WESTERN UNIVERSITY
FACULTY OF ENGINEERING
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

<u>ECE 9603/9063b – Data Analytics Foundations</u>

Assignment 1: Forecasting

<u>Deadline:</u> October 18th, 2020

In this assignment, you will experiment with different forecasting approaches and algorithms. As this is your first assignment in this course, you can keep it simple.

1. Select a forecasting problem for which there is an open source dataset or for which you have data from other sources. Links for open data sets are provided on the course site in OWL (Wiki tab). The data set must contain at least 100 samples (do not use Iris data set). If the selected data set is very large and it is taking very long to train your model, for this assignment you can use a subset of data.
2. Carry out forecasting with at least 3 different approaches/algorithms. The approaches need to be significantly different. For example, support vector regression with two different kernels will be considered one approach. Some possibilities include neural networks, support vector machine/regression, multivariate regression, k-nearest neighbour, regression trees, ARMA, Markov chain and any other.
   Note: The objective of this assignment is to experiment with different models. The focus is on applying forecasting approaches and not on optimizing models. Parameter tuning will be a part of the second assignment.
3. Evaluate the three models/algorithms using hold-out or cross-validation. Compare results obtained with different algorithms using appropriate metrics for your forecasting problem.

Deliverables:
- Report submitted in OWL (total 20 points):
  - Description of the selected forecasting problem (4 points)
  - Description of available data (attributes, context, quantity…). Clearly indicate what attributes and/or parts you have used (4 points)
  - Short overview of the selected algorithms (4 points)
  - Specifics about how algorithms were applied and the evaluation procedure (4 points)
  - Comparison of results obtained with different algorithms (4 points)
  - Code. Although there are no marks for the code itself, marks will be deducted if the code does not match the rest of the report.

IMPORTANT: The report itself should not contain any code. The code is submitted as ab appendix or a separate file. The report should describe what you have done in general terms – the same process and algorithms could be implemented in different languages.