

Basic Time-Series

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The below notes are written to accompany the book *Forecasting: Principles and Practice* by **Rob J Hyndman and George Athanasopoulos**, one should be familiar with the basics of statistical concepts. One should also be familiar with Regression. The language of choice is **R** and the IDE is RStudio and we shall be using the *ggplot2* package of the *tidyverse* to plot, analyze and draw conclusions from the data we have.

1. Mains goals of forecasting
2. Types of forecasting models
 - (a) Explanatory models (Prediction using features)
 - (b) Forecasting models (Prediction using Lag values)
 - (c) Mixed models (Combination of the above two models)
3. Basic Steps in a forecasting task
4. Time-Series Graphics
 - (a) Time-plots
 - (b) Seasonal Plots & Polar Seasonal Plots
 - (c) Seasonal Sub-series Plots
 - (d) Scatter Plots
 - (e) Lag Plots
 - (f) ACF/Correlogram Plots
5. Components of a Time-series
 - (a) Trend
 - (b) Seasonal
 - (c) Cyclic
 - (d) Error
6. White noise (ACF Plot to confirm)
7. Simple Forecasting Techniques
 - (a) Average method
 - (b) Naive method
 - (c) Seasonal Naive method