AMIRHOSSEIN RAZAVI

Email: amirhossein.razavi@torontomu.ca, Phone: +1 416-722-4080, Homepage: razaviah.github.io

EDUCATION

Toronto Metropolitan University *2024 - 2026*
Master of Applied Science, Electrical and Computer Engineering
Supervisor: Dr. Ebrahim Bagheri
GPA: **4.22/4.33**
Focus Area: NLP, LLM Evaluation, Prompt Engineering, and Information Retrieval (IR)

Notable Courses:

Intelligent Systems: A+ *Deep Learning: A+*

York University *2018 - 2022*
Bachelor of Science, Honours Computer Science - Lassonde School of Engineering
GPA: **7.12/9**
Focus Area: NLP, Artificial Intelligence, and Machine Learning

Notable Courses:

Computer Science Capstone Project: A+
Artificial Intelligence: A
Design and Analysis of Algorithms: A
Introduction to Applied Statistics: A+
Machine Learning and Pattern Recognition: A+
Introduction to AI and Logic Programming : A
Advanced Object Oriented Programming: A
Elementary Probability: A+

International College of Manitoba *2017 - 2018*
Bachelor of Science, Computer Engineering (Transferred to York University)
GPA: **4.13/4.5**

Notable Courses:

Computer Programming for Scientists and Engineers: A+ *Calculus 2: A+*

PROFESSIONAL TRAINING

Toronto Institute of Data Science & Technology *Sep. 2022 - Mar. 2023*
Applied Data Engineering and Architect Diploma - WeCloudData

Notable Courses:

AWS Services
Data Warehouses
Apache Airflow
SQL and NoSQL
CI/CD Pipelines
Data Integration, and Data Pipelines
Big Data and Spark
Docker
Data Ingestion, Streaming, and Lakehouse
Linux

PUBLICATIONS

Benchmarking Prompt Sensitivity in Large Language Models *Apr. 2025*
***Amirhossein Razavi**, Mina Soltangheis, Negar Arabzadeh, Sara Salamat, Morteza Zihayat, Ebrahim Bagheri*
In 47th European Conference on Information Retrieval (ECIR 2025)

TEACHING EXPERIENCES

COE892 Graduate Assistant, Distributed and Cloud Computing *Winter 2025*
Holding lab sessions, Holding code reviews, Course project evaluation, Grading exams and assignments

COE428 Graduate Assistant, Algorithms and Data Structures *Winter 2025*
Holding lab sessions, Guiding students on how to think, Grading exams and assignments

COE318 Teaching Assistant, Software Systems *Fall 2024*
Holding lab sessions, Holding code reviews, Grading exams and assignments

RESEARCH AND ACADEMIC EXPERIENCES

Benchmarking Prompt Sensitivity in Large Language Models

Supervisor: Prof. Bagheri
Type: Research Publication, Natural Language Processing (NLP), Information Retrieval (IR)

This project introduces PromptSET, a new dataset and benchmark for studying prompt sensitivity in large language models. Using TriviaQA and HotpotQA, it defines the Prompt Sensitivity Prediction task—predicting whether slight rephrasings of a prompt lead to correct LLM responses. The project evaluates multiple baselines, including self-evaluation, text classification, and query performance prediction, showing that existing methods struggle to capture prompt sensitivity, emphasizing the need for dedicated approaches.

Query Performance Prediction via LLM-Generated Query Variations

Supervisor: Prof. Ensan
Type: Information Retrieval (IR), Natural Language Processing (NLP)

This project explores Query Performance Prediction (QPP) through Large Language Model–generated query variations. Instead of embedding-space perturbations like ADG-QPP, it uses LLMs (LLaMA 3.1) to produce semantically equivalent queries evaluated with BM25 retrieval. The approach offers interpretable, natural-language robustness estimation and achieves strong correlation performance especially on challenging queries showing LLM based QPP as a viable alternative to dense methods.

Dataset Generation, and Evaluation for Natural Question Generation

Supervisor: Prof. An
Type: Capstone Project, Natural Language Processing (NLP)

This project aimed to create and evaluate a new dataset for natural question generation, emphasizing the practical use of natural-sounding questions in real-world applications. Utilizing state-of-the-art NLP models like BART and T5, the project focused on generating and validating a dataset that effectively aids in natural question generation tasks.

