Jeremy Zhou
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EDUCATION

Massachusetts Institute of Technology *Expected: May 2024*
- Candidate for Bachelor of Science, Mathematics & Computer Science and Engineering; **GPA**: 5.0/5.0
- **Coursework**: (*graduate*) Statistical Inference & Information Theory, Theory of Probability, Distributed Algorithms, Computer Vision, Graph Theory & Additive Combinatorics, Commutative Algebra
  - (*undergraduate*) Algorithms, Statistics, Econometrics, Public Finance, Political Economy
- **Activities**: Undergraduate Research, xFair (MIT's largest student-run career fair w/2000+ attendees), Firespinning, Greek Life

SOFTWARE EXPERIENCE

Software Engineer Intern: Exafunction (https://exafunction.com/)
- Series A startup w/$25M raised working on efficient deep learning at scale. Hired as one of 2 interns during summer 2022.
- Implemented & deployed deep learning performance software & state-of-the-art computer vision research w/PyTorch.
- Developed parts of Exafunction job scheduler & model compiler. Designed object-oriented, memory-aware, asynchronous distributed software in C++, Go, Python w/low-level TensorFlow integration. Wrote parallel GPU kernels in CUDA C++.
- Discussed company strategy around recruitment, marketing, sales, finances, e.g. who to recruit & services to expand towards.

Project Lead/Lead Developer: Math Open At Andover (MOAA) (https://andovermathopen.com/)
- Directed team of 8 to host virtual math open w/1100 attendees. Coordinated problem writing, sponsorships, advertising, logistics.
- Overhauled website w/frontend and backend work, integrating dynamic Django/JS framework with Apache & Passenger.
- Negotiated $19K in sponsorships w/corporations focusing on math education, allowing removal of registration fee.

RESEARCH EXPERIENCE

Machine Learning Researcher: Madry Lab (MIT) (https://madry-lab.ml/)
- Develop theory & practice of sharpness-aware minimization, a novel technique to make model training more generalizable.
- Implement Madry Lab's [FFCV](#) package and PyTorch's functorch library for performance acceleration.

Physics Student Researcher: University of Wisconsin-Madison
- Devised cutting-edge research on strained ferroelectric thin films with direct applications to nano-scale electronics.
- Analyzed 15 related papers in solid-state physics to formulate mathematical model w/accuracy & computational feasibility.
- Implemented & ran simulations w/NumPy; visualized time evolution of thin film via two-time correlation plots w/MatPlotLib.

Mathematics Student Researcher: MIT Program for Research In Mathematics, Engineering, and Science (PRIMES) ([arXiv](#))
- Introduced an extensive novel combinatorial framework to resolve a recent open problem in algebraic graph theory.
- Evaluated 30 related papers in algebraic combinatorics. Collaborated w/professors/grad students from MIT, Tufts, UT Austin.
- Authored poster, professional paper, slides. Presented at PRIMES 2019, Joint Mathematics Meetings 2019–2021.

PROJECTS

Personal Website/Blog (https://jerzh.github.io/)
- Design & deploy Jekyll site w/custom GitHub Actions.
- Devise mini-projects w/React, D3.js, e.g. domain coloring.

Modeling the African Onchocerciasis Program ([GitHub](#))
- Analyzed WHO epidemiological data w/Pandas.
- Built model of optimal medicine distribution w/Julia.

MIT Mathematics Directed Reading Program
- Read Robin Hartshorne's *Algebraic Geometry*, created presentation on groups of line bundles and divisors.

AWARDS

2 x Qualifier: Mathematical Olympiad Program (MOP)
national top 60

Scholar: Regeneron Science Talent Search (STS)
national top 300

Silver Medal: International Linguistics Olympiad (IOL)
international top 30

3 x Outstanding Undergraduate Student Poster: Joint Mathematics Meetings (JMM)
largest mathematics conference in the USA

Gold Medal: USA Physics Olympiad (USAPhO)
national top 40

SKILLS

Languages	Python, C++, Go, TypeScript/JavaScript, Julia, Java, HTML/CSS
Tools/Frameworks	PyTorch, TensorFlow, Scikit-Learn, Pandas, NumPy, MatPlotLib, React.js, D3.js, Django, Linux/Unix, Git