

Neural Networks Task 1

Team Number: 74

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First: Single Layer Perceptron Algorithm

First Combination:

task 1

-----USER INPUT-----

First feature: Enter Learning Rate:

Select Feature 2: Enter Number of Epochs:

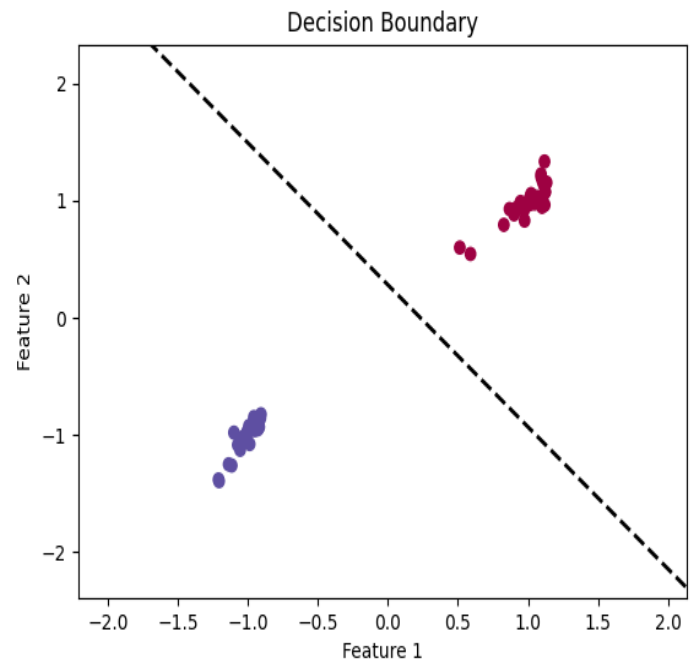
Choose Classes: Enter MSE Threshold:

