Zijie Zhou

CONTACT INFORMATION

College of Artificial Intelligence
China University of Petroleum (Beijing)
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RESEARCH INTERESTS

Large language models, natural language processing, reinforcement learning, machine learning

EDUCATION

China University of Petroleum (Beijing), Beijing, China **August 2023 - June 2026**

M.S. in Artificial Intelligence
GPA: 3.82 / 4.00 | Rank: 3 / 31

China University of Petroleum (Beijing), Beijing, China **August 2019 - June 2023**

B.A. in Artificial Intelligence
GPA: 3.45 / 4.00 | Rank: 5 / 33

PAPERS IN PREPARATION

Yuqi Li, **Zijie Zhou**, Junjia Du, Junhao Dong, Xin Yin, Renye Yan, Yingli Tian and Tingwen Huang. *A Preference-Driven Methodology for Efficient Code Generation.*

Zhiyuan Peng, Xin Yin, **Zijie Zhou**, Chenhao Ying, Chao Ni and Yuan Luo. *PrefGen: A Preference-Driven Methodology for Secure Yet Gas-Efficient Smart Contract Generation.*

Dandan Zhu, **Zijie Zhou**, Xinping Dai, Liping Zhu, Junliang Yuan and Ke Zhang. *A Novel Directional Drilling Decision Method Based on 3D Spatial Wide-Angle Detection Mechanism.*

PUBLICATIONS

Lingyu Wang, **Zijie Zhou**, Guanqun Shi, Junkang Guo, Zhigang Liu. *Small Object Detection Based on Bidirectional Feature Fusion and Multi-scale Distillation.* ICANN 2024.

Yi Zhao, Dandan Zhu, Fei Wang, Xinping Dai, Huishen Jiao, and **Zijie Zhou**. *An intelligent drilling guide algorithm design framework based on high interactive learning mechanism.* Petroleum Science.

ACADEMIC EXPERIENCE

University of California, Riverside, Riverside, California, USA

Visiting Student in Efficient Reinforcement Learning for LLMs **July 2025 - present**
Supervised by Prof. Yinglun Zhu

- Proposed Speculative GRPO (SP-GRPO), a novel RL algorithm combining fast draft model generation with reward computation from a large target model to improve LLM training efficiency.
- Achieved significant inference speedup by using a lightweight draft model for token generation and a large target model for reward-based filtering.

Peking University, Beijing, China

Research on Efficient Code Generation via Reinforcement Learning **April - June 2025**

- Proposed DC-GRPO, a reinforcement learning framework with dynamic pruning and multi-level rewards for LLM-based Solidity code generation.
- Achieved 13.4% Eff@5 on a 1.5B code LLM, outperforming standard GRPO by 1.2% and other baselines. Contributed to manuscript under submission.

Zhejiang University, Zhejiang, China

Multi-objective Solidity Code Generation with Large Language Models **February - April 2025**

- Proposed PrefGen, a DPO-based framework that jointly optimizes correctness, gas efficiency, and security in Solidity code generation.
- Achieved 66.7% Pass@5, 58.9% Gas@5, and 62.5% Secure@5 on Qwen-7B; reduced ERC-20 gas cost by 12%. Contributed to a manuscript under submission.

Xi'an Jiaotong University, Xi'an, China

Small Object Detection via Multi-scale Knowledge Distillation **February - May 2024**

- Second author; co-developed a multi-scale knowledge distillation framework that transfers hierarchical features from teacher to student for small object detection.
- Proposed a bidirectional feature fusion structure incorporating a Convolutional Attention Feature Fusion (CAFF) module and Pyramid Pooling Loss to enhance multi-layer aggregation.
- Demonstrated significant performance gains over traditional baselines; paper accepted at ICANN.

China University of Petroleum (Beijing), Beijing, China

Research Project on Multi-table Understanding and Reasoning **June 2025 - present**

Supervised by Prof. Dandan Zhu and Prof. Huiyu Zhou (University of Leicester, collaborative advisor)

- Designed and implemented an experimental framework for multi-table retrieval and reasoning using large language models.
- Developed a multi-objective reward scheme for multi-turn question answering, incorporating answer correctness, retrieval precision, and format compliance.

Application of Large Language Models **May 2024 - February 2025**

- Built a domain-adapted Q&A system for campus services by fine-tuning LLMs with school-specific data and enabling SQL-based dialogue interactions.
- Integrated retrieval-augmented generation (RAG), achieving a 40% improvement in response accuracy and significantly enhancing user experience.

Teaching Assistant **August 2023 - June 2025**

Taught lab sessions, designed and maintained experimental assignments, deployed course environments, graded submissions, and provided technical and conceptual support to students.

- Principle of artificial intelligence — Fall 2023, Fall 2024 and Spring 2025.
- Python for data analysis — Spring 2024.

Professional Experience

Innovation Business Center of Yidu Cloud, Beijing, China

Algorithm Intern **February - August 2023**

Developed GRU-based multi-label models for disease prediction with competitive Top-10 performance; cleaned and linked internal medical records via SQL and Pandas to enable effective downstream business analysis.

PERCENT Technology, International Business Department, Beijing, China

Machine Learning Research Assistant **August 2022 - February 2023**

Improved Chinese-to-English machine translation by 2%, delivering the deployed model; additionally led multilingual data standardization and contributed to sentiment classification system design.

Kunlun Digital Technology, Sales and Retail Business Department, Beijing, China

Computer Vision Intern **May - August 2022**

Conducted AI video recognition research and authored a 24-page report; designed a cashback scenario for gas station retail stores, enhancing customer engagement.

Honors and Awards

Graduate Study Scholarship, 2023

Undergraduate Study Scholarship, 2022

Technology Innovation Advanced Individual Award, 2022 and 2023

Honorable Mention, Interdisciplinary Contest In Modeling, 2021

Outstanding Undergraduate Student Cadre, 2020

Computer Skills

- Machine Learning: Deployment and fine-tuning of large language models (LLaMA, Qwen).
- Programming Languages: Python, C/C++, with experience in NumPy, Matplotlib, and Pandas.
- Tools: Git, Docker, LangChain, ChatGPT, Microsoft Office, LaTeX.