Daqian (Bill) Shao

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Educational Background

2021.10 - Present   **DPhil in Computer Science, Wolfson College, University of Oxford**
- Research Areas: **RL, DNN Robustness, Causal Inference;** Prof. Marta Kwiatkowska (ACM Fellow, FRS).
- Project FAIR at the **Turing Institute**: Framework for responsible adoption of AI in the **financial services.**

2016 - 2020   **Bachelor and Master of Mathematics and Computer Science**, **University of Oxford**
- **First-Class Honours,** Fitzgerald Prize (College Excellency Prize).
- Study Areas: (Stochastic) Analysis, Mathematical Models of Financial Derivatives, ML/AI, Learning Theory.

Research Experiences

2021.10 - Present   **DPhil in Computer Science,** Current first-author works:
- Sample Efficient **RL from LTL** Specifications with Optimality Guarantees (**IJCAI 2023, Oral**);
- **Robustness Guarantees** for Deep Learning on Optical Character Recognition (**Master Thesis**);
- Learning Decision Policies with **Instrumental Variables** through **Double Machine Learning** (**ICML 2024**);
- Scalable **Verification** of **Vision Transformers** for Scene Text Recognition (Preprint, **ECCV 2024**).

2019 - 2020   **University of Oxford Research Project,** Robustness Verification for DL on OCR
- Proposed a method to verify **pointwise robustness** (maximum safe radius) through a two-player zero-sum game formulation. The game is solved using heuristic search algorithms, submitted to **ECCV.**

2018.11-2019.1   **University of Hong Kong, Healthcare AI:** ML assisted **Orthodontics**
- **Generated treatment plans** from intraoral scans utilising Facial Landmark Recognition models, where Spatial Transformer Networks are used to transform a tilted/rotated face into its upright position.

Selected Work Experiences

2024.8 - 2025.2   **ML Researcher at J.P. Morgan Machine Learning Center of Excellence (MLCOE)**
- Develop practical and scalable statistical and ML tools to handle missing/censored data and measurement error problems in **financial time-series**, especially when the data problem is non-random, i.e., with hidden structures.

2023.4   **Quantitative Research Insight Programme at G research**
- Attained insights on the intersection between **Finance**, **Statistics**, **ML**, and **NLP.**
- Designed and implemented **pair trading** style strategies on commodities with good backtesting performance.
- Implemented a **transformer**-based NLP models capable of analysing news sentiments.

2019.7 – 2021.8   **AI Researcher at WeBank**
- **Algorithmic Trading Model:** Adopted ML techniques for **mid-high frequency** time-series forecasting and **macroeconomics predictive** models; worked with macroeconomics, high frequency and candlestick data.
- Contributed to the **implementation** of the backtesting and trading system in Python.

2018.7-10   **Financial Advisory Intern at Deloitte**
- Conducted valuation of sell-side companies and delivered reports directly for clients.
- Researched related industries of **mergers and acquisitions** (Energy, New Material, Technology etc.).

Miscellaneous

- Accomplishments: **CFA** Level 2; Asia International Math Olympiad (AIMO) **Gold** Medal.
- Languages: **Chinese (Mandarin), English** – Native; **Cantonese** – Fluent.
- Programming languages: Python, Java, R, MATLAB, SQL, Haskell, etc.
- Interests: Diploma level piano, Wolfson college first boat rower, Oxford tennis.