ECEN 689: Machine Learning: Fall 2019
HW 8: Decision trees, Boosting, SVM

In this homework, we will implement a binary classifier using SVM, Decision trees and we will apply Boosting. Please use the notebook attached.[1]

Here is what you are expected to do.

Task 1

- You will implement a Decision tree classifier on the Dataset.
- We are going to the "scikit-learn" package for the entire notebook, so please make yourself comfortable with that. However, the homework is self contained and has everything you need to complete it.

Task 2
Now perform adaptive boosting for a decision tree classifier. Please play with the depth of the tree.

Task 3
Using the SVM classifier on the dataset, play with different kernels and present your observations.

Task 4 Apply Boosting to the SVM classifiers.

Task 5
Use your observations on the dataset, and using the above methods, try to improve the accuracy as much as you can. An ideal target is more than 85%

How to submit

1. Complete all the coding, create a text cell and explain your observations at the end or wherever you feel is appropriate.
2. Download the IPython Notebook as a HTML file for all questions.
3. Put the files in Step 2 in a folder titled **LastName_FirstName.zip**. You should have 4 HTML files in total.
4. Mail the folder created in step 3 with subject of the mail as "ECEN 689 HW8".

[1] We are just using the data which appears to be widely available in tensorflow and used in ML: https://www.tensorflow.org/tutorials/estimator/boosted_trees; please totally ignore its unfortunate morbid context.