Project 3: Classification Algorithms

Code and Report Submission Due: December 2 2017 1:00PM
Demo: December 2 2017 1:00PM ~ 5:00PM
Hard Copy Report: bring to your demo.
Please clearly state the UB Person numbers and UB IT names for all the group members on the cover of the report.

Two datasets (*project3_dataset1*and *project3_dataset2*) can be found on Piazza. Please check the README file first for a short description of the two datasets.

Complete the following tasks:

- Implement three classification algorithms by yourself: **Nearest Neighbor, Decision Tree,** and **Naïve Bayes**.
- Implement **Random Forests** based on your own implementation of Decision Tree.
- Implement **Boosting** based on your own implementation of Decision Tree.
- Adopt 10-fold **Cross Validation** to evaluate the performance of all methods on the provided two datasets in terms of **Accuracy, Precision, Recall**, and **F-1 measure**.

Your final submission should include the following:

- Code: Implementation of five methods. **All the methods must be implemented by yourself**. Existing packages or online codes for the algorithms are not allowed. Together with your code submission, a README file should be included to explain how to execute your code.
- Report: Describe the flow of all the implemented methods, and describe the choice you make (such as parameter setting, pre-processing, post-processing, how to deal with over-fitting, etc.). Compare their performance, and state their pros and cons based on your findings.

The details about Demo will be released **on Nov. 30 through Piazza**. Please note:

- New datasets will be given to check your implemented classification methods and performance measures. The data format will be consistent with the README file that we already provided.
- During the demo, you will be asked to adopt specific setting and run your code.

Note that copying code/results/report from another group or source is not allowed and may result in an F in the grades of all the team members. Academic integrity policy can be found at https://engineering.buffalo.edu/computer-science-engineering/graduate/resources-for-current-students/academic-integrity.html