Yuzhe Yang | 阳雨哲

Email: yuzheyang@link.cuhk.edu.cn | Phone: +86 18310762536 | Homepage: tobyyang7.github.io

A 3rd-year CSE student with a keen interest in deep learning. Currently exploring GNN and LLM.

Education

School of Data Science | The Chinese University of Hong Kong, Shenzhen *Sep 2021 - May 2025*
B.Eng. in Computer Science and Engineering **(Artificial Intelligence Stream)**

Skills

Deep Learning Tools: PyTorch | PyTorch Geometric | Transformers **Languages:** English (Fluent) | Mandarin (Native)

Publication

FAST-CA: Fusion-based Adaptive Spatio-Temporal Learning with Coupled Attention for Airport Network Delay Propagation Prediction, Information Fusion, 2024, 107:102326 [online] *Jun 2023 - Nov 2023*
Undergraduate Research Assistant, supervised by ***Prof. Jianfeng Mao*** SDS, CUHK(SZ)

- Developed the GNN framework, integrating dynamic and adaptive graph learning with coupled attention mechanisms to address complex spatio-temporal dependencies in airport delay propagation
- Implemented periodicity feature extraction and multifaceted information fusion modules to enhance predictive accuracy
- State-of-the-art model for airport network delay propagation prediction
- Spatio-temporal data analysis and visualization

Research Experiences

Integrative Mean-Field Epidemic Model and Adaptive Graph Learning for Network-Wide Delay Propagation Dynamics Prediction *(working paper, to be submitted to Transportation Research Part B: Methodological)* *Dec 2023 - Present*
Undergraduate Research Assistant, supervised by ***Prof. Jianfeng Mao*** SDS, CUHK(SZ)

- 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

Quant-GPT: Money is All You Need [online] *Feb 2024 - May 2024*
Undergraduate Research Assistant, supervised by ***Prof. Benyou Wang*** SDS, CUHK(SZ)

- Developed a multi-agent optimized for A-share market investment decisions
- Fine-tune LLM and integrate with sentiment analysis and real-world market data
- Utilized RAG and multi-agents to dynamically access and synthesize relevant financial news, improving the model's ability to forecast market trends and returns
- Achieved superior performance metrics compared to existing open-source LLMs, with higher annualized return, lower maximum drawdown, and a better Sharpe ratio
- Demonstrated the potential of LLMs in financial applications, providing a robust framework for integrating natural language understanding with quantitative investment strategies

Deep Learning Approach for Early Predicting and Controlling Network Flow in SDN *Jan 2024 - Apr 2024*
Research Internship, advised by ***Prof. Kai Lei*** ICNLAB, PKU(SZ)

- 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 Experiences

Travel Insurance Recommendation AI System [online] *Jan 2024 - May 2024*
Distinguish Course Project of ***Advanced Artificial Intelligence and Business Applications*** SME, CUHK(SZ)
Advised by ***Prof. Yutong Guo***

- Predict flight delays and recommend personalized travel insurance, in order to improve customer satisfaction
- Fine-tuned the LLM using insurance corpus to improve domain-specific question-answering capabilities
- Utilized deep learning, LLM, and sentiment analysis for accurate delay predictions and customer sentiment assessment

Flight Information System [online] *Mar 2024 - Apr 2024*

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