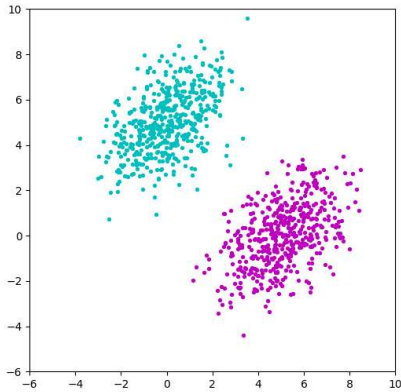CO544 – Machine Learning
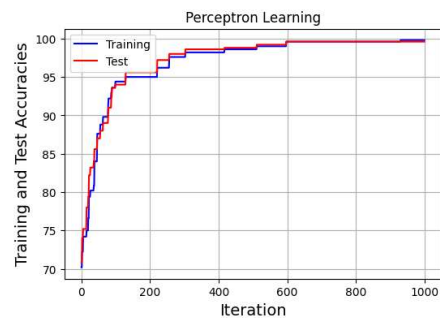E/19/432 - Wickramaarachchi U.I.
Lab 02

1.

2. 3. 4.

5. 6.

```
[0.03009119 0.55530347]
Initial Percentage Correct:  70.20
Percentage Correct After Training:  99.80  99.60
```

7.

8.

```
Accuracy on training set:  1.00
Accuracy on test set:  1.00
Wow, Perfect Classification on Separable dataset!
```

9.

```python
w = np.random.randn(3)
print("Randomly generated weight vector (w):", w)
print("Initial Percentage Correct: %6.2f" % (PercentCorrect(X_train, y_train, w)))

MaxIter = 4000
alpha = 0.001
```

Shape of training data (X_train): (200, 3)
Shape of training labels (y_train): (200,)
Shape of testing data (X_test): (200, 3)
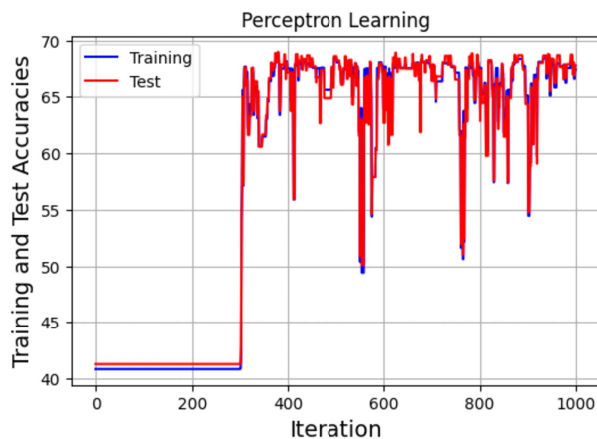Shape of testing labels (y_test): (200,)

Randomly generated weight vector (w): [-0.33668448 0.88074934 1.00721652]
Initial Percentage Correct: 47.00
Percentage Correct After Training: 95.00 95.00

10.

Selected Dataset: https://archive.ics.uci.edu/dataset/602/dry+bean+datasetository

Shape of training data (X_train): (6805, 16)
Shape of training labels (y_train): (6805,)
Shape of testing data (X_test): (6806, 16)
Shape of testing labels (y_test): (6805,)

Randomly generated weight vector (w): [1.26488241, 0.37369124, 1.38870068, 0.23494924,
0.49447518, -0.54586409, -1.64184625, -0.56971345, 0.80650474, 1.84650573, 0.06651514, -
1.19931308, 2.48100842, -1.39982245, -0.63140744, 0.11283985]
Initial Percentage Correct: 40.84
Percentage Correct After Training: 67.44 67.79

All files can be found in : https://github.com/uthsaraiw/Machine-Learning-Labs