

Yifei Wang

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EDUCATION

STANFORD UNIVERSITY

Ph.D Candidate in **Electrical Engineering**

Stanford, CA

Expected June 2025

- *Research Interests:* Diffusion Models; Machine Learning Theory; MCMC and MC Sampling; Blockchain Protocol.

PEKING UNIVERSITY

Bachelor of Science in **Mathematical Science**

Beijing, China

Graduated in June 2020

Major GPA: **3.79 / 4.0**

- *Major:* **Information & Computing Science**
- *Honors:* Merit Student (*Fall 2019*); Outstanding Undergraduate in Beijing (*Summer 2020*)

SELECTED PUBLICATIONS

Conference

- **Yifei Wang**, Tavor Baharav, Yanjun Han, Jiantao Jiao, David Tse. “Beyond the Best: Distribution Functional Estimation in Infinite-Armed Bandits”, Neurips 2022 Poster
- **Yifei Wang**, Jonathan Lacotte, Mert Pilanci. “The Hidden Convex Optimization Landscape of Two-Layer ReLU Neural Networks: an Exact Characterization of the Optimal Solutions”, ICLR 2022 Oral
- **Yifei Wang**, Mert Pilanci. “The Convex Geometry of Backpropagation: Neural Network Gradient Flows Converge to Extreme Points of the Dual Convex Program”, ICLR 2022 Poster
- Jonathan Lacotte, **Yifei Wang**, Mert Pilanci. “Adaptive Newton Sketch: Linear-time Optimization with Quadratic Convergence and Effective Hessian Dimensionality”, ICML 2021 Poster

Journal

- **Yifei Wang**, Peng Chen, Wuchen Li. “Projected Wasserstein gradient descent for high-dimensional Bayesian inference”, to appear on SIAM on Uncertainty Quantification 2022.
- **Yifei Wang**, Wuchen Li. “Accelerated Information Gradient flow,” Journal of Scientific Computing 2022
- **Yifei Wang**, Zeyu Jia, Zaiwen Wen. “Search Direction Correction with Normalized Gradient Makes First-Order Methods Faster,” SIAM on Scientific Computing 2021

SELECTED RESEARCH EXPERIENCE

Beyond the best: distribution Functional Estimation in Infinite-Armed Bandits

Feb 2021 – May 2022

Supervised by David Tse

- We study the statistical estimation of mean/median/maximum of an unknown distribution based on noisy observations. The maximum estimation is similar to infinite-armed bandits, which focuses on minimizing regrets.
- We propose a unified meta algorithm and provide objective-dependent information-theoretical lower bound.

Overparameterized ReLU Neural Networks Learn the Simplest Model (arxiv: 2209.15265)

July 2021 – January 2022

Supervised by Mert Pilanci

- Consider the training and generalization properties of two-layer ReLU networks with standard weight decay regularization. We show that regularized ReLU networks with an arbitrary number of parameters learn only simple models that explain the data
- The situation is simple: whenever the ratio between the number of samples and the dimension exceeds a numerical threshold, the recovery succeeds with high probability; otherwise, it fails with high probability

HONORS & AWARDS

- **Bronze Medal**, Applied & Computational Mathematic, S.T. Yau College Student Mathematical Contests *May 2019*
- **IMO** training team member *Dec 2014*
- **Gold prize**, 29th and 30th Chinese Mathematical Olympiad *Dec 2014*

CODING SKILLS

- **Professional:** Python, Matlab, typescript, C language, Markdown
- **Familiar:** C++, rust, javascript, Julia
- **Selected GitHub repository:** <https://github.com/YiifeiWang/Bits-back-Coding> <https://github.com/pilancilab/IHS-BIN> <https://github.com/YiifeiWang/Accelerated-Information-Gradient-flow>