

Samuel Tian

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Education

Massachusetts Institute of Technology

Cambridge, MA

B.S. Computer Science and Engineering, GPA: 5.0/5.0

Aug 2021 - May 2025 (expected)

- Relevant Coursework: Natural Language Processing, Formal Verification, Machine Learning, Computer Architecture, Probability, Algorithms and Data Structures, Programming Fundamentals, Linear Algebra, Differential Equations, Linguistics

Liberal Arts and Science Academy

Austin, TX

High School Diploma

Aug 2017 - May 2021

Work Experience

Distributed Robotics Laboratory | MIT CSAIL

Cambridge, MA

Undergraduate Researcher, supervised by Lianhao Yin, Daniela Rus

Jun 2022 - present

- Develops reinforcement learning environments in NVIDIA IsaacGym for surgical automation
- Trains agents using PyTorch-based deep reinforcement learning libraries for human-robot collaboration
- Writes Python scripts and uses Blender to edit asset meshes and robot design files
- Connects simulation environment to real surgical robots for evaluation

Programming Languages and Verification Group | MIT CSAIL

Cambridge, MA

Undergraduate Researcher, supervised by Adam Chlipala, Andres Erbsen

Jan 2022 - present

- Implements formally verified modular reduction algorithm in Coq for Curve25519 Diffie-Hellman protocols
- Compiles templates into fast, low-level code that is competitive with manually optimized assembly
- Improves upon existing reduction algorithm in fiat-crypto library due to recent infrastructure advances

Projects

Trading Bot with Market Forecasting

- Created cryptocurrency trading bot that utilized real-time market prices and articles gathered from websockets
- Applied HuggingFace sentiment analysis models to process relevant headlines
- Incorporated market forecasting using LSTM networks in PyTorch

Depth Estimation

- Built multiscale convolutional neural network in TensorFlow for depth estimation of indoor scenes

Threat Detection in Maritime Settings

- Implemented Hidden Markov Models in C++ for classification of ship trajectories
- Used FFT and vector quantization to preprocess trajectories for dimensionality reduction

Novel Lossless Compression Algorithms

- Developed data compression algorithms that operated on the set of unbounded integers
- Utilized a dynamic segment tree to significantly speed up algorithm runtime for large inputs

Skills

- Languages: C++, Python, Java, Coq, OOP, Functional Programming
- OS: Windows, Linux, macOS
- Tools: Git, CI, Vim, Emacs, scikit-learn, PyTorch, TensorFlow, HuggingFace, Pandas, PostgreSQL

Awards

- Olympiads: USACO Platinum Qualifier, AIME Qualifier