# Weizhong Wang

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## EDUCATION

**Columbia University** **Aug. 2026–May 2030(expected)**
Doctor of Philosophy in *Operations Research* *New York, NY*
Advisor: Henry Lam, Adam Block

**Fudan University** **Sep. 2022–June 2026**
Bachelor of Science in *Mathematics and Applied Mathematics* *Shanghai, China*

## PUBLICATIONS

(* = equal contribution)

[1] Chenyang Wang*, **Weizhong Wang***, Yinuo Ren, Jose Blanchet, Yiping Lu, Simple Approximation and Derivative Free Inference-Time Scaling for Diffusion Models via Sequential Monte Carlo on Path Measures, *ICML 2026*

## WORK EXPERIENCE

**Quant Researcher** **Jan. 2026–Jul. 2026**
*Century Frontier Asset Management*

- Developed diffusion- and flow-based models for intraday return prediction, improving IC and long-short portfolio performance. We wanted to design diversified alpha signals using heterogeneous model architectures and feature representations to reduce signal correlation and achieve incremental predictive power.
- Investigated advanced flow-matching and diffusion techniques, including timestep scheduling and architecture design for learning structured dynamics. Meanwhile, engineered cross-sectional and cross-feature interactions to enhance signal robustness and portfolio-level performance.

## RESEARCH EXPERIENCE

**Research on Statistical Learning** **Feb. 2025–Mar. 2026**
*Research assistant, supervised by Prof. Yiping Lu* *Evanston, Illinois*

- Extended diffusion map frameworks by introducing new high-order kernel forms and adaptive weighting schemes, enabling smoothing to automatically adapt to the intrinsic dimension of local manifolds.
- Designed novel clustering algorithms based on higher-order kernel smoothing on manifolds, and rigorously analyzed higher-order bias behavior as well as the convergence rates of eigenvalues and eigenvectors under manifold sampling assumptions.

**Research on Diffusion Model** **Feb. 2025–Jul. 2025**
*Research assistant, supervised by Prof. Kaizheng Wang* *New York, NY*

- Established the theoretical foundations showing that, as time approaches zero in diffusion processes, the score function decomposes into a diverging time-singular component and a bounded non-singular component, and further identified the determinant of the bounded term.
- Developed novel training algorithms leveraging this decomposition, enabling diffusion models to learn each component separately and overcoming the instabilities caused by exploding terms in direct score matching.

**Research on Diffusion Model** **Oct. 2025–Jan. 2026**
*Research assistant, supervised by Prof. Yiping Lu* *Evanston, Illinois*

- Proposed an unbiased inference-time guidance framework that combines Sequential Monte Carlo with diffusion processes, where particle weights are computed via a Girsanov change of measure with respect to the filtration of each diffusion path. The reweighting scheme depends on the entire sample path of the diffusion process.
- Proved that conditional on the terminal value of the diffusion, the backward conditional expectation with respect to the filtration generated by the process recovers the weighting scheme of AFDPS and FK Corrector.

## ADDTTIONAL INFORMATION

**Programming Skills**: Python, C/C++, MATLAB, LaTeX.