

# CSE455/552 – Machine Learning (Spring 2024)

## Homework #5

**Hand-in Policy:** Via Teams. No late submissions will be accepted.

**Collaboration Policy:** No collaboration is permitted.

**Grading:** This homework will be graded on the scale 100.

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**Description:** The aim of this homework is to explore using neural networks as base classifiers for AdaBoost learning.

### Part I: Select a dataset

Select a data set to be used to show your problem. You can choose something from the UCI repository.

### Part II: Train a multi-layer perceptron for this problem.

Use a one hidden layer perceptron as your base classifier to train an AdaBoost ensemble learner. Report your results.

### Part III: Train a random decision forest where each decision in the forest is in turn is a trainable perceptron.

This time instead of using a comparison decision at each node, train a perceptron for each node to make the best decision. Report your results.

**What to hand in:** You are expected to hand in one of the following

**HW5\_lastname\_firstname\_studentnumber\_code.ipynb.** Your notebook should have:

#### Part I: Code

Results:

Conclusions:

#### Part II: Code

Results:

Conclusions:

#### Part III: Code

**Results:**

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**Conclusions:**

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