

Chengsong Huang

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EDUCATION

Washington University in St. Louis

Advisor: Prof. Jiaxin Huang

Ph.D. in Computer Science

Sep. 2023 - Present

St. Louis, MO

Fudan University

Software School of Fudan University

B.S. in Software Engineering

Sep. 2019 - Jun. 2023

Shanghai, China

RESEARCH INTERESTS

My research interests broadly lies in area related to Large Language Models (LLMs) and Natural Language Processing (NLP), with a previous experience on:

- Optimizing inference and training efficiency.
- Enhancing planning and reasoning in large language models.

RESEARCH PAPERS (SELECTED)

* stands for equal contribution or alphabetical ordering.

1. **Huang, C.**, Huang, L., and Huang, J. “[Divide, Reweight, and Conquer: A Logit Arithmetic Approach for In-Context Learning](#)”. *arXiv preprint arXiv:2410.10074*, 2024.
2. Leng, J., **Huang, C.**, Zhu, B., and Huang, J. “[Taming Overconfidence in LLMs: Reward Calibration in RLHF](#)”. *arXiv preprint arXiv:2410.09724*, 2024.
3. **Huang, C.***, Liu, Q*, Lin, B*, Pang, T., Du, C., and Lin, M. “[LoraHub: Efficient Cross-Task Generalization via Dynamic LoRA Composition](#)”, *Conference on Language Modeling (COLM)*, 2024.
4. Chen, L., **Huang, C.**, Zheng, X., Lin, J., and Huang, X. “[TableVLM: Multi-modal Pre-training for Table Structure Recognition](#)”, *Association for Computational Linguistics (ACL)*, 2023.
5. Lin, B*, **Huang, C.***, Liu, Q., Gu, W., Sommerer, S., and Ren, X. “[On Grounded Planning for Embodied Tasks with Language Models](#)”, *AAAI Conference on Artificial Intelligence (AAAI)*, 2023.
6. Gu, C., **Huang, C.**, Zheng, X., Chang, K., and Hsieh, C. “[Watermarking Pre-trained Language Models with Backdoor-ing](#)”, *arXiv preprint arXiv:2210.07543*, 2022.

SELECTED RESEARCH PROJECTS

Logit Arithmetic Reweight Approach

Mar. 2024 - Oct. 2024

- Enhanced in-context learning by dividing input demonstrations into shorter, parallelizable subgroups and reweighting their logits.
- Applied a non-gradient method to optimize the weight of each demonstration group.
- Improved ICL performance on two widely-used benchmarks across three different models.

Reward Calibration in RLHF

May 2024 - Oct.2024

- Discovered that overconfidence in LLMs stems from reward models' preference for high-confidence words.
- Retrained reward models by aligning confidence levels with response quality and a new loss function.
- Improved LLM calibration on 6 datasets without compromising instruction-following ability.

Task Generalization through LoRA Composition

Jan. 2023 - Jun. 2023

- Proposed a dynamic LoRA composition method to achieve cross-task generalization.
- Utilized non-gradient search techniques to optimize LoRA module weights.
- Enhanced downstream task performance with reduced input length.

EXPERIENCE

Sea AI lab (SAIL)

Jan. 2023 - Jun. 2023

Research intern (Mentor: Qian Liu)

LoraHub: Efficient Cross-Task Generalization via Dynamic LoRA Composition

USC INK lab

May. 2022 - Jan. 2023

Research intern (Mentor: Xiang Ren, Bill Yuchen Lin)

On Grounded Planning for Embodied Tasks with Language Models

SKILLS

- **Programming Languages:** Proficient in Python, SQL and Java.
- **Libraries & Frameworks:** Expertise in PyTorch, TensorFlow, Hugging Face Transformers, and Scikit-learn.
- **Tools & Platforms:** Proficient with Git and Wandb. Experience working with LSF and Slurm.

HONORS AND AWARDS

First Prize in Scholarship for Outstanding Students at Fudan University

Dec. 2021

Awarded a Scholarship of Shanghai City

Nov. 2022

SERVICE

Conference Reviewer: NAACL 2024, ACL 2024, EMNLP 2024, ICLR 2025.