Akshat Sanghvi

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Experience

TESLA Fremont, California
Data Scientist *Nov 2023 – Present*

- Optimized training process for forecasting models (Prophet, Croston) used to forecast 26,000 service parts across 11 distribution centers, reducing runtime from **18 hours to 1.5 hours** through parallel processing in Python
- Improved **KPIs by 7%** by implementing machine learning models, such as Logistic Regression and Random Forest, to classify time series into under-forecast, over-forecast, and emerging issues with **85% accuracy**, enhancing exception management to address bottlenecks
- Engineered a solution using **GitHub Actions** to automate multiple tasks, including forecast generation, exception management, and other weekly ad hoc files, reducing manual workload by **80%**
- Constructed an **ETL** pipeline to upload 40+ local CSV, Excel, and Parquet files into **MySQL** database using Python, ensuring updated data for cross-functional teams and achieving **100% data automation**
- Developed a **Streamlit** web app for reviewing time series plots, reducing forecast analysis time by **60%** and enabling real-time feedback mechanism, enhancing collaboration between analytics and supply chain teams

GIES BUSINESS SCHOOL Champaign, Illinois
Research Associate *Aug 2023 – Nov 2023*

- Led research with Prof. Aravinda and an Indian NGO to promote rural girls' education. Analyzed pre- and post-intervention surveys using **t-tests**, showing a **36% increase** in positive attitudes toward education, demonstrating the project's success.
- Utilized Spark to analyze 1M+ credit consumers' data with 200+ attributes. Deployed a credit default classification model on **AWS (SageMaker)** using Random Forest and Decision Tree models in **PySpark MLlib**, achieving **60% accuracy**

WALMART Bentonville, Arkansas
Data Science intern *May 2022 – Aug 2022*

- Coordinated cross-functional collaboration to develop an end-to-end forecasting model for Cases per Trailer (CPT), potentially **saving $1M** and **reducing 4320 man-hours per year**
- Extracted over **five million rows** of CPT data from GCP BigQuery using SQL, followed by Python-based Exploratory Data Analysis for identifying trends, patterns, and seasonality, along with data cleaning and feature engineering
- Applied ARIMA, XGBoost, and Markov Chain forecasting techniques, along with rolling cross-validation and backtesting, achieving **94% accuracy for non-seasonal forecasts** and **88% for seasonal forecasts**
- Designed performance metrics KPIs to track and monitor the continuous improvement of model performance via a **Tableau** dashboard, ensuring effective communication and reporting to non-technical stakeholders

Technical Skills

Languages: Python, R, C/C++, Java, MATLAB, SAS, SQL, NoSQL, MongoDB, Neo4j
Data Tools: NumPy, Pandas, SciPy, Tableau, PowerBI, PyTorch, TensorFlow, Gurobi, SciKit-Learn, Microsoft Excel
DevOps Tools: AWS (S3, SageMaker), CI/CD pipelines, Git, GCP BigQuery, Docker, Kubernetes, Apache Spark, Hadoop
Concepts: Machine Learning, A/B Testing, Neural Networks, Computer Vision, Exploratory Data Analysis

Projects

Image Captioning using Transformer | [Link] | *Python, PyTorch*

- Applied image rotation as a pretext task to train a ResNet18 encoder, yielding robust features for image captioning
- Built a Transformer decoder with custom positional encoding and attention layers, trained on 30,000 images to generate descriptive captions

Generative Adversarial Networks in PyTorch | [Link] | *Python*

- Implemented LSGAN and DCGAN architectures from scratch using PyTorch to generate high-quality synthetic images
- Optimized network architectures and hyperparameters to improve GAN training stability and image quality

Land Cover and Crop Type Segmentation | [Link] | *Python, TensorFlow*

- Used TensorFlow to create pixel-level labels based on crop-type maps from Cropland Layer images provided by USDA
- Incorporated UNet to segment Corn, Soybeans from other crops on RapidEye Satellite image with 85% Pixel accuracy data

Education

University of Illinois, Urbana-Champaign Champaign, Illinois
Master of Science in Industrial Engineering *May 2023*

University of Mumbai Mumbai, India
Bachelor of Engineering in Mechanical Engineering *July 2021*