Yuxing Huang

Quantitative Research | Stochastic Control | Machine Learning
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Professional Summary

Ph.D. candidate at New York University specializing in stochastic control, backward stochastic differential equations (BSDEs), numerical pricing methods, and causal machine learning.

Education

New York University, Tandon School of Engineering Sep 2024–Present
Ph.D. Candidate, Electrical Engineering; Finance and Risk Engineering; Advisor: Prof. Nizar Touzi New York, NY

École Polytechnique Sep 2021–Mar 2024
Cycle Ingénieur (Master's-level), Applied Mathematics; GPA: 3.85/4.00 Paris, France

Zhejiang University, Chu Kochen Honors College Sep 2018–Jul 2022
B.S. in Mathematics; GPA: 3.91/4.00; Rank: 4/20 Hangzhou, China

Technical Skills

Programming: Python, C++, C, Java **Languages:** Chinese (native), English (professional), French (professional, TCF B2)

Selected Research Experience

Backward SDEs for Principal-Agent Models 2024–2026
New York University

- Developed a BSDE characterization of the principal's value function and optimal contract, bypassing the fully nonlinear HJB equation in the Markovian setting.
- Extended the framework to regime-switching agent control problems not covered by existing methods; co-authored the resulting 2026 arXiv preprint with Prof. Nizar Touzi.

Stochastic Signature Methods 2023–2025
École Polytechnique

- Derived explicit signature-based series representations and numerical approximation schemes for stochastic path-dependent integral equations, including Volterra, delay, and fractional Brownian-motion models.

Causal Discovery under Heteroscedastic Noise 2024
École Polytechnique / UC San Diego collaboration

- Contributed to a skewness-based identifiability criterion and refined the main theoretical proof behind SkewScore, a multivariate causal-discovery method robust to heteroscedastic noise; equal-contribution co-author of the resulting ICLR 2025 paper.

Deep BSDE Solver for Occupied Pricing PDEs Ongoing
Research collaboration

- Developing a deep-BSDE numerical solver for occupied pricing PDEs arising in path-dependent derivative pricing, with Valentin Tissot-Daguette and Xin Zhang.

Selected Publications

1. N. Touzi and **Y. Huang**. "Backward SDE Characterization of the Finite-Horizon Principal-Agent Problem." arXiv preprint, 2026.
2. Y. Lin, **Y. Huang**, et al. "A Skewness-Based Criterion for Addressing Heteroscedastic Noise in Causal Discovery." *ICLR*, 2025.
3. E. Abi Jaber, L.-A. Gérard, and **Y. Huang**. "Path-Dependent Processes from Signatures." *The Annals of Applied Probability*, forthcoming.

Selected Honors

Fulgence Bienveniüe International Excellence Scholarship, École Polytechnique 2021–2024
First Prize, Chinese College Mathematics Competition 2020
First-Class Scholarship, Zhejiang University 2019, 2020
First Prize, Chinese High School Mathematics League, ranked 43th/44th in Guangdong Province. 2016, 2017