Final Project for ECE 427 – Machine Learning Course

Due data: May 15, 2021

Title: Compare Deep learning and AutoML Machine learning frameworks for time series forecasting

Part I: Time series forecasting is an important area of machine learning because there are so many prediction problems that involve a time component. The time component makes time series problems more difficult to handle and important to

In Part I of the project,

a) you will discover *time series forecasting problem* by reading the included material and related material you will find in the literature and compose a short summary (4 pages) of the subject, the machine algorithms used to handle the problem, and its applications. Your summary must be written in latex.
b) You will select a dataset from the various repositories previously suggested to you and apply several neural network techniques to make predictions. You will submit a jupyter notebook with your computations, well documented, and with a summary of your observations regarding the performance of the different types of ANN applied.

Part II: The success of machine learning in a broad range of applications has led to an ever-growing demand for machine learning systems that can be used off the shelf by non-experts. To be effective in practice, such systems need to automatically choose a good algorithm and feature preprocessing steps for a new dataset at hand, and also set their respective hyperparameters required. Recent work has started to tackle this automated machine learning (AutoML) problem.

In Part II of the project,

i) You will produce a review of the subject of AutoML and the various frameworks developed which are publicly available. The review should be at most 5 pages long and written in latex and it should include a list of references cited in your review.
ii) You will apply auto-sklearn framework to solve the time series problem you have selected in Part I and compare the performance of the AutoML framework with the ANN techniques used in Part I.