Social Network Influencer Ranking Based On Link Analysis

Supervisor: Prof. Papagelis
Type: Network Analysis

This project explores the application of link analysis methods, such as PageRank and weighted PageRank, to rank influencers on social networking services. Focusing on the burgeoning field of digital marketing and online communication, it aims to provide a systematic approach to measuring the influence and reach of key SNS personalities.

PERSONAL PROJECTS

TTC Real-Time Bus Tracking System

Supervisor: N/A
Type: Data Engineering, Real-Time Data Processing

This project develops a real-time application for tracking TTC buses using GPS data from IoT devices. It harnesses Apache NiFi, Kafka, Spark Structured Streaming, and other technologies to process live data, aiming to optimize TTC bus routes.

Automated Data Pipeline for Transaction Analysis

Supervisor: N/A
Type: Data Engineering, Batch Data Processing

This project automates the extraction of transaction data into a cloud-based storage system, followed by its transformation using a scalable compute service. Post-transformation, the data is stored for further analysis and visualized using a business intelligence tool, enabling detailed reporting and analysis of transactional data.

WORK EXPERIENCE

Research Associate @ Toronto Metropolitan University *Sep. 2024 - Present*
Toronto, Canada

Under Supervision of ***Dr. Ebrahim Bagheri***
Developed large-scale ML pipelines to assess and enhance the reliability of large language models (LLMs), emphasizing prompt engineering and retrieval-augmented generation (RAG). Designed benchmarking datasets and evaluation frameworks to measure model robustness under prompt variations. Leveraged PyTorch, Transformers, and embedding models to train and evaluate text classification and performance prediction systems. Improved model accuracy through fine-tuning and automated prompt refinement techniques based on feedback and performance signals. Collaborated with faculty to publish findings and transform research outcomes into practical evaluation tools for applied ML settings.

Data Engineer Consultant @ Beam Data *Sep. 2022 - May 2024*
Toronto, Canada

Healthcare Data Migration
Migrated a midwifery practice's data to private cloud platform using Apache Airflow, automating data ingestion and establishing advanced transformation rules. This project streamlined healthcare data management and resulted in a scalable pipeline for future migrations, underscored by stringent data quality checks to ensure data integrity.

Automated Data Pipeline for SEO Product
Developed a comprehensive website auditing tool for SEO performance tracking, integrating a robust Apache Airflow data pipeline for daily updates and historical records. This included creating a Metabase dashboard and optimizing data processes with advanced SQL in PostgreSQL, culminating in recognition from the client and a leadership role in training juniors.

TECHNICAL SKILLS

Programming	Python, SQL, PySpark, Java, Linux (Shell Script), Git
Data Engineering	Airflow, Docker, Kafka, Apache Spark (PySpark), Databricks, Nifi, Spark Streaming, Jenkins, Hadoop, Snowflake
Cloud Computing	AWS, Compute Canada, GCP, Azure
Data Visualization & BI	Matplotlib, Seaborn, Metabase, Tableau
Machine Learning	PyTorch, Transformers, Tensorflow, PEFT, Pandas, Keras, Scikit-learn
Tools & Project Management	Slack, Jira, Confluence, GitHub, Notion

LANGUAGES

English, Persian

AWARDS, HONOURS, AND SCHOLARSHIPS

- TMU Graduate Fellowship *2024*
- Member of Dean's Honour Roll at York University *2022*
- York University Undergraduate Bursary *2021*
- Winner of The Merit Scholarship at International College of Manitoba *2017*
- Ranked top 2% between 163000 applicants in National University Entrance Exam *2016*

EXTRA-CURRICULAR AND VOLUNTEER WORK

- Volunteered at the "Iranian Stuttering School" association to provide peer support for individuals with stuttering *2020 - Present*
- Fundraising for back-to-school equipment and clothing for low-income students *2018 - 2020*
- Taught first year Math and Computer courses to students with learning challenges *2017 - 2018*