Shangyu Xing

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EDUCATION

Nanjing University **Nanjing, China**
Master of Computer Science *Sep 2023 - Jun 2026 (expected)*
NJUNLP Group (advised by Prof. Xinyu Dai)
Average Score: 88 / 100

Nanjing University **Nanjing, China**
Bachelor of Computer Science *Sep 2019 - Jun 2023*
Average Score: 91 / 100 (Top 10%)

RESEARCH INTERESTS

Multimodality: Multimodal Alignment / Multimodal Large Language Models
NLP: Natural Language Generation / Large Language Models

PUBLICATIONS

[1] **Shangyu Xing**, Fei Zhao, Zhen Wu, Chunhui Li, Jianbing Zhang, Xinyu Dai. *DRIN: Dynamic Relation Interactive Network for Multimodal Entity Linking*. ACMMM' 2023.

[2] **Shangyu Xing**, Fei Zhao, Zhen Wu, Tuo An, Weihao Chen, Chunhui Li, Jianbing Zhang, Xinyu Dai. *EFUF: Efficient Fine-grained Unlearning Framework for Mitigating Hallucinations in Multimodal Large Language Models*. Submitted to EMNLP' 2024. *Arxiv: 2402.09801*.

[3] Fei Zhao, Taotian Pang, Chunhui Li, Zhen Wu, Junjie Guo, **Shangyu Xing**, Xinyu Dai. *AlignGPT: Multi-modal Large Language Models with Adaptive Alignment Capability*. Submitted to NeurIPS' 2024. *Arxiv: 2405.14129*.

[4] Fei Zhao, Chunhui Li, Zhen Wu, **Shangyu Xing**, Xinyu Dai. *Learning from Different text-image Pairs: A Relation-enhanced Graph Convolutional Network for Multimodal NER*. ACMMM' 2022.

[5] **Shangyu Xing**, Junjie Zhou, Fukang Zhu, Xiaowen Yang, Yu Wang, Linzhang Wang. *Detecting Defects in Deep Learning Systems: A Survey*. Internetware' 2022.

RESEARCH EXPERIENCES

Enhancing Multimodal Alignment Capabilities in Multimodal LLM *Sep 2023 - Now*

- **Pretrained Model - AlignGPT:** create distinct alignment vectors for differently aligned text-image pairs during pretraining, and allocate them to various subtasks in finetuning and inference.
- **Enhancement Framework - EFUF:** leverage external expert knowledge to reinforce the alignment between language and vision, thereby reducing multimodal hallucinations with no manually annotated data and minial computational resources.

Enhancing Multimodal Alignment Capabilities in Information Extraction *Sep 2022 - Sep 2023*

- **Multimodal Named Entity Recognition:** Utilize Graph Neural Networks to capture external matching relationships across different text-image pairs.

- **Multimodal Entity Linking**: explicitly model four types of alignment between multimodal mentions and entities and uses a dynamic Graph Convolutional Network to automatically select appropriate alignment relations for different input samples.

Enhancing Multimodal Alignment Capabilities in Cross-Domain Applications *May 2024 - Now*

- **Fine-Grained Image Caption for Paleontological Fossils**: train expert visual modal to recognize core visual features, e.g., shell thickness, size of volutions, and then feed the numerical information into a pretrained open-source Multimodal LLM to perform finetuning and inference.

INTERNSHIP

Huawei Technologies Co., Ltd. **Nanjing, China**

Software R&D Engineer *Jul 2022 - Sep 2022*

- **Developing a deep-learning based voice cloning module in Text-to-Speech system**
- Integrating the open-source SOTA model Tacotron2 with a proprietary model optimized for handling Chinese spoken language pitch and rhythm

INFLY Tech (Shanghai) Co., Ltd. **Shanghai, China**

Software R&D Engineer *Jul 2023 - Sep 2023*

- **Exploring preference alignment algorithms for training Large Language Models**
- Implementing preference alignment algorithms RLHF/PPO and its variations DPO, RRHF
- Training a BLOOM model with billion-level parameters using the Deepspeed and Megatron-LM frameworks, experimenting different algorithms

SKILLS

Programming: Python, C/C++, Assembly, Java, Matlab, Latex

Software: Linux, Docker, Conda, Git

AWARDS

National Scholarship (TOP 1%)

Tencent Scholarship

Outstanding Graduate of Nanjing University (TOP 10%)

Outstanding Student Model of Nanjing University (TOP 1%)

Outstanding Student Leader of Nanjing University

First-class Academic Scholarship for Master's Students at Nanjing University

REFERENCES

Xinyu Dai (Supervisor)

Email: dxy@nju.edu.cn

Vice president of School of Artificial Intelligence, Professor of Computer Science

School of Artificial Intelligence, Nanjing University

Zhen Wu

Email: wuz@nju.edu.cn

Assistant Professor of Computer Science

School of Artificial Intelligence, Nanjing University