Benjamin Redhead

+86-182-0118-9150 bredhead@stu.pku.edu.cn linkedin.com/in/bredhead github.com/benjaminredhead

Personal Statement

A masters student currently conducting research on robust and efficient learning algorithms for time-series forecasting. I have a keen interest in algorithm development and application, aided by my background in mathematics, statistics and computer science. I am now looking for internships to apply my research in an industry lab and develop projects with real world impact while conducting valuable research on time series forecasting, such as industry demand forecasting, epidemiology and congestion prediction, prior to pursuing a PhD.

Education

Peking University June 2025

Master of Science in Computer Science (GPA: 3.79 / 4.00) *Beijing, China*

- **Relevant Coursework:** Reinforcement Learning, Algorithm Analysis and Complexity Theory, Theory of Computation, Computer Vision, Audited: Distributed Learning (Chinese Taught)
- **Utilised Technical Skills:** Building and Running Models on a headless Linux Server, Training on Multiple GPUs using CUDA

Lancaster University June 2021

Bachelor of Science in Mathematics, Operational Research, Statistics, and Economics (MORSE) *Lancaster, United Kingdom*

- **Relevant Coursework:** Multivariate Statistics for Machine Learning, Stochastic Processes, Linear Algebra, Bayesian Inference, Likelihood Inference

Experience

Saga Plc Sep 2021 – Oct 2022

Actuarial Pricing Analyst *London, United Kingdom*

- Led the team's move away from Excel into industry standard software and python for retention and conversion modelling
- Constructed Pytorch models for renewals business retention analysis and pricing and insurance risk analysis
- Managed health insurance renewals business of £1,000,000s of health insurance each month, implementing updated models which provided savings of £100,000s

Research Projects

Decformer: A series-decompostion based approach to long-sequence time series forecasting | *Python, Pytorch*

- Current research project
- Designed novel series decomposition based approach
- Designed a method of utilising a MoE approach to extract useful representations from decomposed series
- Implemented the model on 6 benchmark datasets
- Outperformed SOTA time-series forecasting models on datasets with high seasonality, Traffic and Electricity
- Presented this work at Microsoft Research Asia's Intern Tech Fest
- Currently bench-marking against foundation model approaches to time-series
- Refining the proposed architecture to use a novel mechanism to fuse expert attentions

Thesis Topic: Robust and Efficient Algorithms for Time-series Forecasting

- Conducting a structured literature search between 2019 and 2024
- Analysing state of the art models in the field of robust and efficient learning algorithms for time series
- Working in the MOE Key Lab of High Confidence Software Technologies on Time-series forecasting algorithms including the use of ensemble, bayesian, and meta-learning.
- Actively working on additional research papers in this area

Technical Skills

Programming Languages: Python, R
Foreign Languages:English (Native), Mandarin (Intermediate)
Awards: IMA Grant (2019), CSC Chinese Government Scholarship (2022-2025)
Society Positions: VP and President of Mathematics Society (2019-2020,2020-2021), Communications Officer of Investment and Finance Society (2020-2021), Member Linux Society (2023-2024)