Kai Zhang

KaiZhang2019Master@163.com/ (+86) 18062099816

EDUCATION BACKGROUND

The Chinese University of Hong Kong (Shenzhen) 9/2015–7/2019

B.S. in Financial Statistics with the 1st Honor Degree (**Top 10%**)

Selected Courses: Introduction to Data Analysis, Data Mining, Statistical Topic Ⅱ, Statistical Inference, Stochastic Process, Time Series, Regression Analysis, Statistical Models in Financial Market, Survival Analysis, Survey Sampling

RESEARCH EXPERIENCES

Research Project of Trajectory Network, Shenzhen Research Institute of Big Data, Shenzhen, China 1/2019-present

- Research Assistant under supervision of Prof. Jianmin Jia and Dr. Jianjun Zhou.
- Constructed trajectory networks of individual in campus from raw wifi record, which is computed in a multi-thread way, in which the processing time is shorten from 3.5 minutes to 2 minutes.
- Visualize the trajectory networks for each 300 individuals in the sample (stratified sampling by entry class) using NetworkX, where each nodes represent one location, edges represent the trajectory between the two locations and node size displays the spending time in the buildings.
- Computed the measures (centrality degree, cluster coefficients, etc) of each networks and the nodes, and merged those measures into data frame with the sample units (student) in rows and the corresponding measures in columns.
- Create multiple new measures regarding entropy (time entropy, centrality degree entropy, cluster coefficient entropy, etc), which were turned out to be highly correlated with students' grade (around 0.3 in correlation coefficient).
- Run the stepwise regression on network measures against GPA, to find the dominant factors of individuals' academic performance.
- Python environment

Research Project of Learning Analysis, Shenzhen Research Institute of Big Data, Shenzhen, China 8/2018–1/2019

- Research Assistant. Adviser: Dr. Jianjun Zhou.
- Applied the latest machine learning methods to explore the learning data (desensitization) of CUHKSZ students in order to warn the student whose GPA was predicted to drop below 2.0.
- Transformed raw wifi data into behavioral features, including diligence (class attendance, visits to library), entertainment (visits to sports hall and music hall), and living habits (time in dormitory, byte/network packets ration).
- Built tree-based models and XGBOOST algorithm to predict students' GPA changes in the semester, based on the behavioral data difference from that of last semester. The prediction accuracy on students whose GPA drop by 0.8 was 81.8% and the prediction accuracy on overall students is 96.3%.
- Analyzed and found out the positive relationship between students' GPA and their friends', where raw wifi data were used to define "co-occur" and "friendship" among students on campus on locational and temporal basis. At this stage, working on mining friendship by tracing similar daily tracks among students.
- Python environment.

Option Pricing 4/2018–5/2018

- Course project with report for *Statistical Topic II*, instructed by Prof. Tze Leung Lai.
- Analyzed the expiration date and earning rate data of 31 medium and long-term national debts in United States.
- Estimated parameters in interest rate model including Vasicek and CIR by least square method based on short-term interest rate affine function.
- According to the closed form of the zero-coupon bonds based European options price and the simulated interest rate model, calculated the price for call options by Jamshidian's Tricks.
- *R* environment.

Causal Inference for Homeless and Physical Component Score 5/2018

- Course project with report for *Statistical Topic II*, instructed by Prof. Anna Choi.
- Studied the causality between homeless and multiple confounders including sex, alcohol abuse, drug abuse, depression and mental component score.
- Adjusted regression model, matched simulated randomized samples based on propensity score and compared the matched samples.
- *R* environment.

Empirical Tests on CAPM in the Chinese Equity Market 3/2018-4/2018

- Course project with report for *Investment Analysis and Portfolio Management*, instructed by Prof. Jinfan Zhang.
- Evaluation to applicability of CAPM for Chinese stock market using China's A-shares' monthly interest during year 2010 to 2014.
- Divided shares into 10 portfolios by market cap, used Jarque-Bera test to test the normality of monthly market interest rate, and implemented Wald test on alpha value to evaluate the effective market hypothesis.
- Project turned out that the normality assumption and the effective market hypothesis holds in Chinese market.
- *R* environment.

WORK EXPERIENCE

Credit Rating Intern, Changjiang Securities, Wuhan, China 7/2018–8/2018

- Preprocessed economic data from listed manufacturing companies during 2014-2017, imputed missing value and defined three new variables: technical default, corporates economic trends and fluctuation for analysis. *R* environment

- Applied random forests for quantitative data and information value for qualitative data to select variables to predict defaults.
- Reduced dimension by binning continuous variables based on conditional inference and discrete variables based on default rate similarities, followed by WOE transformation.
- Fit Logistic model by backward stepwise regression and test multicollinearity among variables by variance inflation factor.
- Worked in team of 9 to create database for company's risk management system.

EXTRACURRICULAR ACTIVITY

- The outreach minister of Campus Basketball club 9/2016–7/2017
- Took part in the campus and community network for NBA China.

AWARD

Dean's List 2017-2018
Master's List of Shaw College (Top 10%) 2018-2019

LANGUAGES AND SKILLS

GRE General: V: 154 / Q: 170 / AW: 3.5 / Total: 324
Programming Languages / Software: Python, R, Mysql, MATLAB, STATA, Gusek