SJSU

CMPE 188 homework

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Support Vector Machine Classifier using scikit-learn

Reading Assignment:

1. Read SVM slides.

Coding Assignment

2. Review the sample code for SVC.
3. Use the Wine dataset (check under ML dataset Module on Canvas) and add an SV Classifier(SVC), a random forest classifier with a depth of 2 and an Adaboost classifier and compare them using kfold cross validation with k=10. For the SVC, use the default settings given in the sample code, use RFB kernel with C = 1.0. Hint: check out the documentation for multi-class classification using SVM: https://scikit-learn.org/stable/auto_examples/svm/plot_rbf_parameters.html#sphx-glr-auto-examples-svm-plot-rbf-parameters-py
4. Plot all the accuracy results vs. each model (model type on the x-axis and accuracy on the y-axis).
5. Try a polynomial kernel by setting kernel = 'poly' and change the kernel degree from 2 – 5.
6. Compare the results with the RBF kernel and the same value of C=1.0
7. Write down your observation on the comparison results.
8. Plot the multi-class ROC curve and use the roc_auc_score function to calculate ROC score.
9. Include your code, the results and explanation of the results either as a .py plus a PDF with plots and explanations of the results or a Jupyter file (.ipynb) and its pdf onto Canvas before the deadline.