SE4060 – Machine Learning

Lab 4 – Support Vector Machines

SVM with Linear kernel

1. Upload the Linear SVM.ipynb file to Jupyter notebook and run it. It loads an email feature set and tries to separate them into spam or non-spam using a SVM linear classifer.

   Note: You may have to change the path of the input data file.

   Change the regularization parameter C and observe how the confidence on the separation of two classes varies. Change the parameter C into three different values (e.g. 1, 10, 100). Observe the variation of the confidence value and the change of the point colors. Try to figure out how these parameters can change the overfitting and underfitting of the decision boundary.

SVM with Gaussian kernel

2. Upload the Guassian Kernel SVM.ipynb file to Jupyter notebook and run it. It loads an email feature set and tries to separate them into spam or non-spam using a SVM Gaussian classifier.

   Note: You may have to change the path of the input data file.

   Change the regularization parameter C and the parameter gamma (which is the inverse of sigma – standard deviation of the Gaussian distribution) and observe how the confidence on the separation of two classes varies. Change the parameter C into three different values (e.g. 1, 10, 100) and the parameter gamma into three different values (e.g. 1, 10, 100). Observe the variation of the confidence value and the change of the point colors. Try to figure out how these parameters can change the overfitting and underfitting of the decision boundary.

Submission:

Upload the html files exported by Jupyter notebook as a single zip file to the courseweb link.
The file name should be your registration number.