WEI Zeyu
1196078177@qq.com | +86 17568083061

EDUCATION

University of Chinese Academy of Sciences (CAS) Beijing, China
Computer Technology, *Master of Engineering expected* Sep, 2023 – Jun, 2026
Core courses: *Pattern Recognition and Machine Learning*, *Intelligent Computing System*, *Deep Learning*, *Advanced Artificial Intelligence*, *Stochastic Models and Intelligent Algorithms*
Qinghai University (QHU) Xining, Qinghai
Information Management & Information System, *Bachelor's degree obtained* Sep, 2019 – Jun, 2023
Weighted Average: 88.5/100

PUBLICATIONS

- Haonan Zhai, Song He, **Zeyu Wei** & Yong Xie (2022). "Blockchain-Based Outsourcing Shared Car Risk Prediction Scheme Design". Security and Privacy in New Computing Environments. SPNCE 2021. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, vol 423. Springer, Cham. https://doi.org/10.1007/978-3-030-96791-8_1
- **Zeyu Wei**, Minghao Zhao, Xiaoyu Zhong. "Study on the selection of optimal reaction conditions for ethanol coupling to C4 olefins based on analytic hierarchy process and Bayesian network", Proc. SPIE 12158, International Conference on Computer Vision and Pattern Analysis (ICCPA 2021), 121581A (2 March 2022); https://doi.org/10.1117/12.2627147
- **Zeyu Wei**, Xuemin Liu, Shuo Wang, Xiaohui Rong. "IMPD-MACD: A Comprehensive Multi-Perspective Cognitive Fusion Approach for LLM Hallucination Detection". (ACL2025 oa:3,3,2; conf:4,3,2; meta 2.5, journal transfer to knowledge-based system)
- **Zeyu Wei**, Shuo Wang, Xiaohui Rong & Xuemin Liu. "Shadows in the Attention: Contextual Perturbation and Representation Drift in the Dynamics of Hallucination in LLMs". (submitted to ICONIP 2025)
- **Zeyu Wei**, Shuo Wang, Xuemin Liu & Xiaohui Rong. "Optimizing Semantic Consistency Modeling: Task-Specific Tensor Fusion, Multi-Task Multi-Scale Joint Training, and Uncertainty-Aware Distillation". (submitted to ECAI 2025)
- Shuo Wang, **Zeyu Wei**, Wenjing Chang, Guangjun Shi & Jianjun Yu. "HiIntent: A Collaborative Hierarchical Framework for Zero-Shot Intent Detection". (submitted to SMC 2025)
- Shuo Wang, **Zeyu Wei**, Guangjun Shi & Jianjun Yu "MAPO-QA: A Multi-Agent Prompt Optimization Method for Question Answering". (submitted to ICONIP 2025)

MAJOR PROJECTS

A Multi-Perspective Cognitive Fusion Approach for LLM Hallucination Detection Jul, 2024 – present

- Analyzed the issue of LLM hallucinations and the limitations of current detection methods, including single-agent and multi-agent methods
- Proposed the novel IMPD-MACD approach to enhance agent division of labor and collaboration, strengthening LLM reliability and practicability
- Performed experiments in varied scenarios to demonstrate the approach significantly outperforms the current state-of-the-art approaches

Development of A Dual-Perspective Framework for Examining LLM Hallucination Jul, 2024 – present

- Proposed a dual-perspective framework to examine the external manifestation and internal dynamics of hallucination of LLMs
- Manipulated contextual inputs along relevant and irrelevant tracks to induce interference of varying degrees and observe their influence on model performance
- Captured external symptoms by introducing a tri-perspective hallucination detector, featuring semantic deviation, factual extension and logical inference

- Analyzed hidden state drift, attention entropy variation and distributional shifts to quantify the process of the injected context altering the model's representation space

Development of A Multi-Dimensional Consistency Evaluation Model Jul, 2024 – present

- Designed a multi-dimensional consistency evaluation model that jointly evaluates semantic, emotional, and logical alignment between sentence pairs with great performance and high efficiency
- Fused gated memory networks with a Multi-Task Mixture-of-Experts architecture to facilitate fine grained decomposition and dynamic recombination of tensors for task-specific feature disentangling
- Developed a multi-granular feature extraction module to better capture semantic information at character, phrase and sentence levels
- Established an uncertainty-aware knowledge distillation mechanism for high-confidence knowledge transfer to largely improve inference efficiency while maintaining performance

A Multi-Agent Prompt Optimization Method for Question Answering Jul, 2024 – present

- Decomposed complex questions into semantically coherent and ordered sub-questions to construct explicit reasoning chains to enhance LLM interpretability and guide multi-step inference
- Employed simulated annealing for global exploration and reinforcement learning for reward-guided policy refinement for LLM-generated candidates relying solely on output text
- Performed experiments on multi-hop QA benchmarks, like HotpotQA and QASC, to demonstrate that optimized framework surpassed prior ones, delivering higher exact-match and F1 scores

A Collaborative Hierarchical Framework for Zero-Shot Intent Detection Jul, 2024 – present

- Developed an LLM to generate semantic abstractions of intent labels and employed a discriminative module to evaluate and refine them for coherence and correctness
- Designed a similarity-driven convergence strategy for higher intra-class consistency and inter-class separability by using multi-metric similarity calculation
- Constructed contrastive prompts and leveraged the learned label hierarchy to generate enriched semantic descriptions for reinforcement learning improvement and more accurate classifications

Image Captioning Based on A CNN-Transformer Architecture Mar, 2024 – Jun, 2024

- Built a CNN model with pretrained weights to extract image features and developed a Transformer model to generate image captioning using the outcome of the CNN model as input
- Selected an appropriate image captioning dataset, like MSCOCO, divided it into a training dataset and a testing dataset at a proper ratio, and performed data processing using OpenCV
- Tokenized captions, removed stop words, and constructed a vocabulary, and offered standard captioning scores for model performance, including BLEU-1, BLEU-4, METEOR, ROUGE-L and CIDEr

AWARDS & HONORS

- Merit Student, Qinghai University
- Outstanding Student Scholarship, Qinghai University
- Individual Scholarship, Qinghai University
- China Undergraduate Mathematical Contest in Modeling, 2nd prize at the national level
- "Chinese Society for Electrical Engineering Cup" China College Students' Mathematical Contest in Modeling, 3rd prize
- MathorCup College Mathematical Modeling Challenge, 3rd prize
- MathorCup Big Data Challenge, 3rd prize
- 'CP Group Cup' National Undergraduate Market Research Competition, 3rd prize at the national level
- National College Student Information Security Contest, Excellence Award at the national level
- China College Students' 'Internet+' Innovation & Entrepreneurship Competition, 3rd prize

SKILLS

C, C++, Python, SPSS, PyTorch, Linux, RISC-V