Nicholas Lyu
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Education

Harvard University Cambridge, MA
A.B. Degree in Physics with CS secondary. GPA: 3.92/4.0
Selected coursework: Computational Learning Theory, Theoretical Computer Science, Information Theory, Systems Programming, Compilers, Quantum Computation and Information, General Relativity.

Industry Experience

Jane Street
Machine Learning Researcher Aug 2025 - Present

- Team focus: marketdata models in billions parameter scale; frontier-sized LLMs.
- Personal focus: (1) diagnosing and optimizing scaling bottlenecks, (2) architecture, (3) pretrain science, and (4) pretrain-posttrain interactions.
- Notes on related topics: weight norms, μP scaling invariants, optimizers, diffusion as MLE.
- Volunteer lecturer for interns and new hires; personal notes for sample summer class on options pricing, heat diffusion, and quantum mechanics.
- Manage research gifts and ongoing collaborations with the Polyanskiy lab (MIT; inference quantization) and Andrea Zanette's lab (CMU; data-constrained post-training).

Jane Street
Quantitative Research Intern May - Aug 2024

- Developed the firm's first deep learning weather model via a physics-constrained neural-ODE.

Undergraduate Research

Harvard University
Undergraduate Researcher Oct 2023-Nov 2024

- "Fermionic Gaussian Testing and Non-Gaussian Measures via Convolution", first author.
- "Displaced Fermionic Gaussian States and their Classical Simulation", first author. *Journal of Physics A: Mathematical and Theoretical* (2025).

Semeghini Lab in Applied Physics
Undergraduate researcher April 2022 - Oct 2024

- Founding designer and engineer of the quantum computing control system, operational in Harvard's Yb-Rb and Atom Array II groups.
- "Continuous operation of a coherent 3,000-qubit system". *Nature* (2025).

Also see select notes on reinforcement learning (Stanford CS234), classical information theory, quantum mechanics, and classical mechanics.

Extracurricular Activities

Kaggle Cambridge, United States
Competitions Master, top percentile of 200k participants 2019-2022

Technical Skills

Computational Libraries: PyTorch, JAX
Programming Languages: Python, C++, OCaml, Rust