FTEC5580 Project 3

Due 11:59pm, May 10, 2020

Instructions:

- Please submit all your files via Blackboard. In your report file, you must include your name and student ID.

- If you submit your work late, please directly email it to the TA. Late submission incurs a penalty as specified in the syllabus. Submissions made two days after the deadline are not accepted.

- You should use Python for the neural network part and R for the time series part.

- The report must be written in English.

- You must work on the project independently.

- The TA responsible for grading this project is *DAI Zhiwen*.

Continue to analyze the stock that is assigned to you (you cannot analyze other stocks).

Data: Consider daily price data from Jan 2, 2016 to Dec 31, 2019 and use year 2019 for testing.

(1) Develop a time series model and justify that it provides adequate fit to the price data. Note: you are expected to apply the relevant tools you have learned from the lectures on time series.

(2) Develop FNN, standard RNN, GRU and LSTM models to the price data. You can tune the hyperparameters using the validation set approach.

(3) Predict stock prices in 2019. Compare the prediction performance of the time series model with the neural networks.

Files to be submitted:

(1) A file that shows your solutions to each question. Interpretations of the results should be provided. All plots and tables should go into this file. Name this file as "Last name-first name-report", e.g., Li-Lingfei-report.

(2) The CSV file that contains the stock price data. Name this file as "Last name-first name-data.csv", e.g., Li-Lingfei-data.csv.

(3) A printout of your R commands in pdf format and your .py file for Python code. In the RGui, just click "print" and choose a pdf printer. Name this file as "Last name-first name-print", e.g., Li-Lingfei-print.

Please follow the naming convention.