

# Resume

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## Education Background

### **University of Oxford (Oxon), Oxford, Oxfordshire, the UK**

**09/2022–09/2023**

- **School:** Mathematical Institute and Department of Statistics
- **College:** St Peter's College
- **Programme:** MSc (Hons) Mathematical Sciences
- **Degree:** Merit
- **Ranking:** 17%
- **Core Courses:** Probabilistic Combinatorics, Continuous Optimization, Bayes Methods, Network, Advanced Topics in Statistical Machine Learning, Bayesian Statistical Probabilistic Programming, etc.

### **University of Manchester (UoM), Manchester, Greater Manchester, the UK**

**09/2019–07/2022**

- **School:** Department of Mathematics
- **Programme:** BSc (Hons) Mathematics
- **Cumulative GPA:** 87 (Graduate with *Distinction*)
- **Ranking:** 1%
- **Scholarships:** 2020 International Mathematics Excellence Scholarship (Top 15 International Students)
- 2020/2021 International Mathematics Scholarship
- **Core Courses:** Time Series Analysis and Financial Forecasting (96%), Numerical Optimisation & Inverse Problem (88%), Complex Analysis (90%), Intro to Uncertainty Quantification (83%), Probability2 (91%), Introduction to Financial Mathematics (93%), Numerical Analysis (89%), Statistical Methods (87%), Real Analysis A (87%), Machine Learning (80%), Probability1 (100%), Foundations of Pure Mathematics A (91%), Calculus and Vectors A (98%), etc.

## Project

### **Ranking Estimation: Integrating SMC and Plackett-Luce Model for Partial Order**

**09/2022–06/2023**

*With Prof. Geoff Nicholls*

- Developed an innovative methodology for partial order ranking, utilizing the Plackett-Luce model in conjunction with Sequential Monte Carlo (SMC) and Markov Chain Monte Carlo (MCMC) resampling techniques.
- Employed this methodology to enhance the comprehension of Partial Order Ranking (POR) and substantiate its efficacy through extensive simulations and real-world case studies.
- Established a robust foundation for future research endeavors in ranking estimation, especially within the realm of intricate systems, where conventional methods may encounter limitations.

### **Improvements for the Nonlinear Filtering Algorithms and their Application**

**09/2021–06/2022**

*With Prof. Kody Law*

- Deduce from the fundamental mathematical knowledge to introduce Kalman Filter and Particle Filter.
- Explore the **stability** and **optimization methods** of Kalman Filter and Particle Filter
- Apply the sequential idea to Gaussian Process Regression when data arrives online and prove that Sequential Monte Carlo is thrifty by contrast to Hamiltonian Monte Carlo in inferring hyperparameters of GPR.

## Work and Internship Experiences

### **China Great Wall Securities (CGWS), Shanghai, P.R. China**

**02/2021–05/2021**

*Quantitative Research Analyst, Financial Engineering Department*

- Involved in **project one:** *Quantitative Market Timing Based on Mahalanobis Distance to Build Stock Investment Strategy*; **project two:** *Fund Investment Strategies Based on Past Returns*.
- **Project one:** Measured data similarity instead of relativity, identified market trends by the MACD indicator (the DEA line), the accuracy rate of measuring historical market hit 70%.
- **Project two:** assisted in the reproduction of Clifford S. Asness' Strategy from the *Power of Past Stock Returns to Explain Future Stock Returns*, during which the period of market/investment timing was shortened to the weekly unit and the calculation of R square was used to do the evaluation for forecasts.
- Responsible for the weekly report writing with data extracted from Wind (including stock market indexes, futures exchange rates, etc) and the follow-up data analysis.

*Data Analyst, Data Analysis Department*

- **Core duties:** web crawler, database management, web development, data visualization, data analysis, etc.
- **Philips Project: engaged in web crawler and data cleaning:** supporting the cross-platform crawling of data (purchases at different time nodes and the portrait of consumers mainly from TaoBao.com, JD.COM, and Tik Tok); **past data analysis and future trend prediction:** NLP (natural language processing) analysis for customer satisfaction and purchase motivation and facilitate the company's decision-making about its publicity methods (star endorsements, live streaming marketing, online/offline advertising) to reach target customers.
- **Company intranet construction:** back-end automatic data crawling and database-based visualization module building (making histogram, scatter diagram, etc) (possibly promoted to future projects of the company).

**Extra-Curriculum Activities**

- Third Prize Winner, Mandarin Debate Competition (Held by Warwick Chinese Society) **02/2020**
- Third Prize Winner, Oxford Cup Freshman Mandarin Debate Competition **10/2019**
- Championship, the Cup of Northern England Union 2019 Mandarin Debate Competition **11/2019.**

**Additional Skills**

**Languages:** Native Chinese Mandarin speaker, a good user of general and academic English (7.5 IELTS gainer), and a Japanese learner.

**Computer Skills:** Good Knowledge of several well-known computer languages: Python, R, MATLAB, Julia, statistical probabilistic programming (such as Anglican), C++.

**Statistics Analysis and Database Management:** Good command of basic statistical analysis software (SAS) to process, extract and analyze second-hand data and various database management systems: MySQL, PostgreSQL and Microsoft SQL Server; proficient in common algorithms for statistics, such as Probability Graph Model, Conditional Random Field, Generative Adversarial Networks, Markov Models, Convolutional Neural Networks, Filtering Algorithms, Generalized Method of Moments, Expectation-Maximization algorithm, etc. ++.

**Interests:** Body building and basketball.