

Activity 16 Support Vector Machines

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Objective(s)

1. Implement the support vector machines (SVM) algorithm to the fruits data.
2. Use quadratic programming packages to solve for the Lagrange multipliers.
3. Solve for the weights \mathbf{w} and bias w_0 and plot the decision lines in feature space [1–3].

Results

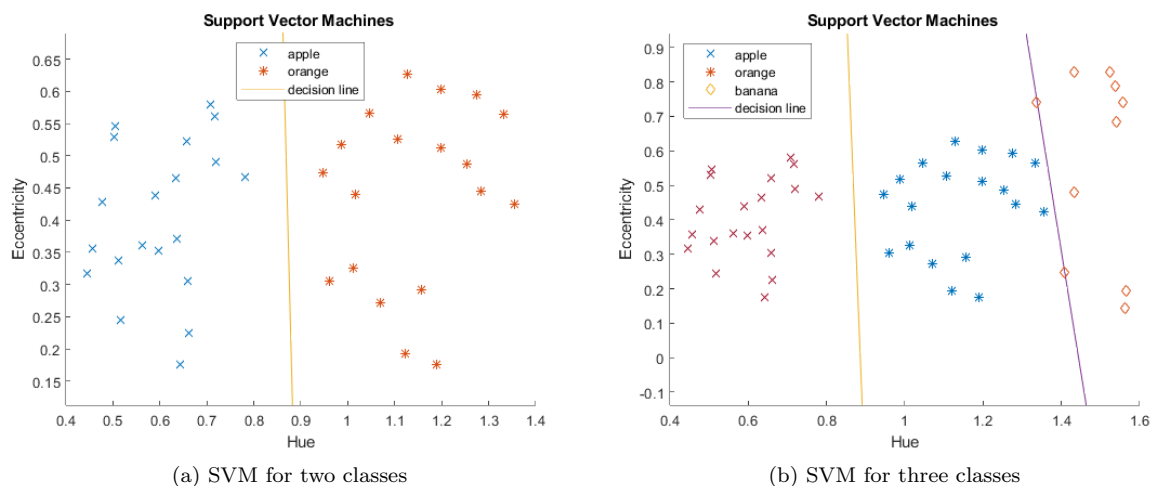


Figure 1: Decision from fruit feature data.

Comment(s)

Support Vector Machine. Figure 1 shows that SVM algorithm was able to separate the different classes by placing a decision line in-between them. Support vectors essentially are the samples nearest to the separating hyperplane or decision line. SVM maximizes the distance and margin between two classes.

Self-Evaluation

I would rate myself a 10. The objectives for this activity was met such that the weights \mathbf{w} and bias w_0 were successfully calculated. The decision line was plotted accordingly by using the weights to make up an equation of the line [4].

References

- [1] M. Soriano, A16 - support vector machines.pdf.
- [2] O. Veksler, Cs 434a/541a:pattern recognition lecture 11 slides.
- [3] M. Soriano, Machine learning intro.pdf.
- [4] M. Soriano, A13 - perceptron.pdf.