

SAUMYA KUMAR 18SCSE1010138

Experiment-8 ETE lab exam

<https://github.com/saumyagr1232/ETE-18SCSE1010138.git>
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```
In [24]: import numpy as np
import matplotlib.pyplot as plt
from sklearn import svm, datasets
```

```
In [25]: # importing some data to work with

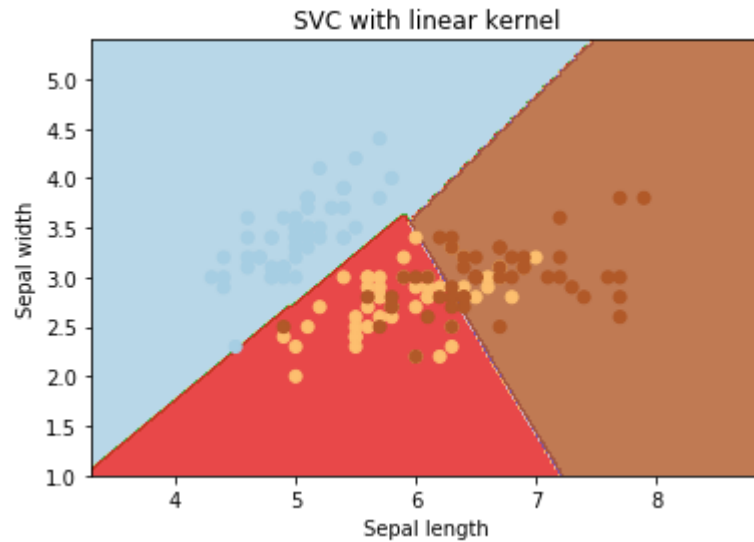
iris = datasets.load_iris()
# Taking only first two features
X = iris.data[:, :2]
# Using two dimension dataset
y = iris.target
```

Linear SVM kernel

```
In [26]: # Creating an instance of SVM and fit out data.
# Not scaling our data because i want to plot support vectors
C = 1.0
svc = svm.SVC(kernel='linear', C=1, gamma='auto').fit(X, y)
```

```
In [27]: # create a mesh to plot in
x_min, x_max = X[:, 0].min() - 1, X[:, 0].max() + 1
y_min, y_max = X[:, 1].min() - 1, X[:, 1].max() + 1
h = (x_max / x_min)/100
xx, yy = np.meshgrid(np.arange(x_min, x_max, h),
np.arange(y_min, y_max, h))
```

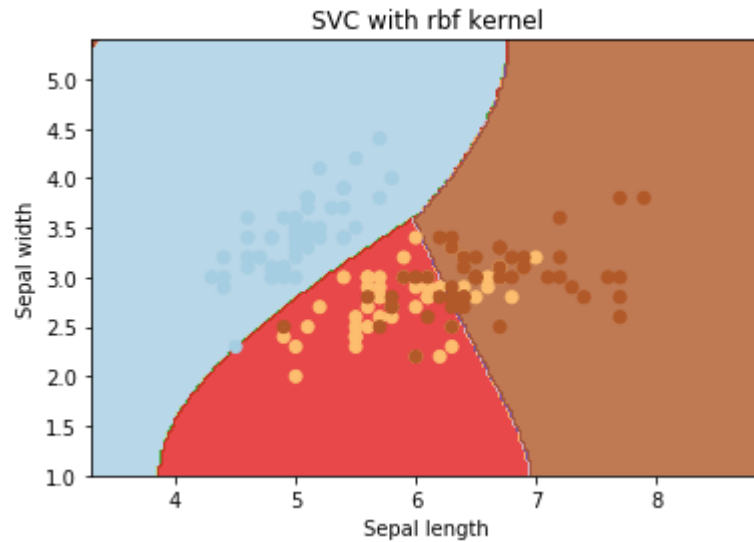
```
In [28]: plt.subplot(1, 1, 1)
Z = svc.predict(np.c_[xx.ravel(), yy.ravel()])
Z = Z.reshape(xx.shape)
plt.contourf(xx, yy, Z, cmap=plt.cm.Paired, alpha=0.8)
plt.scatter(X[:, 0], X[:, 1], c=y, cmap=plt.cm.Paired)
plt.xlabel('Sepal length')
plt.ylabel('Sepal width')
plt.xlim(xx.min(), xx.max())
plt.title('SVC with linear kernel')
plt.show()
```



SVM rbf kernel

```
In [29]: svc = svm.SVC(kernel='rbf', C=1, gamma='auto').fit(X, y)
```

```
In [30]: plt.subplot(1, 1, 1)
Z = svc.predict(np.c_[xx.ravel(), yy.ravel()])
Z = Z.reshape(xx.shape)
plt.contourf(xx, yy, Z, cmap=plt.cm.Paired, alpha=0.8)
plt.scatter(X[:, 0], X[:, 1], c=y, cmap=plt.cm.Paired)
plt.xlabel('Sepal length')
plt.ylabel('Sepal width')
plt.xlim(xx.min(), xx.max())
plt.title('SVC with rbf kernel')
plt.show()
```



In []:

In []: