SUPPORT VECTOR MACHINES

ANDREA RICA ADVINCULA
2015-04544

The goal of this activity is to be able to find the best fit line equation that describes the separation of the classes (different fruits) on the feature plot (Fig. 1).

Previously, through the perceptron activity, I was able to fit decision lines, however this activity aims to find the best separation using the Support Vector Machine (SVM) Algorithm.

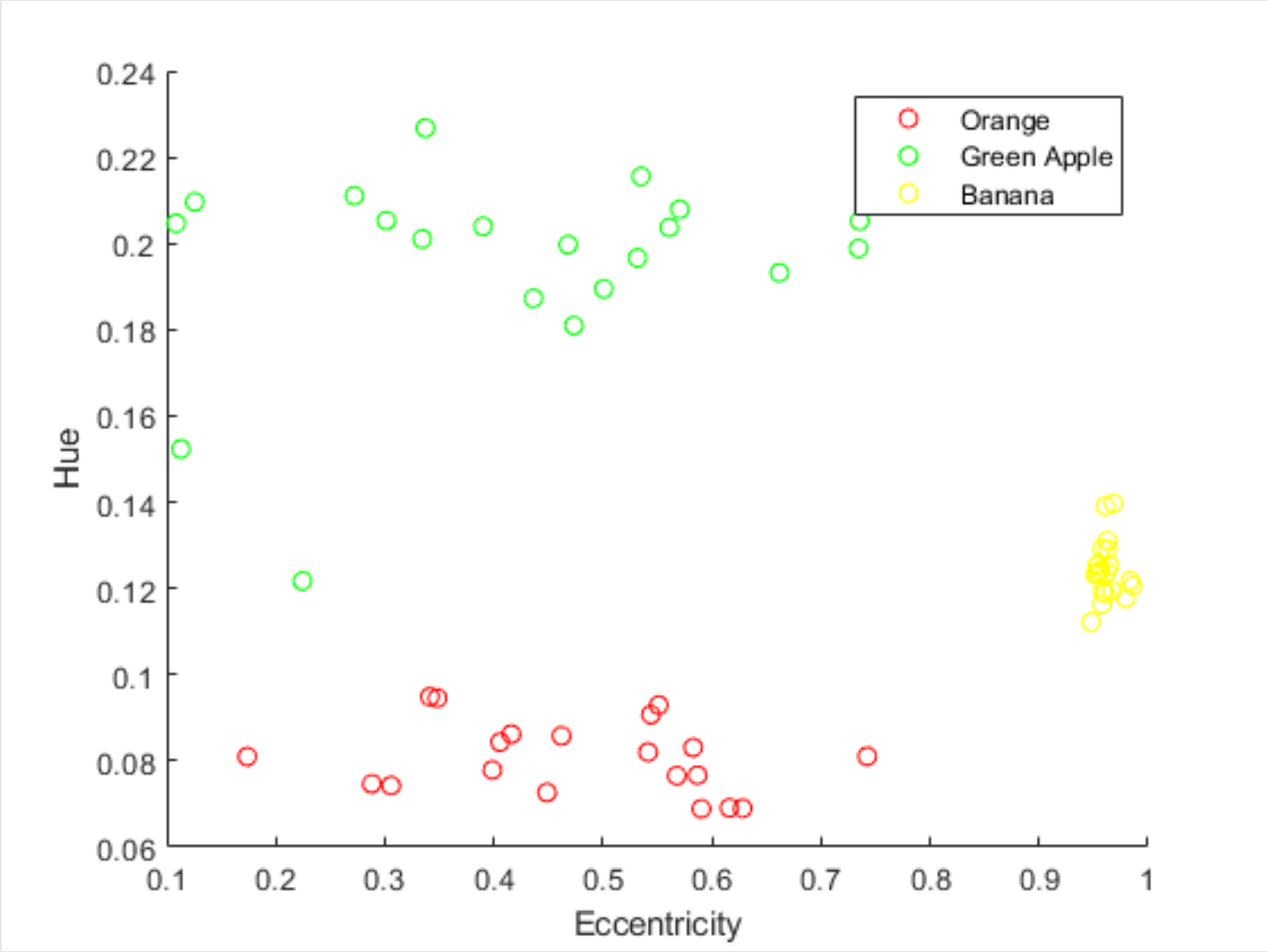
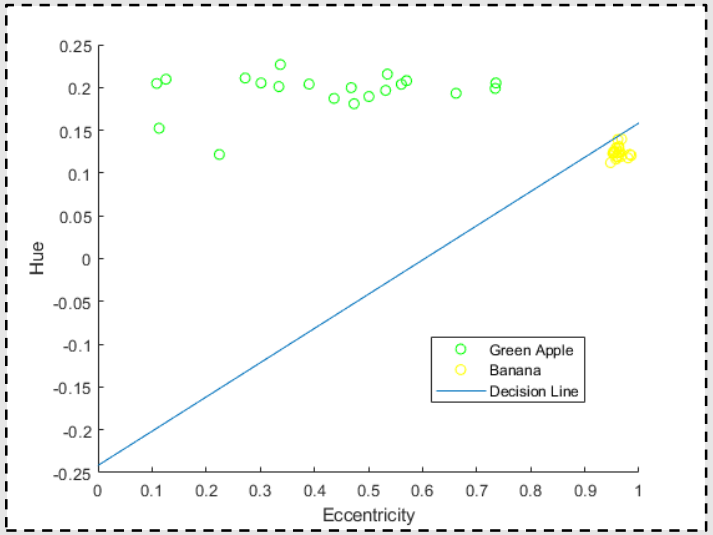


