HUANG YONGQIANG

Phone: (+86) 151-3671-9112 ◇ Email: hyq.cee@zju.edu.cn

BASIC BACKGROUND

Alma mater: Zhejiang University (ZJU) *June 2025*
Major: Process Equipment and Control Engineering
GPA: 3.67/4.0
CET6:480; TOEFL: 89
Related courses: ML, CV, OS, CN, DB, DS, OOP, MCP
Received awards: Provincial Government Scholarship; Third Prize Scholarship; Second Prize in Energy Conservation and Emission Reduction Competition, etc.

RESEARCH INTERESTS

Drawing upon a dual background in Engineering and Computer Science, my research focuses on developing efficient, physics-constrained representation methods for Artificial Intelligence. I am looking forward to enhance models' understanding of topological structures and improve the interpretability of their outputs. For downstream applications, the objective is to advance generative capabilities for non-Euclidean structured data and enhance the spatial reasoning abilities of embodied agents.

RESEARCH EXPERIENCE

Mapping task settings and human-machine distribution in workflows Jul. 2025 - Current
Supervisors:Dr.Yu Kaicheng (WLU)

Introduction:This project aims to explore the human-machine collaborative scenario, provide an open source workflow platform for human-machine co-evolution verification, verify that humans are equivalent to small parameter/weak performance LLM in the context of learning new knowledge/concepts, promote the application of weak models in the field of human-machine systems, and the mapping rules between task settings and human-machine distribution in workflows in multi-person/single-person contexts. On this basis, a theory of workflow design and allocation is provided.
My Role and Contribution:As the project lead, I am responsible for the full-stack development of the platform (Autoflow). I also led the formulation of core research questions, the complete experimental design, and am currently conducting data collection and effect evaluation.

Autoregressive Hierarchical 3D Object Reconstruction Dec. 2024 - Apr. 2025
Supervisors:Prof.Zhang Yue (WLU)

Introduction:An independent project to design a new generative paradigm for non-Euclidean data. This work introduces hierarchical relationships via graph data and an autoregressive decoder to learn multi-level spatial representations. The model is designed to enhance the editability and interpretability of 3D generation, directly addressing the representation challenges I identified in my earlier LLM research.
My Role and Contribution:I independently completed the construction of the main framework, which includes data preprocessing, point cloud autoencoder, graph autoencoder, and the development of an autoregressive decoder for spatial representation tokens.

Navigate Complex Physical Worlds via Geometrically Constrained LLM Feb. 2024 - Jul. 2024
Supervisors: Dr.Zhao Junbo, Researcher (ZJU)

Introduction: This work builds a multi-agent system framework to demonstrate the spatial understanding and planning capabilities of LLM. The GPT series is used as the base model to plan and

generate different fine-grained scene graphs, and combined with knowledge graphs and genetic algorithm solvers to achieve scene construction and updates.
My Role and Contribution:As project lead and first author, I led this project from conception to publication. I designed the multi-agent collaboration framework, integrated the knowledge graph, and developed the 3D visualization workflow. This project critically exposed the unreliability (hallucinations) of LLMs in spatial reasoning, which became a primary motivator for my subsequent research into fundamental representation.
Publication: "Navigate Complex Physical Worlds via Geometrically Constrained LLM"
(Accepted at EMNLP Workshop 2024) ***Yongqiang Huang***, Wentao Ye, Liyao Li, Junbo Zhao

An Invariant Latent Space Perspective on Inversion Attack to Large Language Models Sep. 2024 - Oct. 2024
Supervisors: Dr.Zhao Junbo, Researcher (ZJU)

Introduction: This work proposes a variational inverse encoder (VIE) framework, which introduces invariant latent space assumptions and dynamic filtering mechanisms to effectively address reverse attack problems and improve the security and robustness of large-scale language models. This experience not only enhanced my engineering skills but also taught me how to identify new application scenarios for a technology. In other words, it helped me better understand the process and true meaning of "implementation".
My Role and Contribution: I participated in the experimental design of this project, mainly responsible for obtaining almost all baseline data and some robustness data, and completing the entire process from code disassembly, model training, inference, and multi-criteria evaluation.
Publication: "An Invariant Latent Space Perspective on Inversion Attack to Large Language Models"
(Working Paper)
Wentao Ye, Jiaqi Hu, Haobo Wang, Zhiqing Xiao, ***Yongqiang Huang***, Lei Feng, Muzhi Zhu, Liyao Li, Sai Wu, Junbo Zhao

What is LLM Focusing on When Making a Superficial Change Aug. 2024
Supervisors: Dr.Zhao Junbo, Researcher (ZJU)

Introduction: This work aims to analyze the interpretability of LLM activities from the perspective of attention, especially the attention activities of LLM when dealing with logically perturbed statements, and hopes to summarize a set of indicators to evaluate the performance of LLM in dealing with complex logic.
My Role and Contribution: I am leading this research. Initial experiments to identify high-level logical features failed to produce clear results. Instead of stopping, I pivoted (inspired by sparse attention) and demonstrated that a simple CNN can extract robust attention features during character-level perturbations. This project reinforced the value of methodological persistence.

Exploration of Translation Performance of Multimodal Models in Unbalanced Corpus Aug. 2024 - Dec. 2024
Supervisors:Prof.Zhang Yue (WLU)

Introduction: This project aims to explore whether and in what ways multimodal data can supplement additional information for low resource language translation tasks.
My Role and Contribution: Collaborating with seniors, I design the basic experiment, including parallel corpus data acquisition and preprocessing, prompt design, model deployment, execution of inference tasks, and evaluation.

PROJECTS

Development of Data Interface and Motion Visualization Jan. 2025 - Jun. 2025
Supervisors: Prof. Shan Yan (ZJU)

Introduction: This project is my graduation project, which mainly involves developing an interface plugin to enable information exchange between VeryEngine and ADAMS simulation software.

Gas Safety Self-closing Valve Dec. 2023 - Feb. 2024
Supervisors: Dr. Qian Jinyuan, Associate Professor (ZJU)

Introduction:This project is an engineering project provided by the campus science and technology innovation platform, and I participated in the design of the device and patent editing work.

Floating Island Aeration Devices Based on High-efficiency Catalysts Dec. 2022 - May. 2023
Supervisors: Prof. Wang Xiuyu (ZJU)

Introduction: As the team leader, I coordinated the team's efforts, designed the equipment, conducted experiments, and presented the results. And we were awarded second prize in the school-level Energy Conservation and Emission Reduction Competition.