☒ Biased

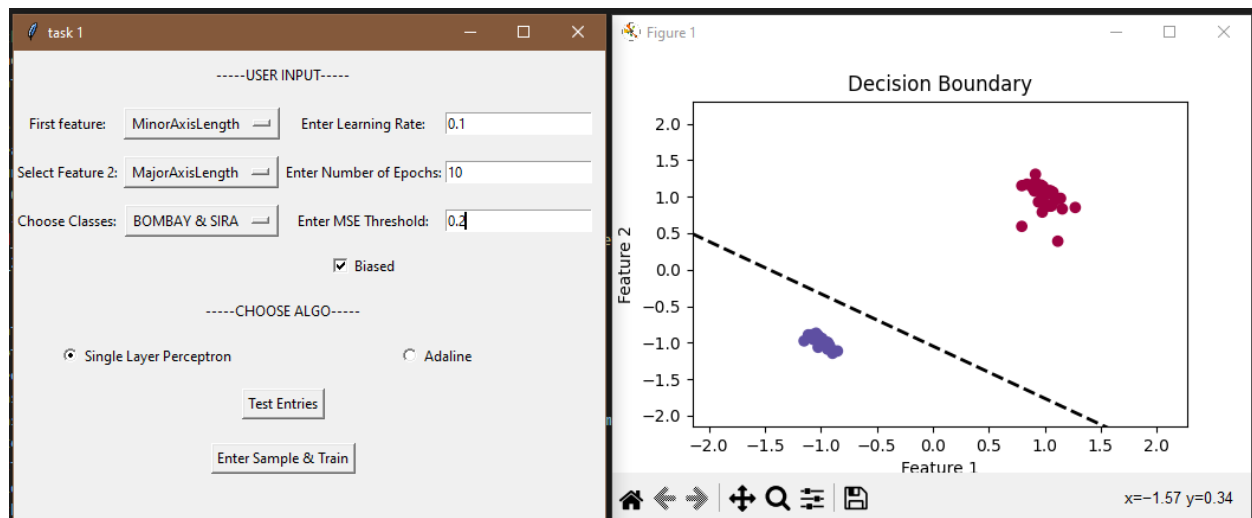
-----CHOOSE ALGO-----

☒ Single Layer Perceptron ☐ Adaline

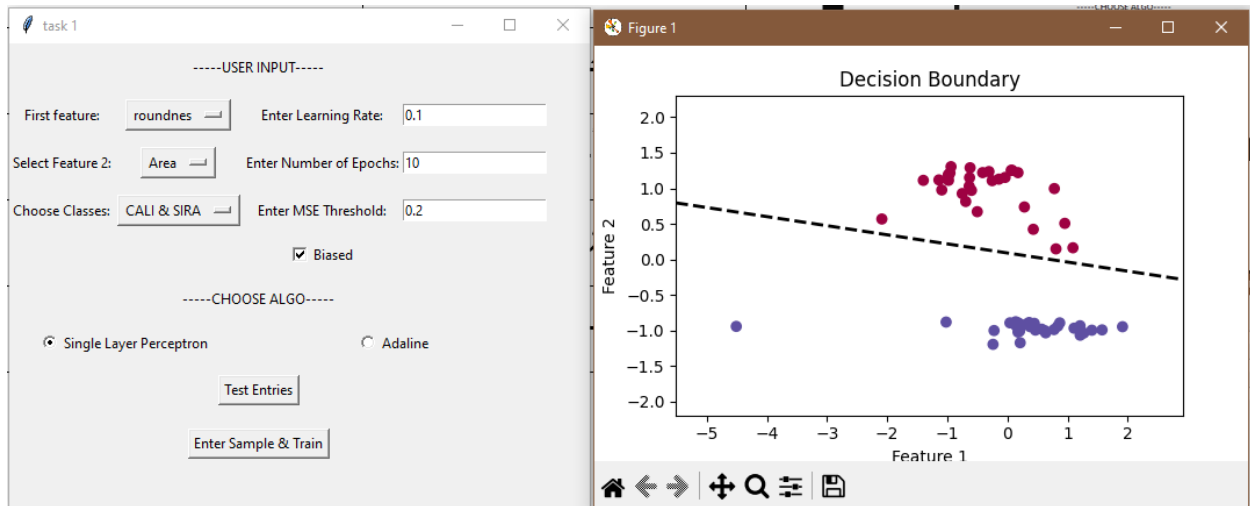
```
get() == "single":
algorithms.SLP train n draw n test(selected features, selected clas
```



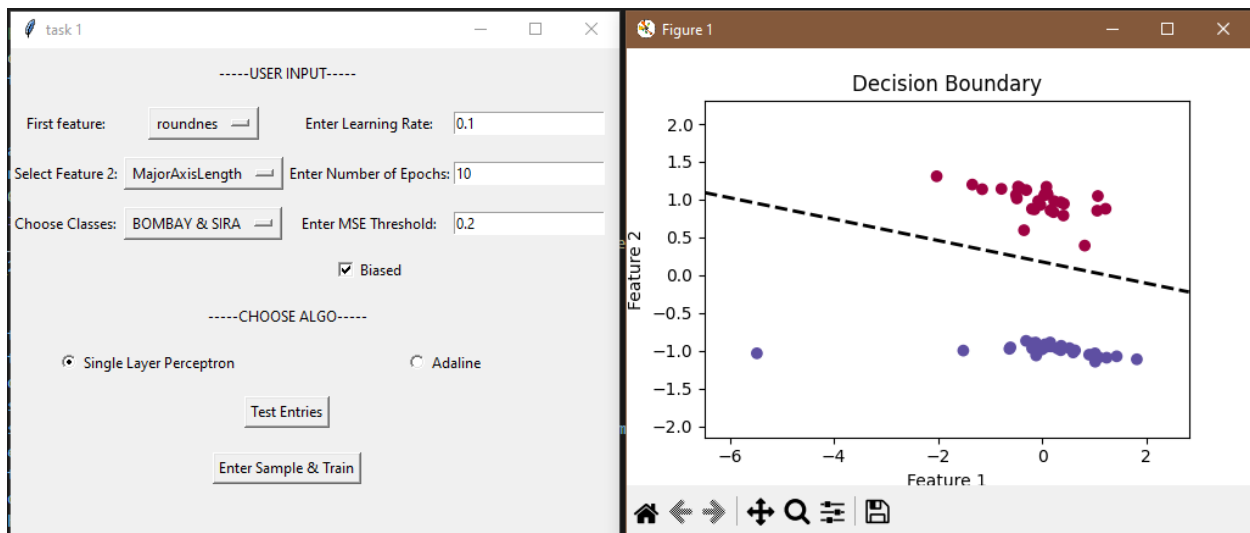
Second Combination:



