

# 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 – 02/2023
    - GPA 3.82, Advisor: Prof. Joseph Konstan, Thesis: Towards an Effective Organization-Wide Bulk 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
- 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, Thesis: A Model of Incentives in Repeated Crowdsourcing Systems

## RESEARCH EXPERIENCE

- Towards an Effective Organization-Wide Bulk Email System** Ongoing  
Supervisor: Prof. Joseph Konstan *GroupLens Lab, University of Minnesota*
- To improve the effectiveness of organizational communication, I deployed end-to-end machine learning projects (iterative design, feature engineering, model tuning, data pipeline, online deployment, and A/B testing).
  - The final solutions include an email personalization tool (**Python + SQL + AWS + html**), a per-region reading time prediction tool (**Tensorflow and Serving**), and an email evaluation platform (<http://www.comm-tool.com/>, **python + javascript + vue + GCP**). Published in CSCW 21, 22.
- Understanding the Value of Recommendation** 1/2021 - 12/2021  
Supervisor: Prof. Joseph Konstan *GroupLens Lab, University of Minnesota*
- To understand recommendations' influence on users, we conducted a 6-month online experiment on MovieLens.org. I designed the database (**SQL**), wrote the backend **Java** code, designed API calls connected through (**elasticsearch**), then implemented the frontend (**AngularJs, CSS**). (under review).
- A Risk Finance Paradigm for Dependent Catastrophe Losses with Pareto Severities** 09/2017-12/2017  
Supervisor: Prof. Michael Powers *School of Economics and Management, Tsinghua University*
- Group Recommendation: An Approach Based on Nash Equilibrium** 01/2015-06/2015  
Supervisor: Prof. Qi Liu *Department of Data Mining, National Engineering Laboratory for Language Information Processing*
- When recommending products for multiple stakeholders, the recommendations have to satisfy the whole group's preferences. We built a Nash game to solve this problem, achieving a Hit Rate of 10% (ICDM 16).
- Effect of Intramuscular Fat on Skeletal Muscle Mechanics** 07/2015-09/2015  
Supervisor: Prof. Nilima Nigam *Simon Fraser University, CA*
- Simulating the biomechanics of different types of skeletal muscle (**C++**).

## INDUSTRIAL EXPERIENCE

- Machine Learning Engineer Intern, *Facebook, Seattle* 06/2022-08/2022
- **Product to Product Recommendation**: Predicting the next product user clicks — I developed a two-tower **deep neural network** to predict users' interactions with products given their previously clicked products, improving `roc_auc` by over 10% (**PyTorch, Hive, Spark**).
- Machine Learning Engineer Intern, *Facebook, Seattle* 06/2021-08/2021
- **Search Engine Optimization** - Query Category Classification: Directing users to the correct product category — I applied **XLM** to classify the hierarchical categories of search queries, improving the recall of query categorization in marketplace by 15% (**PyTorch, Hive**, under review).
- Applied Scientist Intern, *Amazon, Seattle* 05/2020-08/2020

- **Batch-Mode Active Learning in Fraud Detection:** Detecting large quantities of transaction fraud with limited human labeling resources – I developed a **Deep Imitation Batch-Mode Active Learning Model** (NimbleLearn) to reduce the manual labeling for fraud detection by 80% (**Tensorflow, BERT, ICDMW 21**).

Data Science Intern, *Seagate, MN*

06/2019-08/2019

- Social Intelligence and Rank Optimization: Understanding the trends in social media — I built an **NLP trend detection model** (DLNP Topic Extraction + tsne topic clustering) to catch market feedback, and a **LambdaRank model** to improve products' searching ranks, reaching a 90 % ordered-pair accuracy (Python).

Quantitative Developer Intern, *Derivatives-China*

12/2016-04/2017

- A Half-supervised Hidden Markov Model to Forecast Index Futures: I designed a semi-supervised learning algorithm (SHMM) to fit HMM segmentally. The model provides explainable hidden states (e.g., directions of index futures) and brings a 10.6% Year To Date return (**Java, Python**).

