

# RUTVIK PATEL

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## OBJECTIVE

A data science professional with over 1.5 years of experience in data analysis and machine learning, I am skilled in programming, designing innovative AI solutions, and advanced data reporting with Power BI. Seeking to leverage my expertise in Python and machine learning techniques, I aim to drive innovative solutions for impactful insights and efficient decision-making. My commitment lies in harnessing analytics and machine learning to benefit the greater good.

## TECHNICAL SKILLS

- **Programming and Scripting:** Python, C, C++, Java, HTML, JavaScript, CSS, MATLAB, Shell
- **Development Tools:** Git, Docker, ETL (Power Query)
- **Database Management, Visualization & Cloud:** SQL, NoSQL, MongoDB, Hadoop, Azure ML Studio, Power BI, Looker Studio
- **Python Libraries:** Pandas, SciPy, NumPy, Scikit-Learn, PySpark, LangChain, Keras, PyTorch, GPT4All, Sentence Transformers
- **Machine Learning Techniques:** Regression, Deep Learning, Decision Trees, Naive Bayes, Clustering, ML and DL Libraries

## WORK EXPERIENCE

**City of London** | London, ON, Canada

Oct 2023-Present

*Training & Information Intern – Housing Stability Services*

- Developed a methodology for the archival of Encampment Data to facilitate data analysis and future reporting.
- Crafted an advanced Power BI dashboard integrating data from SQL Server, Dynamics CRM, and Network Folders, aiding the city's homelessness strategy.
- Established a dashboard to analyze the correlation between weather patterns, shelter availability, and CSR communications, leveraging CRM and historical weather data REST API, which improved reporting and decision-making, saving up to 20% of time.
- Created dashboards instrumental in supporting executive decision-making and public statistics reporting.
- Engineered Designed automation scripts that cut staff time by 60% for routine processes and monthly reporting.
- In the process of developing an integrated dashboard for executive decision-making, incorporating data from diverse sources, including Census data.
- Spearheaded the creation of process flowcharts, digital presentations, and public informative videos using Synthesia, enhancing organizational efficiency and public access to government program information.
- Standardized and documented various internal processes for consistency and future reference.

**Vosyn Inc.** | Toronto, ON, Canada

Sept 2023-Mar 2024

*Machine Learning Engineer*

- Contributed to the development of a personalized AI chatbot, specializing in prompt engineering for tailored user interactions.
- Implemented an audio segmentation module within a voice cloning and translation framework, enabling its application in multi-speaker environments.
- Engaged in the initial conceptualization and design planning of the voice synthesis AI software architecture.
- Researched various tools and resources necessary for the development phases of the AI-based product, including open-source tools, architectures, and Large Language Models (LLMs).
- Developed a Retrieval-Augmented Generation (RAG) based model to customize chatbots using available user data and chat history.
- Assisted in the testing of a Large Language Model (LLM) based product for text-based interactions, employing tools such as Langchain, Hugging Face, Sentence Transformers, and GPT4All.

**Hiloni Stock Broking Pvt. Ltd.** | Ahmedabad, GJ, India

Mar 2021-Aug 2021

*Data Science Intern*

- Developed client-centric dashboards in Power BI for premium clients, integrating daily updates from SQL Server and Market Data API to boost engagement and investment tracking.
- Implemented K-Means clustering to efficiently segment 200 clients into six categories for targeted advisor and stockbroker assignments, enhancing service delivery and reducing operational costs.
- Innovated Standardized data collection forms to web-based, achieving 40% reduction in employee processing time.
- Designed and deployed an automated script for daily financial reporting and alerts to the Accounting department regarding outstanding and receivable account balances, achieving a 25% improvement in operational efficiency.
- Provided basic IT support for office devices and network enhancements, including the installation of switches, demonstrating versatility in technical roles and contributing to the maintenance of essential IT infrastructure.

