Andrew Yuan

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EDUCATION

Massachusetts Institute of Technology   Cambridge, MA
B.S. Mathematics; B.S. Computer Science and Engineering   **Expected Grad:** May 2026
- **GPA:** 5.0/5.0
- **Selected Coursework:** Design & Analysis of Algorithms, Abstract Algebra I, Real Analysis, Economic Game Theory, Probability & Random Variables, Intro to Machine Learning, Fundamentals of Programming, Web Lab
- **Honors & Awards:**
  * Putnam Top 400; USAMO Qualifier & USAJMO Top 50; USAPhO Semifinalist; USACO Gold Division
  * US Presidential Scholar; Regeneron Science Talent Search Scholar; National Merit Scholar

EXPERIENCE

WeRide   Jun. 2024 – Aug. 2024
Software Engineer Intern   *San Jose, CA*
- Designed the .rafa (Random Access / Fast Append) file format, a custom archive file format for small file packing.
- Created a high-performance C++ API for RAFA packing & integrated it with the **SLAM** map generation system.
- Developed a parallelized, highly scalable data migration tool to pack ~**1 billion** sensor/map files on cloud into .rafa format. Optimized scalability of file dependency resolution using LRU-based caching.
- RAFA packing reduces sensor/map files stored to cloud by **97%**, alleviating disk pressure on private cloud servers.

UVA Biocomplexity Institute   Jun. 2022 – Jul. 2023
Research Intern   *Remote*
- Researched networked dynamical systems and combinatorial optimization on multi-agent networks.
- Proved expected performance bounds for approximation algorithms; solved combinatorial sub-problem via reduction to polyomino tiling; empirically validated algorithm performance via simulations.
- Co-authored paper published at AAMAS '23 (international conference). Won Regeneron STS Scholar for my research.

JHU Applied Physics Laboratory   Oct. 2021 – May 2022
Data Science Intern   *Remote*
- Interned through the ASPIRE program; investigated the relationship between climate change and human migration.
- Used Pandas in Python to process, clean, and organize 10 years of flood data and population data.
- Performed statistical analyses through regression modeling and created data visualizations.

PROJECTS & EXTRACURRICULARS

Tradeswipe | website | *Javascript (React, Node.js, Express.js, SocketIO), MongoDB, HTML/CSS*
- Developed a full-stack web application providing a two-sided marketplace for trading MIT meal swipes.
- Implemented both a live and asynchronous market, as well as authentication, live chat, and transactional emails.
- Obtained **420+** unique users and processed **$1000+** worth of transactions **within 2 weeks of release**.

clarity.ai | github | *Python (Modal, TensorRT-LLM, FastAPI, Flask), Javascript (MERN stack), HTML/CSS*
- Built a multi-agent LLM application that researches complex issues from 10 different political perspectives & aggregates the similarities/differences. Integrated LLM system into a web application with chat interface & chat history features.
- LLM system uses a webscraper to find articles & deploys a modified TensorRT-Llama, running parallel agents on Modal.

Math4All: Founder and (Former) President
- Founded Math4All, a 501(c)(3) nonprofit dedicated to making competitive math more accessible.
- Led team of 40+ student volunteers; engaged 1300+ students from 25+ countries through contests/classes/community.

Activities: MIT THINK (Co-Director), Full Stack @ MIT (Officer), Undergrad Math Association (Officer), Club Volleyball

TECHNICAL SKILLS

Programming Languages: C++, Python, Java, JavaScript/TypeScript, HTML/CSS, SQL
Frameworks & Libaries: React, Node.js, Express.js, Flask, MongoDB, SocketIO, Numpy, Pandas, PyTorch, Tensorflow
Software & Tools: Git/GitHub, Linux/Unix, AWS S3, Bazel, VS Code, Figma, LaTeX

Concepts: Software Engineering, Machine Learning, Statistics, Probability, Data Analysis, Databases, Robotics, Autonomous Vehicles, Distributed Systems, High-Performance Computing, Cloud Computing (AWS, Azure, GCP), Multithreading, Concurrency, Web Development (Frontend, Backend), Unit Testing, Version Control, CI/CD Pipelines