Zhao Haiteng

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Research Interest

As a fourth-year Ph.D. student in machine learning, my primary interests lie in the realm of **Natural Language Processing** (NLP), encompassing a range of areas such as **Language Model Design and Training**, **Knowledge Reasoning**, **Model Reliability**, and **Language Agents**. Additionally, I'm also interested in the application of NLP in the context of **AI for Science**.

Education

Peking University, Beijing, China 2020 – Present

Ph.D. student in Intelligent Science and Technology, Advisor: Zhihong Deng, expected July 2025

Peking University, Beijing, China 2016 – 2020

B.S. in Psychology, Advisor: Hang Zhang

Experience

Tencent AI Lab NLP 2024.3 – Present

Research Intern Mentor: Xinting Huang

Conducting research to improve the planning capacity and reliability of language models through reinforcement learning on search trees.

By expanding the multi-turn planning task trajectory in a step-level policy, the model's planning tree space is detected and optimized using reinforcement learning, which not only minimizes the potential for fragile branches in the language model's planning but also enhances the self-correcting ability of the language model.

ByteDance Data-AML-US 2023.8 – 2024.2

Research Intern Mentor: JingJing Xu

Enable language agents to iteratively acquire and improve skills through interactions with their environment.

Explore frameworks for language models to devise tools for solving mathematical and reasoning challenges.

The University of Hong Kong 2022.12 – 2023.6

Research Intern Advisor: Lingpeng Kong and Qi Liu

Investigate the application of instruction-based zero-shot learning for language models in the chemistry and biological domains.

Examine the feasibility of replacing MSA augmentation in protein language models with a general retrieval method.

Microsoft Research Asia 2022.1 – 2022.10

Research Intern Mentor: Shuming Ma

Explore multilingual continue learning for language model pre-training, enabling pre-training on dynamically increasing corpora.

Design innovative transformers that can take advantage of model depth when working with graph data.

Nanyang Technological University 2021.6 – Present

Collaboration Advisor: Prof. Luu Anh Tuan

Work on the certified robustness of language models against perturbations in language forms by causal interventions.

Investigate the models' reasoning robustness, particularly in relation to their reliability against knowledge perturbations.

PUBLICATIONS

Empowering Large Language Model Agents through Action Learning
Haiteng Zhao, Chang Ma, Guoyin Wang, Jing Su, Lingpeng Kong, Jingjing Xu, Zhi-Hong Deng, Hongxia Yang.
COLM 2024

Exploring the Reasoning Abilities of Multimodal Large Language Models (MLLMs): A Comprehensive Survey on Emerging Trends in Multimodal Reasoning
Yiqi Wang, Wentao Chen, Xiaotian Han, Xudong Lin, **Haiteng Zhao**, Yongfei Liu, Bohan Zhai, Jianbo Yuan, Quanzeng You, Hongxia Yang.
arXiv preprint 2024

GIMLET: A Unified Graph-Text Model for Instruction-Based Molecule Zero-Shot Learning
Haiteng Zhao, Shengchao Liu, Chang Ma, Hannan Xu, Jie Fu, Zhi-Hong Deng, Lingpeng Kong, Qi Liu.
NeurIPS 2023

ChatPathway: Conversational Large Language Models for Biology Pathway Detection
Yanjing Li, Hannan Xu, **Haiteng Zhao**, Hongyu Guo, Shengchao Liu
NeurIPS 2023 AI for Science Workshop

Retrieved Sequence Augmentation for Protein Representation Learning
Chang Ma, **Haiteng Zhao**, Lin Zheng, Jiayi Xin, Qintong Li, Lijun Wu, Zhihong Deng, Yang Lu, Qi Liu, Lingpeng Kong.
arXiv preprint 2023

Are More Layers Beneficial to Graph Transformers?
Haiteng Zhao, Shuming Ma, Dongdong Zhang, Zhi-Hong Deng, Furu Wei.
ICLR 2023

Certified Robustness Against Natural Language Attacks by Causal Intervention
Haiteng Zhao‡, Chang Ma‡, Xinshuai Dong‡, Anh Tuan Luu, Zhi-Hong Deng, Hanwang Zhang.
ICML 2022

Domain Adaptation via Mutual Information Maximization
Haiteng Zhao, Chang Ma, Qinyu Chen, Zhihong Deng.
IJCAI 2022 (Long presentation)

SKILLS

- Programming Languages: Python(Pytorch,Tensorflow) > C++ == C
- Platform: Linux
- Development: Web
- Others: LaTex, MarkDown

HONORS AND AWARDS

Award of Scientific Research	Dec. 2018
Award of Merit Student	Dec. 2022
Guorui Scholarship	Dec. 2022