Zhongsheng Wang

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Summary/Objective

As a dedicated postgraduate student in Data Science at the University of Auckland, my research centers on advancing natural language processing techniques, focusing on optimizing the performance of Large Language Models (LLMs) for specialized applications. My academic journey has equipped me with a solid foundation in both theoretical and practical aspects of AI and machine learning. I am keen to pursue a Ph.D. to further my research in Multimodal Retrieval-Augmented Generation and the development of trustworthy AI agents, aiming to contribute significantly to artificial intelligence.

Education

The University of Auckland **Auckland, New Zealand**

Master of Data Science *2022.7 - 2024.6*

- **Selected Coursework:** Statistical Computing (A), Functional Programming and Distributed Services (A-), Capstone: Creating Value from Data (A+), Foundations of Machine Learning (A-), Software Tools and Techniques (A), Dissertation (A+)
- **Voluntary Work:** Graduate Class Representative

Southwest University **Chongqing, China**

Bachelor of Engineering in Computer Science and Technologies *2019.9 - 2023.6*

- **Selected Coursework:** Algorithm Analysis and Design (A+), Artificial Intelligence (A+), Data Structure (A)
- **Voluntary Work:** Assistant Counselor, New Oriental Group Campus Ambassador
- **Awards:** The Third Prize Scholarship, Excellent Student Cadre, Spiritual Advanced Individual

Research Interests

- Large Language Model Agents (LLM/AI Agents)
- Multimodal Retrieval-Augmented Generation (MRAG)
- Trustworthy Agent Development

Research Experience

ASR Models Fine-tuning in Industry-level CRM Systems **2024.5 - 2024.7**

- Proposes an industry paradigm for automatically building high-quality datasets for speech model fine-tuning
- Created a plug-and-play framework and added LLMs as components to augment reasoning capabilities universally.
- The model fine-tuned by this solution has been verified feasible and deployed.

ChatLogic: Multi-step Deductive Reasoning over LLMs **2023.8 - 2023.12**

- Augmented multi-step reasoning capabilities of LLMs using external symbols.
- Participated in creating valid prompts to allow LLMs to generate formatted code content.
- Created a plug-and-play framework and added LLMs as components to augment reasoning capabilities universally.
- The dissertation based on this project received an **A+** grade in postgraduate studies at the University of Auckland.

Epic-level Text Generation with LLM through Auto-prompted RL **2023.3 - 2023.7**

- Defined awards indicator in the PPO reinforcement learning model and complete indicator measurement function.
- Participated in creating independent prompts for each action to force LLMs to generate text content that meets the format requirements.
- Integrated specifically formatted text content generated by LLMs.
- The epic-level novel (snow white) generated by this method can be viewed here*.

Working Experience

Graduate Teaching Assistant **2023.7 - 2023.11/2024.7 - 2024.11**

The University of Auckland, New Zealand

- Assist lecturers with computer science courses, including answering questions and marking assignments and tests.
- The courses I provide help include: COMPSCI 761 Advanced Topics in Artificial Intelligence (2024 S2), COMPSCI 367 Artificial Intelligence (2023 S2)

AI Engineer **2024.5 - 2024.9**

Atom Intelligence, Remote

- Develop speech recognition model fine-tuning solution for the retail industry customer management system.
- Propose solution for automated construction of fine-tuning datasets for the retail industry.
- Explore the industrial applications of LLM in the retail industry and provide business solutions.

Data/AI Scientist (Summer Intern) **2023.11 - 2024.2**

HouGarden Co, Ltd., New Zealand

- Design the Issue Management System product, which is used to build a ChatBot Question-Answering dataset for the real estate industry.
- Complete the fine-tuning of the large model for the English automated translation of the company's official website and deploy it in practice.

Academic Services

Conference Reviewer

The International Conference on Neural Information Processing (ICONIP'24)

The International Joint Conference on Neural Networks (IJCNN'[24-25])

Reasoning and Planning for Large Language Models@ICLR'25 (Workshop)

Talks

Creative Intelligence: Applications of Large Language Models in Data Generation and Reasoning, University of Electronic Science and Technology of China, Chengdu, China, December 2024

Publications

Conference & Journal Papers

Wang Z, Wang S, Wang J, Liang Y, Zhang Y, and Liu J. Weak Supervision Techniques towards Enhanced ASR Models in Industry-level CRM Systems. Accepted by The International Conference on Neural Information Processing, ICONIP 2024

Wang Z, Liu J, Bao Q, Rong H, Liu J, and Zhang J. ChatLogic: Integrating Logic Programming with Large Language Models for Multi-Step Reasoning. Accepted by The International Joint Conference on Neural Networks, IJCNN 2024

Qi Q, Ni L, **Wang Z**, Zhang L, Liu J, and Witbrock M. Epic-Level Text Generation with LLM Through Auto-Prompted Reinforcement Learning. Accepted by The International Joint Conference on Neural Networks, IJCNN 2024

Preprint & Workshop Papers

Li X, Ni L, Wang X, Tang Y, Li R, Liu J, and **Wang Z**. LLM-based Business Process Model Generation from Textual Descriptions. Arxiv pre-print

Xiao X, Shen S, Bao Q, Rong H, Liu K, **Wang Z**, and Liu J. CoRA: Optimizing Low-Rank Adaptation with Common Subspace of Large Language Models. Arxiv pre-print