

**About:**

This project focuses on predicting stock returns using time series analysis, leveraging a combination of ARIMA for trend modeling and GARCH for volatility forecasting. The workflow includes:

- Data Preprocessing & Stationarity Check: Ensuring the time series is stationary using statistical tests and transformations.
- Model Selection: Identifying optimal ARIMA parameters using ACF/PACF analysis and integrating GARCH into model volatility clustering.
- Rolling Window Forecasting: Implementing a rolling window approach to dynamically update predictions over time.
- Backtesting Portfolio Performance: Evaluating model effectiveness by simulating a portfolio and analyzing returns over historical data.