Zhaohan Xiong

zhaohanx@hotmail.com | GitHub | Google Scholar
+61 410 648 906 | LinkedIn | PhD Thesis

Key Skills

Communication | Teamwork | Machine Learning | Data Handling | Data Analysis | Software Development | Python

Education

March 2015 – January 2022

PhD in Bioengineering & BEng in Engineering Science / University of Auckland

Best PhD Thesis | Best Publication | 1000+ Citations | PhD Finished In 3 Years | Dean's Lists | 1st Class Hons

Work Experience

March 2023 – February 2025 (1.8 Years, Full Time) + (2 Months, Non-Compete) | Company Website

Quantitative Trading Developer / Tibra Capital, Australia

- Developed frameworks to support the operation of automated trading algorithms for investment returns
- Adhered to strict software principles (dev-ops, agile, release lifecycle) through cross-disciplinary teamwork
- Deployed an existing high-frequency making/taking strategy on a newly listed derivative by analysing backtest behaviour and risk against existing instruments/strategies already in production
- Delivered a new mid-to-high frequency index statistical arbitrage strategy by building the Python research, backtest automation, post-trade analysis, and alpha research frameworks
- Improved the statistical arbitrage model performance by 50% through researching tick data alphas
- Conducted C++ bug fixes, unit tests, strategy configuration implementation, and code reviews

March 2022 – February 2023 (1 Year Fixed Term, Full Time) | Company Website | GitHub Repo

Machine Learning Post-Doc / University of Oxford, United Kingdom

- Built an analytical framework to model cardiovascular patient data on the world's largest medical database, working alongside health professionals in a multi-disciplinary setting (Oxford University Hospitals)
- Delivered a combined statistical and machine learning model which classified patients into different disease-development pathways to personalise treatment, the model is currently in clinical trial
- Conducted big-data ETL on AWS with Apache Spark to deliver interactive analysis and visualizations (R-Shiny, Jupyter Notebooks) for non-technical users (cardiologists) to improve their understanding of disease patterns
- Set up a robust model development framework and codebase using ML-Ops to automate model training/validation with Python, PyTest, R, ML-Flow, Databricks, and DVC
- Built custom GitHub Actions for fully CI/CD (integrate, test, build, deploy) of docker containers to AWS (ECR, ECS, Fargate) with Terraform and TensorFlow-Serving to make models stand-alone, sharable, and testable

October 2016 – January 2022 (2.3 Years, Full Time) + (3 Years, PhD Student) | Company Website | GitHub Repo

Deep Learning Researcher / Auckland Bioengineering Institute, New Zealand

- Researched and developed a new deep learning pipeline which improved cardiovascular arrhythmia diagnosis
- Liaised with non-technical stakeholders to iterate on ideas and improve the accuracy of the diagnostic framework by presenting data visualizations and complex models in a simple manner using R and Python
- Designed CNN models in TensorFlow to perform segmentation and classification on the world's largest 3D cardiac imaging datasets to spatially map disease patterns in the hearts of patients
- Designed time-series CNNs to detect cardiac disease in heartbeats from portable smart devices
- Prototyped CNN models in virtual environments (PipEnv, Conda) and deployed with Docker/AWS
- Established internal standards for cardiovascular data collection and storage to facilitate ease of analysis and visualization by designing a goal-driven Data-Ops framework with data lakes and elastic compute
- Set up the compute resources and streamlined model prototyping on remote servers (GPU, HPC, Linux, Slurm)
- Gained skills in implementing U-Net, V-Net, Res-Net, Inception, VGG-Net, Fast R-CNN architectures with various libraries (TensorFlow, Keras, TF-Learn, Scikit-Learn, NumPy, Pandas, SciPy, Plotly, MatPlotLib, and OpenCV)
- Presented data visualization and statistical models in R Studio, GG-Plot, Matplotlib, PowerPoint, and LaTeX