Figure 1. Feature plot taken from Activity 12 results.

Figure 2. Feature plot of green apples and bananas with the calculated decision line from Activity 13 (below), and with the best decision line calculated through the SVM algorithm (right).



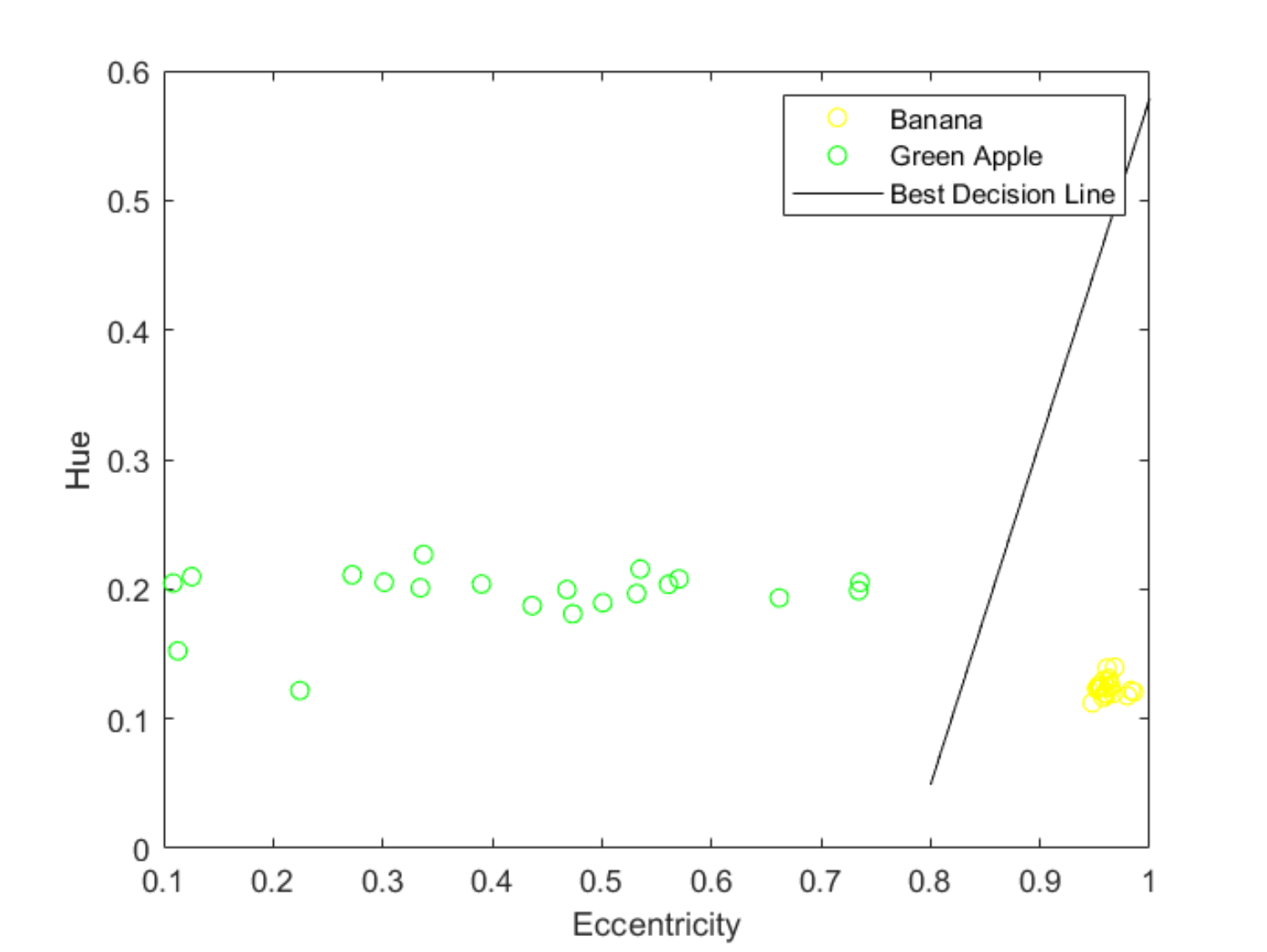
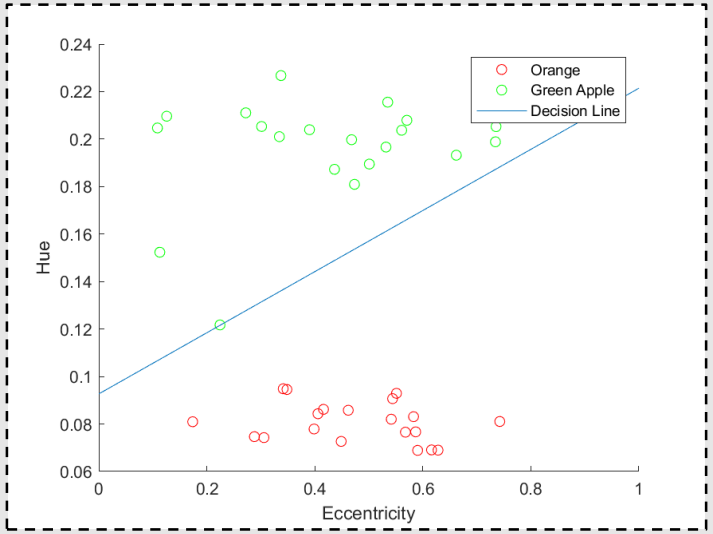


Figure 3. Feature plot of green apples and oranges with the calculated decision line from Activity 13 (below), and with the best decision line calculated through the SVM algorithm (right).



