

SHENAO ZHANG

shenao@u.northwestern.edu | shenao-zhang.github.io

EDUCATION

Northwestern University

Ph.D. student in IEMS (Industrial Engineering & Management Sciences)

Advisor: Prof. Zhaoran Wang

Sep. 2023 - Present

Evanston, IL

Georgia Institute of Technology

M.S. in ECE (Electrical and Computer Engineering), GPA: 3.81/4.00

Advisor: Prof. Tuo Zhao and Prof. Bo Dai

May 2020 - May. 2022

Atlanta, GA

South China University of Technology

B.Eng. in EE (Electronic and Information Engineering, Innovation Class)

Aug. 2016 - May 2020

Guangzhou, China

University of California, Berkeley

Visiting student at the Department of EECS, GPA: 3.90/4.00

Jan. 2019 - May 2019

Berkeley, CA

RESEARCH INTERESTS

My research centers around Large Language Models (LLMs) and Reinforcement Learning (RL). I'm currently interested in the *efficient* alignment of LLMs with RLHF, studying active synthetic data generation and more capable training algorithms. Previously, I built autonomous LLM agents and developed data-efficient decision-making algorithms with applications to robotic and multi-agent systems.

PREPRINTS

[12] **Shenao Zhang**, Donghan Yu, Hiteshi Sharma, Ziyi Yang, Shuohang Wang, Hany Hassan, Zhaoran Wang, "Self-Exploring Language Models: Active Preference Elicitation for Online Alignment", *ICML 2024 AutoRL Workshop* (**Best Paper Award**). [\[PDF\]](#)

[11] Zhihan Liu*, Miao Lu*, **Shenao Zhang**, Boyi Liu, Hongyi Guo, Yingxiang Yang, Jose Blanchet, Zhaoran Wang, "Provably Mitigating Overoptimization in RLHF: Your SFT Loss is Implicitly an Adversarial Regularizer", *ICML 2024 ARLET Workshop*. [\[PDF\]](#)

[10] **Shenao Zhang***, Sirui Zheng*, Shuqi Ke, Zhihan Liu, Wanxin Jin, Jianbo Yuan, Yingxiang Yang, Hongxia Yang, Zhaoran Wang, "How Can LLM Guide RL? A Value-Based Approach", *Preprint*. [\[PDF\]](#)

[9] Xiaoyu Chen, **Shenao Zhang**, Pushi Zhang, Li Zhao, Jianyu Chen, "Asking Before Action: Gather Information in Embodied Decision Making with Language Models", *Preprint*. [\[PDF\]](#)

PROCEEDINGS

[8] Zhihan Liu*, Hao Hu*, **Shenao Zhang***, Hongyi Guo, Shuqi Ke, Boyi Liu, Zhaoran Wang, "Reason for Future, Act for Now: A Principled Framework for Autonomous LLM Agents with Provable Sample Efficiency", *International Conference on Machine Learning (ICML)*, 2024. [\[PDF\]](#)

[7] Feng Gao*, Liangzhi Shi*, **Shenao Zhang**, Zhaoran Wang, Yi Wu, "Adaptive-Gradient Policy Optimization: Enhancing Policy Learning in Non-Smooth Differentiable Simulations", *International Conference on Machine Learning (ICML)*, 2024. [\[PDF\]](#)

[6] **Shenao Zhang**, Boyi Liu, Zhaoran Wang[†], Tuo Zhao[†], "Model-Based Reparameterization Policy Gradient: Theory and Practical Algorithms", *Neural Information Processing Systems (NeurIPS)*, 2023. [\[PDF\]](#).

[5] Zhihan Liu*, Miao Lu*, Wei Xiong*, Han Zhong, Hao Hu, **Shenao Zhang**, Sirui Zheng, Zhuoran Yang, Zhaoran Wang, "Maximize to Explore: One Objective Function Fusing Estimation, Planning, and Exploration", *Neural Information Processing Systems (NeurIPS)* (**Spotlight**), 2023. [\[PDF\]](#).

- [4] **Shenao Zhang**, Wanxin Jin, Zhaoran Wang, “Adaptive Barrier Smoothing for First-Order Policy Gradient with Contact Dynamics”, *International Conference on Machine Learning (ICML)*, 2023. [\[PDF\]](#)
- [3] **Shenao Zhang**, “Conservative Dual Policy Optimization for Efficient Model-Based Reinforcement Learning”, *Neural Information Processing Systems (NeurIPS)*, 2022. [\[PDF\]](#).
- [2] **Shenao Zhang**, Li Shen, Lei Han, Li Shen, “Learning Meta Representation for Agents in Multi-Agent Reinforcement Learning”, *Conference on Lifelong Learning Agents (CoLLAs)* (**Oral**), 2023. [\[PDF\]](#)
- [1] **Shenao Zhang**, Li Shen, Zhifeng Li, Wei Liu, “Structure-Regularized Attention for Deformable Object Representation”, *NeurIPS Workshop on Object Representations for Learning and Reasoning*, 2020. [\[PDF\]](#)

INTERNSHIP EXPERIENCE

Microsoft GenAI <i>Student Researcher</i>	<i>Jan. 2024 - June 2024</i> <i>Advisor: Donghan Yu</i>
• Worked on active preference elicitation for online alignment [12] .	
ByteDance AML <i>Research Intern</i>	<i>June 2024 - Present,</i> <i>June 2023 - Aug. 2023</i> <i>Advisor: Yingxiang Yang</i>
• Worked on sample-efficient RL with the policy prior provided by LLMs [11] .	
Microsoft Research (MSR), Asia <i>Research Intern</i>	<i>Feb. 2023 - May 2023</i> <i>Advisor: Li Zhao</i>
• Worked on autonomous LLM agents [9] .	
Tencent AI Lab <i>Research Intern</i>	<i>Aug. 2019 - Sep. 2020</i> <i>Advisors: Li Shen, Lei Han and Li Shen</i>
• Worked on the representations and generalizability of multi-agent RL algorithms [2] .	
• Proposed an attention mechanism for visual representation of structured data [1] .	

TEACHING EXPERIENCE

Head TA of the graduate course [CS 7648: Interactive Robot Learning](#) (Fall 2021) at Georgia Tech.

SELECTED PROJECTS

Object Detection Project paper : Coarse-to-Fine Attention, advised by Bo Wu. Related patent .	<i>May 2019 - Oct. 2019</i> <i>Columbia University</i>
Cloth Simulation using OpenGL Shader Project website : ffjmmm.github.io/CS184-final/webpage , advised by Ren Ng.	<i>Jan. 2019 - May 2019</i> <i>UC Berkeley</i>

PROFESSIONAL SERVICE

Conference Review: NeurIPS 2020-23, ICLR 2022-24, AISTATS 2022-24, RSS 2021, ICML 2022-23.
Journal Review: Neurocomputing, Transactions on Pattern Analysis and Machine Intelligence (TPAMI).

HONORS AND AWARDS

NeurIPS Scholar Award	<i>2022-2023</i>
ICML Travel Award	<i>2023</i>
Georgia Tech Level A Premier Merit-Based Scholarship	<i>2020-2021</i>
SCUT Study Abroad Global Education Scholarship	<i>2019</i>
Second Prize in the China Undergraduate Electronics Design Contest	<i>2018</i>
Third Prize in the Intel Undergraduate Embedded System Contest	<i>2018</i>
Outstanding Freshman Scholarship (Awarded to 30 among 6,500 students)	<i>2016</i>