Miaoran Zhang

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Short Bio

I am currently a final-year Ph.D. candidate at Saarland University in Germany, under the supervision of Prof. Dietrich Klakow. My research interests lie in the general area of NLP, with a particular focus on **representation analysis**, **multilingual modeling**, and **LLM alignment**.

Education

Saarland University, Germany   08/2020 - 04/2025 (expected)
Ph.D. in Computer Science

Chinese Academy of Science, China   09/2014 - 07/2017
M.Sc. in Communication and Information Systems, GPA: 3.6/4.0

Harbin Engineering University, China   09/2010 - 07/2014
B.Sc. in Electro-information Engineering, GPA: 3.8/4.0

Work Experience

Research Assistant in Max Planck Institute for Informatics, Germany   07/2019 - 12/2019
○ Proposed an end-to-end GCN-based framework for zero-shot image recognition and analyzed the impact of class distances in the WordNet hierarchy.

Algorithm Engineer in Using.AI, China   06/2018 - 02/2019
○ Implemented the object detection and segmentation pipeline for traffic scene based on YOLOv3.
○ Developed Python code for handling imbalanced data in AI-assisted healthcare projects.

Research and Development Engineer in Baidu Inc, China   07/2017 - 02/2018
○ Developed PHP code for new functionalities in the internal user feedback monitoring platform.
○ Refactored PHP code in the internal tracing platform to reduce the server response time.
○ Redesigned C++ modules in the internal log analysis system to prevent log loss.

Publications

○ Dawei Zhu, Pinzhen Chen, **Miaoran Zhang**, Barry Haddow, Xiaoyu Shen, Dietrich Klakow. *Fine-Tuning Large Language Models to Translate: Will a Touch of Noisy Data in Misaligned Languages Suffice?* Preprint, 2024.

○ **Miaoran Zhang**, Vagrant Gautam, Mingyang Wang, Jesujoba O Alabi, Xiaoyu Shen, Dietrich Klakow, Marius Mosbach. *The Impact of Demonstrations on Multilingual In-Context Learning: A Multidimensional Analysis.* Findings of ACL 2024.

○ Anupama Chingacham, **Miaoran Zhang**, Vera Demberg, Dietrich Klakow. *Human Speech Perception in Noise: Can Large Language Models Paraphrase to Improve It?* HuCLLM 2024.

○ Pin-Jie Lin, **Miaoran Zhang**, Marius Mosbach, Dietrich Klakow. *Exploring the Effectiveness and Consistency of Task Selection in Intermediate-Task Transfer Learning.* Student Research Workshop of ACL 2024.

○ **Miaoran Zhang**, Mingyang Wang, Jesujoba O Alabi, Dietrich Klakow. *AAdaM at SemEval-2024 Task 1: Augmentation and Adaptation for Multilingual Semantic Textual Relatedness.* SemEval 2024. (**best paper award**)

○ Vagrant Gautam, **Miaoran Zhang**, Dietrich Klakow. *A Lightweight Method to Generate Unanswerable Questions in English.* Findings of EMNLP 2023.

- **Miaoran Zhang**, Marius Mosbach, David Ifeoluwa Adelani, Michael A Hedderich, Dietrich Klakow. *MCSE: Multimodal Contrastive Learning of Sentence Embeddings.* NAACL 2022.
- Vilém Zouhar, Marius Mosbach, **Miaoran Zhang**, Dietrich Klakow. *Knowledge Base Index Compression via Dimensionality and Precision Reduction.* Spa-NLP 2022.
- David Adelani, **Miaoran Zhang**, Xiaoyu Shen, Ali Davody, Thomas Kleinbauer, Dietrich Klakow. *Preventing Author Profiling through Zero-Shot Multilingual Back-Translation.* EMNLP 2021.

Research Topics

LLM Alignment via Representation Editing — Current
- Using multi-dimensional steer vectors to enable fine-grained controlled generation
- Analyzing the cross-lingual transferability in English-centric representational alignment
- Investigating the orthogonality and compositionality of various controllable attributes

Multilingual Learning and Cross-Lingual Transfer — 2023 - 2024
- Multilingual in-context learning across a wide range of LLMs, tasks, and languages
- Measuring semantic relatedness for diverse languages by data augmentation and adaptation
- Adapting English LLMs to other languages by continued pre-training and instruction tuning

Representation Learning and Understanding — 2020 - 2022
- Learning meaningful sentence embedding by integrating multimodal information
- Systematically studying the impact of data scale in (un)supervised sentence embedding learning
- Analyzing the geometry properties of the embedding space in multimodal models
- Interpreting sentence representations as high-level concepts via sparse dictionary learning

Invited Talks

London Data Week Workshop, United Kingdom — 2024
Title: Multilingual In-Context Learning

German National High Performance Computing (NHR) Association, Germany — 2024
Title: Introduction to In-Context Learning

SFB1102 Multilingual Modelling Workshop, Germany — 2024
Title: The Impact of Demonstrations on Multilingual In-Context Learning

German Research Centre for Artificial Intelligence (DFKI), Germany — 2022
Title: Sentence Representation Learning with Pre-trained Language Models

Awards

Best System Description Paper Award (1/269), SemEval workshop — 2024

Graduate Fellowship, Saarbrücken Graduate School of Computer Science — 2019 - 2020

Ding Xiu Scholarship (Top 5%), Chinese Academy of Sciences — 2015

National Scholarship (Top 1%), Nationwide — 2012

First-Prize Scholarship (Top 5%), Harbin Engineering University — 2010 - 2014

Skills

Programming: Python, PHP, C/C++, Matlab, SQL

Toolkits: Pytorch, Tensorflow, Huggingface, Transformers, Adapters, SentenceTransformers, Scikit-learn, Pandas, Numpy, NLTK, Faiss, HTCondor, Docker

Languages: Chinese (native), English (fluent), German (beginner)