Rahul Atre

Website | Email | Linkedin | Github | Canadian Citizen

Education

University of Ottawa Sept 2021 - May 2026
B.S.c in Mathematics & B.S.c in Computer Science (4th Year), GPA: 3.7/4.0 *Ottawa, ON*

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

Experience

Data Science Intern Jan 2025 – Aug 2025
Statistics Canada *Ottawa, ON*

- Spearheaded the design and pilot testing of a new **Supply Chain Resilience Index (SCRI)** for critical minerals in EV battery production, integrating data from **mining** and **manufacturing** surveys to identify vulnerabilities and measure supply chain resilience.
- **Cleaned**, **transformed**, and **analyzed** large-scale datasets using Python and R, uncovering key insights on domestic supply, proximity, concentration, and price stability.
- **Collaborated cross-functionally** with subject matter experts within Statistics Canada and other government agencies (e.g., Natural Resources Canada, ISED)
- Developed **interactive dashboards** and automated reporting tools to visualize SCRI findings, enabling **senior management** to **quickly identify** high-risk commodities and inform **strategic decision-making**.

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

- Developed a **Separation-Reduction** algorithm to enhance the Probabilistic Transitive Closure (PTC) for Fuzzy Cognitive Maps.
- Implemented using a divide-and-conquer process to reduce one digraph into smaller, dissimilar parallel arc components (bipolar & weighted).
- **Optimized** computational load for the university's **cloud computing resources** by achieving polynomial time **O(n^2)** efficiency in PTC algorithm.

Projects

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

- Implemented **image augmentation** and **dropout** techniques for overfitting, achieving **93%** classification accuracy
- Conducted **hyper-parameter** tuning using **Keras Tuner** to improve model performance, achieving **95%** accuracy.
- 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
- Achieved estimated **savings of up to 50%** in both delivery time and fuel consumption over a route based on transaction order alone.

Customer Loyalty Score Prediction | *Python, Pandas, Scikit-learn, Matplotlib* [Link]

- Performed **feature engineering** from transaction and demographic data, building a dataset to predict loyalty scores.
- **Optimized** regression models (Linear Regression, Decision Tree, Random Forest) to estimate missing scores, achieving a **top adjusted R^2** of **0.955**.
- Improved model performance using **hyper-parameter** tuning, resulting in a cross-validated R^2 of **0.925**.

Technical Skills

Languages: Python, Java, C, GoLang, HTML/CSS, SQL, R, Bash
Technologies: Numpy, Pandas, SciPy, Scikit-Learn, TensorFlow, PyTorch, Keras, Firebase, Android
DevOps: Unix/Linux, Git, Github, CI/CD, AWS (S3, ECS, Lambda)
Machine Learning: Linear Regression, Logistic Regression, Decision Trees, Random Forest, KNN, k-means, PCA, Associate Rules Mining, Causal Impact Analysis