Lab 11

January 26, 2018

1 Lab 11

Load the basic dependencies like numpy to your program. You can import svm from the aklearn package. Load the matpltlib package also for data visualize

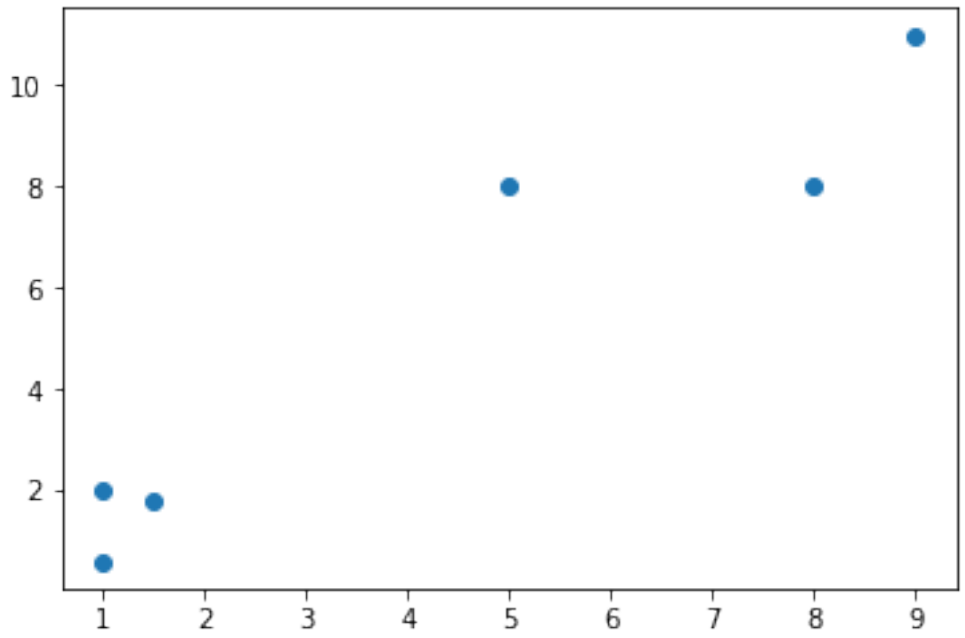
```
In [31]: import numpy as np

In [32]: from sklearn import svm

In [33]: import matplotlib.pyplot as plt
```

Create the dataset

```
In [34]: x = [1,1.5,1,5,8,9]
         y = [2,1.8,0.6,8,8,11]
```

Use a scatter plot to visualize the distribution of the data.

```
In [35]: plt.scatter(x,y)
         plt.show()
```



To feed the data into SVM, compile the data into numpy array

```
In [36]: x = np.array(x)

In [37]: y = np.array(y)
```

Stack the 1-D arrays as columns into a 2-D

```
In [38]: X = np.column_stack((x,y))

In [39]: X

Out[39]: array([[  1. ,   2. ],
                [  1.5,   1.8],
                [  1. ,   0.6],
                [  5. ,   8. ],
                [  8. ,   8. ],
                [  9. ,  11. ]])
```

Generating the class labels

```
In [40]: y = [0,0,0,1,1,1]

In [45]: clf = svm.SVC(kernel='linear', C=1.0)
```

Fit the data to the model

```
In [46]: clf.fit(X,y)

Out[46]: SVC(C=1.0, cache_size=200, class_weight=None, coef0=0.0,
           decision_function_shape=None, degree=3, gamma='auto', kernel='linear',
           max_iter=-1, probability=False, random_state=None, shrinking=True,
           tol=0.001, verbose=False)
```

Create a test sample Xtest = (0.58,0.76) and predict

```
In [48]: X_test = [0.58,0.76]

In [52]: X_test = np.array(X_test)

In [53]: pred = clf.predict(X_test)

/opt/conda/lib/python3.6/site-packages/sklearn/utils/validation.py:395: DeprecationWarning: Pass
  DeprecationWarning)
```