ARIMA

Autoregressive (AR) term (p)

The AR part models the relationship between the current value and its previous values (lags). The parameter **p** represents the number of lag observations included in the model. For example, an AR(1) uses the immediately preceding value to predict the current one.

•**Integrated (I) term (d)**

Differencing is applied to the series to make it stationary, removing trends or seasonality. The parameter **d** indicates the number of times the raw observations are differenced. For example, d=1 means taking the difference between consecutive observations.

•**Moving Average (MA) term (q)**

The MA part models the relationship between the current value and past forecast errors. The parameter **q** represents the size of the moving average window on the error terms.

Order (p, d, q):

p: How many past values to look at when predicting.

d: How many times we subtract previous data points to remove trends.

q: How many past errors to use in the model.

•**Seasonal ARIMA:**

Used when data has repeating seasonal patterns, adding extra seasonal settings.

•**Parameter Estimation:**

The model finds the best settings by fitting the data as closely as possible.

•**Stationarity:**

Data needs to be steady (no changing trends), so differencing helps with that.

•**Model Checking:**After fitting, we check if the errors are random and use measures like AIC to pick the best model.