Haoyang Zheng

PH.D. CANDIDATE & APPLICANT

(765) 413-7189 | zheng528@purdue.edu | haoyangzheng.github.io | github.com/haoyangzheng1996 | haoyangzheng | Scholar

Education

Purdue University, College of Engineering *West Lafayette, IN*

Ph.D. in Mechanical Engineering (advised by Prof. Guang Lin, GPA 4.0/4.0) *Jun. 2021 - May. 2025 (expected)*

Purdue University, College of Engineering *West Lafayette, IN*

M.S. in Mechanical Engineering (GPA 3.8/4.0) *Sep. 2019 - May. 2021*

Southwest University, School of Computer and Information Science *Chongqing, China*

B.Eng. in Automation (advised by Prof. Yong Deng, Rank 1/92) *Sep. 2014 - Jun. 2018*

Professional Experience

Argonne National Laboratory, Mathematics and Computer Science Division *Lemont, IL*

Givens Associate *May. 2023 - Jul. 2023*

- Investigated suitable hyperparameters for **proximal policy optimization (PPO)** models through centralized Bayesian optimization search.
- Integrate the DeepHyper framework with the **MPI program** to achieve parallel computing and improve exploration.

Conference

[1] **Haoyang Zheng**, Wei Deng*, Christian Moya, Guang Lin*, "Accelerating Approximate Thompson Sampling with Underdamped Langevin Monte Carlo", *AISTATS 2024*;

[2] **Haoyang Zheng**, Hengrong Du, Qi Feng, Wei Deng*, Guang Lin*, "Constrained Exploration via Reflected Replica Exchange Stochastic Gradient Langevin Dynamics", *ICML 2024*.

Journal

[1] **Haoyang Zheng**, Yao Huang, Ziyang Huang, Wenrui Hao, Guang Lin*, "HomPINNs: Homotopy Physics-Informed Neural Networks for Solving the Inverse Problems of Nonlinear Differential Equations with Multiple Solutions", *Journal of Computational Physics* (2024);

[2] **Haoyang Zheng**, Jeffrey R. Petrella, P. Murali Doraiswamy, Guang Lin*, Wenrui Hao, "Data-Driven Causal Model Discovery and Personalized Prediction in Alzheimer's Disease", *NPJ Digital Medicine* (2022);

[3] **Haoyang Zheng**, Ziyang Huang, Guang Lin*, "A Physics-Constrained Neural Network for Multiphase Flows", *Physics of Fluids* (2022);

[4] **Haoyang Zheng**, Yong Deng*, Yong Hu, "Fuzzy Evidential Influence Diagram and Its Evaluation Algorithm", *Knowledge-Based Systems* (2017);

[5] **Haoyang Zheng**, Yong Deng*, "Evaluation Method Based on Fuzzy Relations Between Dempster-Shafer Belief Structure", *International Journal of Intelligent Systems* (2018);

[6] Tian Bian, **Haoyang Zheng**, Yong Deng*, "Failure Mode and Effect Analysis Based on D Numbers and Topsis", *Quality and Reliability Engineering International* (2018);

[7] Likang Yin, **Haoyang Zheng**, Tian Bian, Yong Deng*, "An Evidential Link Prediction Method and Link Predictability Based on Shannon Entropy", *Physica A* (2017).

Talks

[1] On Sampling Tasks with Langevin Dynamics, Brown University, July 2024.
Host: George Em Karniadakis.

Achievements

Selected Awards

2024	**Student Travel Awards**, 2024 Mathematical and Scientific Foundations of Deep Learning Annual Meeting	*New York, NY*
2024	**Student Travel Awards**, 2024 SIAM Conference on Mathematics of Data Science	*Atlanta, GA*
2024	**Student Travel Awards**, Nonlocality: Challenges in Modeling and Simulation	*Providence, RI*
2023	**Student Travel Awards**, 2023 Mathematical and Scientific Foundations of Deep Learning Annual Meeting	*New York, NY*
2018	**Pacemaker to Technological Innovation in Chongqing**, Awarded 10 college students every two years	*Chongqing, China*
2018	**Outstanding undergraduates in Chongqing**, Awarded 1% of all college undergraduate students every year	*Chongqing, China*
2015	**China National Scholarship**, Awarded 1% of all undergraduates in China	*China*

Selected Honors

2017	**Finalist (0.5%)**, Interdisciplinary Contest in Modeling	*China*
2016	**Special prize (2/3568)**, International Mathematical Contest in Modeling	*China*

Teaching Experience

Purdue University, School of Mechanical Engineering *West Lafayette, IN*

Teaching Assistant *Aug. 2019 - May. 2021*

- Guided students through **hands-on lab tasks** in ME375 (Measurement And Control Systems) and ME475 (Automatic Control Systems), ensuring understanding of key principles and safe practice.
- Conducted regular **office hours** to provide individualized support and address questions in homework and lab sections.
- Collaborated with instructors to **organize and execute in-class robot competitions**.

Service

Reviewer ICML, NeurIPS, Scientific Reports, Journal of Computing and Information Science in Engineering, Journal of Supercomputing, Knowledge and Information Systems

Skills

Programming Python (TensorFlow, PyTorch), MATLAB, R, C, Java
Research skills LaTeX, Origin Lab, EndNote, Visio, Notion, Obsidian