Fanqi Wan

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Education

Sun Yat-sen University, School of Computer Science and Technology

Master student in Computer Science and Technology, supervised by Prof. Xiaojun Quan. 09/2022 - Present

- Research Interests: Knowledge Fusion, Efficient Alignment, Dialogue Systems.

Xi'an Jiaotong University, School of Electronic Information

Bachelor of Electronic Information Engineering, supervised by Prof. Hongqiang Lv. 09/2018 - 06/2022

- Overall Percentage: 93/100
- Rank: 10/180

Publications

My main research interests focused on deep learning for natural language generation. Previously, my work primarily focused on dialogue systems. After the emergence of large language models (LLMs), my research direction shifted towards efficient alignment (e.g., self-evolution for LLMs optimization, developing LLMs for specific domains, mitigating hallucinations of LLMs) and knowledge fusion (e.g., combining the strengths of LLMs with diverse architectures and scales).

Knowledge Fusion

1. FuseChat: Knowledge Fusion of Chat Models, ***NeurIPS 2024***, ***Under Review***, **1st Author**.

   We propose FuseChat, an extended framework of FuseLLM to integrate the collective knowledge and individual strengths of multiple structure- and scale-varied chat LLMs into a more powerful chat LLM. FuseChat-7B achieves 8.22 on MT-Bench, which is the *current SOTA 7B LLM*.

2. Knowledge Fusion of Large Language Models, ***ICLR 2024***, **1st Author**.

   We propose FuseLLM to create a unified model that combines the distinctive strengths of multiple structurally diverse LLMs. FuseLLM-7B *surpasses Llama-2-7B on 12 benchmarks*, including commonsense, reasoning, question-answering, and code generation.

Efficient Alignment

1. Self-Evolution Fine-Tuning for Policy Optimization, ***EMNLP 2024 Findings***, **4th Author**.

   We introduce self-evolution fine-tuning for policy optimization, which eliminates the need for annotated data samples during alignment.

2. Knowledge Verification to Nip Hallucination in the Bud, ***EMNLP 2024***, **1st Author**.

   We introduce Knowledge Consistent Alignment to verify and minimize the knowledge inconsistency between external knowledge in the alignment data and the intrinsic knowledge embedded in foundation LLMs, thus mitigating hallucinations before alignment.

3. Explore-Instruct: Enhancing Domain-Specific Instruction Coverage through Active Exploration, ***EMNLP 2023***, **1st Author**.

   We propose a novel approach to enhance the domain-specific instruction coverage by utilizing LLMs to explore the domain space from both breadth and depth automatically. Explore-Instruct *outperforms Self-Instruct in three specific domains.*

Dialogue Systems

1. Retrieval-Generation Alignment for End-to-End Task-Oriented Dialogue System, ***EMNLP 2023***, **4th Author**.

   We introduce maximal marginal likelihood for retriever training to address the retrieval-generation misalignment in end-to-end task-oriented dialogue systems.

2. Multi-Grained Knowledge Retrieval for End-to-End Task-Oriented Dialog, ***ACL 2023***, **1st Author**.

   We propose a multi-grained knowledge retriever and introduce a novel distillation objective for retriever training. MAKER achieves *SOTA performance on MultiWOZ 2.1 and CamRest* with both condensed KB and full KB.

Misc.

1. BlockPruner: Fine-grained Pruning for Large Language Models, ***NAACL 2025 Under Review***, **2nd Author**.

   We propose a novel method for zero-shot personality detection in a multi-turn dialogue manner.

2. PsyCoT: Psychological Questionnaire as Powerful Chain-of-Thought for Personality Detection, ***EMNLP 2023 Findings***, **3rd Author**.

   We propose a novel method for zero-shot personality detection in a multi-turn dialogue manner.

3. Clustering-Aware Negative Sampling for Unsupervised Sentence Representation, ***ACL 2023 Findings***, **2nd Author**.

   We propose a novel method that incorporates cluster information for unsupervised representation learning.

Professional Experience

Research Intern at LLM Team, ByteDance Doubao (Seed)

Self-improvement of LLMs. 06/2024 - Present

Research Intern at Natural Language Processing Center, Tencent AI Lab

Instruction-tuning and model fusion of LLMs, supervised by Dr. Xinting Huang and Dr. Wei Bi. 03/2023 - 05/2024

Commercial Projects on E-Commerce Platforms, Vipshop

Emotional analysis of comments on e-commerce platforms, supervised by Dr. Rui Wang. 04/2022 - 01/2023

Academic Competitions

2023 Xingzhi Cup

2nd Prize on Deep Learning Model Interpretability Task. 08/2022 - 02/2023

2022 IFLYTEK AI Developer Competition

2nd Prize on Text Classification and Question Answering Based on Paper Abstracts Task. 07/2022 - 10/2022

2022 Ali Lingjie E-commerce Search Algorithm Competition

3nd Prize on E-commerce Search (Recall & Rerank) Task. 03/2022 - 06/2022

Selected Awards

Outstanding Award

Received outstanding award for Tencent AI Lab Rhino-Bird Focused Research Program. 09/2022 - 09/2023

Excellent Graduate Students

Received excellent graduate students award at Xi'an Jiaotong University. 09/2018 - 06/2022

National Scholarship

Received national scholarship at Xi'an Jiaotong University. 09/2018 - 06/2019