

LUTAO YAN

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Education

South China University of Technology

Bachelor of Science in Data Science and Big Data Technology

Sep. 2021 – Now

Guangdong, China

Research Interest

Multi-modal Learning, MLLM, LLM, Data Management, Visualization

Publication

Evaluating Task-based Effectiveness of MLLMs on Charts

- Author: Yifan Wu*, **Lutao Yan***, Yuyu Luo, Yunhai Wang, Nan Tang (* Equal Contribution)
- Conference: **EMNLP 2024**: Empirical Methods in Natural Language Processing *under review*
- Main Contribution: Curate the first benchmark focus on low-level data analysis tasks on charts. A large-scale dataset with 89,388 quartets (chart, task, question, answer). Propose a novel textual prompt strategy, named Chain-of-Charts, which boosts model performance by 24.36%.
- Preprint Link: [Paper](#)

Academic Experience

The Chinese University of Hong Kong, Shenzhen

Undergraduate Research Programme (UGSC)

Jul. 2024 – Present

School of Science and Engineering

- Mentor: Fangxin Wang
- Focus on research about LLM and edge intelligence computing. Optimization of sparse models (MoE) for federated learning scenarios.

Hong Kong University of Science and Technology (Guangzhou)

Research Intern

Jan. 2024 – Jun. 2024

HKUST, Guangzhou

- Mentor: Yuyu Luo (DSA Thrust)
- Focus on visual analysis based on multimodal large language model (MLLM). Proposed a benchmark and data prompt for MLLMs
- Investigate how visual modifications to charts, such as altering visual elements and introducing perturbations, affect MLLM's performance. Summarize our work into a paper submitted to IEEE VIS.

South China University of Technology

Research Assistant

April 2023 – May 2024

Future Technology Department

- Mentor: Ye Liu, Jin Xu
- Investigate cross-domain recognition techniques for lie detection. Conduct significance test using t-test and try to analyze eye movement and facial expression across multiple datasets.
- Develop a deception detection multimodal feature extraction and significance test tool.
- Implement big data analytics based on health data.

Internship

Thin Red Line Company | Algorithm Lab Internship

Jul. 2024 – Aug. 2024

- Responsible for the design and development of the large language model evaluation system, assessment set design and development, and the output of the assessment technology report.
- According to the annotation rules, the text of various types of AI to carry out annotation work. Review the results of large model data annotation to ensure data quality.

National University of Singapore (NUS) | Visiting Student

July 2023

- As an invited student to summer school in NUS, advised by Prabhu Natarajan, I improved image quality by implement advanced computer vision applications to recognize traffic signs.
- Enhance visual model performance with 98% accuracy by fine-tuning and get Distinction Grade(1%) at last assessment.

Honors and Awards

Future Technology Study Tour Prize <i>Second Prize</i>	CNY 5000 Scholarship <i>2024</i>
Future Technology Taihu Innovation Prize <i>Second Prize</i>	CNY 5000 Scholarship <i>2023</i>
National Contemporary Undergraduate Mathematical Contest in Modeling(CUMCM) <i>Third Prize</i>	National competition <i>2022</i>
Mathematical Contest in Modeling(MCM) <i>Successful Participant</i>	International competition <i>2022</i>
Thrice-Good Student of the Year <i>Top 10%</i>	University-level Award <i>2022</i>
Baidu “Paddle Paddle” Cup <i>Excellence Award</i>	Enterprise competition <i>2021</i>

Core Courses

Bachelor Courses:

Mathematics: Calculus II (4.0/4.0), Discrete Mathematics (4.0/4.0), Complex Variable(3.7/4.0) etc.

CS/CE: Advanced Language Programming (4.0/4.0), Introduction to Bid Data (4.0/4.0), Data Structure (3.7/4.0), Introduction to Engineering (4.0/4.0), Computer Network (4.0/4.0), Artificial Intelligence and 3D Vision (4.0/4.0), Introduction to Computer and Software Engineering (4.0/4.0), LLM and AI Engineering Design (3.7/4.0), Big Data Applications (4.0/4.0) etc.

Others: Engineering Drawing (4.0/4.0), General Physics III (3.7/4.0), Technical Commucation (4.0/4.0) etc.

Overseas Courses:

Carnegie Mellon University: A Window to Data Science in Technology Online Project-Based Learning Program (A Grade)

Cambridge Girton College: Artificial intelligence and applications in cybersecurity, software and security engineering Spring Programme (Upper Second Class)

Technical Skills

Languages: Python, Java, C, C++, SQL, Matlab

Developer Tools: VS Code, Eclipse, Google Cloud Platform, PyCharm, Visual Studio

Technologies/Frameworks: Linux, Pytorch, GitHub, MySQL, Latex, Tableau

Miscellaneous

Hobby: Skateboarding (Member of School Club), Track and Field (School-wide Silver Medal Winner)

Personal Homepage: More details and interesting life shared at [Link](#)