Jeremy Zhou

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EDUCATION

Massachusetts Institute of Technology: Candidate for Bachelor of Science   *GPA: 5.0/5.0*
- Majors in Mathematics & Computer Science and Engineering; Minor in Economics

Statistical Inference & Information Theory (G)	Computer Vision (G)	Business Analytics
High-Dimensional Statistics (G)	Computer Systems Security (G)	Mathematical Economic Modeling
Theory of Probability (G)	Graph Theory & Additive Combinatorics (G)	Political Economy (G)
Econometrics	Design & Analysis of Algorithms	Public Finance

(G) indicates a graduate-level course

EMPLOYMENT

Quantitative Research Intern: Akuna Capital (https://akunacapital.com/)
- Market leader in high-frequency options market making. Hired as one of 3 research interns in 2023, the only undergraduate.
- Research and engineer original enhancements to gradient boosting decision tree models that predict market returns, using cutting-edge inference research, statistical intuition, data visualization, and familiarity with options & portfolio theory.
- Rapidly design and execute projects to improve team performance, regular communication & goal-alignment with leadership.

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.

RESEARCH & PROJECTS

Machine Learning Researcher: Madry Lab (MIT) (https://madry-lab.ml/)
- Study differentially private machine learning, a statistical technique to guarantee data privacy while training ML models.
- Architected model and infrastructure upgrades, using functorch & [FFCV](#) to scale up 20x, train 8 parallel jobs on ImageNet.
- Presented & participated in weekly lab meetings w/Prof. Madry, discussing ML privacy & interpretability topics.

Co-Director: MIT xFair (https://xfair.io/)
- Organize largest MIT student-run career fair w/700 attendees, promoting & collaborating with 50+ corporate representatives.
- Oversaw total team of 15, heading communications with MIT students & career services, development work on web portals.

Mathematics Student Researcher: MIT Program for Research In Mathematics, Engineering, and Science (PRIMES) ([arXiv](#))
- Introduced novel combinatorial framework to resolve open problem in algebraic graph theory, evaluating 30 related papers.
- Collaborated w/professors from MIT, Tufts, UT Austin, presented at PRIMES 2019, Joint Mathematics Meetings 2019–2021.

Personal Website/Blog (https://jerzh.github.io/)
- Designed Jekyll site w/custom deployment pipeline.
- Interactive fractal visualization tool w/React, D3.js.

Generative Adversarial Networks for Image Inpainting
- Built original deep neural network to improve image generation by adversarially training DeepFillv2 and UNet.

Modeling the African Onchocerciasis Program ([GitHub](#))
- Optimized on WHO epidemiological data w/Pandas, Julia.

MIT Mathematics Directed Reading Program
- Read & present Hartshorne's *Algebraic Geometry*.

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