Ryan Zhao

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Summary of Qualifications:

- Strong analytical, abstract thinking and research ability, essential to my curriculum
- Out-of-the-box thinking developed through mathematics and physics competitions, consistently placing in top percentiles
- 4+ months of experience transforming raw data into actionable insights, utilizing Python, SQL, and Power BI to support strategic decision-making in a university department setting
- Proficient in Python, R, Pandas, NumPy, PyTorch, Flask, Plotly, Django and Regex, leveraging these skills to build multiple deep learning web applications
- Familiarity with Java and C through academic and personal practices
- Strong understanding with normalization, dimensionality reduction, input preparation, finetuning and deploying (via cloud services) models; strong experience with training algorithms (linear regression, random forest, K-NN, decision tree) and optimizing AI models
- Strong experience with Git version control and Shell / Unix scripting for collaborative development and automation CI/CD workflows with AWS and Azure warehouses.
- Experience with SQL databases (SQLite, MySQL, NoSQL, SQL Server) for efficient information retrieval, cleaning and data modeling across ETL processes
- Well-versed in web technologies including Flask, HTML, CSS, and JSON, demonstrated through building responsive web applications
- Proficiency in MS Office, including Excel, Outlook, PowerPoint, MS Teams and Word
- Excellent presentation and communication skills developed through explaining complex data concepts to non-technical stakeholders

Technical Projects:

Image Similarity Checker (Independent Project)
April 2025

- Engineered a responsive web application using Flask and PyTorch that classifies images into 10 categories with over 78% accuracy over an efficient selection of epochs.
- Implemented a convolutional neural network (CNN) architecture with batch normalization and dropout layers to optimize model performance and streamlined the data preparation process by creating scripts to efficiently extract and label CIFAR-10 dataset images.

Stock Price Prediction Platform (Independent Project)
May 2025-Current

- Developed a comprehensive web application that predicts stock prices for three major indices (Dow Jones, S&P 500, NASDAQ) using Linear Regression, ARIMA, and XGBoost models from Numpy or Pandas with real-time data visualization through candlestick charts.
- Architected a scalable cloud-based solution with AWS based on model size, implemented memory optimization techniques for handling large-scale financial datasets, trained models on prebuilt/customized Docker container and deployed large models on Vertex AI endpoints.

- Engineered robust data processing pipelines that handle data anomalies, implement business day calculations, and maintain data normalization across multiple price points (Open, Close, High, Low) with configurable prediction time steps.

- Successfully deployed business-ready application on Render platform with proper error handling, environment-aware configurations, and JSON API endpoints.

Course Search Helper - Interactive Course Visualization System (Independent Project)
May 2025

- Engineered an efficient data processing system that parses and serves over 2,000 courses and over 8,000 course relationships from JSON, enabling real-time relationship mapping without database queries.

- Developed an intuitive course visualization system using Cytoscape.js and Flask, enabling students to dynamically explore and understand course prerequisites through an interactive graph interface.

Education & Training:

Bachelor of Science in Mathematics (Co-op), 3nd year
University of Toronto | September 2023 – present

Introduction to Probability Theory
University of Toronto | May 2025 – present

- Exhibited excellence at probability modelling and comprehensive skill translating real-life probability events, enhancing understanding on machine learning models like Transformer.

Milliken Mills High School | January 2022 - June 2023

- STEM-focused Grade 11 and 12 courses

- Achieved excellent results in mathematics and physics competitions.

Introduction to Computing Studies (ICS2O)

- Excelled in VB-based coursework, frequently collaborating with instructors to design interactive interfaces and implement efficient local file management solutions with VBA

Work Experience:

Data Analyst & Business Intelligence
University of Toronto Scarborough | January 2025 - April 2025

- Developed a fully automated data pipeline in collaboration with cross-functional teams, increasing dashboard accessibility for marketing and customer service departments by individually designing and streamlining 50% of ongoing dashboards.

- Applied Python, SQL, and Power BI to digest, clean, transform, upload and visualize student data, enabling the identification of trends that informed targeted outreach strategies.

- Enhanced technical proficiency with GitHub Actions and YAML-based workflow automation, successfully implementing Azure-based solutions for scalable data processing.

- Improved team data literacy by regularly explaining complex data processes to non-technical colleagues using clear, accessible language and visual aids.

- Working on a standard project management software like MS Teams.