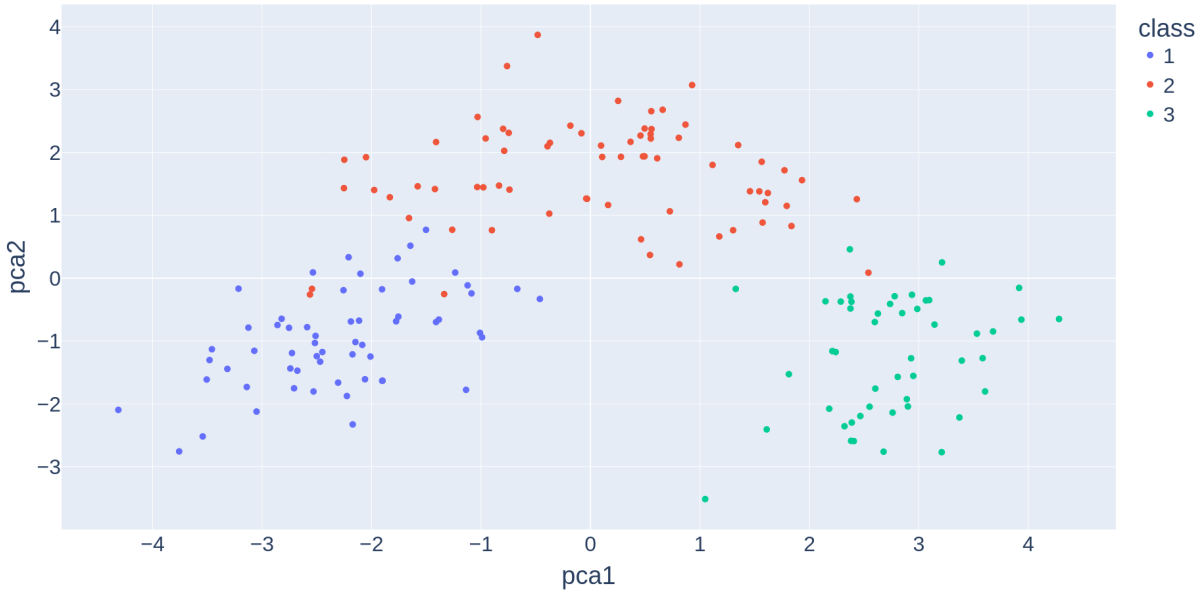
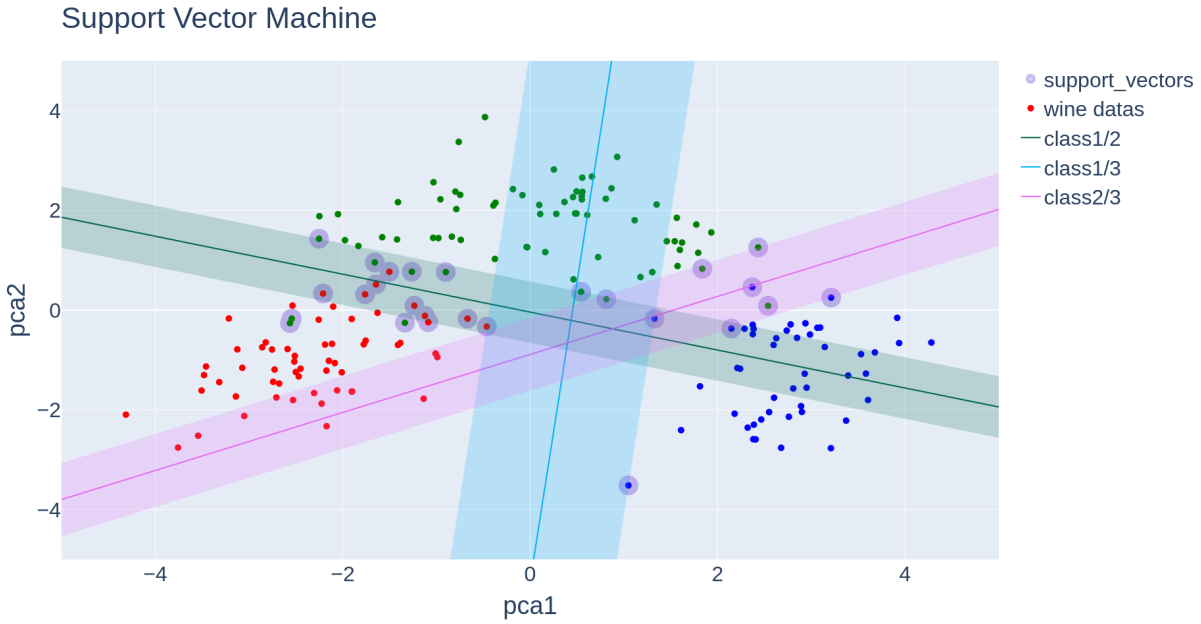
Fundamental Theory of Intelligent Interaction Systems

