Siyuan Zhao

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Education

National University of Singapore *Singapore*

Master of Science - Digital Financial Technology (School of Computing) *Aug 2024 - Jan 2026*

University of Toronto *Toronto, Canada*

Honours Bsc. in Applied Mathematics (with High Distinction) *Sep 2020 - June 2024*

- Dean's List Scholar 2020-2024
- Relevant Courses: Mathematical Modelling, Stochastic Processes, Time Series Analysis, Neural Networks and Deep Learning, Mathematical Theory of Finance, Statistical Computing, Machine Learning II
- Directed Reading Program: Explored the emergence of clusters in self-attention dynamics within LLMs.

Professional Experience

LLM-based Coding Tool Development Intern *June 2024 - July 2024*

IflyTek *Hefei, China*

- Implemented multiprocessing techniques for web scraping to expedite data collection and enhance the quality of datasets for Retrieval-Augmented Generation (RAG) models.
- Developed algorithms for automatic prompt engineering, reducing manual input and standardizing model outputs.
- Developed a fully automated evaluation framework for coding assistants, capable of benchmarking different models based on their performance in answering programming-related questions.

Data Scientist Intern *Dec 2023 - Feb 2024*

Kuarts Inc. *Toronto, Canada*

- Using datasets extracted from the London Stock Exchange Group platform to develop time series models for cash flow prediction of companies.
- Feature engineered on massive fields from the Eikon Platform to extract critical information about manufacturing companies' revenue.

Machine Learning Algorithms Engineer Intern *May 2023 - Aug 2023*

Botinkit Co. Ltd. (AI-driven Digital Kitchen Solutions) *Shenzhen, China*

- Used deep learning methods like ShuffleNet and LeViT to classify objects in the pot, and used Yolov5 and UNet to detect and segment the object in order to better instruct cooking action.
- Created a data-centric environment (through methods similar to SegmentAnything) that improves the performance of our existing models.
- Developed a time series model that helps restaurants decide how many kilos in weights of each ingredient should be put in stock each day.
- **Results:**
    1. Our model could classify food ingredients with a MAP over 0.98 in our closed-world environment and was able to segment food with the pot to an extent that the machine can correctly use the information gained to significantly improve the taste of cuisines.
    2. Automatic labeling methods significantly boosted the model's MAP by 10%.
    3. The MSEs of each time series in the backtesting are stable and are acceptably low.

Projects

3D Causal ShuffleNet in Dual Paths for Efficient Action Recognition *Oct 2023 - Dec 2023*

- We develop an innovative approach to action recognition that refines the architecture of 3D ShuffleNetV1 0.5x by integrating a causal temporal component and optimizing the network's layers. We also adopted the SlowFast two paths architecture to improve the robustness of the model.
- The model attains a Top-1 accuracy of approximately 0.70 and a Top-5 accuracy of around 0.92 on the UCF101 dataset.

Propagation of Rumors on Social Platforms *March 2023 - April 2023*

- Designed a rectified SIR model to examine the propagation of opinion on different topological structures of social network.

Library Management System *Sep 2021 - Dec 2021*

- Proposed and developed a fully-functioned library management system that conformed to several design patterns.

Skills

Programming Python (Proficient in Pandas, PyTorch, NumPy, Scikit-learn, OpenCV, etc.), R, Java(Basic), C/C++(Basic), SQL, MongoDB.

Miscellaneous Linux, LaTeX(Overleaf/R Markdown), Tableau, VS code, DataGrip, Microsoft Office, Git, Docker, AWS.

Soft Skills Time Management, Teamwork, Problem-solving, Documentation, Resilient Mindset, Curiosity, Conflict Resolution.

Others

Nvidia's LLM Workshop Attendee: Gained insights into advanced LLM architectures, including GPT-2.

Marking Volunteer: Canadian Open Math Challenge

Quantitative Research Simulation JPMorgan Chase