Ruoyan Kong's CV

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Education

Grouplens Lab, Department of Computer Science, University of Minnesota Minneapolis, US

- Ph.D. Student in Computer Science 09/2018 –
  - — GPA 3.86, Advisor: Prof. Joseph Konstan
  - — Project: Towards an Effective Organization-Wide Email System

School of Economics and Management, Tsinghua University Beijing, China

- Master of Science in Finance 09/2016 - 06/2018
  - — GPA 3.5, Advisor: Prof. Michael Powers
  - — Master's Thesis: A Government Funding Allocation Mechanism Based on A Game On Credibility

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

- Bachelor of Science in Mathematics (Information and Computational Science) 09/2012 - 06/2016
- Minor subject: Computer Science
  - — GPA 3.92, Advisor: Prof. Qi Liu
  - — Graduation Thesis: A Model of Incentives in Repeated Crowdsourcing Systems

Awards and Honors

- National Scholarship, National Ministry of Education of China, *top* 1% *2013*
- Gold Award of University's Excellent Students, USTC, *top* 3% *2014*
- Outstanding Student Research, USTC, *top* 3% *out of undergraduates in USTC* *2015*
- Huangyu Scholarship, USTC, *top* 3% *in the School of Mathematics* *2015*
- Outstanding Graduates, USTC *2016*
- First Prize Scholarship, Tsinghua University, *top* 3% *in the Department of Finance* *2017*

Research Experience

Towards an Effective Organization-Wide Email System *09/2018-Ongoing*

Graduate Research *Grouplens Lab, University of Minnesota*

Supervisor: Prof. Joseph Konstan

- In organizations, Ineffective communication or email overload could result in substantial wasted employee time and lack of awareness or compliance.
- We study the reading behavior of employees and interviewed representative organizational senders to understand current practice, the effectiveness of the communication channels, and factors that lead to ineffective email communication.
- We found significant disorder and ineffectiveness resulting in low read rates and wasted employee time. A major factor underlying these results is the disparate views of different stakeholders on the use of email channels.

A Government Funding Allocation Mechanism Based on A Game On Credibility *01/2018-06/2018*

Graduate Research *School of Economics and Management, Tsinghua University*

Supervisor: Prof. Michael Powers(SEM)

- Built a dynamic fund-allocation mechanism based on the techniques of algorithmic game theory, optimal mechanism design, and multi-armed bandit algorithms.
- Built a government credibility index based on a UCB-style indicator.
- Proved that under this mechanism, the game on the credibility indicator between all the local governments will have an O(lnT/T) Bayesian Nash Equilibrium, where all the local governments will not over-report their demands at this equilibrium.

A Risk Finance Paradigm for Dependent Catastrophe Losses with Pareto Severities *09/2017-12/2017*

Graduate Research *School of Economics and Management, Tsinghua University*

Supervisor: Prof. Michael Powers

- Modeled catastrophe losses' portfolios as a class of dependent Pareto severity variables with Gumbel copulas.
- Designed a parallel-serial numerical algorithm to get Fourier-analytic risks for levy-stable variables.
- Proposed 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 risks.

Group Recommendation: An Approach Based on Nash Equilibrium *01/2015-06/2015*

Undergraduate Research Department of Data Mining, National Engineering Laboratory for Language Information Processing
Supervisor: Prof. Qi Liu

- Proposed to built a Nash game to simulate the selections of members in a group to capture the group members' interactions and to ensure fairness.
- The Nash approach had a Hit Rate 10% with a Harmonic(a fairness metric)1.09 while AVG method only had a Hit Rate 8% with a Harmonic 1.01.
- Awarded with *Outstanding Students Research* of USTC in 2015

Effect of Intramuscular Fat on Skeletal Muscle Mechanics *07/2015-09/2015*

Undergraduate Summer Research Program *Simon Fraser University(SFU)*
Supervisor: Prof. Nilima Nigam

- Realized the Cpp code of different types of skeletal muscle by finite element tool dealii.
- Analyzed the mechanics of different types of skeletal muscle.

Internship

Social Intelligence and Rank Optimization *06/2019-08/2019*

Supervisor: Mr. Allan Luk *Seagate, MN*

- Build NLP, trend detection models (DLNP Topic Extraction + W2V + tsne topic clustering) to catch market feedback, customer reviews, industry opportunities (Python).
- Deploy SEO, Learning to Rank models (softmax + DNN) to improve product searching ranks, reach a 90 % ordered-pair accuracy of top5 products searching results (Python).

A Half-supervised Hidden Markov Model to Forecast Index Futures *12/2016-04/2017*

Supervisor: Mr. You Zhang *Derivatives-China*

- Designed an algorithm to estimate HMM by the Baum-Welch algorithm segmentally and combined the estimations by Adaboost to suit changeable economy environments and let HMM's hidden states make sense (e.g. the daily directions of index futures).
- Designed a parallel-serial optimization method to get the approximate global solution of Balm-Welch algorithm.
- Realized the Python code including model prediction, model back-testing, and daily reports and warning.
- Brought a consistent 10.6% Year To Date (YTD) Return with a max drawdown 3.6% for the company.

Learn Order Execution Problem by Reinforcement Learning *03/2016-06/2016*

Supervisor: Mr. Siwei Chen *Guangzhou Securities*

- Deploy a reinforcement learning model to derive the optimal strategy to execute large orders to minimize impact cost for the company.

Teaching Experience

Teaching Assistant in UMN CSCI 2041: Advanced Programming Principles *2019 Spring*

Teaching Assistant in Mathematics and English *2014*

Kongdian Middle School *Kongdian Village, Anhui Province*

- Improved students' average scores in Math and English. Awarded with *Advanced Social Practice Student Prize*.

Services

Multimedia Technical Support *09/2016-09/2017*

Liaison Department of Student Union *Tsinghua University*

- Supported large screen interactive multimedia display system in orientation, Ph.D Candidates Conference.

Violinist *09/2013-09/2015*

School Orchestra *University of Science and Technology of China*

SKILLS

Computer Speciality

– Python, Java, Sql, Kafka, Mongodb, Druid

Mathematics Speciality

– Numerical Methods, PDE

Finance Speciality

– CFA Level I, Securities/Funds Practitioner Qualification Certificate

PUBLICATIONS

- Ruoyan Kong, Haiyi Zhu, and Joseph Konstan. 2019. Learning to Ignore: A Study of Organization-Wide Email Effectiveness. under review
- 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), 679-688