## wine PCA data

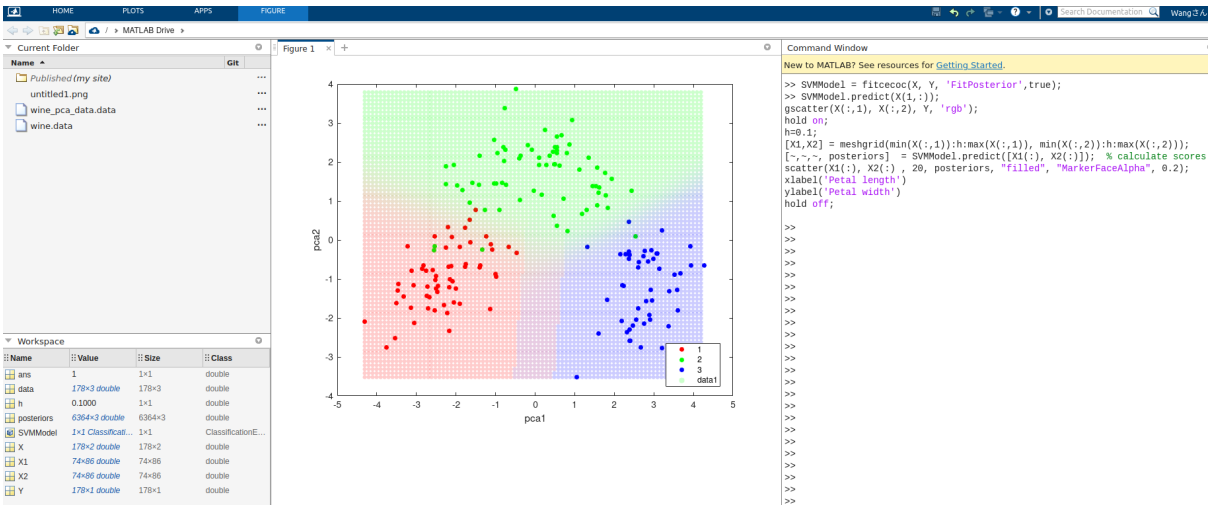



For visualization, I use the wine PCA data for SVM training.

## linear SVM

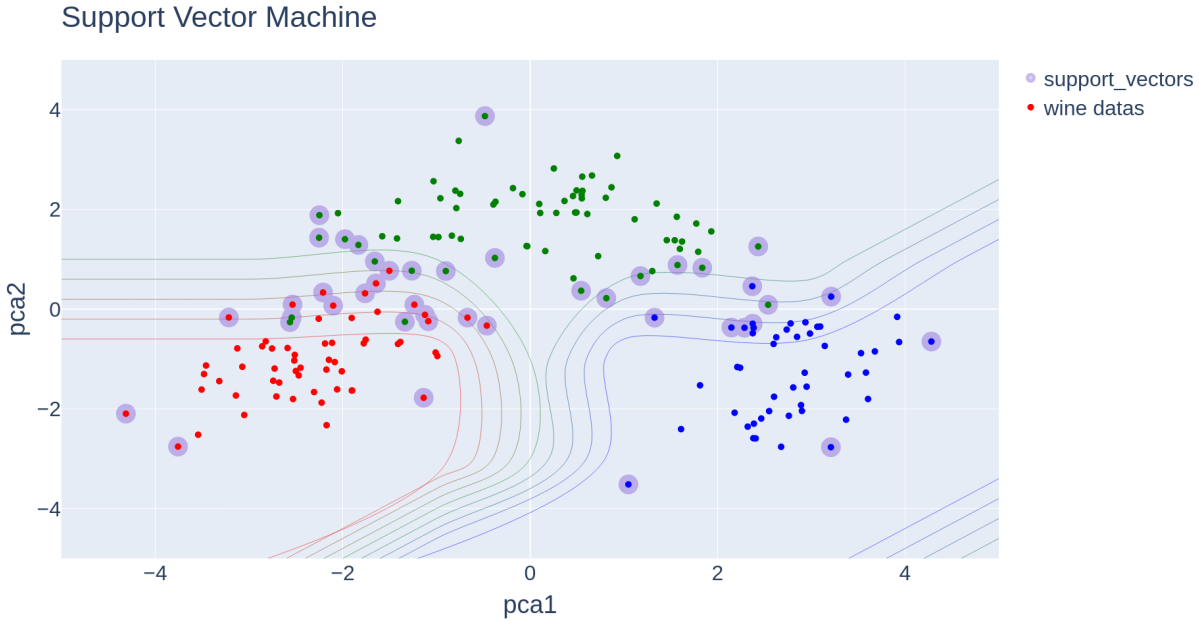



Linear SVM provides three decision boundaries. I tried to visualize the support vectors and the margins.