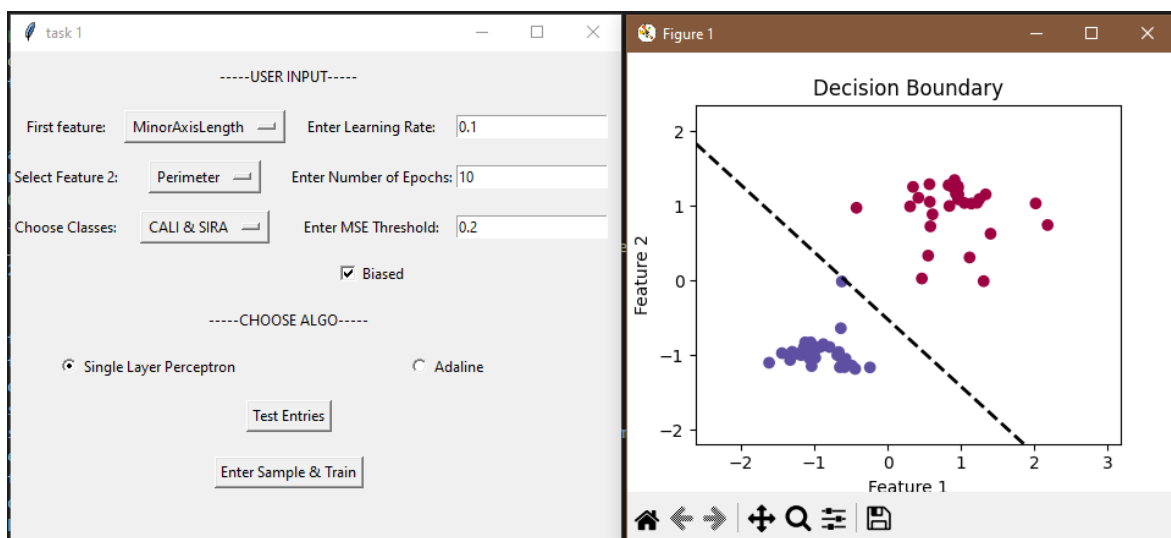
Third Combination:



Fourth Combination:



Fifth Combination:



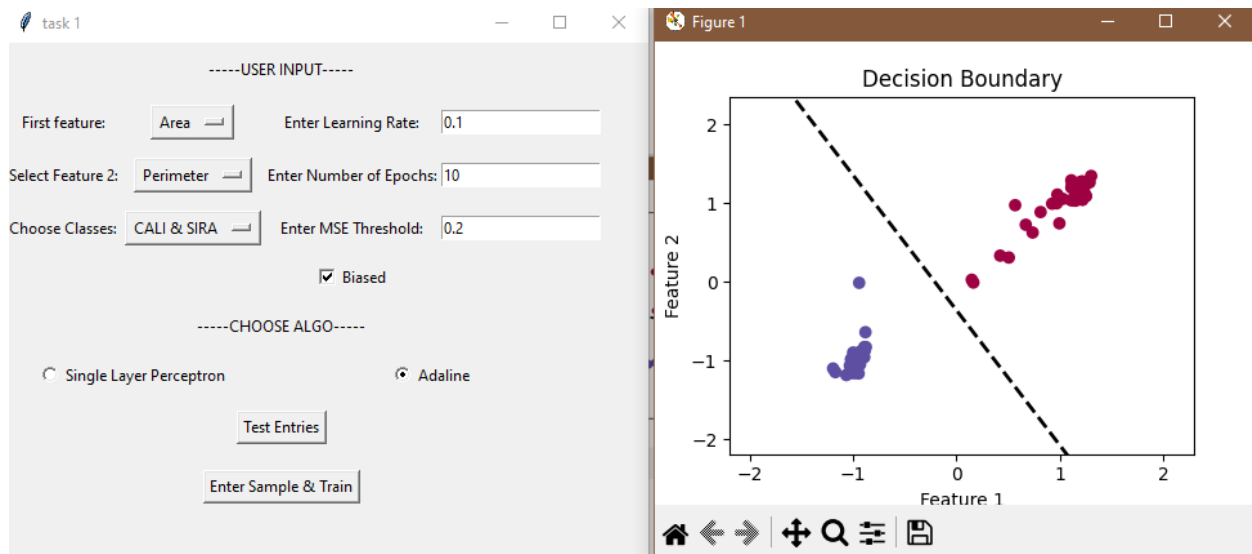
Analysis:

All of them had an accuracy of 100% by using a learning rate of 0.1 and 10 Epochs but they had different visualizations.

