* Link to Azure Noteook : <http://bit.ly/2pXjMOd>
* Using what you have learnt in the lecture, search for additional resources related to the following two approaches.
  1. Two-class Support Vector Machine
  2. Two-class Locally-Deep Support Vector Machine (MSR) Read - http://research.microsoft.com/en-us/um/people/manik/pubs/Jose13.pdf
* Explain what’s the differences between the two algorithms, and provide examples of when you will prefer to use one over the other.

**LDSVM is preferable if speed is required to make non-linear SVM predictions while maintaining classification accuracy above an acceptable limit.**

**LDSVM is preferable if Linear classifiers are not performing well.**

* For this exercise, we will use the veh-prime.arff file, and support vector machines for classification.
* As a first step you will need to modify the .arff file so that the car, noncar classes are re-placed with 1 and -1 respectively.

Default run of SVM on this dataset yields the following numbers.

SVM-Type: C-classification

SVM-Kernel: radial

cost: 1

gamma: 0.02777778

Number of Support Vectors: 371

Here are model accuracy numbers.

* 1. Model Accuracy On Test Dataset : 0.9370079
  2. Model TPR On Test Dataset : 0.8955224
  3. Model FPR On Test Dataset : 0.1044776
* Consider use 10 fold cross-validation (this should come up as the default)

**Model created in this run is better than the default as it can be confirmed by the accuracy numbers.**

Run with the these paramaters(elsilon=seq(0,1,0.1), cost=1:100) yeilded the following numbers.

Sampling method: 10-fold cross validation

best parameters:

elsilon cost

0 3

best performance: 0.05573446

Given below are accuracy numbers

1. Model Accuracy On Test Dataset : 0.9566929
2. Model TPR On Test Dataset : 0.9402985
3. Model FPR On Test Dataset : 0.05970149

* Try various parameters, and explain what you observe.

**Model created in this run is better when you go by "best Performance" parameter, accuracy numbers however make the previous model better.**

Run with these parameters(elsilon=seq(0,.2,0.1), cost=1:100)) yielded the following numbers.

sampling method: 10-fold cross validation

best parameters:

elsilon cost

1. 5

best performance: 0.05745763

Given below are accuracy numbers.

* 1. Model Accuracy On Test Dataset : 0.9488189
  2. Model TPR On Test Dataset : 0.9328358
  3. Model FPR On Test Dataset : 0.06716418