Week 13: Daily Morning Challenge

Day 2: Thursday 2nd April 2020

Question 1: Which of the following is an example of time series problem?

Estimating number of hotel rooms booking in next 6 months – This is a time series problem

Estimating the total sales in next 3 years of an insurance company – This is not a time series problem as time series problems occur yearly(for one year), monthly, weekly, daily, hourly etc.

Estimating the number of calls for the next one week - This is a time series problem as time series problems occur yearly(for one year), monthly, weekly, daily, hourly etc

Question 2: Briefly explain what these following terminologies connote in time series analysis

Seasonality - A general systematic linear or (most often) nonlinear component that changes over time and does repeat. In time series data, seasonality is the presence of variations that occur at specific regular intervals less than a year, such as weekly, monthly, or quarterly. Seasonality may be caused by various factors, such as weather, vacation, and holidays and consists of periodic, repetitive, and generally regular and predictable patterns in the levels of a time series. Seasonal fluctuations in a time series can be contrasted with cyclical patterns. The latter occur when the data exhibits rises and falls that are not of a fixed period. Such non-seasonal fluctuations are usually due to economic conditions and are often related to the "business cycle"; their period usually extends beyond a single year, and the fluctuations are usually of at least two years

Moving average – A calculation to analyse data points by creating series of averages of different subsets of the full data set. In time series analysis, the moving-average model (MA model), also known as moving-average process, is a common approach for modelling univariate time series. The moving-average model specifies that the output variable depends linearly on the current and various past values of a stochastic (imperfectly predictable) term. A moving average is defined as an average of fixed number of items in the time series which move through the series by dropping

the top items of the previous averaged group and adding the next in each successive average.

Exponential Smoothing - Exponential Smoothing Methods are a family of forecasting models. They use weighted averages of past observations to forecast new values. Exponential smoothing is a time series forecasting method for univariate data that can be extended to support data with a systematic trend or seasonal component. Exponential smoothing is a rule of thumb technique for smoothing time series data using the exponential window function. Whereas in the simple moving average the past observations are weighted equally, exponential functions are used to assign exponentially decreasing weights over time.