

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 Macroeconomics, Algorithms and Data Structures, Probability and Stochastic Systems, Linear Algebra, Multivariable Calculus, Combinatorics, Real Analysis, and Fourier Analysis.
- Machine Learning** by Stanford University, coursera.org/learn/machine-learning May 2019–August 2019
- Studied supervised and unsupervised learning algorithms: linear regression, logistic regression, neural networks, support vector machines (SVMs), k-means clustering, principal component analysis (PCA), anomaly detection.
 - Studied tools to evaluate and debug machine learning systems: bias/variance, learning curves, error analysis, ceiling analysis.

Skills

Programming Languages and Frameworks

- Java, Python, HTML/CSS, JavaScript, Node.js, Express, Socket.io, Cypress, Django, PostgreSQL, Bootstrap, Git, \LaTeX .

Concepts

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

Languages

- English, Mandarin.

Experience

- Algebraic Geometry Research** under Professor János Kollár, Princeton University June 2019–Present
- Study the connection between ideals of polynomial rings and algebraic varieties in affine and projective space.
 - Meet weekly with Prof. Kollár as part of a 7-person research group.
- 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 guide students through homework problems.

Projects

- Thue-Morse Connect Four**, github.com/code-by-matt/tmc4node October 2018–Present
- 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. See it at code-by-matt.github.io/connect4.
 - Currently building a new version that will allow users on two different devices to play each other in real-time.
 - Started work in Python/Django, then switched to Node.js/Express with Socket.io, with testing done in Cypress.
- 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.

Activities

- Author in Princeton Undergraduate Research Journal**, bit.ly/2W72vBR 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.
- Editor of Profiles in Entrepreneurship**, medium.com/profiles-in-entrepreneurship October 2018–Present
- Manage a team of 4 writers for an intercollegiate publication that provides student entrepreneurs actionable advice from startup founders and VCs.
 - Produced over 30 articles in the 2018–2019 school year.