Kaixuan Ji

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EDUCATION

Bachelor of Computer Science and Technology 08/2019 - 07/2023
Department of Computer Science and Technology, Tsinghua University

Ph.D. Student in Computer Science 09/2023 - 06/2029 (expected)
Department of Computer Science, University of California, Los Angeles
Advisor: Prof. Quanquan Gu

RESEARCH INTERESTS

Theoretical Machine Learning, RL Theory, Statistic, Optimization
Reinforcement Learning and Efficient Methods for LLMs

RESEARCH AND WORKING EXPERIENCE

Knowledge Engineering Group, Tsinghua University 07/2021 - 01/2022
Research Assistant, Advisor: Prof. Jie Tang

· Developed P-tuning V2 method (a prefix-tuning-like method) that is comparable with full-finetune universally across model scales and tasks.
· Investigated the performance of P-tuning on neural text retriever.

Statistical Machine Learning Lab, University of California, Los Angeles 06/2022 - 12/2023
Visiting Student, Advisor: Prof. Quanquan Gu

· Designed a new horizon-free algorithm for linear mixture Markov decision processes (MDP) with unknown transition and adversarial rewards.
· Proved that the regret of our proposed algorithm for linear mixture MDPs was horizon-free.

Knowledge Engineering Group, Tsinghua University 03/2023 - 06/2023
Research Assistant, Advisor: Prof. Juanzi Li

· Developed efficient in-context method for LLM to solve open information retrieval task.
· Investigated LLM's ability in understanding video when visual tools are available.

ByteDance Inc., San Jose 06/2023 - 12/2024
Research Scientist Intern, Mentor: Renjie Zheng

· Designed actor-critic reinforcement learning algorithm for LLM post-training
· Developed direct-preference-learning styled offline RL algorithm to enhance reasoning ability of LLMs.

ByteDance Inc., San Jose 06/2024 - 09/2025
Research Scientist Intern, Mentor: Renjie Zheng

· Developed retrieval-augmented generation based emmory learning methods for LLM
· Applied reinforcement learning methods for training memory agent.

RESEARCH PUBLICATIONS AND PREPRINTS

P-Tuning: Prompt Tuning Can Be Comparable to Fine-tuning Across Scales and Tasks
Xiao Liu*, **Kaixuan Ji***, Yicheng Fu*, Weng Tam, Zhengxiao Du, Zhilin Yang, Jie Tang
The 60th Annual Meeting of the Association for Computational Linguistics **(ACL)**, 2022.

Parameter-Efficient Prompt Tuning Makes Generalized and Calibrated Neural Text Retrievers
Tam Weng Lam*, Xiao Liu*, **Kaixuan Ji**, Lilong Xue, Xing Zhang, Yuxiao Dong, Jiahua Liu, Maodi Hu,

Jie Tang
Findings of the Association for Computational Linguistics **(EMNLP-Findings)**, 2023

Horizon-free Reinforcement Learning in Adversarial Linear Mixture MDPs
Kaixuan Ji*, Qingyue Zhao*, Jiafan He, Weitong Zhang, Quanquan Gu
The Twelfth International Conference on Learning Representations **(ICLR)**, 2024

Mastering the Task of Open Information Extraction with Large Language Models and Consistent Reasoning Environment
Ji Qi*, **Kaixuan Ji***, Xiaozhi Wang, Jifan Yu, Lei Hou, Bin Xu, Juanzi Li
arXiv preprint arXiv:2310.10590, 2023

Self-Play Fine-Tuning Converts Weak Language Models to Strong Language Models
Zixiang Chen*, Yihe Deng*, Huizhuo Yuan*, **Kaixuan Ji**, Quanquan Gu
Forty-first International Conference on Machine Learning **(ICML)**, 2024

Self-play Fine-tuning of Diffusion Models for Text-to-image Generation
Huizhuo Yuan*, Zixiang Chen*, **Kaixuan Ji***, Quanquan Gu
Advances in Neural Information Processing Systems **(NeurIPS)**, 2024

Reinforcement Learning from Human Feedback with Active Queries
Kaixuan Ji*, Jiafan He*, Quanquan Gu
Transactions on Machine Learning Research **(TMLR)**, 2025. Featured Cerfitication

Self-play Preference Optimization for Language Model Alignment
Yue Wu*, Zhiqing Sun*, Huizhuo Yuan*, **Kaixuan Ji**, Yiming Yang, Quanquan Gu
The Thirteenth International Conference on Learning Representations **(ICLR)**, 2025

Enhancing Multi-Step Reasoning Abilities of Language Models through Direct Q-Function Optimization
Kaixuan Ji*, Guanlin Liu*, Ning Dai, Qingping Yang, Renjie Zheng, Zheng Wu, Chen Dun, Quanquan Gu, Lin Yan
arXiv preprint arXiv:2410.09302, 2024

Towards a Sharp Analysis of Offline Policy Learning for f-Divergence-Regularized Contextual Bandits
Qingyue Zhao*, **Kaixuan Ji***, Heyang Zhao*, Tong Zhang, Quanquan Gu
arXiv preprint arXiv:2502.06051, 2025

ACADEMIC SERVICES

Reviewer EMNLP (2023), NeurIPS (2024, 2025), ICLR (2024-2026), AISTATS (2024-2026), ICML (2025)

SKILLS

Programming Skills C++, Java, Python, Qt, Django, Vue, Pytorch, Pytorch Geometry
Language Proficiency Mandarin Chinese (native speaker), English (TOEFL iBT: 103/120)

FUNDINGS AND AWARDS

Tsinghua University Initiative Scientific Research Program 05/2022

UCLA Graduate Division Fellowship 09/2023