

CS 6316 – In-Class Activity

Support Vector Machine (SVM)

Logistics:

- Work individually or in pairs
- Type up your answers to the following questions and submit in PDF format
- Write the activity title, your name, and computing ID at the top of the submitted document
- If you worked in a pair, remember to include **both** your names and computing IDs at the top of the submitted document

Questions:

Go to the following website (below). Read and follow the short tutorial on SVM. Quickly review sections 1 & 2, main part starts at section 3 “How to implement SVM in Python and R?”

URL: <https://www.analyticsvidhya.com/blog/2017/09/understaing-support-vector-machine-example-code/>

1. Understand and run the code given in the above webpage. Capture the output of the code. Label and include the output in your report.
2. Modify your code (add to it) to include an SVM example (on the same data set) that uses a **polynomial** kernel (of degree=3). Plot and label the result and include the new output in your report (you may submit your code as an appendix to the report – *add comments!*) [Additional reference: http://scikit-learn.org/stable/auto_examples/svm/plot_iris.html]
3. Explain briefly in your own words what the following **SVM parameters** are:
 - C
 - Kernel
 - Gamma
4. One weakness of SVM is that it only considers two classes. ***How can you perform multi-class classification with SVM?*** Discuss with a friend and describe briefly your solution. (No code necessary, just an description / explanation.)

Submission:

- Submit on Collab under the “Assignments” tab.
- Everybody makes a submission (pairs can submit same document)
- Submit **by 8pm TONIGHT** (the day the in-class activity was issued)
Note the submission deadline. No late submissions accepted.