

# Yuzhe Yang

(+86) 183-1076-2536 | [yuzheyang@link.cuhk.edu.cn](mailto:yuzheyang@link.cuhk.edu.cn) | [homepage](#) | [google scholar](#)

## EDUCATION

**The Chinese University of Hong Kong, Shenzhen**

*B.Eng. in Computer Science and Engineering*

Shenzhen, China

Sep. 2021 – May 2025

Advised by: Prof. [Jianfeng Mao](#) and Prof. [Benyou Wang](#)

Research Interest:

- Data Mining: Spatial-Temporal Modeling, Time Series, Graph Learning
- Large Language Model: Multimodal Reasoning & Alignment, Hallucination, Agent
- Trustworthy AI

## PUBLICATIONS

- [1] **FAST-CA: Fusion-based Adaptive Spatial-Temporal Learning with Coupled Attention for airport network delay propagation prediction**

Li, C., Qi, X., **Yang, Y.**, Zeng, Z., Zhang, L., Mao, J., *Information Fusion*. 2024. P. 102326. [\[link\]](#)

- [2] **Open-FinLLMs: Open Multimodal Large Language Models for Financial Applications**

Xie, Q., Li, D., Xiao, M., Jiang, Z., Xiang, R., Zhang, X., Chen, Z., He, Y., Han, W., **Yang, Y.**, Chen, S., Zhang, Y., Shen, L., Kim, D., Liu, Z., Luo, Z., Yu, Y., Cao, Y., Deng, Z., Yao, Z., Li, H., Feng, D., Dai, Y., Somasundaram, V., Lu, P., Zhao, Y., Long, Y., Xiong, G., Smith, K., Yu, H., Lai, Y., Peng, M., Nie, J., Suchow, J. W., Liu, X.-Y., Wang, B., Lopez-Lira, A., Huang, J., Ananiadou, S., *arXiv preprint 2408.11878*. 2024. [\[link\]](#)

## Working Paper

- [3] **Integrative Mean-Field Epidemic Model and Adaptive Graph Learning for Network-wide Delay Propagation Dynamics Prediction**

Li, C., Lei, M., Wu, J., **Yang, Y.**, Zhang, L., Mao, J., *To be submitted*. 2024

- [4] **A User-Centric Financial Benchmark for Large Language Models**

**Yang, Y.**, Zhang, Y., Gan, R., Wang, B., *To be submitted*. 2024

## RESEARCH EXPERIENCE

### Financial Multimodal LLM

May. 2024 – Present

*Research Assistant Internship, advised by Prof. [Benyou Wang](#) and [Jimin Huang](#)*

*[SRIBD](#)*

- Led a task team to the multimodal extension of LLM; this work had submitted to *KDD 2025* [\[2\]](#)
- Developed a multimodal financial benchmark dataset for LLM training and evaluation
- Multimodal instruction finetuning for LLM, include text, image (chart & tabular) and numerics data
- Align multimodal LLM with financial data and real-world scenarios to improve model performance
- Released [FinLLaVA-8B](#): Achieved MMMU (Overall) score of 36.3 and MMMU (Business) score of 30.7
- Constructed a purely text-based multi-turn dialogue benchmark to evaluate the performance of LLMs in real-world financial applications using a user simulator; this work is currently ongoing [\[4\]](#)

### Flight Delay Propagation Modeling

Aug. 2023 – Nov. 2023

*Undergraduate Research Assistant, advised by Prof. [Jianfeng Mao](#)*

*[CUHK-Shenzhen](#)*

- This work had published in *Information Fusion* [\[1\]](#)
- Developed a GNN framework integrating dynamic and adaptive graph learning with coupled attention mechanisms to address complex spatial-temporal dependencies in airport delay propagation
- Implemented periodic feature extraction and multifaceted information fusion modules to enhance performance
- Achieved SOTA performance in airport network delay propagation prediction, with 0.043% reduction in long-term prediction RMSE compared to the previous SOTA model

## Text-to-Video Generative Models

Sep. 2024 – Present

*Undergraduate Research Assistant, advised by Prof. Benyou Wang*

*SRIBD*

- Downloaded and constructed a comprehensive video caption dataset for pretraining
- Developed a pipeline to assess video caption hallucination, filtering out low-quality data
- Established a robust evaluation framework for measuring and scoring video hallucinations, improving the quality and reliability of video generation models

