

HW9: AdaBoost and SVM Results

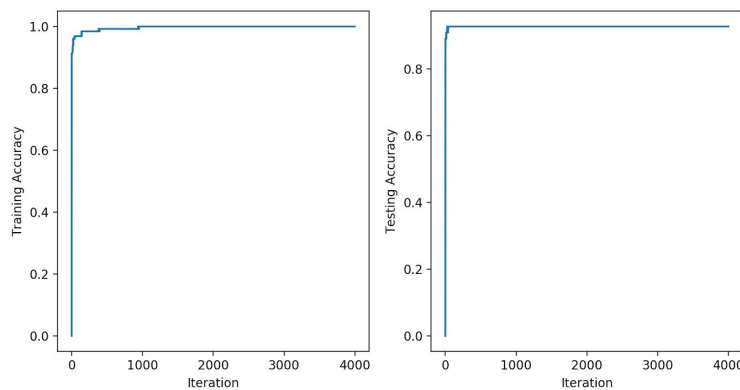
Data used: digits.csv (Training: 70%; Testing: 30%)

Programming Language: Python

1. AdaBoost Results (Training and Testing Accuracy):

```
# training 255
# testing 110
After iteration 100, Train Accuracy = 0.968627,Test Accuracy = 0.927273
After iteration 200, Train Accuracy = 0.984314,Test Accuracy = 0.927273
After iteration 300, Train Accuracy = 0.984314,Test Accuracy = 0.927273
After iteration 400, Train Accuracy = 0.992157,Test Accuracy = 0.927273
After iteration 500, Train Accuracy = 0.992157,Test Accuracy = 0.927273
After iteration 600, Train Accuracy = 0.992157,Test Accuracy = 0.927273
After iteration 700, Train Accuracy = 0.992157,Test Accuracy = 0.927273
After iteration 800, Train Accuracy = 0.992157,Test Accuracy = 0.927273
After iteration 900, Train Accuracy = 0.992157,Test Accuracy = 0.927273
After iteration 1000, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 1100, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 1200, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 1300, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 1400, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 1500, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 1600, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 1700, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 1800, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 1900, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 2000, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 2100, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 2200, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 2300, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 2400, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 2500, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 2600, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 2700, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 2800, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 2900, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 3000, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 3100, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 3200, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 3300, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 3400, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 3500, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 3600, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 3700, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 3800, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 3900, Train Accuracy = 1.000000,Test Accuracy = 0.927273
After iteration 4000, Train Accuracy = 1.000000,Test Accuracy = 0.927273
```

2. AdaBoost Plots (Training Accuracy and Testing Accuracy V/s. Iteration):



3. SVM results(Training and Testing Accuracy):

```
# training 255
# testing 110
After iteration 100, Train Accuracy = 0.976471,Test Accuracy = 0.981818
After iteration 200, Train Accuracy = 0.984314,Test Accuracy = 0.981818
After iteration 300, Train Accuracy = 0.984314,Test Accuracy = 0.981818
After iteration 400, Train Accuracy = 0.984314,Test Accuracy = 0.981818
After iteration 500, Train Accuracy = 0.984314,Test Accuracy = 0.981818
After iteration 600, Train Accuracy = 0.984314,Test Accuracy = 0.981818
After iteration 700, Train Accuracy = 0.992157,Test Accuracy = 0.981818
After iteration 800, Train Accuracy = 0.992157,Test Accuracy = 0.981818
After iteration 900, Train Accuracy = 0.992157,Test Accuracy = 0.981818
After iteration 1000, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 1100, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 1200, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 1300, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 1400, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 1500, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 1600, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 1700, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 1800, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 1900, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 2000, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 2100, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 2200, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 2300, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 2400, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 2500, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 2600, Train Accuracy = 1.000000,Test Accuracy = 0.981818
After iteration 2700, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 2800, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 2900, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 3000, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 3100, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 3200, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 3300, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 3400, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 3500, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 3600, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 3700, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 3800, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 3900, Train Accuracy = 1.000000,Test Accuracy = 1.000000
After iteration 4000, Train Accuracy = 1.000000,Test Accuracy = 1.000000
```

4. SVM Plots (Training and Testing Accuracy V/s. Iteration):

