



Time Series Forecasting

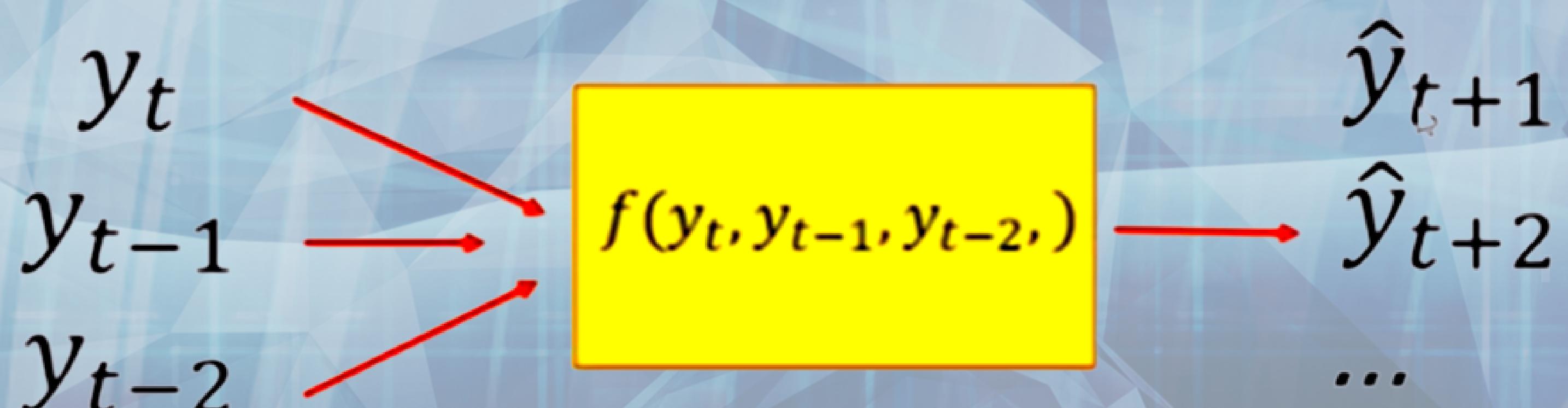
By - PRAKARSH, ADITI, PUSPKANT

Department of Computer science and Engineering

Alliance College of Engineering and Design

Introduction

- Forecasting is the process of predicting future events based on past and present data.
- Time-series forecasting is a type of forecasting that predicts future events based on time-stamped data points
- Commonly used in business and finance to predict sales or stock prices, and in science to predict weather patterns