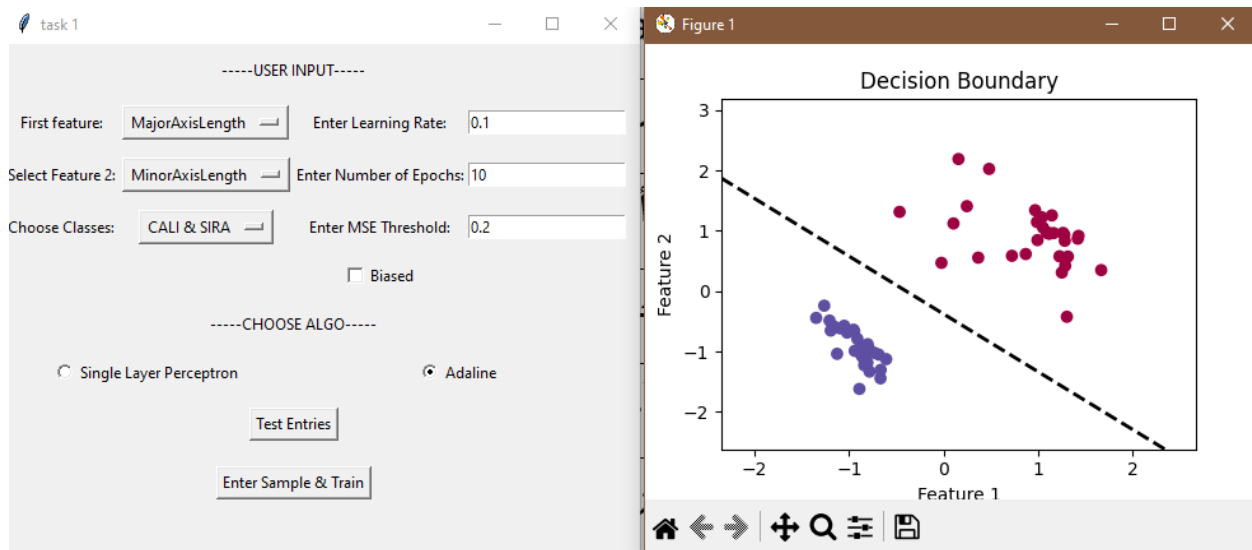
From the 5 combinations above we can see that the best boundary line is when we used Area and Perimeter features.

Second: Adaline Learning Algorithm

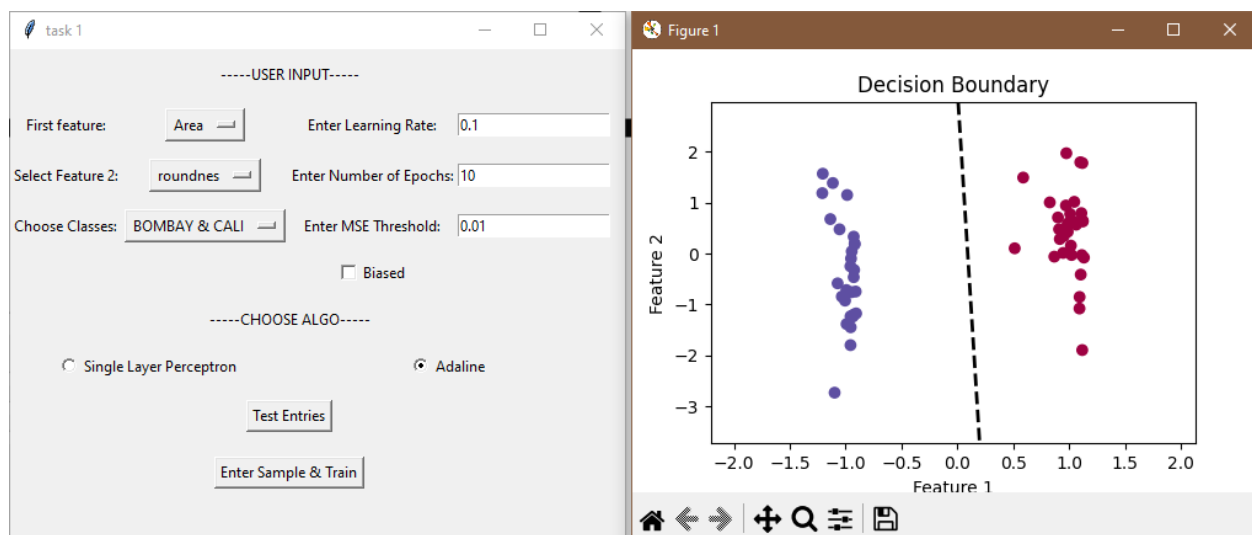
First Combination:



