Andrew Yuan

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EDUCATION

Massachusetts Institute of Technology, Cambridge, MA — Sep. 2023—May 2026
B.S. Mathematics, B.S. Computer Science and Engineering — **GPA:** 5.0/5
Selected Coursework: Machine Learning (Grad), Deep Learning (Grad), Design & Analysis of Algorithms, Quantitative NLP, Operating Systems, Abstract Algebra I, Real Analysis, Probability & Random Variables, Economic Game Theory, Web Lab

EXPERIENCE

WeRide.ai: Software Engineer Intern — Jun. 2024—Aug. 2024

- Designed the .rafa (Random Access, Fast Append) file format, a custom archive file format for the cloud storage of small files. Created a high-performance C++ API for RAFA packing, and integrated it with WeRide's HDmap generation system.
- Developed a data migration tool to pack **~1 billion** sensor/map files on cloud into .rafa format and then edit meta files to resolve file dependencies. Optimized scalability via extensive parallelization & LRU-based caching.
- RAFA packing reduces sensor/map files stored to cloud by **97%**, greatly alleviating disk pressure on private cloud servers.

University of Virginia Biocomplexity Institute: Research Intern — Jun. 2022—Jul. 2023

- 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.

Johns Hopkins Applied Physics Laboratory: Data Science Intern — Oct. 2021—May 2022

- Interned through the ASPIRE program; investigated the relationship between climate change and human migration.
- Used Pandas in Python to process/organize 10 years of flood data from the Dartmouth Flood Observatory and population data from the US census. Performed statistical analyses through regression modeling.

SpringGem Weather Information: Research Intern — Jun. 2020—Mar. 2021

- Researched road ice detection in drone images. Conducted field experiments and processed/analyzed images; my work validated the feasibility of detecting road ice using NDVI in calibrated RGN photographs.
- Co-authored paper presented at the 2020 American Geophysical Union (AGU) Fall Meeting.

PROJECTS & EXTRACURRICULARS

Tradeswipe: Sole Developer

- Developed Tradeswipe, a two-sided marketplace for trading MIT meal swipes. Built frontend with React, backend server & REST API with Express.js/Node.js. Implemented MIT Kerberos auth, live chat with SocketIO, and transactional emails.
- Obtained **420+** unique users and processed **$1000+** worth of transactions **within 2 weeks of release**.

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 free contests & classes.

Activities: MIT THINK (Co-Director), Full Stack @ MIT (Tech Chair), Undergraduate Math Association (Social Chair), Men's Club Volleyball, MAIA AI Safety Program

HONORS & AWARDS

- US Presidential Scholar; Regeneron Science Talent Search Scholar; National Merit Scholar — Jun. 2023
- Putnam Math Competition Top 400 — Dec. 2023
- USAMO (USA Math Olympiad) Qualifier, USAJMO Top 50 — May 2022
- USAPhO (USA Physics Olympiad) Semifinalist — Feb. 2021
- USACO (USA Computing Olympiad) Gold Division — Feb. 2021

SKILLS

Programming Languages: C++, Python, Java, JavaScript/TypeScript, HTML/CSS
Frameworks & Libraries: React, Node.js, Express.js, MongoDB, SocketIO, Numpy, Pandas, PyTorch
Software & Tools: Git/GitHub, AWS S3, Bazel, VS Code, Microsoft Office, Google Suite, LaTeX