Matthew Yuan

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Education

Princeton University, Princeton, NJ — September 2017–May 2021 (Expected)
- Bachelor of Arts (A.B.) in Mathematics, 3.8 GPA.
- Coursework includes Algorithms and Data Structures, Probability and Stochastic Systems, Computational Geometry, Linear Algebra, Multivariable Calculus, Combinatorics, Real Analysis, and Fourier Analysis.

University of Oxford, Oxford, UK (study abroad) — January 2020–Present
- One on-site trimester at Worcester College, one remote trimester.
- Coursework includes Artificial Intelligence (AI), Algebraic Number Theory, Topology, Philosophy of Mathematics.

Experience

Adversarial Machine Learning Researcher, University of Oxford — March 2020–Present
- Study and implement existing attacks against deterministic neural networks.
- Propose and test new attacks against Bayesian neural networks, which are known to be more robust.
- Meet weekly (remotely) with a research assistant and a doctoral student to discuss progress.

Course Assistant, Princeton University — September 2018–May 2019
- Led weekly problem sessions for about 50 students in Real Analysis and Linear Algebra.
- Helped students understand complex mathematical ideas and guided students through homework problems.

Activities

Writer, medium.com/@my4 — November 2018–Present
- Write short stories on Medium about math, origami, and whatever else interests me in the moment.
- Articles featured by Medium on their Math and Design topic pages and published by Medium's largest active publication.
- Previously managed and wrote for a student-run publication that interviews startup founders.

Author in Princeton Undergraduate Research Journal — Spring 2019
- Presented a creative, narrative explanation of Carl Friedrich Gauss's discovery that the regular seventeen-sided polygon is constructible using a compass and straightedge.
- Driven by curiosity and a desire to understand the real-world historical context of Gauss's work.
- 1 of 5 papers selected for publication out of 23 total submissions.

Projects

Thue-Morse Connect Four, tmc4.herokuapp.com — October 2018–August 2019
- Built a variant of Connect Four to explore what happens when players take turns following the Thue-Morse sequence. Intended to eliminate the game's first-player advantage. Two users can play each other on two different devices in real-time.
- Started work in Python/Django, then switched to Node.js/Express with Socket.io, using Cypress for testing.

Seam Carving, class project — April 2019
- Implemented an image resizing algorithm in Java that preserves an image's content without cropping or stretching.
- Achieved by using Dijkstra's algorithm to find minimal-energy seams in an image.

Skills

Programming Languages and Frameworks
- Java, Python, HTML/CSS, JavaScript, Node.js, Express, Socket.io, Cypress, Django, PostgreSQL, Bootstrap, Git, Heroku, LaTeX.

Concepts
- Object-Oriented Programming, Machine Learning, Mathematical Reasoning, Teaching.

Languages
- English, Mandarin.