch with a React.js SPA frontend for user interaction (i.e. entering HTTP params / body data / headers)
- Implemented various load balancing algorithms (round-robin, least connection) and concurrent data structures to support several clients