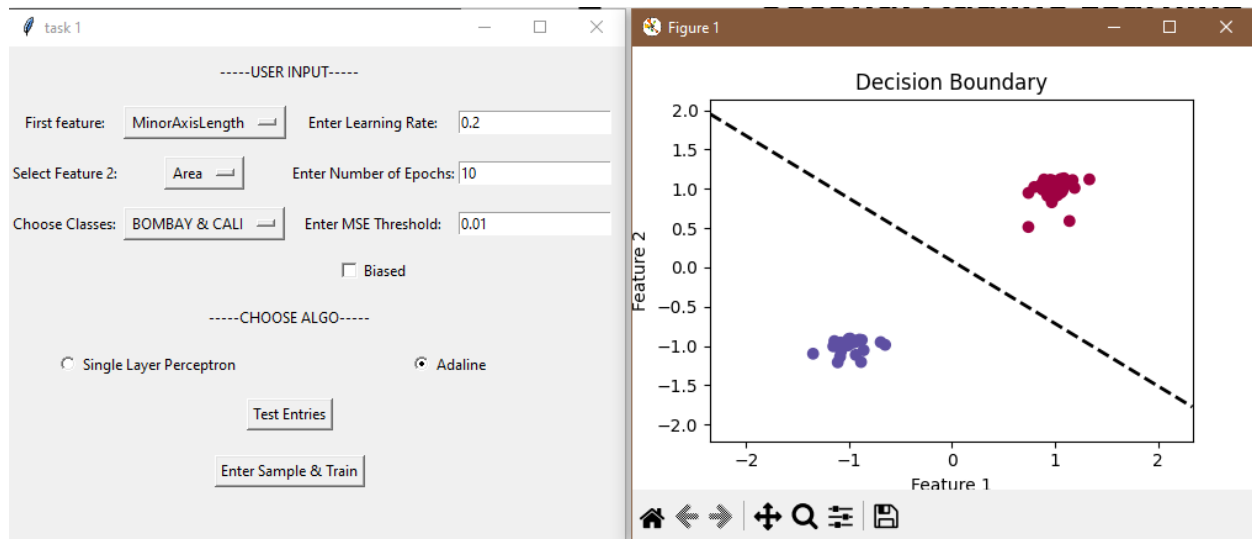
Second Combination:



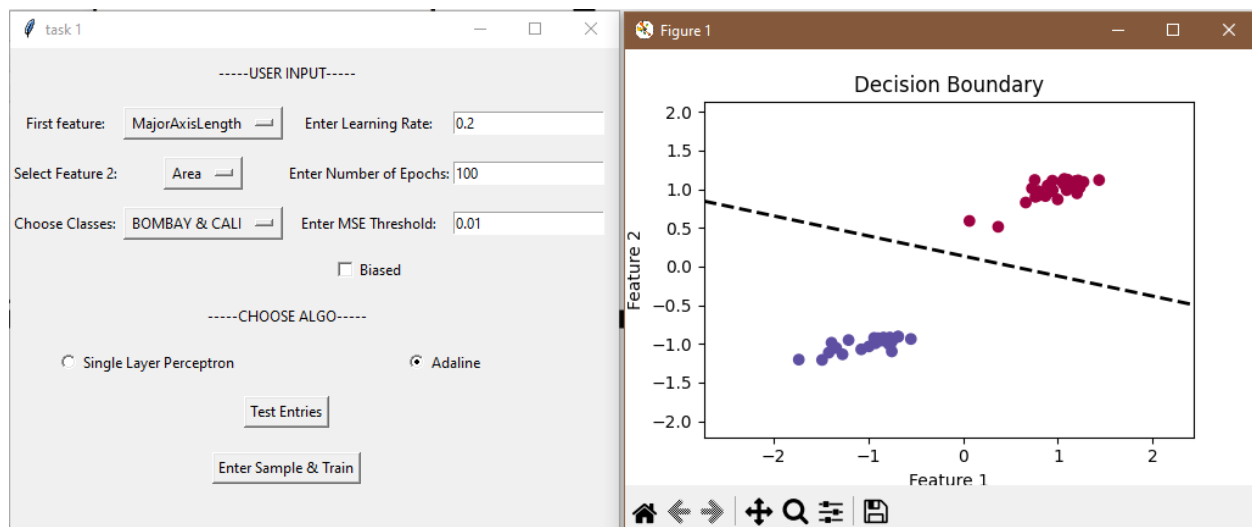
Third Combination:



Fourth Combination:



Fifth Combination:



Analysis:

All of them achieved an accuracy of 100%.

The combination of minorAxisLength and Area features and also the combination of Area and roundness features have the best looking boundary decision lines.

Conclusion:

After testing the two algorithms when we run them with the a low learning rate and a high number of epochs it achieves 100% accuracy with all features but if we use a high learning rate the accuracy decreases.