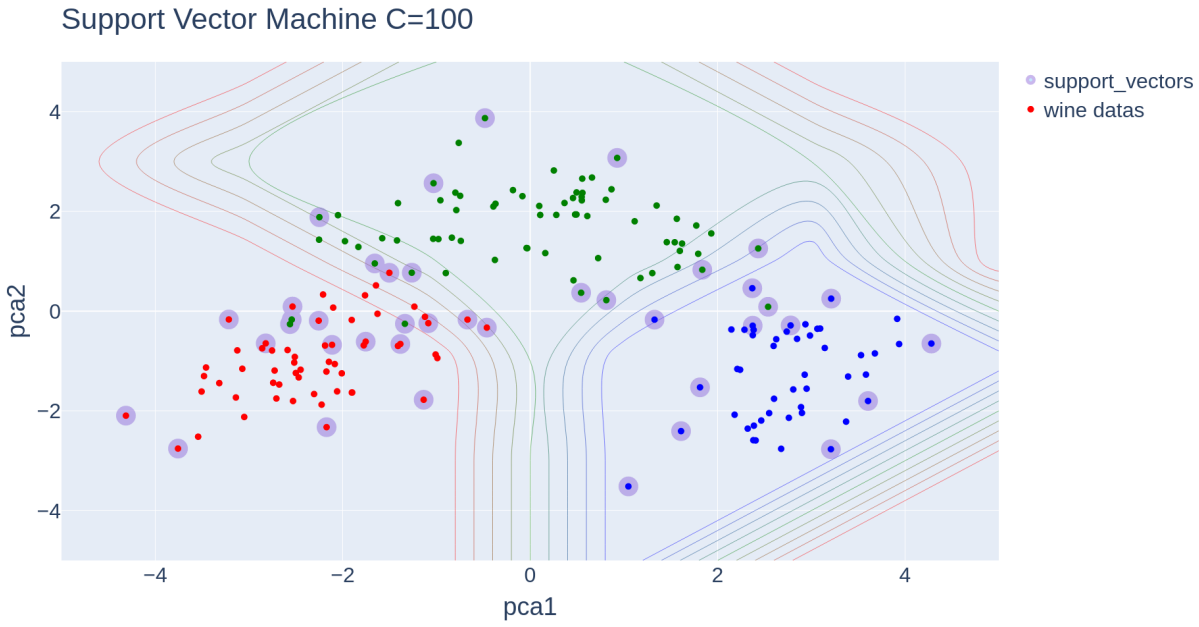

The above figure shows the SVM visualization graph generated by using Matlab.

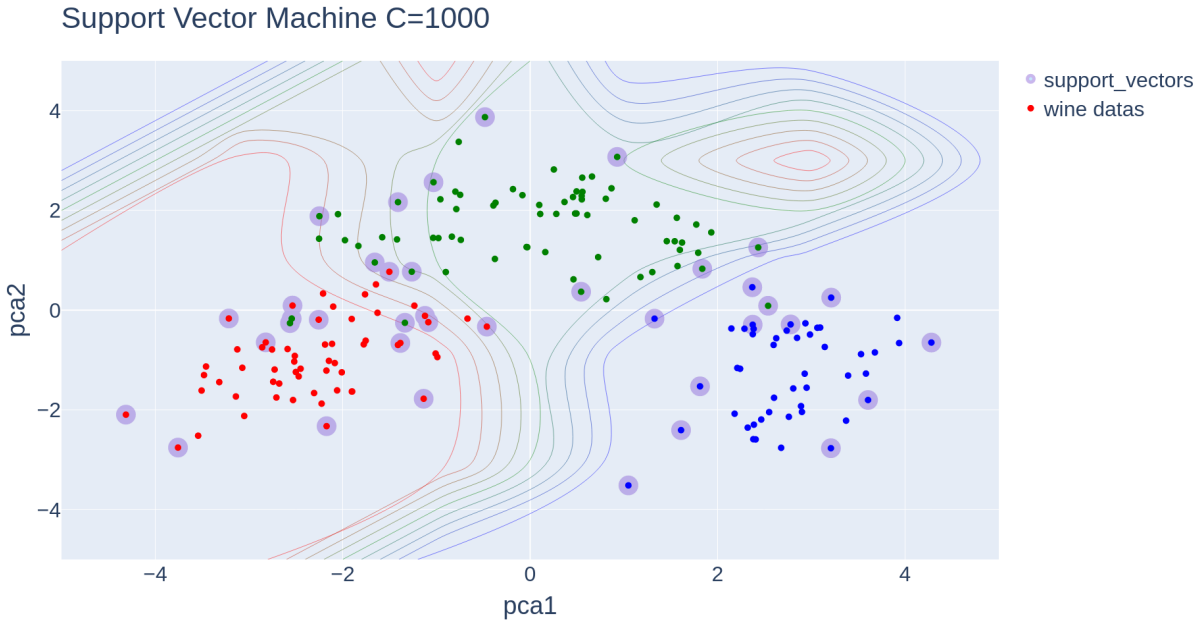
# SVM with RBF kernel




SVM with RBF kernel obviously adds the number of support_vectors. And the decisive boundary presents a distortion.

# Gaussian SVM with optimization




Adding Gaussian and increasing the C-value decision boundaries obviously becomes more distorted.

This report is almost done in python, all the source code URL is as follows: https://github.com/qwe789qwec/Fundamental-Theory-of-Intelligent-Interaction-Systems/tree/master/class2