Shibo Hao

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Education

University of California, San Diego **Sep. 2022 – Present**
Ph.D. in Data Science. Advisor: Zhiting Hu *La Jolla, CA*

Peking University **Sep. 2018 – Jun. 2022**
B.S. in Computer Science *Beijing, China*

Experience

Meta FAIR Lab **Jun. 2024 – Jan. 2025**
Research Scientist Intern. Advisor: Yuandong Tian, Jason Weston *Menlo Park, CA*

Bloomberg L.P. **Jun. 2025 – Sep. 2025**
Data Scientist Intern (Bloomberg Data Science Fellow) *New York, NY*

Research Interests

My research goal is to push the boundaries of machine reasoning. My work includes training LLMs to reason with reinforcement learning (Guru, OREO, FoR), building a system-2 reasoning framework using world-model planning (RAP, LLM Reasoners, Pandora), augmenting LLMs with external tools (ToolkenGPT) and exploring reasoning in latent space (COCONUT, COCONUT-Theory).

Awards

Bloomberg Data Science Ph.D. Fellowship (3 recipients worldwide) 2024

Best Paper Award at SoCal NLP Symposium 2023

Outstanding Graduate Award, Peking University 2022

Leo KoGuan Scholarship (Top 1% at Peking University) 2022

First Prize, National Olympiad in Informatics in Provinces (NOIP) 2017

Selected Publications

(* indicates equal contribution)

Training Large Language Models to Reason in a Continuous Latent Space
Shibo Hao, Sainbayar Sukhbaatar, DiJia Su, Xian Li, Zhiting Hu, Jason Weston, Yuandong Tian
COLM 2025
Highlighted by Quanta Magazine

Reasoning with Language Model is Planning with World Model
Shibo Hao*, Yi Gu*, Haodi Ma, Joshua Jiahua Hong, Zhen Wang, Daisy Zhe Wang, Zhiting Hu
EMNLP 2023
Featured in State of AI Report 2023

ToolkenGPT: Augmenting Frozen Language Models with Massive Tools via Tool Embeddings
Shibo Hao, Tianyang Liu, Zhen Wang, Zhiting Hu
NeurIPS 2023 (Oral, 67 / 12345)
Best Paper Award at SoCalNLP 2023

LLM Reasoners: New Evaluation, Library, and Analysis of Step-by-Step Reasoning with Large Language Models
Shibo Hao*, Yi Gu*, Haotian Luo*, Tianyang Liu, Xiyan Shao, Xinyuan Wang, Shuhua Xie, Haodi Ma, Adithya Samavedhi, Qiyue Gao, Zhen Wang, Zhiting Hu
COLM 2024
2.1k Stars (as of Mar. 2025) at Github

Offline Reinforcement Learning for LLM Multi-Step Reasoning
Huaijie Wang*, **Shibo Hao***, Hanze Dong, Shenao Zhang Yilin Bao, Ziran Yang, Yi Wu
Findings of ACL 2025
ICLR 2025 Workshop on Reasoning and Planning for LLMs (Oral, 7 / 181)

Revisiting Reinforcement Learning for LLM Reasoning from A Cross-Domain Perspective
Zhoujun Cheng*, **Shibo Hao***, Tianyang Liu*, Fan Zhou, Yutao Xie, Feng Yao, Yuexin Bian, Yonghao Zhuang, Nilabjo Dey, Yuheng Zha, Yi Gu, Kun Zhou, Yuqi Wang, Yuan Li, Richard Fan, Jianshu She, Chengqian Gao, Abulhair Saparov, Haonan Li, Taylor W. Killian, Mikhail Yurochkin, Zhengzhong Liu, Eric P. Xing, Zhiting Hu
NeurIPS 2025 Datasets & Benchmarks Track

Reasoning by Superposition: A Theoretical Perspective on Chain of Continuous Thought
Hanlin Zhu*, **Shibo Hao***, Zhiting Hu, Jiantao Jiao, Stuart Russell, Yuandong Tian
NeurIPS 2025

Pandora: Towards General World Model with Natural Language Actions and Video States
Jiannan Xiang*, Guangyi Liu*, Yi Gu*, Qiyue Gao, Yuting Ning, Yuheng Zha, Zeyu Feng, Tianhua Tao, **Shibo Hao**, Yemin Shi, Zhengzhong Liu, Eric P. Xing, Zhiting Hu
arXiv preprint arXiv:2406.09455, 2024

Flow of Reasoning: Efficient Training of LLM Policy with Divergent Thinking
Fangxu Yu, Lai Jiang, Haoqiang Kang, **Shibo Hao**, Lianhui Qin
ICML 2025

LLM Pretraining with Continuous Concepts
Jihoon Tack, Jack Lanchantin, Jane Yu, Andrew Cohen, Ilia Kulikov, Janice Lan, **Shibo Hao**, Yuandong Tian, Jason Weston, Xian Li
arXiv preprint arXiv:2502.08524, 2025

Linear Correlation in LM's Compositional Generalization and Hallucination
Letian Peng, Chenyang An, **Shibo Hao**, Chengyu Dong, Jingbo Shang
arXiv preprint arXiv:2502.04520, 2025

Neural-symbolic Interaction and Co-evolving
Bowen Tan, **Shibo Hao**, Eric Xing, Zhiting Hu
Compendium of Neurosymbolic Artificial Intelligence 369, 125, 2023

Technical Skills

Programming: Python, C++, HTML, JavaScript

Deep Learning: Pytorch, Transformers, Distributed Training (e.g., FSDP), Accelerated Inference (SGLang/vLLM)

Languages: English – Fluent, Chinese – Native

Services

Reviewer for ICML (2024 - 2025), NeurIPS (2024), ICLR (2025), and ACL-ARR (Oct. 2023 - Now)