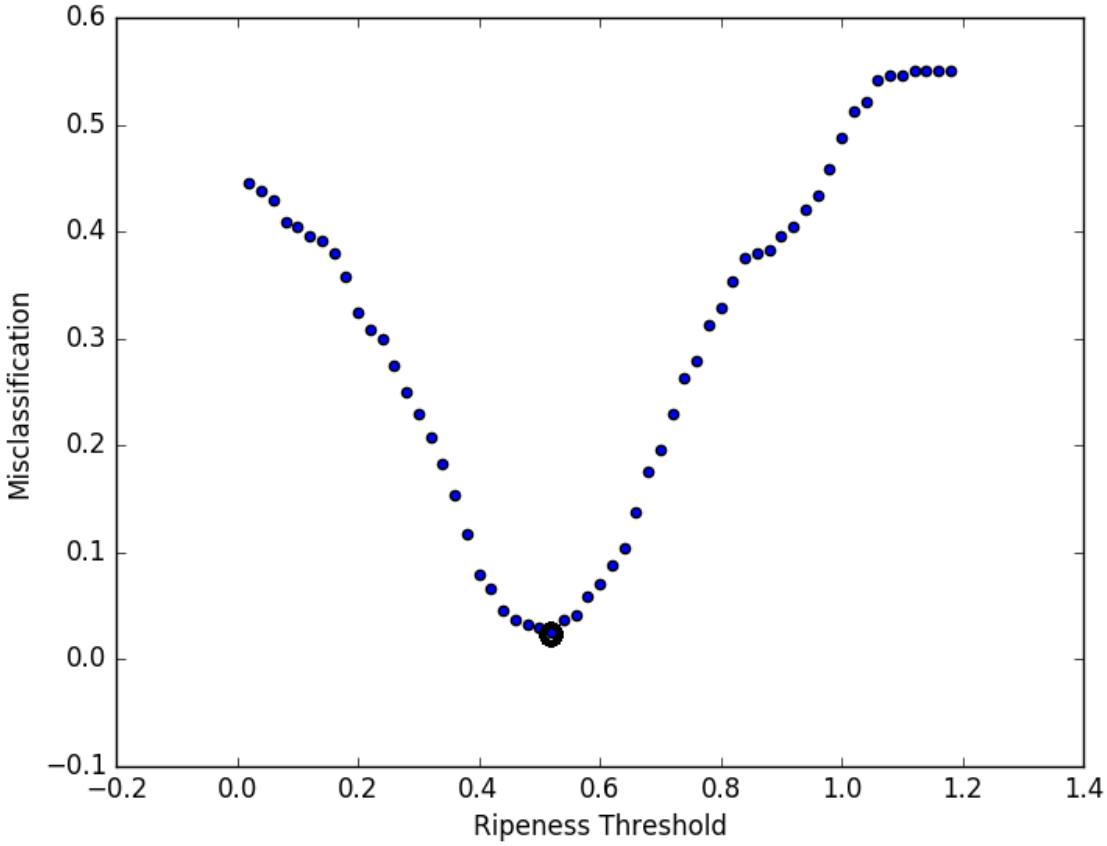
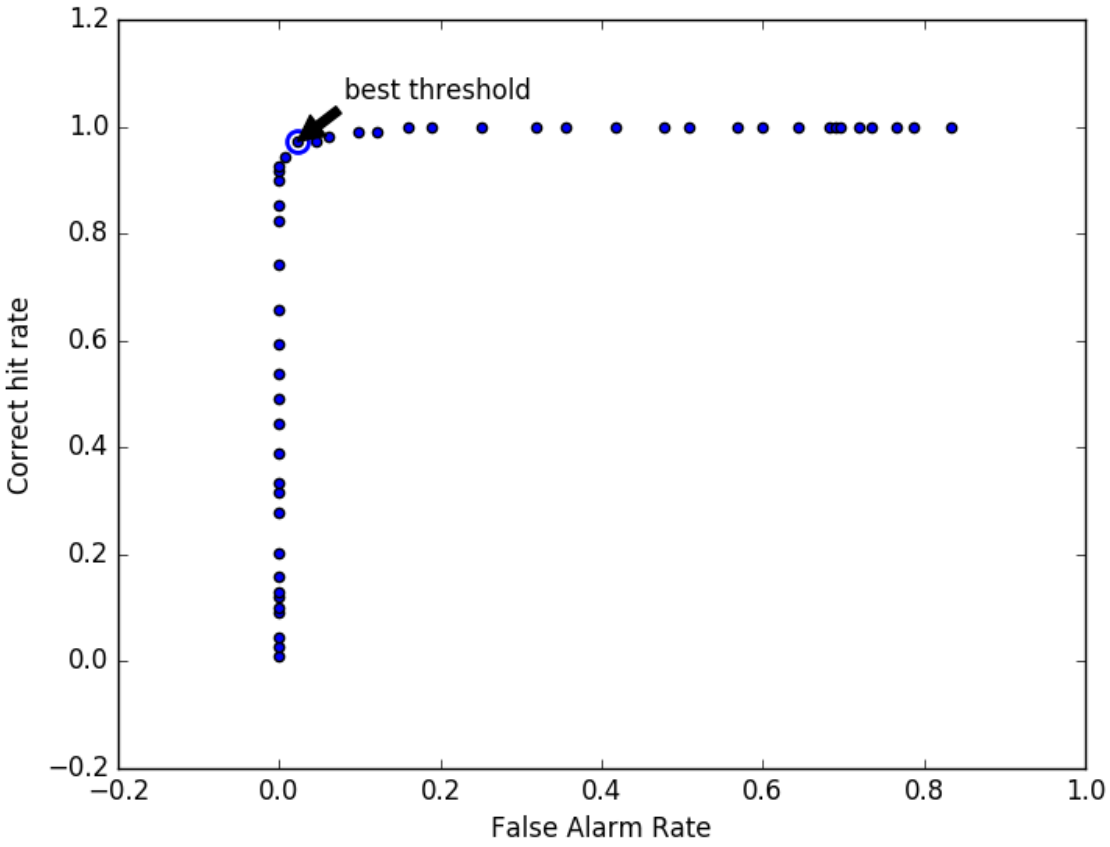
1. It will take me 8 hours to complete the homework
2.
    a. If we want to maximize customer satisfaction, in case the two thresholds have same minimum misclassification rate, then tie can be broken by using other metric such as better true positive rate. Otherwise to maximize customer satisfaction, greater threshold for ripeness will be chosen so that it is ensured that melons are ripe. Hence <= should be used for choosing threshold.
    b. If we want to maximize water melon sales, then we would choose the lesser threshold so that more number of melons will be classified as '1' i.e. ripe or rotting. Hence < will be used for choosing threshold.
    c. I have used <= for the threshold as it maximizes public trust. This is important because it ensures melons are really ripe.
    d. Please find HW_03_Bharde_Manasi.py attached.
    e. Best threshold comes as 0.52. If ripeness is less than 0.52, melon is not ripe. If ripeness is greater than or equal to **0.52**, melon is ripe or rotting.
    I have also calculated another threshold which distinguishes ripe from rotting. Which comes as 0.9.
    f. For given training data decision misses **3** ripe melons.
    g. For given training data decision says **3** unripe melons are ripe.
3.



4. It took me 1.25 times estimated time to complete homework.
5. I talked with Paridhi Srivastava about homework.
6. Please check HW_03_Bharde_Manasi_CLASSIFICATIONS.csv and the data is indexed.
7. To evaluate classifier, we need expected result for the data. Using actual result and expected result the true positive rate and false alarm rate can be calculated. More the true positive rate better is the **sensitivity** of classifier. Similarly, lesser the false alarm rate, better is **specificity** of classifier. These both conditions can be checked by plotting false alarm rate Vs. true positive rate. If positive area under curve is good, then classifier is good. This is called Receiver Operating Characteristics (ROC curve).
8.


best threshold
Correct hit rate
False Alarm Rate
1.2
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.2
0.0
0.2
0.4
0.6
0.8
1.0