Ruizhe Huang

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EDUCATION

University of Toronto **Toronto, Ontario, Canada**
Master of Engineering Emphasis in Data Analytics and Machine Learning Expected Graduation: 11/2025

- **Relevant Coursework:** Introduction to Data Science; Introduction to Deep Learning; Financial Engineering; Artificial Intelligence in Finance; Cloud-Based Data Analytics; Blockchain Technologies and Cryptocurrencies; Data Mining

University of Toronto **Toronto, Ontario, Canada**
Honours Bachelor of Science (with Distinction) 09/2019 – 01/2023

- **Major:** Statistics **Minor:** Economics & Mathematics

TECHNICAL SKILLS

- **Programming:** R(tidyverse, ggplot), Python(pandas, scikit-learn), MATLAB, Java
- **Analytics:** Excel, SQL, SAS, Tableau, PowerBI
- **Big Data:** Azure, Databricks, PySpark, Hadoop

PROFESSIONAL EXPERIENCE

Artificial Intelligence for Justice Lab **Toronto, Ontario, Canada**
Research Assistant 05/2024 – Present

- Conducted comprehensive literature reviews on LLM and their application in topic modeling
- Implemented machine learning models to analyze social media data, focusing on NGO-related topics using LLM models
- Co-authored academic papers, contributing to research and writing for peer-reviewed journals
- Assisted in the preparation of manuscripts, posters, and presentations for submission to academic conferences, ensuring clarity in the communication of research findings

Institute for Studies in Transdisciplinary Engineering Education & Practice **Toronto, Ontario, Canada**
Research Assistant-Student Data Analytics 09/2023 – 03/2024

- Leveraged critical literature reviews to synthesize information, driving strategic enhancements to educational services
- Employed ordinal logistic regression and KNN model on survey data, with 80%+ accuracy in forecasting student success
- Effectively communicated findings through written reports and presentations, facilitating data-driven decision making
- Contributed to the development of reports, academic articles, and engaged in professional development activities

PROJECTS

Curriculum Development using Clustering Algorithms 04/2024

- **Scraped** over 1,000 job postings from Indeed and employed **hierarchical** and **K-means** clustering to identify 14 and 9 skill clusters for the data science curriculum, covering essential hard and soft skills
- Implemented thorough text cleaning, lemmatization, tokenization, and utilized pre-trained word **embedding** model to refine text for clustering algorithms like K-means
- Applied **PCA** to reduce feature dimensions to 9, capturing over 90% of the cumulative variance, and fine-tuned the hyperparameters of K-means clustering using the elbow method to pinpoint 9 skill clusters for curriculum development

Advancing Canada's Global Innovation Ranking through NLP and modeling 03/2024

- Led, through delegation, a team of seven conduct project to enhance Canada's innovation ecosystem, employing GPT **API** and **random forest** model for sophisticated text analysis and feature importance extraction
- Developed a robust, data-driven innovation scoring system through meticulous analysis, establishing benchmarks for Canada's performance in global innovation rankings and identifying strategic areas for improvement
- Proposed practical strategies to improve Canada's innovation ranking, leveraging diverse data sources
- Designed and presented infographics that succinctly visualized project findings and strategic recommendations, effectively communicating complex insights to stakeholders

Credit Card Fraud Detection via Anomaly Detection 10/2023

- Leveraged **Gaussian Mixture Models** to accurately pinpoint fraudulent transactions in credit card data
- Optimized model for **imbalanced datasets**, ensuring robust model performance by applying GMM for **outlier detection**, significantly reducing false positives
- Achieved superior model performance through **hyperparameter tuning**, resulting in an F1 score exceeding 80%, significantly enhancing detection capabilities