

Project 3: Classification Algorithms Demo

Time: December 10, 2016 2:00PM ~ 6:00PM

Location: 341 Davis Hall

Please bring the following items to Demo:

- A hard copy of your report
- Your laptop, on which you could run and show your implementation

Two NEW data sets (*project3_dataset3_train*, *project3_dataset3_test*, and *project3_dataset4*) have been posted on Piazza. The data format is the same as the ones we already provided, which is described in README file.

Complete the following tasks, and show your results during demo (please do NOT include these results in your report).

1. **Nearest Neighbor** implementation:
 - a. training data: *project3_dataset3_train* file
 - b. testing data: *project3_dataset3_test* file
 - c. parameter setting: set K to be a fix number (for example, 9), use Euclidean distance as the distance measure for data samples.
 - d. performance measure: report **Accuracy, Precision, Recall, and F-1 measure**.
2. Run your **Decision Tree** implementation with *project_dataset4* file, and show the learnt decision tree.
3. Run your **Naïve Bayes** implementation with *project_dataset4* file, and output the following probability:

$$p(H_0 | X), \quad p(H_1 | X).$$

For example $X = \{\text{sunny, cool, high, weak}\}$. Note that there is no “zero-probability” issue for the dataset in this demo. Please **disable** you implemented components for the “zero-probability” issue.

4. Run your **Random Forests** with any dataset you prefer.
5. Run your **Boosting** with any dataset you prefer.

Please note:

1. The demo is divided into three parts:
 - a. Check Nearest Neighbor, Decision Tree, and Naïve Bayes;
 - b. Check Random Forests, and Q&A about Decision Tree and Random Forests;
 - c. Check Boosting, and Q&A about Nearest Neighbor, Naïve Bayes and Boosting.
2. We will ask questions to test your understanding about the tested methods. Your final score is based on your report, your demo, and your answers to those questions.
3. Each group only has 5 minutes to finish each part of the demo. Do not be late and make sure your code can run smoothly. We will NOT give extra time.
4. You should not reveal the questions you are asked during your demo to other groups. If we find this, then we will give F to all the members in your group and the groups that receive the information.