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## EDUCATION

**The University of Western Ontario** | London, Ontario, CA  
*Master of Science in Computer Science (Specialization in Artificial Intelligence)*

*Sep 2021-Feb 2023*  
**GPA: 3.90/4.00**

**Pandit Deendayal Energy University** | Gandhinagar, Gujarat, IN  
*Bachelor of Technology in Information and Communication Technology*

*July 2017-June 2021*  
**GPA: 9.38/10.0**

## PROJECTS

### Comprehensive Retail Product Analytics using Power BI: Sales, Sizes, and Pricing Insights

- Conducted an extensive analysis of over 250,000 retail entries using Power BI over a six-month period, focusing on identifying top-performing SKUs and optimizing Manufacturer's Suggested Retail Prices (MSRPs).
- Developed and utilized advanced visuals, including market share pie charts, month-over-month (MoM) comparisons, and sales pattern bubble charts, to enhance inventory management and pricing strategies.
- Leveraged insights from a wide array of data, effectively pinpointing the top 10% of SKUs, determining competitively priced products by weight, and highlighting the potential of select product types for strategic decision-making.

### Reinforcement Learning based 2<sup>nd</sup> player for Pong Game

- Created a Pong game from the ground up, integrating a Deep Convolutional Neural Network (CNN) with Q-learning to facilitate real-time learning capabilities for AI-versus-human gameplay.
- Optimized the training process by initially pairing the machine learning-based AI with a predefined hard-wired AI opponent, enhancing the learning curve.
- Refined model efficacy through iterative adjustments to custom reward and loss functions, culminating in a notable score of 7.88 out of 20 (moving average over 25 games) following 250 training episodes, indicating substantial progress in model performance.

### Stellar Classification and Comparative Analysis of Classification Algorithms

- Performed a detailed analysis of six classification algorithms-Decision Tree, Random Forest, XGBoost, AdaBoost, Naive Bayes, and Deep Convolutional Neural Network (CNN)-to assess their performance in stellar classification.
- Utilized the Stellar Dataset from Kaggle to conduct thorough weight balancing and feature selection, employing both correlation analysis and univariate/multivariate techniques to refine the data preparation process.
- Identified Deep CNN as the most effective algorithm, achieving a notable classification accuracy of 96.5%, underscoring its superiority in handling complex classification tasks.

### Database Management for a Product Manufacturing Company

- Developed a database management system tailored for a consumer product manufacturer, focusing on schema design and seamless data integration to streamline operations.
- Achieved a significant improvement in operational efficiency, with the system reducing time spent on manual entries and paper-based order searches by more than 50%, highlighting its effectiveness in enhancing productivity.

### Twitter Data Analysis: FIFA 2022

- Scraped approximately 5 million tweets, totaling 14GB, that included 53 different hashtags related to FIFA 2022 using SNScraper, and stored the data efficiently in an HDFS cluster.
- Employed data cleaning, wrangling, and preprocessing techniques with the NLTK library, followed by sentiment analysis using Textblob to derive insights into the public perception of FIFA 2022.
- Applied SparkMLlib for the development of Logistic Regression and Naive Bayes models for sentiment classification, achieving f1 scores of 0.9 and 0.73, respectively, demonstrating high efficacy in sentiment analysis.

### Stock Price Movement Prediction Using Deep CNN and Other Deep Learning Models

- Implemented a **CNN-based classification** strategy with automated technical analysis using **candlestick charts** to predict stock price trends, achieving over **81% accuracy** in the top 10 Indian stocks on the NSE, complemented by scripts for automatic chart generation.
- Utilized **LSTM**, **RNN**, and **GRU** models for forecasting stock prices in time-series data, outperforming others with a MER under 14%.

## CERTIFICATIONS AND ACHIEVEMENTS

- Pursuing** Data Engineering Essentials using SQL, PySpark (Udemy), and Azure Data Scientist certification
- Ranked** in the 89th percentile among more than 55,000 participants in TCS Codevita Coding Competition
- Completed** online courses on Machine Learning (deeplearning.ai), SQL (Stanford Online), Agile Software Development (University of Minnesota), and various Short courses on Generative AI (deeplearning.ai)