## Neural ODE Network for Flight Delay Prediction

Feb. 2024 – Present

*Undergraduate Research Assistant, advised by Prof. Jianfeng Mao*

*CUHK-Shenzhen*

- Developed a continuous graph using Neural ODE to enhance the interpretability of the model by incorporating mathematical formulations
- Achieved faster training time and reduced model complexity compared to traditional models
- Built baseline models to validate the performance of Neural ODE in aviation-related tasks
- Addressed challenges such as irregular time sampling and missing data in the dataset

## Epidemic Transmission Prediction in Airport Networks

Aug. 2023 – Present

*Undergraduate Research Assistant, advised by Prof. Jianfeng Mao*

*CUHK-Shenzhen*

- This work is currently ongoing [3], to be submitted to *Transportation Research Part B: Methodological*
- Improved the SIS epidemiological model to simulate airport epidemic transmission
- Enhanced the SIS model by converting network transmission parameters into time-varying functions using adaptive graph learning (AdapGL)
- Incorporated heterogeneity, dynamic, and negative recovery states into the SIS model and used adaptive graph learning to predict infection and recovery states
- Compared the improved SIS model with classical ODE methods, LSTM, and ASTGCN models, demonstrating the superior performance of adaptive graph learning (GAT+AdapGL) in predicting extended states at airports
- Conducted simulation experiments, including setting infection rates and transmission processes consistent with real-world scenarios, validating the theoretical guidance's accuracy

## Early Predicting and Controlling Network Flow in SDN

Jan. 2023 – Mar. 2023

*Research Assistant Internship, advised by Prof. Kai Lei*

*PKU-Shenzhen*

- Developed a novel network flow prediction method using a modified Informer architecture for Software-Defined Networks (SDN) to enhance traffic management and resource allocation
- Designed and implemented a proactive congestion management strategy based on the predictions, significantly reducing network delays and improving overall network performance
- Conducted extensive practical experiments in a simulated SDN environment to validate the effectiveness and scalability of the proposed method, achieving a notable increase in prediction accuracy and response times

## PROJECTS

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### Quant-GPT: Money is All You Need [link] | PyTorch, Transformers, ChromaDB

Mar. 2024 – Apr. 2024

- Final project for the PhD course CSC6052, a multi-agent system for A-share market investment decisions
- Fine-tuned an LLM, integrating it with sentiment analysis and real-world market data.
- Utilized RAG and multi-agent systems to dynamically access and synthesize relevant financial news, enhancing the model's ability to forecast market trends and returns
- Results achieved: Sharpe Ratio: 0.40, Annualized Return: 7.26%, Max Drawdown: 13.61%

### Travel Insurance Recommendation AI System [link] | PyTorch, LangChain

Jan. 2024 – Apr. 2024

- Developed an AI system to predict flight delays and recommend personalized travel insurance, enhancing customer satisfaction
- Fine-tuned the LLM using an insurance corpus to improve domain-specific question-answering capabilities, achieving an 83% accuracy in identifying user intent
- Utilized deep learning and LLM agents for accurate delay predictions and customer sentiment assessment

### Flight Information System [link] | Python, LangChain, SQL, Flask

Mar. 2024 – Apr. 2024

- Developed database system to optimize airline management, including passenger bookings and flight logistics
- Delivered a functional database with a user-friendly web interface
- Integrated LLM to enhance database architecture and query generation

## WORK EXPERIENCE

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### **China Telecom Beijing Research Institute**

Jan. 2024 – Mar. 2024

*Remote Internship*

*Beijing, China*

- Intern at the AI Large Model Research Team
- Analyze a technology's trends, applications, and industry impact

### **Shenzhen Branch of China Telecom**

Jan. 2024 – Apr. 2024

*Part-time Internship*

*Shenzhen, China*

- Time Series Analysis, Data Visualization
- GIS Data Analysis, Data Mining

## TECHNICAL SKILLS

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**Languages:** Python, C/C++

**Developer Tools:** Git, Docker, VS Code, Linux

**Libraries:** PyTorch, Transformers