

# Data

February 8, 2016

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In [8]: %matplotlib inline
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn.discriminant_analysis import LinearDiscriminantAnalysis
from sklearn import cross_validation
from sklearn import datasets
from sklearn import svm

pf= pd.read_csv("data_lda_test.txt")

x = pf.values[:,0:2];
y = pf.values[:,2];

indx = (y==1)|(y==2)

X = x[indx, :]
Y = y[indx]

#clf = LinearDiscriminantAnalysis(store_covariance=True)
C = 1.0

clf = svm.SVC(kernel='rbf', gamma=100, C=C)

X_train, X_test, Y_train, Y_test = cross_validation.train_test_split(X,Y,test_size=0.3,random_s

clf.fit(X_train, Y_train)

err = clf.predict(X_test) != Y_test

plt.figure(1)
for i in [1,2]:
    II = Y_test == i
    plt.plot(X_test[II,0],X_test[II,1], 'o', label=str(i))
plot_step = 0.01
x_min, x_max = X[:, 0].min() - .1, X[:, 0].max() + .1
y_min, y_max = X[:, 1].min() - .1, X[:, 1].max() + .1
xx, yy = np.meshgrid(np.arange(x_min, x_max, plot_step),np.arange(y_min, y_max, plot_step))

Z = clf.predict(np.c_[xx.ravel(), yy.ravel()])
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Z = clf.decision_function(np.c_[xx.ravel(), yy.ravel()])

Z = Z.reshape(xx.shape)
cs = plt.contourf(xx, yy, Z, cmap=plt.cm.PuBu)

plt.plot(X_test[err,0], X_test[err,1], 'ro')
plt.axis("image")
err = clf.predict(X) != y

ci="black"
for i in range(0,4):
    if i == 2:
        ci="gray"
    plt.plot(X[y==i,0],X[y==i,1], 'o', c=ci)
    plt.axis("image")

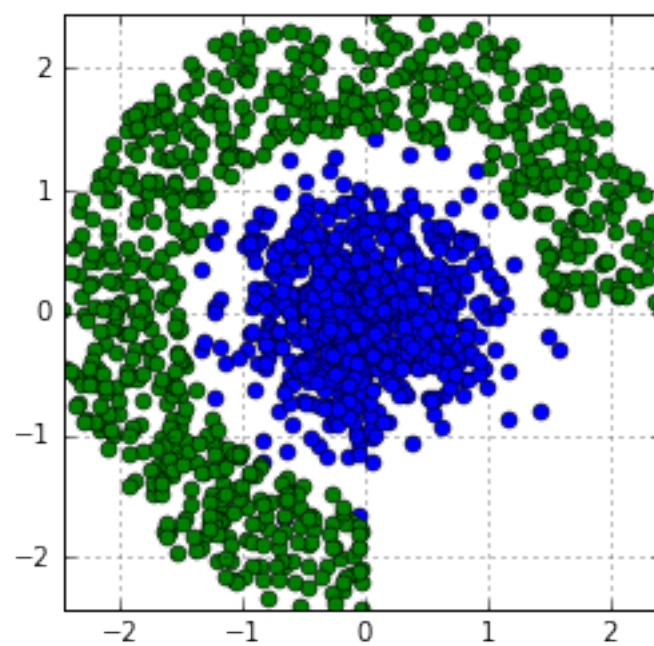
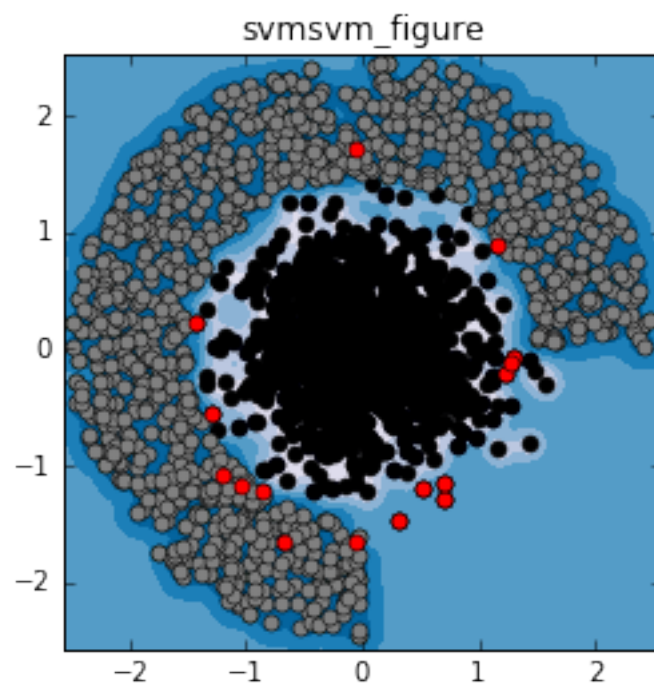
plt.plot(X[err, 0], X[err,1], 'ro')
plt.title("svmsvm_figure")

plt.figure(2)
for i in [1,2]:
    II = Y_train == i
    plt.plot(X_train[II,0],X_train[II,1], 'o', label = str(i))

plt.axis("image")


plt.grid()
plt.axis("image")
plt.show()

```



In [ ]: