

Bryan Zin

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Education

Cornell University

Ithaca, NY

B.S. in Mechanical Engineering, minor in Business

Dec 2021

Relevant Coursework: Linear Algebra, Probability & Statistics, Machine Learning (OCW 6.036), Reinforcement Learning (Stanford CS234)

Research Interests

I'm interested in applying machine learning and computational modeling to understand global manufacturing and industrial systems related to the interdependence between the U.S. and Asia. I'm particularly interested in predictive methods (multi-agent models, reinforcement learning) that study how firms, industries, and production networks respond to technological, economic, and geopolitical change.

Technical Projects

Supply-Chain Risk & Financial Markets

Independent Research

2026 - Present

- Goal: Test whether elevated supply-chain risk is associated with negative abnormal returns.
- Developed Python pipeline to collect/analyze SEC 10-Ks, XBRL, and equity-market data across 450 public companies in 9 sectors.
- Used Word2Vec to create supply chain risk and resolution dictionaries from 20 years of SEC filings/earnings calls as context.
- Applied FinBERT to quantify information contained in corporate disclosures and investigate relationships to market returns.
- Built event-study and regression models comparing actual cumulative abnormal returns (CAR) to expected returns using a 4-factor benchmark, isolating firm-specific market responses from broader market movements.

Machine Learning Reproduction & Experimental Projects

Independent Projects

2026 - Present

- Reproduced optimization experiments from the Adam paper (Kingma & Ba, 2015), implementing Adam, AdaGrad, RMSProp, and SGD/Nesterov and comparing convergence behavior on neural-network (NN) training loss.
- Implemented and evaluated NN architectures using NumPy and PyTorch, including MLP and convolutional models on MNIST/CIFAR-10.
- Designed controlled experiments to investigate optimizer hyperparameters, convergence behavior, dropout, and model architecture.

Industry Experience

Reframe Innovations, Inc.

San Francisco, CA

Founder

2026 - Present

- Accepted into Y Combinator (W26) and raised \$1.2M in seed funding to build AI-driven procurement automation for hardware teams.
- Architected automated workflows across bill-of-materials management, vendor quoting, POs, and component tracking.
- Engineered data pipelines to centralize vendor purchasing metrics, providing real-time, sourcing visibility for engineering groups.
- Built seamless integrations with core enterprise software ecosystems, encompassing email, Slack, logistics API feeds, and ERP systems.

Apple Inc.

Cupertino, CA

Product Design Engineer III

Jan 2022 - May 2025

- Owned mechanical architecture design, structural integration, and rigorous testing for several flagship device generations. (iPhone 15 Pro Max, iPhone 17 Air, and iPhone 17)
- Formulated validation protocols and evaluated yield datasets to assess critical failure modes and verify engineering modifications.
- Leveraged statistical factory analytics and empirical testing to rectify production bottlenecks, driving >\$50M in yield optimizations.
- Spearheaded international technical investigations and executive presentations with eng/ops teams in US, China, India, and Singapore.

Skills

Programming: Python (PyTorch, NumPy, Pandas, Scikit), Matlab

Machine Learning: NLP, transformers, neural networks, reinforcement learning, optimizer tuning, supervised learning, PPO/GRPO