

# RUOYAN KONG's CV

Department of Computer Science, University of Minnesota

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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 3.79, 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

## RESEARCH EXPERIENCE

- Towards an Effective Organization-Wide Email System** 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.
  - I conduct mixed-methods studies, along with machine learning and iterative design techniques to design enhancements to an organizational bulk email system to support multi-stakeholder prioritization.
- 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 algorithmic game theory, optimal mechanism design, and multi-armed bandit algorithms, and 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  $O(\ln T/T)$  Bayesian Nash 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.
  - Proposed a conservative risk finance paradigm that can be used to prepare the firm for worst-case scenarios with regard to (1) firm's intrinsic sensitivity, (2) heaviness of severity's tail and (3) dependence between risks.
- Group Recommendation: An Approach Based on Nash Equilibrium (ICDM'16)** 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.
- Effect of Intramuscular Fat on Skeletal Muscle Mechanics** 07/2015-09/2015  
*Undergraduate Summer Research Program* Simon Fraser University, CA

Supervisor: Prof. Nilima Nigam

- Implemented C++ code of different types of skeletal muscle with finite element tool dealii.

## INTERNSHIP

### Batch-Mode Active Learning for Less Labeling

05/2020-08/2020

Supervisor: Dr. Zhanlong, Qiu

Applied Scientist Intern, Amazon, Seattle

- Developed a Deep Imitation Batch-Mode Active Learning Model (DBAL) to control the number of human labels needed while maintaining model's performance.

### Social Intelligence and Rank Optimization

06/2019-08/2019

Supervisor: Mr. Allan Luk

Data Science Intern, Seagate, MN

- Built NLP trend detection models (DLNP Topic Extraction + W2V + tsne topic clustering) to catch market feedback, customer reviews, industry opportunities (Python).
- Deployed SEO, Learning to Rank models (softmax LR + 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

Quantitative Developer Intern, Derivatives-China

- Designed a semi-supervised learning algorithm (SHMM) to fit HMM segmentally based on Adaboost; SHMM could react to changeable marketing and have explainable hidden states (e.g. 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.

## TEACHING EXPERIENCE

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

2019 Spring

**User Interface Design:** Teaching Assistant in UMN CSCI 5115

2020 Fall

## SKILLS

**Computer Speciality** Python, Java, Sql, Kafka, Druid, Hive/Hadoop, Angular, CSS/HTML, CUDA, Javascript

**Finance Speciality** CFA Level I

## AWARDS AND HONORS

- |   |      |
|---|------|
| • Grand Prize @ Wells Fargo Campus Analytics Challenge                              | 2020 |
| • National Scholarship, National Ministry of Education of China, top 1%             | 2013 |
| • First Prize Scholarship, Tsinghua University, top 3% in the Department of Finance | 2017 |

## PUBLICATIONS

- Ruoyan Kong, Haiyi Zhu, and Joseph A. Konstan. Learning to Ignore: A Case Study of Organization-Wide Bulk Email Effectiveness. To appear in Proceedings of the ACM on Human-Computer Interaction (accepted to CSCW 2021).
- Ruoyan Kong, Haiyi Zhu, Chuankai Zhang, Jin Kang, and Joseph Konstan. COVID-19 as Reflected in University President Bulk Email. under review
- Ruoyan Kong, Ruobing Wang, Zitao Shen. Virtual Reality System for Invasive Therapy. 2021 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW). IEEE, 2021.
- Ruoyan Kong, Haiyi Zhu, and Joseph Konstan. 2020. Organizational Bulk Email Systems: Their Role and Performance in Remote Work. NFW 2020.
- 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