

Bingyu (Bonnie) Zhang

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EDUCATION

Fudan University (FDU)

Shanghai, China

M.S in Applied Statistics, School of Mathematical Sciences

Sept. 2019 – June 2021

- Rank: 4/20
- Awards: Outstanding Student (10%)
- Coursework: *Data Mining (A), Time Series Analysis (A-), Machine Learning (A-), Neural Networks and Deep Learning (A-), Game Theory (A)*

Shanghai Jiao Tong University (SJTU)

Shanghai, China

B.S in Mathematics & Applied Mathematics, School of Mathematical Sciences

Sept. 2015 – June 2019

- Cumulative GPA: **89.18/100**; Rank: **3/57**; **Graduate with Honors**
- Awards: Kwang-Hua Scholarship (5%), SFI Scholarship (5%)
- Coursework: *Mathematical Analysis (91), Advanced Algebra (94), Probability, Real Analysis (98), Scientific Computation (100), Stochastic Process (93), Statistics, C++ Programming (92)*

University of Oxford

Oxford, United Kingdom

Mathematics Programme, Hertford College

July 2017 – Aug. 2017

- Coursework: *Manifolds (A), Group Theory (A)*

PROFESSIONAL EXPERIENCE

Amazon

Shanghai, China

Solutions Architect Intern, AWS GCR Public Sector

May 2020 – Oct. 2020

- Built LSTM model related to English Automatic Speech Recognition of Chinese teenagers for primary schools with 0.134 of MAE and applied it to corresponding English teaching circumstances
- Established churn prediction model for a media company via EMR cluster; provided high-coverage (100%) and high-precision (increased by 8%) forward-looking prediction
- Developed invoice identification solution for public hospitals through Chinese OCR model; supported template reuse with average accuracy >92% and cost savings up to 80%
- Applied regression model to prenatal diagnosis for a high-throughput sequencing company; provided double diagnosis and reduced false positive rate

YanAnTang

Shanghai, China

Data Analyst Intern, Research Institute

May 2019 – Aug. 2019

- Developed product recommendation system based on customer similarity and taboo matrix; reduced customer service training time from 4–5 days to 3 days
- Expanded company's product database by Python-based web crawler
- Established KNN, SVM and XGBoost classification models on customer satisfaction data, and acquired precision of 0.72 for prediction; contributed to final decisions to target the market

RESEARCH EXPERIENCE

Cell Atlas Annotation Based on Joint Scoring and Supervised Learning

Sept. 2020 – Present

Supervised by Prof. Shuqin Zhang, FDU

- Defined a hierarchical markup language for specifying cell types using specifically expressed genes, in that a cell type can have subtypes
- Assigned overall marker score assessing the value of marker genes; applied TMM transformation to identify representative cells bearing markers
- Generated clusters using Louvain community detection on cell-cell map of jaccard coefficients; trained representative cells with GLMnet model and classified cells across datasets

Application of Bayesian Stochastic Volatility Model in Finance

Nov. 2018 – May 2019

Supervised by Prof. Dewen Xiong, SJTU

- Established the SV model in the mixed Gaussian space based on Bayesian statistics
- Estimated parameters for standard SV model, linear space model and mixed Gaussian space model by Markov Chain Monte Carlo Bayesian estimation
- Selected stock price of SSE(Shanghai Stock Exchange) Composite Index for empirical analysis; SV-T model (one extended model) performed best with 9.17 of MAE

A Study for Regularized Method in Image Restoration

Sept. 2018 – May 2019

Supervised by Prof. Ling Pi, SJTU

- Considered total variation, data fidelity and regularity criterion for optimization; used mirror symmetry and Dirichlet boundary for boundary condition processing
- Proved convergence of alternating iteration algorithm; calculated gradients, Lipschitz moduli and proximal operator
- Implemented PALM algorithm and achieved peak signal-to-noise ration (PSNR) of 32.16, a better restoration for thin structures such as thin blood vessels

A Study on the Efficiency of Metro Networks

Oct. 2016 – Apr. 2017

Supervised by Prof. Mijia Lai, SJTU

- Established topology networks based on small-world model and took transfer effects into account
- Applied indicators such as betweenness centrality to measure significance of specific stations
- Proposed a method for city planners to assess the efficiency of any new lines; helped decide the best route by comparing the proposed parameters and changes of transfer stations

SELECTED PROJECTS

Learning Hierarchical Features from Generative Models

June 2020 – July 2020

- Used a ladder structure under the training framework of single-layer Variational Auto-encoders, which avoided conflict between optimization of evidence lower bound and efficient representation
- Learned disentangled hierarchical features on image datasets MNIST (stroke width, tilt, and digit), SVHN (color schemes, shape, and digit) and CelebA (skin and hair color, and face identity)

Community Mining and Link Prediction

Oct. 2019 – Nov. 2019

- Detected community characteristics of 2 datasets and visualized by Gephi; applied fast-unfolding algorithm and clique penetration algorithm to community mining
- Used network characteristic indexes to carry out link prediction of the 2 community networks; achieved 0.92 of AUC with Adamic Adar algorithm
- Calculated node similarity by 3 definitions and carried out k-means and DBSCAN to identify special nodes (such as celebrities)

LEADERSHIP & ACTIVITIES

Class Council of the Alumni Association, SJTU

June 2019 – Present

Founder of the Joint Undergraduate Committee, SJTU

Apr. 2018 – June 2019

Minister of School of Mathematical Sciences Student Union, SJTU

June 2016 – Nov. 2017

Vice Minister of Exploration and Outdoor Life Society Association, SJTU

June 2016 – Nov. 2017

Volunteer of Shanghai International Marathon

Oct. 2016

SKILLS

Programming: C++, Python, R, Matlab

Tools: LaTeX, Linux, Git, SPSS, SQL

Languages: Japanese (JPLT N2); English (TOEFL 104); Mandarin (native)