

SHANGBIN ZHU

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EDUCATION

NEW YORK UNIVERSITY

New York, NY

The Courant Institute of Mathematical Sciences

MS in Mathematics in Finance (expected – December 2020)

- **Current Coursework:** Monte Carlo simulation, stochastic calculus, OOP in Java, CAPM, VaR, derivative pricing & hedging, Black-Scholes formula and applications, mean-variance portfolio optimization
- **Future Coursework:** Continuous time finance, interest rate & FX models, algorithmic trading, time series analysis, statistical arbitrage, data science in quantitative finance, credit valuation adjustment

UNIVERSITY OF OXFORD

Oxford, UK

MSc in Statistical Science (2018 – 2019)

- **Coursework:** Applied and computational statistics, R programming, statistical inference, reversible jump MCMC, actuarial science, data cleaning, PCA, SVMs, kernel methods, neural networks, random forest

UNIVERSITY OF NOTTINGHAM

Nottingham, UK

BSc in Mathematics with Applied Mathematics (2014 – 2018) with First Class Honors, GPA: 4.0/4.0

- **Coursework:** Calculus, linear algebra, analysis, ODE, PDE, scientific computation, optimization
- **Awards:** Best Student of The Year Scholarship & President Scholarship (top 1%)

EXPERIENCE

UNIVERSITY OF OXFORD

Oxford, UK

Summer Research (June 2019 – August 2019)

- Researched properties of a novel active clustering framework for speeding up hierarchical clustering
- Utilized active spectral clustering algorithm to recover random ultrametric binary trees using only $O(n \log^2 n)$ entries rather than the entire matrix for the purpose of reducing measurement and computational cost
- Wrote Python code using active spectral clustering algorithm to construct phylogenetic trees based on phylogenetic distance matrices of real genetic data and achieved an accuracy of more than 91%
- Compared active spectral clustering algorithm with other methods like UPGMA, neighbor-joining method

UNIVERSITY OF NOTTINGHAM NINGBO CHINA

Ningbo, China

Summer Research (June 2017 – August 2017)

- Researched financial risk management model using graph algorithms and haze weather forecasting model using decision trees, random forest and logistic regression
- Wrote MATLAB code using PCA, k-means clustering and k-nearest neighbors algorithms to establish and visualize a credit risk model that divides 7358 construction companies in China into 5 ranks

Learning Community Forum Representative (September 2015 – June 2016)

- Organized regular academic and social events in the School of Mathematical Sciences
- Hosted monthly Learning Community Forum meetings and communicated with staff representatives

PROJECTS

UNIVERSITY OF OXFORD

Oxford, UK

Machine Learning: Predicting the Labels of Populations with Human Genetic Data (R)

- Utilized PCA to reduce dimension of features from 200000 variables to 10000 variables
- Predicted labels of populations using SVMs, Naïve Bayes Classifier, KNN, Random Forests, Extreme Gradient Boosting and achieved the best accuracy of 89.7% with XGBoost algorithm

Parallel Computing: Tuning Parameters of the Elastic Net (R)

- Implemented greedy grid search method with various parallel computing strategies using the snow package in R to speed up the process of tuning parameters of the elastic net

Hidden Markov Model for DNA sequences (Python)

- Utilized Viterbi algorithm to calculate maximum a posteriori (MAP) estimate of sequence and find the approximate value of state transition probabilities which maximizes loglikelihood

COMPUTER SKILLS/OTHER

Programming Languages: Java, R, Python, MATLAB

Other Software: Microsoft Office, LaTeX

Languages: Chinese (native), English (fluent)