Matthew Habtezgi

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Education

Massachusetts Institute of Technology   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), Distributed Systems (6.5840), Advanced NLP (6.8611), Operating Systems Engineering (6.1810), Computer Architecture (6.1910)
- **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

Massachusetts Institute of Technology   Expected May 2026
MEng. Computer Science and Engineering   *Cambridge, MA*

Experience

Structify   Feb 2024 -
ML Engineer   *Brooklyn, NY (Remote)*

- Implemented data pipelines for collecting multimodal text-image data for finetuning on more general VLMs.
- Implemented SOTA ML algorithms such as knowledge distillation and PEFT on collected data for finetuning pretrained VLM models.

Amazon Web Services   June 2023 – Sept 2023, June 2024 - Sept 2024
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*

- Working on research on the formal verification of hardware systems from cache based side-channel attacks / timing side-channel attacks on different processor/memory architectures. Using Coq for automated proof management and Koika for hardware engineering.

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 realtime data prediction using pretrained models.

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

HTTP Packet Load Balancer | *Golang, React.js*

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