Daniel (Haolan) Zuo | (561) 7151917 | haolan.zuo@gmail.com | LinkedIn | Personal Page

Education

M.S. in ***Computer Science***, **Yale University**, New Haven, CT May 2024

Courses: Graph Deep Learning, Distributed System, Software Engineering, Probabilistic Machine Learning, Information Theory, Automated Decision System, Trustworthy Deep Learning, Computer Vision, Natural Language Processing

B.S. in ***Computer Science*** & ***B.S.*** in ***Finance***, **Sichuan University**, Chengdu, China Jun 2023

Awards: National Scholarship, Outstanding Graduate of Sichuan Province, Prizes in Mathematical Contest in Modelling

Research and Machine Learning Experience

Research Assistant (advised by Prof. Rex Ying), **Yale University**, New Haven, CT Aug 2023 – Present

- Contributed to 2 research papers and an open-source hyperbolic learning tool; developed and managed lab's website

Teaching Assistant (instructor: Prof. Alex Wong), **Yale University**, New Haven, CT Jan 2024 – May 2024

- Delivered weekly recitation lectures on machine learning knowledge and coding to undergraduates in CPSC 381/581
- Topics: stochastic gradient descent, kernel support vector machine, principal components analysis, neural networks

Machine Learning Engineer Intern, **Meituan**, Beijing, China May 2023 – Aug 2023

- Part of a 9-person MLE team in Mobike division, algorithmically optimizing shared e-bikes logistics for productivity
- Researched and developed graph-based neural networks to improve bike reallocation order quality by predicting profitable bike stations; back-tested in both component-specific and end-to-end pipeline, increasing revenue by 7%
- Collaborated with 2 peers, delivered daily/weekly updates, and led code reviews, concluding with final presentation

Research Engineer Intern, **Johns Hopkins University CBID**, Baltimore, MD Jun 2022 – Sep 2022

- Developed iOS and watchOS apps using Swift to engineer structured tabular data from sensor timeframes, featuring an interactive user interface for recording and labeling patient biomechanical data in spine deformity clinical trials
- Implemented LSTM model in Keras for motion classification, with 84% accuracy across 4 specified body movements

Selected Projects

Generative AI-Powered Web-Based Voice Assistant Chatbot, **IBM Skills Network**, Jun 2024 – Present

- Developed web application using Flask and Gradio, with integration of open-source large language models (LLMs)
- Implemented a voice assistant chatbot using IBM Watson's Speech-to-Text service coupled with OpenAI's GPT 3
- Enhanced chatbot with PDF file digestion using RAG (retrieval-augmented generation)-supported Llama 2 model

Graph Neural Networks (GNNs) for Bike Station Recommendations, **Meituan** May 2023 – Aug 2023

- Curated large-scale heterogenous graph dataset (300K nodes 20M edges) from spatio-temporal data using PySpark
- Implemented GNNs for station recommendations using Tensorflow, achieving 72% Acc@500 and a 7% revenue lift
- Deployed the model as a service using Docker and Flask, into Java heuristic-search order system via a RESTful API

Reinforcement Learning in Quantitative Trading, **Sichuan University** Oct 2022 – Mar 2023

- Proposed a stock valuation model based on P/B-ROE using residual momentum to capture pricing regression signals
- Employed multi-agent deep reinforcement learning (A2C, PPO and DDPG) for quantitative portfolio management

Publications

- J. Chen, **H. Zuo**, et al. *Graph Foundation Model for Expressive Structural Encoding*. **Under Review, NeurIPS 2024**
- W. Qiu, H. Chu, S. Wang, **H. Zuo**, et al. *Learning High-Order Relationships of Brain Regions.* **ICML 2024**
- **H. Zuo**. *A Fully Convolutional Denoising Auto-Encoder with 2.5 D Convolutional Classifier*. **IEEE TOCS 2022**

Skillset

ML & data tools: Pytorch, Tensorflow (Keras), Seaborn, Scikit-learn, Pandas, NumPy, PySpark, BigQuery, Vertex AI, Google Cloud, AutoML, AWS, Azure, MLflow, Jupyter, Hugging Face. Programming: Python, SQL, Java, C++, Shell
Development tools: Git, Flask, React, Jekyll, Docker, Gradio, Kubernetes, Heroku; Database: Hadoop, Spark, Hive, Redis