

Joshua Lin

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EDUCATION

Princeton University , A.B. Mathematics	(Expected) Aug 2023 - May 2027
<i>Minors in Computer Science, Statistics & Machine Learning</i>	GPA: 3.8/4.0
<ul style="list-style-type: none">– Relevant Coursework: Linear & Nonlinear Optimization[†], Machine Learning Theory[†], Functional Analysis[†], Complex Analysis, Numerical Analysis, Measure-Theoretic Probability Theory, Algorithmic Game Theory, Theory of Algorithms.– 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.

EXPERIENCE

Statistical Astrophysics Researcher	May 2025 - Aug 2025
<i>Princeton Astrophysical Data Laboratory</i>	<i>Princeton, NJ</i>
<ul style="list-style-type: none">– Developing message-passing neural network in PyTorch-Geometric using individual properties of over $\mathcal{O}(10^5)$ galaxies and optical fibers to optimize interactions. Current model attains 98.1% performance of a constraint-free upper bound.– Designed heterogeneous bipartite graph to model a class of high-dimensional combinatorial optimizations with $\mathcal{O}(10^{10})$ binary variables, constructing a noisy family of smooth functions to discretize the output. [See blog post.]– My work will help direct the <i>Prime Focus Spectrograph</i>’s nightly second-year exposures. The PFS is an international consortium of twenty-seven universities and institutes studying galaxy evolution. [See overview paper.]	
Mathematics Teaching Assistant	
<i>Jane Street Capital</i>	Jun 2024 - Aug 2024
<ul style="list-style-type: none">– 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 Researcher	Jan 2023 - May 2023
<i>NASA Jet Propulsion Laboratory</i>	<i>Pasadena, CA</i>
<ul style="list-style-type: none">– Developed numerical methods to approximate the ages of lithospheric bands and identify regions of geologic co-/re-activation in Europa’s nondeformed and chaos terrains using NASA’s geographical information system (GIS) databases.– Fundamentally characterized unmapped regions on Europa by applying modern physical models to <i>Galileo</i> data.– Presented at NASA-JPL summer research conference to physicists on the <i>Europa Clipper</i> science team.	

PROJECTS

Emergency Signaling System	Nov 2023
<i>Top Prize, HackPrinceton</i>	<i>Princeton, NJ</i>
<ul style="list-style-type: none">– 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	

<i>Top Prize, Jane Street Electronic Trading Challenge</i>	July 2023
<i>New York, NY</i>	
<ul style="list-style-type: none">– Engineered algorithms to systematically trade bonds, stocks, & ETFs against contestants in live six-hour competition.– Achieved 1st place in both divisions: a) highest overall PNL, b) greatest peak (last-hour) PNL.	

SKILLS, INTERESTS, & AWARDS

Skills	Languages: C, C++, Python. Libraries: PyTorch/PyG, CVXPY, Tensorflow, Pandas, Scipy.
Interests	High-dimensional probability, statistical learning theory, and stochastic optimization.
Awards	Gates Scholarship, USAPhO Semifinalist (Honorable Mention), Wells Fargo Wealth Mgmt Comp 1st Prize.