Richard Vargas

005859278

CSE 512 Machine Learning

Dr. Zhang

**CSE 516 Lab 4: Perceptron and Attribute Transformation**

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| --- | --- | --- | --- | --- | --- |
| **Classifier** | **Acc** | **Avg. P** | **Avg. R** | **Avg. F** | **Avg. AUC** |
| J48, default | 92.9798 | 0.930 | 0.930 | 0.930 | 0.939 |
| IBk, default | 90.7846 | 0.908 | 0.908 | 0.908 | 0.906 |
| NaïveBayes, default | 79.2871 | 0.842 | 0.793 | 0.794 | 0.937 |
|  |  |  |  |  |  |
| VotedPerceptron, default | 49.0328 | 0.758 | 0.490 | 0.409 | 0.580 |
| VotedPerceptron, 100 iterations | 68.8111 | 0.788 | 0.688 | 0.683 | 0.734 |
| VotedPerceptron, 1000 iterations | 68.8111 | 0.788 | 0.688 | 0.683 | 0.734 |
|  |  |  |  |  |  |
| VotedPerceptron, default (binarized dataset) | 92.9363 | 0.929 | 0.929 | 0.929 | 0.928 |
| VotedPerceptron, 100 iterations (binarized) | 93.1319 | 0.931 | 0.931 | 0.931 | 0.927 |
| VotedPerceptron, 1000 iterations (binarized) | 93.1319 | 0.931 | 0.931 | 0.931 | 0.927 |

**Exercise 3 #4**

Using the VotedPerceptron on default the classification seems to go very poorly, with a ~49% precision rate.

**Exercise 3 #7**

Increasing the iterations to 100 causes for better accuracy than having precision set to 1, however having 1000 iterations does not cause for a higher accuracy, or a difference in the average of any of the results.This implies that their may yield more accuracy with less computing time if iterations are greater than 100, but less than 1000.

**Exercise 4 #3**

The performance on the default with the binarized filter is far greater, with ~93% accuracy of correctly classified instances.

**Exercise 4 #5**

Performance seems to peak at the 100 iterations, and does not benefit significantly, if at all, with 1000 iterations. This is only increasing computing time at this point, thus 100 iterations is preferred over 1000 iterations.