MIS 432 – Project 2 – Spring 2020

The dataset *HireRate.csv* contains monthly data on the non-farm hire rates in the United States since 2005. The dataset can be found in Blackboard

Project Description:

The objective of this project is to build each of the following time-series models on a training dataset and evaluate the performance of each on the validation dataset. Then, use the best-fit model to predict future observations.

1. Naïve Forecast with seasonality
2. Linear trend with seasonality
3. Quadratic trend with seasonality

Project Requirements:

- Partition the dataset into a training dataset and a validation dataset, where the validation dataset is the last two years of hire rates.
- Include plots in your report of
  1. the entire time series
  2. each of the three models developed. Plot the fitted model on the training dataset and plot the forecasted model onto the validation dataset.
- Choose the model that reports the lowest RMSE statistic on the validation dataset.
- From there, recombine the training and validation dataset and retrain the chosen best-fit model on the entire time series dataset.
- Predict the next four months of hire rates.
- In conclusion, write up a recommendation for the best of the three time-series models.

Project Report and Submission

1. Write up your submission in a word document report explaining the process and your results. Include graphs of the time series and the important **outputs** from R within the text of your report.
2. Include an appendix at the end of all of your R code and outputs copied and pasted from the Console window.
3. The length of the report should be at least 800 words (not including the outputs or the appendix).
4. Save the word file as "Last Name First Initial Project 2" and submit in the Assignments/Projects link in Blackboard.

Case Study Dataset is from Data Mining for Business Analytics: Concepts, Techniques, and Applications in R, 2017 edition, by Shmueli, Bruce, Yahav, Paten, and Lichtendahl, Wiley Publications