FAN BU

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Education

2017-present DEPARMENT OF STATISTICAL SCIENCE, DUKE UNIVERSITY, NORTH CAROLINA, USA
Ph.D. in Statistics.

2013-2017 SCHOOL OF MATHEMATICAL SCIENCES, PEKING UNIVERSITY, BEIJING, CHINA
B.S. in Data Science and Big Data Technology, earned multiple academic scholarships and awards.

Research Interests

- Non-parametric Bayesian statistics
- Machine learning
- Network analysis
- Stochastic modeling
- With applications in social networks, social sciences, and sports data analysis

Research Projects: Ongoing and Completed

07/2016-present "Ground Zero" Identification in Multivariate Hawkes Processes

- Introducing a novel concept "rooted probability" and corresponding inference algorithms to study the very initial cause of a series of stochastic events, with applications in social media
- Computing "rooted probability" in a dynamic programming procedure and implementing variational Bayesian inference in Python

10/2015-06/2017 Traffic Speed Nowcasting Based on Urban Road Network and Artificial Neural Network

- Modified Recurrent Neural Networks with graph convolution techniques to predict real-time traffic speed for road networks in Beijing using taxi GPS data
- Produced urban road segments in QGIS, implemented baseline models in R, and ran Artificial Neural Network experiments in Tensorflow
- Funded by Beijing Municipal Transportation Commission

08/2015-09/2016 Detection of Differential Genetic Networks

- Compared two distinct gene set test methods, CCLasso and DRAGEN, to assess their performances in detecting differential genetic dependencies under disparate conditions
- Generated simulation datasets and ran both methods in R
- Awarded with National Undergraduate Innovation Grant

Class Projects

06/2015 Performance Prediction of Top Tennis Players

- Developed a statistical method based on Hidden Markov Models to infer in-game performance of top tennis players from rankings history
- Implemented the Viterbi Algorithm in Python

06/2016 Sentiment Analysis on American Airlines Twitter Posts

- Applied frequent pattern mining, kNN and hierarchical clustering to analyze sentiments and language usage patterns in Twitter users' comments on American airlines
- Conducted textual analysis and clustering in R

01/2017 Google Street View image classification using Julia

- Designed a mixture of deep learning networks to classify 26 letters (both upper and lower cases) and 10 digits in cropped Google Street View images
- Ranked 3rd among 56 entries in the Kaggle competition

Skills

- Programming Languages: R, Python, Matlab, Julia, LaTex
- Languages: Mandarin (native), English (professional working proficiency)

Work Experiences

01/2016-03/2017 Social media account assistant manager, Red Lantern Digital Media

Managed and wrote for social media promotion platforms for the Wimbledon Championship and the International Tennis Federation in China (part-time)

05/2016-12/2016 Sports analyst and columnist, Aoderui Tennis Technology (Beijing) Co. Ltd.

Composed editorials, comments and analytical articles on tennis tournaments, matches and notable players (part-time)

Service

2016 Editor of announcements and on-court director for 2016 China Open (tennis tournament)

2015-2016 Chief Editor of the Magazine of School of Mathematical Sciences

2014-2016 Senior Editor of the Newsletter of School of Mathematical Sciences

2014-2015 Trainer of New Members in Mathematics Student Government

Honors and Awards

2016 Yang Fuqing & Wang Yangyuan Academician Scholarship

2015 Merit Student Award

2015 Second Prize Winner of Chinese Mathematical Model Contest

2015 Meritorious Winner of Mathematical Contest in Modeling (MCM)

2015&2014 "May 4th" Outstanding Academic Scholarship

2013 Meritorious Freshmen Scholarship