JNTUH UNIVERSITY COLLEGE OF ENGINEERING, SCIENCE AND TECHNOLOGY HYDERABAD

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING.**

# Stock Prediction and Volatility Forecasting Web Application

This project develops an interactive web application using Streamlit to predict stock prices and forecast volatility based on historical data retrieved from Yahoo Finance. The application integrates various financial modeling techniques, including Autoregressive Conditional Heteroskedasticity (ARCH) modeling, to provide insights into stock market behavior..

# Abstract:

The "Stock Prediction App" enables users to input a stock ticker and select a start date for data retrieval. The app retrieves historical closing prices from Yahoo Finance and visualizes them in a dynamic chart. Percentage returns are calculated and displayed to understand the stock's performance over time. Additionally, the app generates autocorrelation and partial autocorrelation plots to analyze the temporal dependencies in the data.

Users can select the order of the ARIMA model for stock price forecasting, which fits the model to the calculated returns. The fitted model's summary is displayed, offering statistical insights into the stock's price dynamics. Furthermore, the app forecasts future stock returns over the next 30 days and presents the predictions graphically.

This project leverages Python libraries such as Pandas, Matplotlib, NumPy, Statsmodels, and yfinance to handle data manipulation, visualization, and financial modeling. Streamlit facilitates the creation of an intuitive user interface, allowing stakeholders to interactively explore stock data, analyze returns, and gain predictive insights into future price movements.

The "Stock Prediction and Volatility Forecasting Web Application" serves as a practical tool for investors, financial analysts, and enthusiasts seeking to enhance their understanding of stock market trends and make informed decisions based on quantitative analysis.

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