**W11 – Stock Prophet Deployment (1)**

| **Criteria** |
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| **Execute Programming Code Assignment**  Complete Tasks 1- 5 in the Stock Prophet Deployment Notebook |
| **Algorithm Understanding**  How does the Prophet Algorithm differ from an LSTM? Why does an LSTM have poor performance against ARIMA and Prophet for Time Series?  Prophet is a procedure for forecasting time series data based on an additive model where non-linear trends are fit with yearly, weekly, and daily seasonality, plus holiday effects. It works best with time series that have strong seasonal effects and several seasons of historical data. Prophet is robust to missing data and shifts in the trend, and typically handles outliers well. The LSTM prediction is based on a set of last values, and therefore less prone to variance due to seasonality.  A disadvantage is that LSTM based RNNs are difficult to interpret and it is challenging to gain intuition into their behaviour. Also, careful hyperparameter tuning is required in order to achieve good results. |
| **Interview Readiness**  **What is exponential smoothing and why is it used in Time Series Forecasting?**  Exponential smoothing is a method for forecasting univariate time series data. It is based on the principle that a prediction is a weighted linear sum of past observations or lags. The Exponential Smoothing time series method works by assigning exponentially decreasing weights for past observations.  By adjusting parameter values, analysts can change how quickly older observations lose their importance in the calculations. Consequently, analysts can tweak the relative importance of new observations to older observations to meet their subject area’s requirements. |
| Interview Readiness  What is stationarity? What is seasonality? Why Is Stationarity Important in Time Series Forecasting?  Stationarity means that the statistical properties of a time series (or rather the process generating it) do not change over time. Stationarity is important because many useful analytical tools and statistical tests and models rely on it. Understanding stationarity is vital to know how to approach the data. If the data is non-stationary, then certain transforms may help turn it into stationary data.  . |
| **Interview Readiness**  **How is seasonality different from cyclicality? Fill in the blanks:   Seasonality is predictable, whereas cyclicality is not.**  The difference between seasonal and cyclical behavior has to do with how regular the period of change is. A seasonal behavior is very strictly regular, meaning there is a precise amount of time between the peaks and troughs of the data. Cyclical behavior on the other hand can drift over time because the time between periods isn't precise.  . |