## PUBLICATIONS

### Conferences and Journal Articles

- Ruoyan Kong, Chuankai Zhang, Ruixuan Sun, Vishnu Chhabra, Tanushsrisai Nadimpalli, Joseph A. Konstan. 2022. Multi-Objective Personalization in Multi-Stakeholder Organizational Bulk E-mail: A Field Experiment. Proc. ACM Hum.-Comput. Interact., Vol. 6, No. CSCW2, Article 528. DOI:<https://doi.org/10.1145/3555641>
- Ruoyan Kong, Joseph A. Konstan. 2023. The Challenge of Organizational Bulk Email Systems: Models and Empirical Studies. In *The Elgar Companion to Information Economics*. Edward Elgar Publishing. (Accepted for Publication Book Chapter)
- Charles Chuankai Zhang, Mo Houtti, C. Estelle Smith, Ruoyan Kong, and Loren Terveen. 2022. Working for the Invisible Machines or Pumping Information into an Empty Void? An Exploration of Wikidata Contributors' Motivations. Proc. ACM Hum.-Comput. Interact. 6, CSCW1, Article 135. <https://doi.org/10.1145/3512982>
- Ruoyan Kong, Haiyi Zhu, and Joseph A. Konstan. 2021. Learning to Ignore: A Case Study of Organization-Wide Bulk Email Effectiveness. Proc. ACM Hum.-Comput. Interact. 5, CSCW1, Article 80. DOI:<https://doi.org/10.1145/3449154>
- Hongke Zhao, Qi Liu, Yong Ge, Ruoyan Kong, Enhong Chen "Group Preference Aggregation: A Nash Equilibrium Approach," 2016 IEEE 16th International Conference on Data Mining (ICDM), 2016, doi: 10.1109/ICDM.2016.0079.

### Workshop Papers

- Ruoyan Kong, Zhanlong Qiu, Yang Liu, and Qi Zhao. "NimbleLearn: A Scalable and Fast Batch-mode Active Learning Approach." In 2021 International Conference on Data Mining Workshops (ICDMW), pp. 350-359. IEEE, 2021. doi: 10.1109/ICDMW53433.2021.00050.
- Ruoyan Kong, Ruobing Wang and Zitao Shen, "Virtual Reality System for Invasive Therapy," 2021 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), 2021, doi: 10.1109/VRW52623.2021.00227.
- Ruoyan Kong, Haiyi Zhu, and Joseph Konstan. 2020. Organizational Bulk Email Systems: Their Role and Performance in Remote Work. *New Future of Work*.

### Under Review Papers

- Aridor, G., Goncalves, D., Kluver, D., Kong, R., Konstan, J. (2022). The Economics of Recommender Systems: Evidence from a Field Experiment on MovieLens. arXiv. <https://doi.org/10.48550/arXiv.2211.14219> (Under Review for American Economic Review)
- Ruoyan Kong, Joseph A. Konstan. 2023. Socially-embedded Agent in Organizational Contexts – Bulk Email as an Example. (Under Review Book Chapter for *Intelligent Systems in the Workplace: Design, Applications, and User Experience*. Springer Publishing)
- Ruoyan Kong, Ye Yuan, Ruixuan Sun, Chuankai Zhang, and Joseph A. Konstan. 2023. CommTool: Supporting Organizations Evaluate Bulk Emails. (Under Preparation Conference Paper, for The 26th ACM Conference On Computer-Supported Cooperative Work And Social Computing).
- Ruoyan Kong, Ruixuan Sun, Chuankai Zhang, Chen Chen, Sneha Patr, Gayathri Gajjela, and Joseph A. Konstan. 2023. Message-Level Reading Estimation of Web-pages based on User Interactions. (Under Preparation Conference Paper, for The 2023 ACM Symposium of Eye Tracking Research Applications).
- Yunzhong He, Cong Zhang, Ruoyan Kong, Chaitanya Kulkarni, Qing Liu, Ashish Gandhe, Amit Nithianandan, Arul Prakash. HierCat: Hierarchical Query Categorization from Weakly Supervised Data at Facebook Marketplace. (Under Review for The Web Conference 2023).

## AWARDS AND SERVICES

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- Reviewers of CSCW 2021, CSCW 2022, IEEE VR 2023, IJHCI 2022
- Grand Prize @ Wells Fargo Campus Analytics Challenge, top 4 2020
- First Prize Scholarship, Tsinghua University, top 3% 2017
- *Outstanding Graduates, USTC*, top 3% 2016
- *Gold Award of University's Excellent Students, USTC*, top 3% 2014
- *National Scholarship, National Ministry of Education of China*, top 1% 2013

## TEACHING EXPERIENCE

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- Advanced Programming Principles:** Teaching Assistant in UMN CSCI 2041 2019 Spring  
**User Interface Design:** Teaching Assistant in UMN CSCI 5115 2020 Fall  
**Recommender Systems:** Teaching Assistant in UMN CSCI 5123 2021 Fall

## SKILLS

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**I wrote projects in** Python, Java, Javascript, Sql, C++, Kafka, Druid, Hive/Hadoop, Spark, Angular, React, CSS/HTML, TypeScript, Tensorflow, PyTorch  
**Finance Speciality** CFA Level I