Ruoyan Kong's CV

School of Economics and Management, Tsinghua University
Beijing 100084, China
Phone: (+86)18355180586 E-mail: ruoyankong@gmail.com
Website: www.ruoyankong.com

Education

School of Economics and Management, Tsinghua University Beijing, China

- Master in Finance (Insurance and Big Data Finance) Sep. 2016 - Now
  - — Overall GPA 3.5/4.0
  - — Rank Top 5%

University of Science and Technology of China(USTC) Hefei, China

- Bachelor of Information and Computational Science Sep. 2012 - Jun. 2016
  - — Overall GPA 3.92/4.30
  - — Rank Top 5%
  - — Major GPA 4.04/4.30
- Minor subject: Computer Science Sep. 2012 - Jun. 2016

Previous Internship

Department of Investment Management, Guangzhou Securities *Guangzhou, China*

Internship title: Learn Order Execution Problem by Monte-Carlo Learning and Q-Learning *03/2016-06/2016*

Supervisor: Mr. Siwei Chen (Department Director)

- Build a model-based reinforcement problem and apply backward induction algorithm to large order execution problem
- Found the upper bound of the practical error of Q-learning
- Derive the optimal strategy for the firm to execute order to minimize impact cost

Research Experience

Graduate Research (Ongoing) *School of Economics and Management, Tsinghua University*

Project title: Risk Finance for Dependent Catastrophe Losses with Pareto-Calibrated Levy-Stable Severities *09/2017*

Supervisor: Prof. Michael Powers(SEM)

- Study a loss portfolio characterized by nonstochastic frequency and a class of Levy-stable severity distributions calibrated to match the parameters of the Pareto II distribution
- Study a loss portfolio characterized by nonstochastic frequency and a class of Pareto II severity distributions with Gaussian and Gumbel copulas
- Propose a conservative risk finance paradigm that can be used to prepare the firm for worst-case scenarios with regard to (1) the firm's intrinsic sensitivity to risk, (2) the heaviness of the severity's tail and (3) the dependence between the losses
- Design the code of risk finance paradigm

Graduate Research *Derivatives-China*

Project title: Predict Market by Half-supervised Hidden Markov Model *12/2016-04/2017*

Supervisor: Mr. You Zhang (Chairman)

- Design the adaboost-subsection estimation Baum-Welch method to solve the problem of local estimation in the HMM model. The new model can achieve a global solution which can be used in industry

- Design a feedback model for HMM to suit the different market environments (e.g. the lot of 399905.SZ firm should trade each day in a economic upside or downside)
- Design the code including database interface, model prediction, model back-testing, and daily automatic generation of reports
- Bring an annual return of approximately 15% for the company

Project title: Predict GDP by Markov Chain Monte Carlo (MCMC) *05/2017-09/2017*
Supervisor: Mr. You Zhang, thanks to Prof. Thomas J. Sargent's advice

- Design the model to estimate HMM by Markov Chain quasi-Monte Carlo (MCQMC) with Sobel sequence to solve the high dimension problem of parameters
- Design the code and proved that MCMC has lower error rate in the estimation of HMM's parameters who have high dimensions and large value

Undergraduate Thesis *University of Science and Technology of China*

Project title: Model of Incentives in Repeated Crowdsourcing System *01/2016-06/2016*
Supervisor: Prof. Qi Liu(USTC)

- Built the discrete model of repeated crowdsourcing system and calculate the profits of task givers and task receivers in each round under different ways of pay, different productive functions and different incentives
- Suggest a method to set appropriate incentives to maximize the profits of task givers and task receivers
- Found the upper bound of the error between theoretical measurements and practical measurements

Undergraduate Research Program *USTC*

Project Title: Group Recommendation: An Approach Based on Nash Equilibrium *01/2015-06/2015*
Supervisor: Prof. Qi Liu

- Propose to explore the idea of Nash equilibrium to simulate the selections of members in a group by a game process to capture the group members' interactions and fairness
- Calculate the preferences (group-dependent optimal selections) of each individual member in a given group scene with the help of two pruning approaches
- Design a matrix factorization-based method (SVD) which aggregates the preferences in latent space and estimate the final group preference in rating space
- Coding work of the system and the experiment, got *Outstanding Students Research* of USTC in 2015, *Hongke Zhao, Qi Liu, Yong Ge, Ruoyan Kong, Enhong Chen, Group Preference Aggregation: A Nash Equilibrium Approach, In Proceedings of the 16th IEEE International Conference on Data Mining (ICDM'16), Barcelona, Spain, 2016, 679-688*

Undergraduate Summer Research Program *Simon Fraser University(SFU)*

Project title: Effect of Intramuscular Fat on Skeletal Muscle Mechanics *07/2015-09/2015*
Supervisor: Prof. Nilima Nigam(SFU)

- Realized different types of skeletal muscle by dealii
- Analyzed the mechanics of different skeletal muscle
- Compiled the C++ finite element program of skeletal muscle

PUBLICATION

- Hongke Zhao, Qi Liu, Yong Ge, Ruoyan Kong, Enhong Chen, Group Preference Aggregation: A Nash Equilibrium Approach, In Proceedings of the 16th IEEE International Conference on Data

Mining (ICDM'16), Barcelona, Spain, 2016, 679-688

Teaching Experience

Teaching assistant in Mathematics and English

Kongdian Middle School, Kongdian Village, Anhui Province *2014*

- *This is a underdeveloped village with limited education resources. The teaching methods of English and Mathematics we designed were proved to be an efficient way to enhance students' learning interests*
- *Got* Advanced Social Practice Student Prize

Awards and Honors

- First Prize Scholarship, Tsinghua University *2017*
- Outstanding Graduates, University of Science and Technology of China *2016*
- Huangyu Scholarship, University of Science and Technology of China *2015*
- Outstanding Student Research, University of Science and Technology of China *2015*
- Gold Award of University's Excellent Students, University of Science and Technology of China *2014*
- National Scholarship, National Ministry of Education of China *2013*

English Proficiency

- TOEFL: Total 106, Reading 30/30, Listening 27/30, Speaking 22/30, Writing 27/30 *Jul. 2017*
- GRE: Verbal 157/170, Quantitative 170/170, Writing 3.0 *Mar. 2014*

Services

- Liaison Department of Student Union, Tsinghua University *2016*
  - *Organization of freshman orientation evening*
  - *Organization of* Nanshan Ph.D Candidates Conference
- Violinist, School Orchestra , University of Science and Technology of China *2013 - 2015*
  - Learned to play viloin since 6.

Skills

Computer Speciality

- 8000 lines, C++, Python, *C#*, Java, Sql, Matlab
- Pandas library, sklearn library, theano library, pymc library, Unity

Mathematics Speciality

- Numerical Methods, PDE, Optimization, Monte Carlo Simulation

Finance Speciality

- CFA Level I, Securities Practitioner Qualification Certificate, Funds Practitioner Qualification Certificate