CSE-6363-Machine Learning Assignment-I

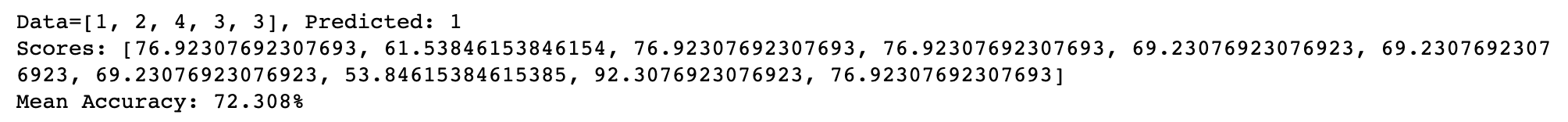
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Results of comparison between Naive Bayes from scratch and Naive Bayes from Weka:

Hayes Roth

I have applied Naïve Bayes algorithm to the Hayes Roth dataset and obtained a mean accuracy of 72.308% when implementing from scratch. However, when I used the same dataset with Weka I obtained accuracy of 76.5152%.

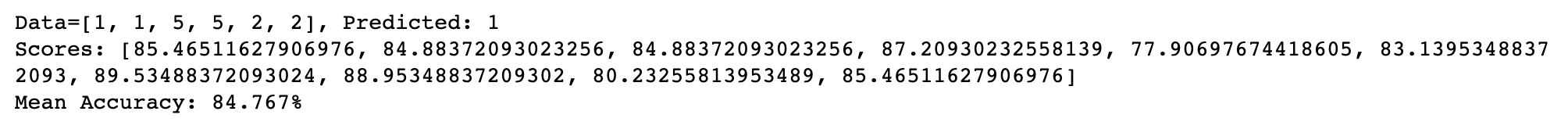


A picture containing text, receipt, screenshot

Description automatically generated

Car Evaluation

I have applied Naïve Bayes algorithm to Car dataset and obtained a mean accuracy of 84.767% when implementing from scratch. However, when I used the same dataset with Weka I obtained accuracy of 70.0231%.

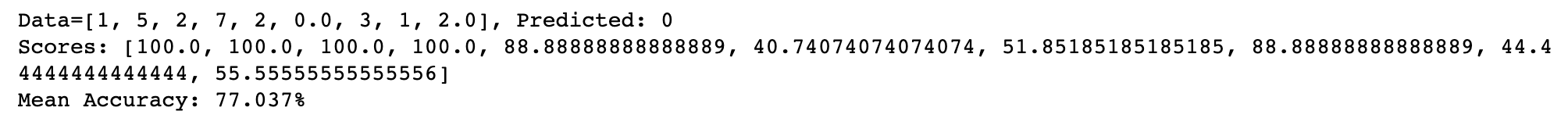


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Breast Cancer

I have applied Naïve Bayes algorithm to Breast-cancer dataset and obtained a mean accuracy of 77.037% when implementing from scratch. However, when I used the same dataset with Weka I obtained accuracy of 74.8252 %.



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Hypothesis Testing:

Null Hypothesis: There is no significant difference between the mean accuracies.

Alternate Hypothesis: The mean accuracy obtained by Weka is less than the accuracy obtained by my code.

Testing Result: Alternate Hypothesis is greater than Null Hypothesis,

Hence Null Hypothesis is accepted.

i.e., My Accuracy is greater than the accuracy obtained by Weka.

References:

1. https://machinelearningmastery.com/naive-bayes-classifier-scratchpython/

2. https://archive.ics.uci.edu/ml/datasets/Breast+Cancer

3. https://archive.ics.uci.edu/ml/datasets/Car+Evaluation

4. https://archive.ics.uci.edu/ml/datasets/Hayes-Roth

5. https://en.wikipedia.org/wiki/Cross-validation\_(statistics)

6. <https://machinelearningmastery.com/bayes-theorem-for-> machinelearning/

7. https://machinelearningmastery.com/k-fold-cross-validation/