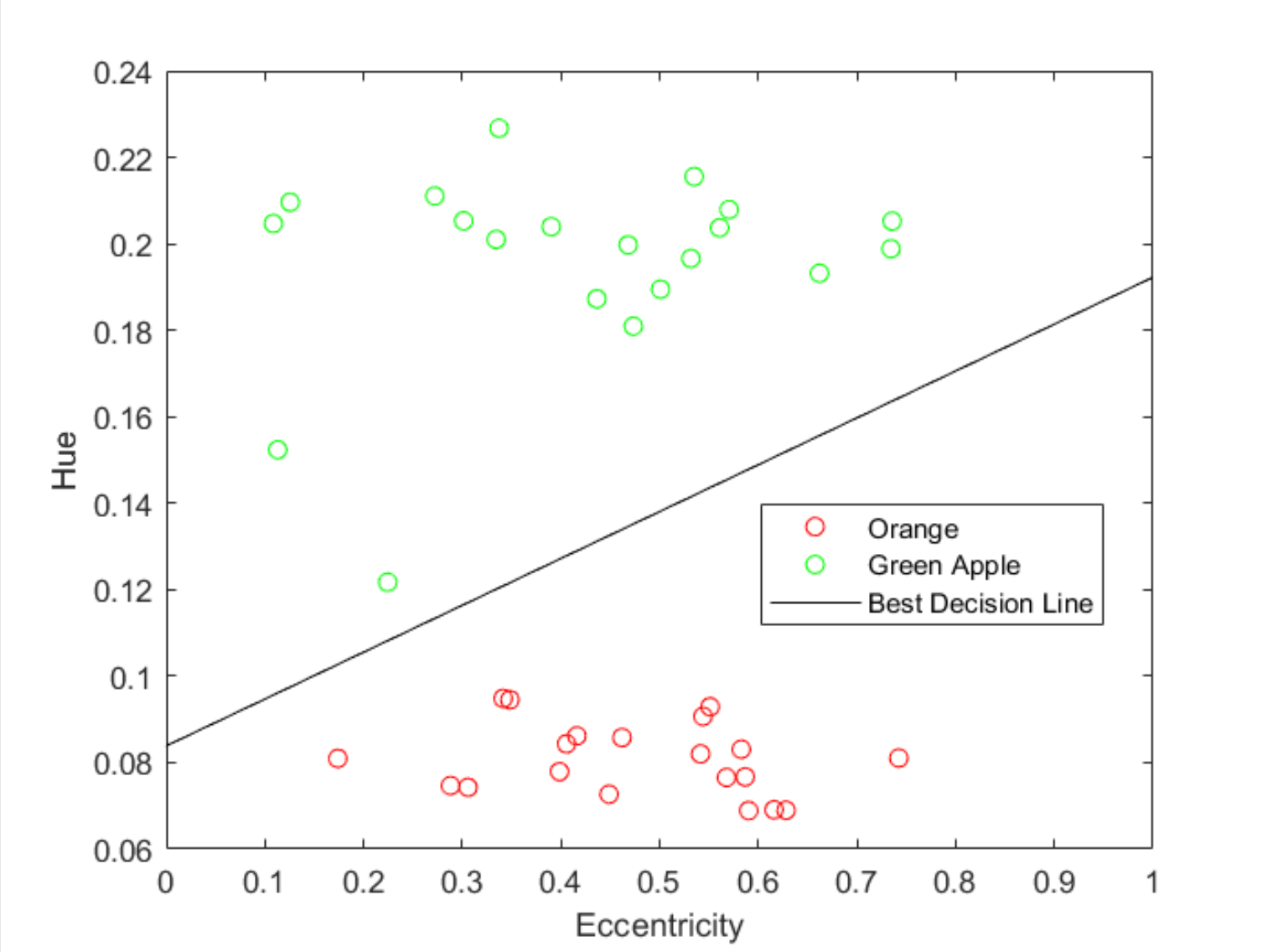
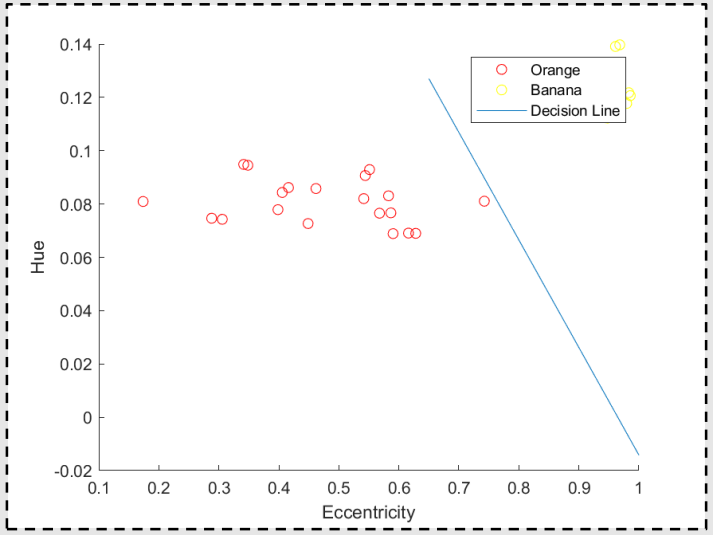
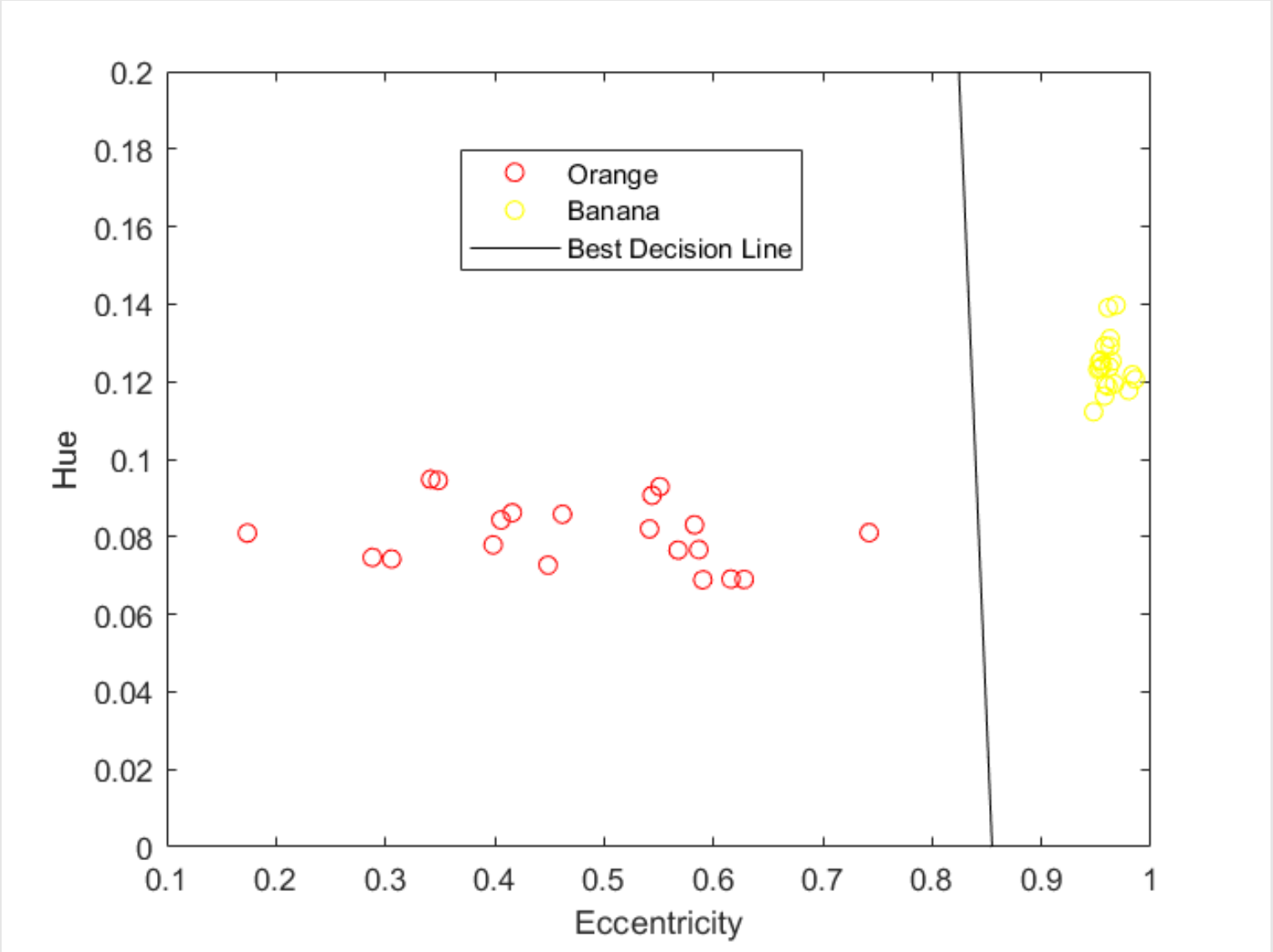


Figure 4. Feature plot of oranges and bananas with the calculated decision line from Activity 13 (below), and with the best decision line calculated through the SVM algorithm (right).





It can be clearly seen that the decision line produced by this activity has more or less the same separation from the two classes compared to the previous decision lines calculated.

I rate myself 10/10 for fulfilling the requirements of this activity. I thank LJ for the discussions, and Rhei for lending me his Matlab which has the optimization toolbox.