# Ruien(Ryan) Li

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## EDUCATION

**East China Normal University| Shanghai, China** **09/2021-06/2025(Expected)**

Bachelor of Engineering, Data Science and Big Data Technology, Ranked 2/58, WAM: 91.3/100, Minor, Japanese

**Coursework:** Core Courses: Web Programming (4.0), Mathematical Foundation of Data Science & Engineering (3.9),Computer Systems (4.0), Computer Networks Theory & Programming (4.0), Algorithms for Data Science and Engineering (4.0), Operating System (4.0), Computer Vision & Multimedia Information Processing (4.0),Cloud Computing System (4.0), Contemporary Artificial Intelligence (4.0), Statistical Methods and Machine Learning (4.0), Distributed Computing System (4.0), Deep Learning (4.0), Social Computing (4.0), Data Mining (4.0)

## PUBLICATION

[1] Ruien Li, Yanhao Wang, and Michael Mathioudakis. "Coresets for Deletion-Robust k-Center Clustering." *Proceedings of the 33rd ACM International Conference on Information and Knowledge Management*. 2024.

## RESEARCH EXPERIENCE

**Research Assistant| Dr. Shuaikun Hou| Tsinghua University|Remote** **07/2024-Present**

- Led a performance evaluation of an AI-powered telephone sales system using DID and CSDID methods, analyzing 490,000+ data points in Python and Stata to measure its impact on employee productivity.
- Used DID to estimate the AI system's effect on key performance metrics, showing an 8% increase in customer conversion rate after implementation.
- Applied CSDID to analyze varying treatment effects over time, finding a 13% performance boost initially, which tapered to 6% after 6 months.
- Compared DID and CSDID results to validate the AI system's impact on sales revenue and conversion rates, confirming its effectiveness in improving productivity.
- Conducted a survey on AI surveillance's impact on employee perceptions, analyzing how demographics such as work hours, age, and gender influenced responses to AI in the workplace.

**Research Assistant| Pro. Yanhao Wang| East China Normal University |Shanghai** **09/2024-Present**

***Project One: Coresets for Deletion-Robust k-Center Clustering***

- Proposed and implemented an efficient algorithm for k-center clustering in a deletion-robust context, demonstrating superior robustness against adversarial deletion attacks compared to baseline methods.
- Introduced a coreset-based approach to reduce time complexity and improve clustering accuracy under deletion, achieving a 4-approximation algorithm with a coreset size of O(kz) in O(nk) time, where k is the number of centers, z is deleted points, and n is the total number of points.
- Conducted experiments in Python using four real-world datasets and one synthetic dataset, comparing the proposed algorithm against traditional GMM and fault-tolerant algorithms under three types of adversarial deletion attacks. Results demonstrated significant improvements in robustness and efficiency, with detailed performance analysis visualized through tables and graphs.
- Drafted a Short Research Paper accepted at CIKM 2024, presented at the conference in Boise, Idaho. Shared the algorithm's findings through an academic poster session, engaging with industry professionals and researchers.

***Project Two: Approximation Algorithms for Individually Fair Diversity Maximization***

- Initiated a project focused on developing approximation algorithms for Max-Min Diversity Maximization with an individual fairness constraint, aiming to balance both effectiveness and efficiency.
- Proposed an algorithm inspired by diversity maximization with group fairness and individual fairness in k-clustering, providing a proof of correctness for the approach.
- Conducted a comprehensive review of existing research on diversity maximization and individual fairness, leading to a deep understanding of mathematical definitions and guiding the formulation of the proposed algorithm.
- Currently refining the algorithm, engaging in discussions to improve rigor and explore potential alternative approaches for further optimization.

## SELECTED PROJECTS

**Gender Confrontation on the Chinese Internet: Analysis of Baidu Index and Weibo Comments**

- Crawled and cleaned 6,282 Weibo comments on gender-related news using Python
- Visualized emotional tendencies in comments with word clouds, highlighting gender conflict and negative sentiment.
- Analyzed emotional sentiment with a fine-tuned BERT-based model and classified comments using k-means clustering, revealing mainly negative comments categorized by length and emoji.
- Developed a gender bias detection model using Chinese BERT on a 32.9K sentence dataset, achieving an F1-score above 0.7, showing strong potential for practical application.
- Found that gender confrontation is widespread on Chinese social media, with negative sentiment dominating.

**Tap News: Real Time News Scraping and Recommendation System**

- Implemented a data pipeline that monitors, scrapes, and dedupes latest news (MySQL, Redis, RabbitMQ, TF-IDF).
- Built a single-page web application for users to browse news (React, Node.js, RPC, SOA, JWT).
- Implemented a click event log processor that collects user clicks and updates a news preference model.
- Designed and built an offline training pipeline for news topic modeling (Tensorflow, DNN).
- Deployed an online classifying service for news topic modeling using the trained model.

## SELECTED CONTEST PROJECTS

**Team Leader|China Undergraduate Mathematical Contest in Modeling| Shanghai** **09/2023-10/2023**

- A leading character in the team for the most prestigious Mathematical Modeling Competition in China Mainland
- Employed Simulation, Grid Search and Literature Review concerning statistics topic
- Improved the efficiency of our codes greatly by considering geometric properties of the problem

**Member| COMAP'S Mathematical Contest in Modeling (MCM)| Shanghai** **02/2023-03/2023**

- Collaborated with a team for the Mathematical Modeling Competition organized in the United States.
- Wrote a paper Unveil the Mystery of Wordle: Analyze Wordle Data.
- Employed Time Series Analysis, Gaussian Mixture Distribution and Literature Review on lexical resources.
- Learned LATEX English writing, academic figure drawing and Literature Review.

## LEADERSHIP AND ACTIVITIES

**Mentor | Life Development Navigation** **09/2023-Present**

- Help 8 freshmen get familiar with the campus
- Offer professional advice on university study and future planning

## HONORS AND AWARDS

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| East China Normal University Excellent Student Scholarship, Special Prize& First Prize | **2021-2024** |
| East China Normal University Excellent Student | **2021-2024** |
| China Undergraduate Mathematical Contest in Modeling, National Second Prize& Shanghai First Prize | **2023** |
| Huashu Cup National Undergraduate Mathematical Contest in Modeling,National First Prize | **2023** |
| COMAP'S Mathematical Contest in Modeling (MCM), Successful Participant | **2023** |
| East China Normal University *My Teacher and Me* Literature Contest, First Prize (1000 CNY) | **2023** |

## SKILLS AND INTERESTS

**Languages**: Chinese (Native), English (IELTS: 7.5, GRE 323+4.0), Japanese (JLPT: N3 133)
**Programming**: Python, C++, C, Java, SQL, MongoDB, JavaScript, HTML, CSS, Matlab, Stata
**Modeling And Stat:** Regression analysis, Time series analysis, Bayesian statistics, Supervised learning(Decision trees, Random Forest, SVM, CNN, DNN), Unsupervised learning(K-means, K-Center, PCA), Hypothesis Testing
**Tools/Web Development:** MongoDB, Redis, RabbitMQ, TF-IDF, Node.js, RPC, SOA, JWT