

Joshua Lin

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EDUCATION

Princeton University, A.B. Mathematics (Expected) Aug 2023 - May 2027
Minors in Computer Science, Statistics & Machine Learning GPA: 3.8/4.0

- Relevant Coursework: Linear & Nonlinear Optimization[†], Machine Learning Theory[†], Functional Analysis^{†§}, Complex Analysis, Algorithmic Game Theory, Theory of Algorithms, Probability & Stochastic Systems.
- Awards & Activities: Princeton Physics Pyka Memorial Prize for “promise in independent research,” ACM Competition Chair, Tournaments Officer for Princeton Quantitative Traders, Tour Director for the Princeton Debate Panel.

[†] Denotes graduate coursework. [§] Denotes upcoming fall coursework.

EXPERIENCE

Combinatorial Optimization Researcher Oct 2024 - Present
Princeton Astrophysical Data Laboratory Princeton, NJ

- Analyzing robust allocations of cosmological targets by constructing graph neural networks to solve high-dimensional, NP-hard combinatorial optimizations. Trained model on CUDA toolkit using high-performance computing clusters.
- My work will direct the [Prime Focus Spectrograph](#)’s second-year exposures. [The PFS is an international consortium of over twenty-five universities and national laboratories to study [large-scale galaxy evolution](#).]

Directed Reading Program Jun 2024 - Aug 2024
Princeton Mathematics Department Hybrid | Princeton, NJ

- Accelerated study of topics in general relativity and cosmology, with the requisite semi-Riemannian geometry.

Mathematics Teaching Assistant Jun 2024 - Aug 2024
Jane Street Capital New York, NY

- Taught topics in probability, combinatorics, and number theory at the Academy of Mathematics and Programming.
- Facilitated probability games, market-making simulations, and the Electronic Trading Challenge.

Computational Physics Research Intern Jan 2023 - May 2023
NASA Jet Propulsion Laboratory Pasadena, CA

- Developed numerical and analytical methods to approximate the ages of lithospheric bands, identify regions of geologic co-/re-activation, and classify surface fractures in Europa’s nondeformed and chaos terrains.
- Presented at NASA-JPL summer research conference to members of the *Europa Clipper* physics team.

PROJECTS

Emergency Signaling System Nov 2023
Top Prize, HackPrinceton Princeton, NJ

- Developed “Moco” to discretely execute preset emergency calls, texts, and other customizable actions, triggered by customizable wrist gestures pre-calibrated with iOS app.
- Implemented gesture matching between live Apple Watch accelerometer/gyroscopic data and calibrations using iterative closest point for spatial transformations and dynamic time warping for temporal mappings.

Automated Securities Trader July 2023
Top Prize, Jane Street Electronic Trading Challenge New York, NY

- Engineered stochastic models to forecast time series through order book data, conducting six hours of live market making.
- Interfaced with backend AWS servers through WebSocket API to exchange bonds, stocks, and ETFs at high frequency.

SKILLS, INTERESTS, & AWARDS

Skills	Languages: Python, C, C++, x86 Assembly. Libraries: CVXPY, PEPit, Tensorflow, Pandas, Scipy.
Interests	Mathematical optimization; statistical learning theory; asymptotic statistics; high-dimensional probability.
Awards	Bill and Melinda Gates Scholarship, USAPhO Semifinalist with Honorable Mention, Wells Fargo Wealth Management Competition National Champion.