

# David Wu

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## Education

### University of California, Berkeley

Ph.D. in EECS, coadvised by Prasad Raghavendra and Anant Sahai. GPA: 4.0/4.0

Supported by an NSF GRFP and an OpenAI Superalignment Grant

Berkeley, CA

May 2026 (expected)

### Massachusetts Institute of Technology

B.S. in Computer Science and Mathematics, GPA: 5.0/5.0

Cambridge, MA

May 2022

## Research Interests

LLM reasoning, weak-to-strong generalization, scaling laws, synthetic data, knowledge distillation, Markov chains and sampling, algorithms for machine learning

## Skills

Python (PyTorch, numpy, pandas), Go, Java,  $\text{\LaTeX}$ , git.

## Work Experience

### Windsurf

ML Research Intern

Created and designed verifiable coding evals and agentic judges for the Windsurf coding agent in go. Post-trained models and built new go and Python data and eval pipelines for new coding capabilities. Helped maintain eval and training infrastructure during transition period for Cognition acquisition.

Mountain View, CA

Summer 2025

### Hudson River Trading

Algorithm Developer Intern

Developed low level high frequency signals in C++ and Python for trading cryptocurrency perpetuals. Implemented completely automated trading bot with two teammates in C++ for live trading. Modeled market impact of cryptocurrency liquidations with rigorous statistical techniques. Developed data structure to predict liquidation events based on open interest and price data.

New York, NY

Summer 2021

### Akuna Capital

Quantitative Trading Intern

Identified and developed signals in C++ for a futures trading algorithm. Improved insight generation for feature engineering by creating an interactive market book visualization and an order history dashboard in Python. Designed and implemented a Python package for order-specific feature generation from market book data, taking into account tradeoffs related to data storage formats and scalability.

Chicago, IL

Summer 2020

### Akuna Capital

Quantitative Developer Intern

Created a user-friendly API in Python for researchers to calculate option theoretical values and greeks. Calculated trade quality metrics for PNL feedback and risk characteristics on trades. Profiled and optimized to remove bottlenecks by batching expensive API calls and using vectorization.

Boston, MA

Summer 2019

## Selected Publications

### Papers listed by contribution

1. David X. Wu and Anant Sahai. Provable weak-to-strong generalization via benign overfitting. *International Conference on Learning Representations (ICLR)*, 2025 (Previously appeared at NeurIPS 2024 M3L workshop).  
**tl;dr:** Extreme weak-to-strong generalization can occur because ground-truth concepts are more easily learnable than incorrect concepts with strong model representations.
2. David X. Wu and Anant Sahai. Precise asymptotic generalization for multiclass classification with overparameterized linear models. In *Neural Information Processing Systems (NeurIPS)*, 2023 (**Spotlight**)

3. David X. Wu, Chulhee Yun, and Suvrit Sra. On the training instability of shuffling SGD with batch normalization. In *Proceedings of the 40th International Conference on Machine Learning (ICML)*, volume 202 of *Proceedings of Machine Learning Research*, pages 37787–37845. PMLR, 23–29 Jul 2023

**tl;dr:** Empirical+theoretical analysis of divergent training dynamics arising from the interaction of optimization and architecture choices.

**Papers listed alphabetically.....**

1. Brice Huang, Sidhanth Mohanty, Amit Rajaraman, and David X. Wu. Weak Poincaré Inequalities, Simulated Annealing, and Sampling from Spherical Spin Glasses. *ACM Symposium on Theory of Computing (STOC)*, 2025

**tl;dr:** New framework for understanding warm starts and annealing for sampling, with applications to diffusion.

2. Kuikui Liu, Sidhanth Mohanty, Prasad Raghavendra, Amit Rajaraman, and David X. Wu. Locally Stationary Distributions: A Framework for Analyzing Slow-Mixing Markov Chains. *IEEE Symposium on Foundations of Computer Science (FOCS)*, 2024

**tl;dr:** New framework for analyzing the statistical performance of sampling algorithms before convergence.

3. Kuikui Liu, Sidhanth Mohanty, Amit Rajaraman, and David X. Wu. Fast Mixing in Sparse Random Ising Models. *IEEE Symposium on Foundations of Computer Science (FOCS)*, 2024

4. Sidhanth Mohanty, Prasad Raghavendra, and David X. Wu. Robust recovery for stochastic block models, simplified and generalized. *ACM Symposium on Theory of Computing (STOC)*, 2024

**Awards**

○ OpenAI Superalignment Grant	April 2024
○ NSF GRFP fellowship	July 2022
○ Robert M. Fano UROP Award	July 2021
○ Regneron Science Talent Search, 5th place finalist (\$90,000 award)	March 2018