Assignment 7: Logic-Based Approaches

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**House Votes Data**

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| **Rules:** | **Classification Accuracy %** |
| ZeroR\* | 61.8% |
| JRip | 59.7% |
| DTNB | 57.4% |
|  |  |
| **Trees:** | **Classification Accuracy %** |
| REPTree | 62.1% |
| BFTree | 61.8% |
| DecisionStump | 61.8% |
| J48 | 56.5% |
| FT | 54.9% |

\*baseline

**Conclusion:**

ZeroR served as the baseline. Most of the other learning algorithms had classification accuracies ranging in the 50% percentile range. The lowest classification accuracy was when Prism was used giving 35.4%. The highest classification accuracy was when ZeroR and Decision Table was used which gave 61.8%.The learning algorithm that gave off the highest classification accuracy was REPTree of 62.1% and the lowest classification accuracy was given by FT of 54.9%.

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**ZeroR (Baseline Statistic):**

Sepal Length: 39.3%

Sepal Width: 36.3%

Petal Length: 36.7%

Petal Width: 36%

Class: 33.3%

**Conclusion:**

Ran the above rule using each attribute individually. The 33.3% class breakdown is due to there being a total of 3 classes, each of which get equally distributed.

**Iris Data**

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| --- | --- |
| **Rules:** | **Classification Accuracy %** |
| JRip & PART | 95.4% |
| Decision Table | 94% |
| Conjunctive Rule | 66.7% |
| ZeroR\* | 33.3% |
| Prism | 6.7% |
|  |  |
| **Trees:** | **Classification Accuracy %** |
| BFTree | 95.3% |
| FT | 94.7% |
| J48 | 94% |
| DecisionStump | 66.7% |

\*baseline

**Conclusion:**

The highest classification accuracy was using the learning algorithms, JRip & PART. The lowest classification accuracy was when PRISM was used. Most of the learning algorithms under “Tree” centered around 94% with the highest classification accuracy in BFTree with 95.3%