CSE 6005- Machine Learning
Lab Practice Sheet 2 (Decision Tree based classification)

Date of Completion : 09/02/2020, 11.59 P.M

– You are supposed to answer the following questions after doing the appropriate experiments.

– Every answer should be supported by the experiment(s) with the details: Objective of the experiment, Design of the experiment, Algorithm and the related code and the inference from the experiment.

– Choice of the data-set for any experiment is your choice, but the data set should be a multi-variate data set.

– Answer for every questions should be in the form of a report with the details of the experiments performed with justification.

1. Use ID3 Algorithm to build a decision tree for a data set of your choice. Compute the depth of the tree. Using that Decision tree, compute the 'class' of a given input. For computing the 'class' of a given input, you are not supposed to use any library function.

2. Build a Decision tree for a data set where all the input attributes are continuous and the output attribute is categorical.

3. Build a Decision tree based on the pseudocode described in the 'Introduction to Machine Learning- Ethen Alpaydin' (page 219 in the III edition). Identify the conceptual difference (if any) between the ID3 Algorithm and the pseudocode described in the book. You are required to execute the ID3 Algorithm and the pseudocode (as decsribed in the book) on the same data set and compare the performance.

4. Implement a regression based learning model by building a decision tree on a data set of your choice and predict the output for a given input. For prediction, you are not supposed to use any library function.

5. Build a decision tree for a same data set using ID3 and CART algorithm and record your observations on ID3 and CART(Classification And Regression Tree) Algorithm.