

FAANG-TASTIC INSIGHTS: PREDICT STOCK PRICES WITH REGRESSION AND MLFLOW

OVERVIEW:

This project aims to develop an intelligent and user-friendly Streamlit web application that predicts the closing prices of FAANG stocks. Leveraging advanced regression techniques, MLflow, and a user-centric design, the tool empowers financial analysts and retail investors to make data-driven decisions.

KEY FEATURES:

- **Stock Price Prediction:** Predict the closing prices of FAANG stocks using regression models.
- **Streamlit Application:** Interactive UI for entering stock parameters and viewing predictions.
- **MLflow Integration:** Experiment tracking and model comparison.
- **Data Insights:** Visualizations and metrics to aid decision-making

APPROACH:

1. Data Cleaning

- Handling missing values using mean/median imputation.
- Removing outliers using IQR and Z-score methods.
- Encoding categorical variables via one-hot encoding.

2. Exploratory Data Analysis (EDA)

- Generating visualizations such as line charts, scatter plots, and correlation heatmaps.
- Identifying key features using statistical analysis.

3. Model Development

- Building regression models (Linear Regression, Random Forest, Gradient Boosting).
- Normalizing data for optimal model performance.
- Performing train-test splits and hyperparameter tuning.

4. MLflow Integration

- Tracking experiments, metrics, and artifacts.
- Comparing models to identify the best-performing one for deployment.

5. Deployment with Streamlit

- Building an interactive app for users to input stock parameters.
- Loading the pre-trained model and generating predictions in real time.

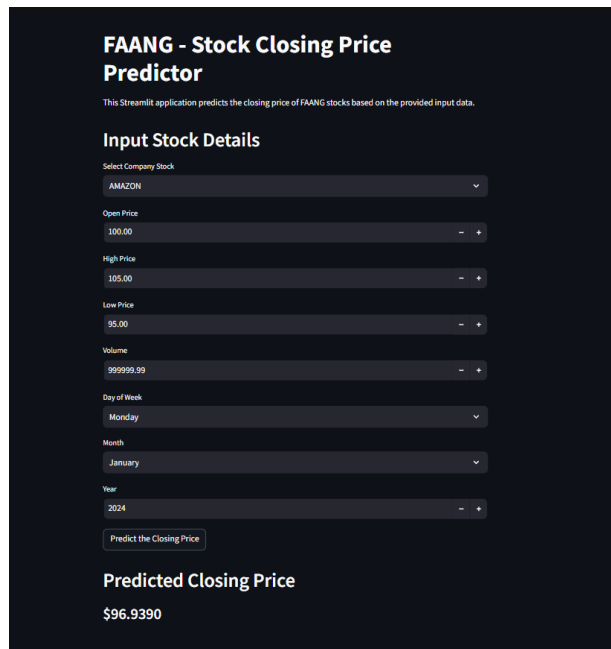
6. Model Evaluation

- Metrics: MAE, RMSE, and R^2 score.
- Ensuring alignment with business objectives.

Project Deliverables

- **Source Code:** Scripts for preprocessing, modeling, and the Streamlit app.
- **Streamlit Application:** Deployed locally or on the web.
- **MLflow UI:** Experiment tracking and performance evaluation.
- **Documentation:** Comprehensive guide on methodologies and usage.

OUTPUT:



The screenshot displays a Streamlit web application titled "FAANG - Stock Closing Price Predictor". Below the title, a subtitle states: "This Streamlit application predicts the closing price of FAANG stocks based on the provided input data." The main section is labeled "Input Stock Details" and contains several input fields: "Select Company Stock" (a dropdown menu with "AMAZON" selected), "Open Price" (a slider set to 100.00), "High Price" (a slider set to 105.00), "Low Price" (a slider set to 95.00), "Volume" (a slider set to 999999.99), "Day of Week" (a dropdown menu with "Monday" selected), "Month" (a dropdown menu with "January" selected), and "Year" (a slider set to 2024). A "Predict the Closing Price" button is located below these inputs. The output section, titled "Predicted Closing Price", shows the result: "\$96.9390".

CONCLUSION:

The **FAANG-tastic Insights** project successfully combines advanced data science techniques with user-friendly interfaces to empower financial analysts and retail investors. By predicting FAANG stock prices using robust regression models and providing real-time insights through a Streamlit application, this tool simplifies data-driven decision-making in the financial domain.