**INTERVIEW QUESTIONS**

**121. List down, time series algorithms that you know?**

* Autoregression (AR)
* Moving Average (MA)
* Autoregressive Moving Average (ARMA)
* Autoregressive Integrated Moving Average (ARIMA)
* Seasonal Autoregressive Integrated Moving-Average (SARIMA)
* Seasonal Autoregressive Integrated Moving-Average with Exogenous Regressors (SARIMAX)

**122. How to solve TS problems using deep learning?**

LSTM – Long Term Short Memory algorithm which is a variant of RNN which is a deep neural network is widely used in TS problems because of its capability to remember information for a long time. By this if there is any seasonality or pattern in the data it can remember it and give some importance of it.

**123. Give application of TS in weather, financial, healthcare & network analysis?**

Weather – Weather forecasting

Financial – Stock Price Prediction

Healthcare – Covid Cases Forecasting

Network Analysis – Predicting the computer traffic

**124. What is diff between uptrend and downtrend in TS?**

The criteria are :

The observations must be independent of each other,

The number of observations must be fixed,

The probability of success is same for each outcome

A real time example is Lottery ticket where there is only two ways either you reach success or failure

**125. What do you understand by seasonality in TS?**

Seasonality refers to the presence of some variations in trends occurring at specific regular intervals of time in a nutshell like a seasonal pattern.

For example the price of mango is cheap at summer season

**126. What do you understand by Cyclic pattern in your TS data?**

A cyclic pattern is similar to seasonality it shows some kind of patterns in the data but not in a fixed period. On an average the data exhibits this kind of a pattern at a minimum of two years

**127. How will you find Trend in TS Data?**

* A specific time window is selected
* In that window see how the data is
* For example take a span of 3 months for the sales of a company. Here in 1st the sales seems to be increasing but not a peak and in the 2nd month the sales is at a peak and 3rd month there is a drop here in the first month there we can see an uptrend and in the 3rd month we can see a downtrend

**128. Have you implemented ARCH model in TS? If yes, give scenario?**

Yes I have implemented ARCH model for a time series data in one of my projects where I had a lot of variance in the data up and down.

**129. What is VAR (vector autoregressive) model?**

Vector Auto Regressive model is a time series forecasting algorithm that can be used when we have two or more time series data which will influence each other. So here we can say that the relationship is bidirectional

**130. What do you understand by univariant and multivariant TS Analysis?**

Univariant Analysis:

As the name suggests univariant analysis means analysing the time series data which has only feature to analyse

For eg: Analysing the stock’s close price

Multivariant Analysis:

As the name suggests multivariant analysis means analysing the time series data which has more than one feature to analyse straight opposite to the univariant analysis

For eg: Analysing the stock’s close price along with the volume

**131. Give example where you have created a multivariant model?**

I created a Vector AutoRegressive model which is a multivariate model in one of my project where I was supposed to use the Air Quality Index data and forecast the value for each particulate some of the particulates are CO, CO2, NO2, etc..

**132. What do you understand by p, d, & q in ARIMA model?**

p(AR) – the number of autoregressive terms

d(I) – the number of non-seasonal differences needed for stationarity

q(MA) – the number of lagged forecast errors

These are some characteristics of ARIMA(p, d, q) model

**133. Tell me mechanism by which I can find p, d, q in ARIMA model?**

p – We should make a partial autocorrelation plot and see till where there is an exponential decrease which is the shutoff point that value is taken for p

q – A similar kind of process like p is used to calculate q but the difference is here we will be using autocorrelation plot

d – It is found by seeing the seasonal difference shift

**134. What is SARIMA and how it’s different from ARIMA?**

SARIMA which is known as seasonal ARIMA model and is an extension of ARIMA model. The difference between ARIMA and SARIMA models is the seasonality of the dataset. If the data is not seasonal we can use ARIMA or if the data is seasonal we can use SARIMA

**135. What is meaning of AR, MA and I in ARIMA model?**

AR – Auto Regressive

MA – Moving Average

I – Integration

ARIMA model is a model which combines both AR and MA models along with a differencing preprocessing step of sequence in purpose to make it stationary called Integration

**136. Can we solve TS problems with transformers? What is your thought on that? why do you think in that way?**

Yes we can solve Time Series problem using Transformers. But it should be the last resort at any point of time because Transformers is a heavy model so the output generating time at real time will be very slow and even for training the model is computationally intensive compared to the conventional Time Series models like ARIMA, SARIMAX or else NN’s like LSTM or RNN. But if we are you going to use it we should start from just a single attention layer with a considerable learning rate

**137. Have you ever productionised TS Based Model using LSTM? What are advantages and disadvantages?**

**138. Can we solve TS problem using Regressive algorithm, if yes, why, if no, give a reason?**

Yes we can solve Time Series problem using regressive algorithms like XGBoost, Linear Regression, etc.. but this wont work for a realtime time series data because our model needs to understand the patterns in the data and capture it and give some importance it that’s where the power Time Series models comes into picture. So though we can convert TS problem into a regressive problem it is not advisable to do