Exercise - Scenario Generation

17-03-2020

Scenario generation using ARIMA models in R

The following exercise consists on creating scenarios using the ARIMA and Seasonal ARIMA (SARIMA) models that you created in the previous exercise session (06 - Linear Time Series). The three different data sets (plotted in Figures 1,2 and 3) and the three R files containing the fitted models are available from DTU Inside.

Your task is to create scenarios following the steps of the heat demand example in the lecture 07-Scenario Generation. Create 1000 random scenarios that you reduce to 10 scenarios by clustering them using the partioning around methods (`pam`) method in the R package `cluster`. Plot the reduced set of scenarios and determine the probability for the reduced scenarios. Write the results to csv files.

The prediction horizon is again 15% of the total number of periods, i.e, 15 years for number of earth quakes, 13 month for souvenir sales and 75 months for cases of chicken pox.

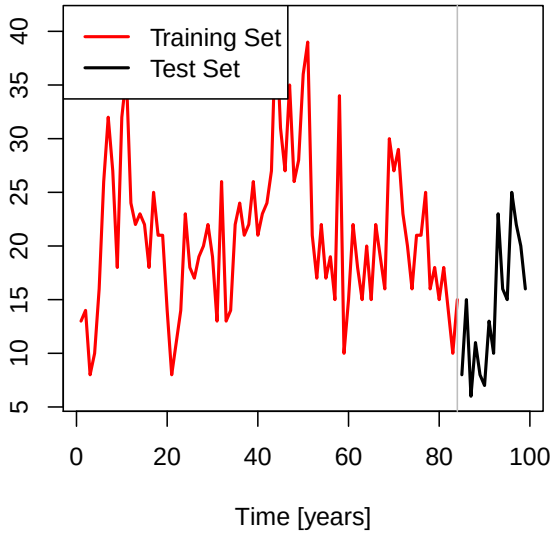

Figure 1: Earthquakes greater than magnitude 7.0 registered from 1900 to 1998

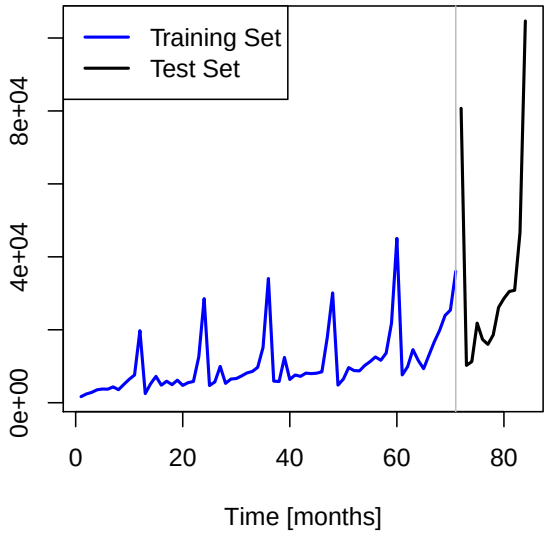

Figure 2: Souvenirs sales in the US from January 1987 to December 1993

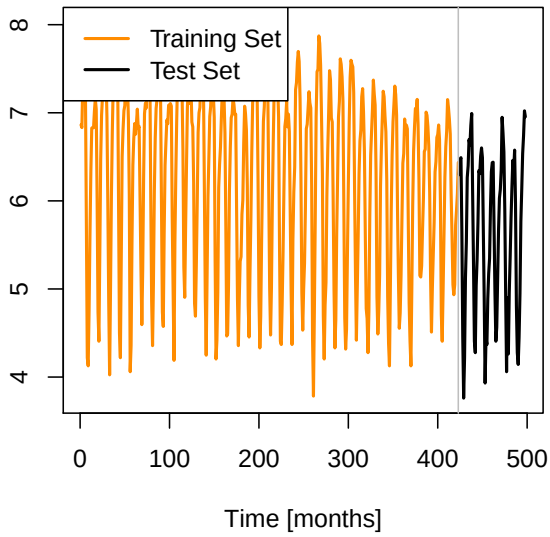

Figure 3: Reported cases of Chickenpox in New York City from 1931 to 1972