**Report**

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| --- | --- | --- | --- | --- | --- | --- |
| Samples | Train/Test Ratio | Decision Tree Accuracy(%) | Perceptron Accuracy(%) | Neural Net Accuracy(%) | SVM accuracy(%) | Naïve Bayes Accuracy(%) |
| 1 | 80:20 | 57.37 | 99.39 | 98.80 | 65.57 | 55.73 |
| 2 | 85:15 | 65.21 | 99.33 | 99.45 | 67.39 | 63.04 |
| 3 | 95:05 | 68.75 | 99.40 | 99.30 | 68.75 | 62.50 |

**Analysis**:

1. Decision Tree: is not performing well because maybe its overfitting on training dataset.
2. Naïve Bayes: This classifier did not perform well on our dataset because in some records there are zero values for some attributes and because of this overall probability becomes zero.
3. SVM: SVMs do not perform well on highly skewed/imbalanced data sets. These are training data sets in which the number of samples that fall in one of the classes far outnumber those that are a member of the other class.

SVMs are also not a good option specially if you have multiple classes. Ultimately in this case, you get back to a binary classifier and then use some kind of a voting mechanism to classify a sample to one of the classes. We here have 5 classes 0,1,2,3,4

Reference: https://www.quora.com/For-what-kind-of-classification-problems-is-SVM-a-bad-approach