Yuhao Huang

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Education

✍ **University of Utah, UT, USA** — Aug 2022 – Present
Ph.D. in Applied Mathematics (with a specialization in Machine Learning & Data Science)
GPA: 3.93/4.00

✍ **Northwestern University, IL, USA** — Sep 2019 – Jan 2021
Master in Applied Mathematics (Machine Learning & Data Science Track)
GPA: 3.78/4.00

✍ **Hohai University, Jiangsu, China** — Sep 2015 – Jun 2019
Bachelor in Computing Science
GPA: 87/100

Research

Deep Generative Models

– Improving diffusion (score-based) and flow-based models, with a focus on ❑ theoretical analysis [1] from differential equations point of view, ❑ model- and algorithm-level efficiency optimization [4, 7] and ❑ applications to image [4, 5], spatiotemporal data and video [1], and scientific data [7] sampling.

Stochastic Algorithms & Applications to Deep Generative Models

– Improving stochastic algorithms for ❑ nonconvex optimization [2] ❑ generative models training and inference: more efficient training for diffusion (score-based) models [4], image restoration tasks incorporating flow/diffusion-based generative models [5].

Graph Learning & Large Language Model

– Geometric learning integrated with LLM / State Space Model (Mamba) for sequential node representations embedding. [3, 6].

Publications and Preprints

*: equal contribution

1. ***ICML2025*** **Yuhao Huang**, Taos Transue, Shih-Hsin Wang, William M Feldman, Hong Zhang, Bao Wang. "Improving Flow Matching by Aligning Flow Divergence". The 42nd International Conference on Machine Learning, 2025.

2. ***CVPR2025*** Tao Sun, **Yuhao Huang**, Li Shen, Kele Xu, Bao Wang. "Investigating the Role of Weight Decay in Enhancing Nonconvex SGD". Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2025.

3. ***ICLR2025, Oral 1.8%*** **Yuhao Huang***, Shih-Hsin Wang*, Justin M. Baker, Yuan-En Sun, Qi Tang, and Bao Wang. "A Theoretically-Principled Sparse, Connected, and Rigid Graph Representation of Molecules". The 13th International Conference on Learning Representations, 2025.

4. ***ICLR2024*** **Yuhao Huang**, Qingsong Wang, Akwum Onwunta, Bao Wang. "Efficient Score Matching with Deep Equilibrium Layers". The 12th International Conference on Learning Representations, 2024.

5. *Under review* Fan Jia, **Yuhao Huang**, Shih-Hsin Wang, Bao Wang. "Plug-and-Play Image Restoration with Flow Matching: A Continuous Viewpoint". Under review at NeurIPS, 2025

6. *Under review* Shih-Hsin Wang, **Yuhao Huang**, Taos Transue, Justin M. Baker, Jonathan Forstater, Thomas Strohmer, Bao Wang. "Towards Multiscale Graph-based Protein Learning with Geometric Secondary Structural Motifs". Under review at NeurIPS, 2025.

7. *Under review* **Yuhao Huang**, Justin Baker, Shih-Hsin Wang, Massimiliano Lupo Pasini, Andrea L. Bertozzi, Bao Wang. "A Regularized Training of E(n)-Equivariant Graph Neural Network-assisted Generative Models". Under review.

8. *Preprint* **Yuhao Huang**, David Chopp. "Fast Iterative Algorithm for Eikonal Equation and Applications". arxiv.2106.15869

Professional Experience

Machine Learning & AI Research

– **Argonne National Laboratory**, Chicago Area, IL — May 2024 – Aug 2024
Research Intern,
✎ Worked on flow matching/normalizing generative models in scientific applications.

– **Snips Media**, Chicago, IL — Jun 2020 – Aug 2020
Machine Learning Engineer Intern,
✎ Worked on GANs for data augmentation and YOLO for object detection.

Quantitative Research for the Financial Industrial

– **AQUMON Digital Wealth Management**, Hong Kong SAR — Nov 2021 – Jul 2022
Quantitative Researcher Intern,
✎ Developed ML models (ARIMA, LSTM, CNN, Attention, Transformer) for time series forecasting.

– **SGD Asset Management**, Shenzhen, China — Feb 2021 – Jul 2021
Quantitative Researcher Intern,
✎ Developed ETF arbitrage models integrated with machine learning techniques for tik-level time series data forecasting.

Teaching & Service Experience

– **Reviewer**: ICLR 2025, ICML 2025
– **Volunteer**: ICLR 2025
– **Teaching**: MATH 2210, University of Utah

Skills

- **Programming Languages**: Python, C, CUDA Programming, Linux
- **Frameworks**: PyTorch, Jax
- **Libraries**: Pytorch-diffeq, Pytorch-geometric, Matplotlib, Pandas, Numpy, PETSC