Characterstics

1. Trend
- 2.Seasonality
- 3.Cyclic Variations
- 4.Irregularities

Libraries



Model used

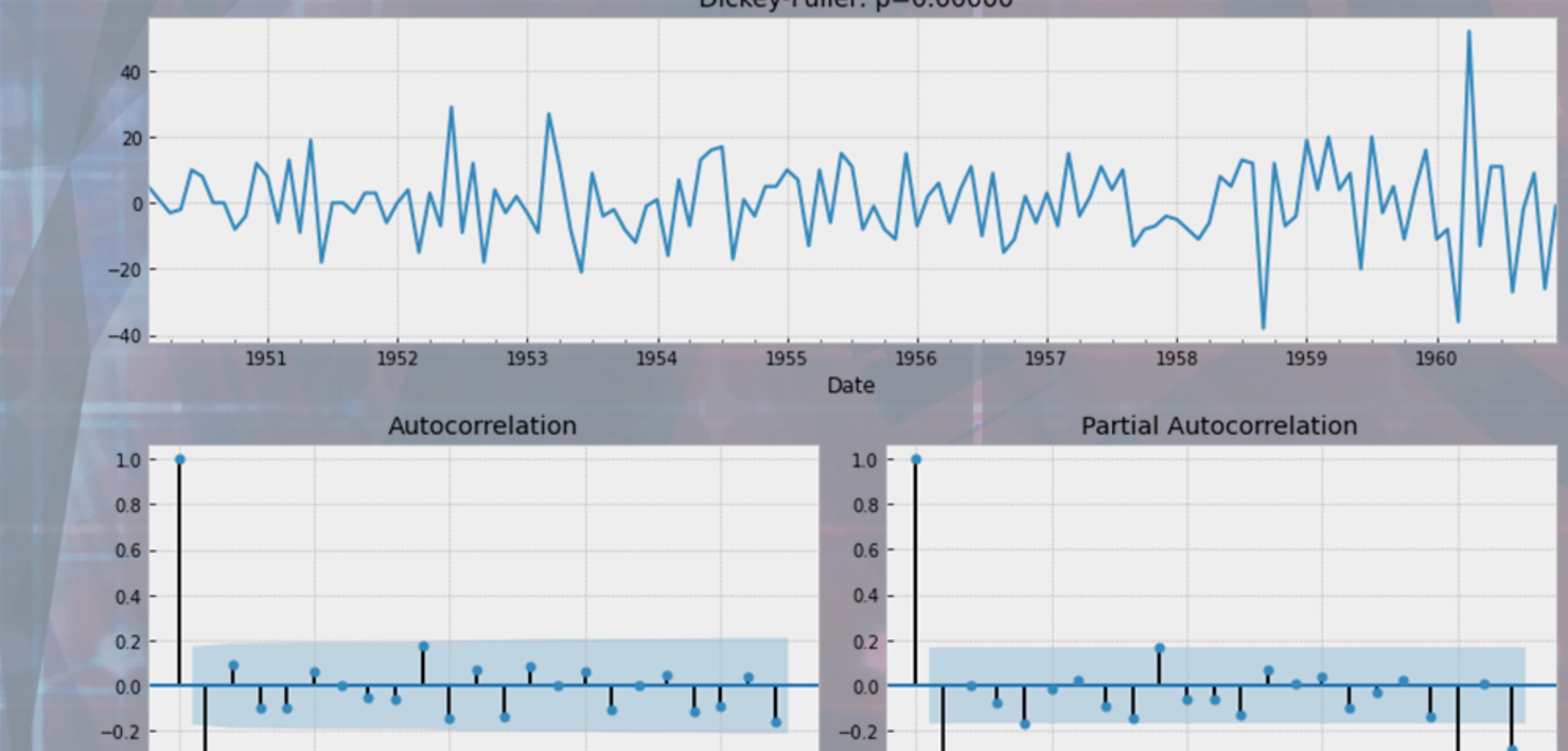
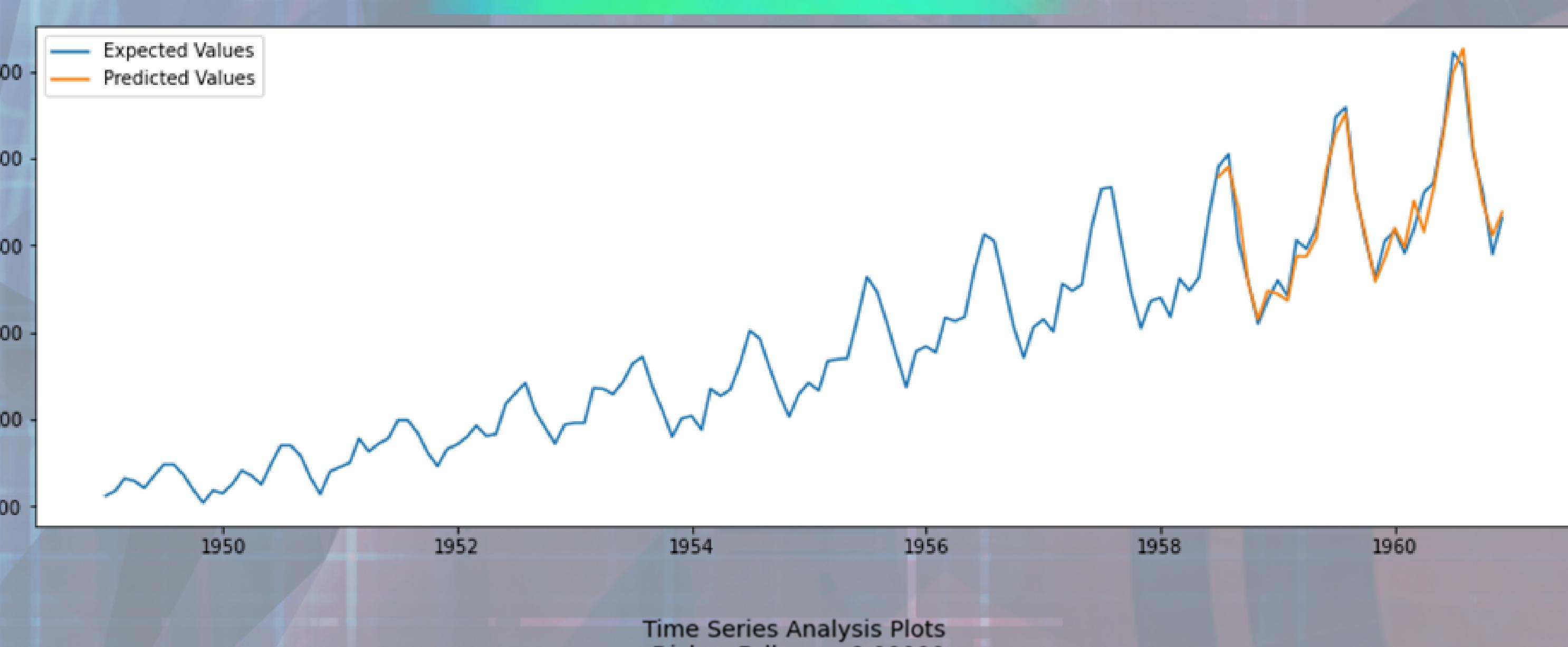
1. **Autoregressive (AR) model** - Regression models in which the dependent or response variable is a linear function of past values of the dependent/response variable
2. **Moving average (MA) model** - primarily used for stationary data, the data where we don't see significant trends or seasonality.

3. Autoregressive integrated moving average (ARIMA)

Regression model in which the dependent/response variable is a linear function of past values of both the dependent/response variable and the error term, where the error term has been differentiated 'd' times

4. **Seasonal autoregressive integrated moving average (SARIMA)** - based on a combination of differencing, autoregression, and moving average processes. Used for forecast short-term or long-term trends in data.

Results



Conclusion

- For this Time Series Analysis, data did not undergo the log transformation on purpose. It was just to check the effects of it. Use of square root is another option for the log transformation.
- ARIMA and SARIMA model forecasting future values using `forecast_function` & `predict_function` for Out-of-Sample Forecasting using rolling method takes up more time than future values predicted using non-rolling method in the Avocado Price Forecasting notebook