Rahul Atre

Website | Email | Linkedin | Github

Education

University of Ottawa — Ottawa, ON
B.S.c in Mathematics & B.S.c in Computer Science (4th Year), GPA: 3.8/4.0 — *Sept 2021 - Present*

- **Dual Degree** with specialization in **Machine Learning**
- **Advanced Coursework:** Machine Learning, Data Science, Regression, Time Series, Multivariate Statistics, Computational Statistics, Optimization
- **Graduation Date**: May 2026

Experience

Undergraduate Research Assistant — Ottawa, ON
University of Ottawa — *Jan 2023 – Apr 2023*

- Developed a **Separation-Reduction** algorithm to enhance the Probabilistic Transitive Closure (PTC) for Fuzzy Cognitive Maps.
- Implemented using a divide-and-conquer process of reducing one digraph into smaller components (bipolar & weighted) with no two parallel arcs having the same sign.
- Allowed for **enhanced efficiency** at polynomial time **O($\mathbf{n^2}$)** in the computation of PTC which can provide deeper insights into Fuzzy Cognitive Maps represented with bipolar weighted digraphs

Projects

Fruit Classification Using A Convolutional Neural Network | *Python, Keras, TensorFlow* [Link]

- Implemented **image augmentation** and **dropout** techniques to tackle overfitting, achieving a classification accuracy of **93%**
- Conducted **hyper-parameter** tuning using **Keras Tuner** to improve model performance, achieving an accuracy of **95%**.
- Utilized transfer learning with the pre-trained **VGG16 network**, reaching a final classification accuracy of **98%**.

Grocery Delivery Optimization | *Python, Scikit-learn, Matplotlib* [Link]

- Created & applied a **Genetic Algorithm** in Python to search out a near-optimal route across 10 addresses
- Led to an estimated **savings of up to 50%** in both delivery time and fuel consumption over a route based upon transaction order alone. This approach could be utilized across many industries as a way to find more optimal solutions.

Customer Segmentation Using K-Means Clustering in Supermarket Data | *Python, Pandas, Scikit-learn* [Link]

- Used **k-means clustering** on grocery transaction data to split out customers into distinct ”shopper types” that could be used to better understand customers over time, and to target customers more accurately with relevant content & promotions.

Mealer App - Food Delivery System | *Java, Android Studio, Firebase* [Link]

- Led a team of 5 students in developing a food ordering Android app that provides a complete solution for clients to order favorite meals from chefs nearby.
- Utilized **Chain-of-Responsibility, Model-View-Controller, Dispatcher-Action-Handler** design patterns.

Technical Skills

Languages: Python (Base, Pandas, NumPy, Matplotlib, Scikit-Learn, Keras), Java, Javascript, Go, C, HTML/CSS, SQL, Bash
Technologies: Unix/Linux, Spring Boot, Spark, React, Node.js, Next.js, Firebase, Android
DevOps: Docker, Kubernetes, Kafka, Git, Github, GitHub Actions, AWS (S3, ECS, Lambda), CI/CD, Terraform
Machine Learning: Linear Regression, Logistic Regression, Decision Trees, Random Forest, KNN, k-means, PCA, Associate Rules Mining, Causal Impact Analysis

Certifications

DSI Data Science Professional Certification — Aug 2023 – Feb 2024

AWS Associate Developer Certification Training — Apr 2024 - Ongoing