LIJIE LIU

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EDUCATION

University of Wisconsin-Madison M.S in Data Science GPA: 3.86 09/2017-06/2019

Courses: Design of Experiment, Mathematical Statistics, Stochastic Processes, Probability Theory, Applied Time Series Analysis, Bayesian Analysis, Optimization, Nonparametric Statistical Methods

East China Normal University B.S in Financial Engineering GPA:3.31 09/2014-06/2018

Mathematics Analysis, Advanced linear Algebra, Multivariate Statistical Regression, Numerical Analysis, Differential Equation

RESEARCH EXPERIENCE

Multiple Change Points Detection Assuming PLP in Recurrent 01/2018-03/2019

Advisor: Visiting Professor Qing Li Iowa State University, IA, USA

- Applied Markov chain Monte Carlo method on recurrent data which followed Power Law Process(PLP); sampled complicated posterior distribution via Gibbs sampling method for faster convergence
- Detected change point via corrected Bayes Factor which surpassed DIC in our simulation framework; tested the model with more change points and different scenarios which still have good performance
- Utilized hybrid high performance computing cluster for parallel simulation
- Applied the methodology on the UK coal disaster data whose results are conformable with the history

VaR Calculation Based on EVT With Heavy Tail and Empirical Research 10/2017-05/2018

Advisor: Professor Fangjun Xu East China Normal University, Shanghai, China

- Estimated Value at Risk (VaR) via ARMA-EGARCH model; solved the heavy tail distribution in model residuals with Extreme Value Theorem(EVT);
- Developed a better methodology to determine the threshold on the tail part of residuals distribution; approximated the tail characteristics by Generalized Pareto Distribution (GPD) based on EVT; estimate the parameters with Gibbs sampling method with proper prior
- Applied this framework to Russell 2000 Index data to estimate VaR value; checked the model validation with LR failure rate which outperformed regular methods

WORK EXPERIENCE

Quantitative Analyst | *Quant Investment Company* 06/2018-09/2018

- Imputed missing stock data; found abnormal stock fluctuations like dividend and made corrections according to historical data and market rules
- Constructed 35 real-time calculated market factors and stored them in the database via MySQL; developed Barra's Risk Models with these factors to build a portfolio and hedge the risk; checked and dealt with multicollinearity, heteroscedastic, normalization, Newey-West correction, Volatility Regime Adjustment
- Explained the factors and model results; balanced the database and local device calculation burden

PROJECTS

Yelp Review Analysis 03/2019-05/2019

Advisor: Assistant Professor Hyunseung Kang University of Wisconsin Madison, WI, USA

- Cleaned the text of the reviews including tokening the word, removing the stopping words, expanding abbreviation, lemmatization and stemming
- Applied LSTM to predict the user ratings according to their reviews; ranked 1st on Kaggle's online competition
- Combined Word2vec and Glove to find bags of keywords of some features like service and food; utilized XGboost to find the importance sequence of the features; provided practical advice to the business owner

Honors and Awards

The Second Prize in National Statistical Contest in Modeling 06/2017

- Solved multiple truck route scheduling problem under realistic restrictions like traffic, truckload, driver's rest time, road speed limit, etc
- Compiled ant colony algorithm (ACA) with MATLAB; tuning hyperparameters like Heuristic Factor and Information Elicitation Factor with grid search for better performance and faster convergence
- Proposed point exchange and arc exchange method to avoid local optimum; visualized convergence speed and optimized path via R and google map; algorithm performance was significantly improved and the "knot" in the route was untied

The Second Prize in China Undergraduate Mathematical Contest in Modeling 12/2016

Skills

Programming: Python, R, MATLAB, Julia
Tools: Spark, SQL, Git, Tex, Linux