Ray Tang

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EDUCATION

Massachusetts Institute of Technology (Mathematics & Computer Science)　　　　　　　**9/2023 – 5/2026**

Courses include: Differential Equations, Linear Algebra, Computability and Complexity Theory, Design and Analysis of Algorithms, Introduction to Machine Learning, Deep Learning, Natural Language Processing (NLP)

RESEARCH /WORK EXPERIENCE/ACTIVITIES

MIT UROP Researcher, Adaptive Language Guidance for Patient Lifting Robotics (6/2024 - current)

Designed and implemented software to help Robotics to predict a therapist's movement and speech based on the patient's actions during a therapy session. The prediction is based on AI/ML techniques like KNN and Transformers for NLP.

Jane Street First Year Trading and Technology Program, NYC (3/2024)

Invited to participate in a one-week event at Jane Street's New York Office. Learned and implemented ETF arbitrage. Placed 6th in the overall trading competition among 40 teams. Connected with around 80 aspiring quants.

MIT UROP Researcher, Implementing Economics Concepts on Blockchain (08/2023 – 12/2023)

Worked with Dr. Robert Townsend, VISA and other graduate students to use Twisted ElGamal semi-homomorphic encryption to implement economic functions such as Nash and Walras Equilibria on the Ethereum blockchain. Worked towards implementing manipulation free blind auctions. Used programming languages Solidity and Rus to implement software that allows for a user's sensitive data to be shared with a 3rd party for research without revealing any of the information.

Scholar, PROMYS (Program in Mathematics for Young Scientists), Boston, MA (07/2022 - 08/2023)

Studied the simple idea of integers deeply in the field of number theory. Studied elliptic curves and their applications in cryptography. Studied linear algebra and its applications in visualization. Conducted research on various Number Theory and Combinatorics topics. Published a paper "*Minimum Decomposition on MaxMin Trees*" (https://arxiv.org/abs/2310.14385); paper is also accepted by 2024 JMM (Joint Mathematics Meeting).

Summer Research Intern, CloudStream Medical Imaging Inc., Houston, TX (06/2021 - 08/2021)

Conducted research at a high-tech start-up company specialized in medical imaging with ultrasound. Conducted research to evaluate the benefits of using mixed-precision data representation in the imaging software. Implemented fp16 and bf16 imaging kernels to improve software performance without sacrificing imaging quality. Wrote the research paper "*Use Mixed Precision Data Types to Speed up Computation for Ultrasound Imaging Software.*" Paper received *Best Paper Award* at IEEE 7th International Conference on Intelligent Informatics and Bio Medical Sciences (ICIIBMS 2022), Nara, Japan.

CS Summer Camp Faculty, AlphaStar Academy, Santa Clara, CA (06/2022)

Three weeks of full-time instructor job. Designed and taught Olympiad-level algorithm and data structure classes.

AWARDS AND HONORS

- **Mathematics Competition**:
  - 3x USA(J)MO (United States of America Math Olympiad) qualifier
  - 2024 Putnam top 205
  - 2023 February HMMT top 26 overall individual; HMIC (HMMT Invitational Competition) qualifier
  - 2019 National Mathcounts Qualifier, individually placed 25th
- **Computer Science Competition**:
  - 2022 Google Code Jam Round 3 qualifier. Placed global top 550 out of ~93000 competitors
  - USACO (USA Computing Olympiad) Platinum Division since 2021. Best rank: 52nd in Platinum division
- **Physics Competition**: USAPhO (United States of America Physics Olympiad) Honorable Mention, 2021
- **Atlas Fellowship Finalist 2023:** ~100 Finalists selected from over 7000 applicants around the world

TECHNICAL SKILLS

- Machine Learning, Deep Learning, NLP
- Research experience in in economics, cybersecurity and bioinformatics.
- Excellent problem-solver skills
- Fluent in C++, Python
- Competitive programmer with advanced knowledge in Data Structures and Algorithms.
- Research experience in various Number Theory topics.