TIMOTHY MATHEW

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EDUCATION

Massachusetts Institute of Technology — Cambridge, MA
Bachelor of Science in Computer Science, Economics and Data Science - 5.0 GPA — *May 2027 (expected)*

AWARDS

4x American Invitational Mathematics Exam (AIME) Qualifier
USA Computing Olympiad – Gold Division
2nd Place (of 8000+) in U.S. – Math Madness
Top 100 in U.S. – Google Kickstart Round
International Science and Engineering Fair (ISEF) – Robotics & Intelligent Machines – 3rd Place (COVision Project)

PROJECTS & WORK EXPERIENCE

Software Developer Intern | *Tyler Technologies - Public Safety Division* — June 2024 – Aug. 2024

- Worked closely with senior developers in Agile environment on **Angular** based web application to align UI with QA requirements, add required features, and fix reported bugs
- Refactored existing code to be more modular and readable while gaining experience with Linux and Git
- Improved quality of unit testing and wrote end-to-end (E2E) tests to thoroughly validate functionality

Research Science Institute Scholar | *MIT Research Laboratory of Electronics* — June 2023 – Aug. 2023

- Project: A Learning Approach to Coherent Detection with Non-uniform Digital Modulation
- Adapted and trained novel multivariate feature extraction model **(Python TensorFlow)** to perform as a coherent detector (recover transmitted signals from received signals with a known gain) in non-uniform modulation contexts
- Nested neural network captures joint dependence from X-S-Y rather than traditional X-Y bivariate dependence

COVision Research Project | *Independent Research* — Jan 2022 - Sept. 2022

- COVision is a deep-learning model, ensembled from a convolutional neural network and fully connected neural network, that can **differentiate COVID-19 from other common lung diseases**, with high specificity using CT scans and other clinical factors; Designed and developed with Python TensorFlow
- Achieved statistical significance that COVision **performs better than experienced independent radiologists**
- Performed analysis on Grad-CAMs to find human-interpretable differences between pneumonia and COVID lesions
- Published in BioMed Central Pulmonology (https://doi.org/10.1186/s12890-023-02723-x)

COMMUNITY & LEADERSHIP

Coding Competitions Club President — May 2022 – May 2024
Troy High School

- Hosted a programming competition in ICPC Format
  - Wrote problems ranging from simple sorting to dynamic programming based graph traversal
  - First ever inter-HS coding event in Michigan
- Led group lectures on data structures and algorithms for problem-solving

AP Computer Science A Teaching Assistant — Jan 2024 – May 2024
Troy High School

- Led **Java** workshops and helped develop curriculum for 100+ students
- Created unit and final projects tailored to varying experience levels
- Wrote annotated sample code to demonstrate concepts

Math Club President — Aug. 2022 – May 2024
Troy High School

- Gave talk on Pólya's recurrence theorem (Random Walks) at University of Michigan
- Coordinated involvement in math competitions and organizations
- Introduced stress-free math to encourage participation (game theory experiments, pi-day parties, fractal art projects, "proofs without words" puzzles) and grew club size from 10 to 40+ members

TECHNICAL SKILLS

Languages: Python, C++, Java, JavaScript, Angular (TypeScript), SQL, TensorFlow
Experience/Interests: Combinatorics, Graph Theory, Machine Learning, DSA, Mathematical Modeling