

Experiment 2.1

Support Vector Machine

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Subject Name: Machine Learning Lab

Subject Code: CSP-317

1. Aim/Overview of the practical:

Implement Support Vector Machine on any data set and analyze the accuracy with Logistic regression

2. Source Code:

```
import pandas as pd
```

```
[1] from google.colab import drive  
drive.mount('/content/drive')
```

Mounted at /content/drive

```
df = pd.read_csv("/content/drive/MyDrive/ML Lab/Iris.csv")  
x = df.iloc[:, :2]  
y = df.iloc[:, 2]
```

```
[4] x=df[['SepalLengthCm']]  
y=df['Species']  
df.head()
```

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	1	5.1	3.5	1.4	0.2	Iris-setosa
1	2	4.9	3.0	1.4	0.2	Iris-setosa
2	3	4.7	3.2	1.3	0.2	Iris-setosa
3	4	4.6	3.1	1.5	0.2	Iris-setosa
4	5	5.0	3.6	1.4	0.2	Iris-setosa

```
✓ [5] from sklearn.model_selection import train_test_split  
0s x_train, x_test, y_train, y_test = train_test_split(x,y,test_size=0.4)
```

```
✓ [6] from sklearn.linear_model import LogisticRegression  
0s model = LogisticRegression()  
model.fit(x_train, y_train)  
y_predicted = model.predict(x_test)
```

```
✓ [7] from sklearn.metrics import accuracy_score  
0s print("Accuracy: ",accuracy_score(y_test,y_predicted))
```

Accuracy: 0.7333333333333333

```
✓ [8] from sklearn import svm  
0s #Create a svm Classifier  
clf = svm.SVC(kernel='linear') # Linear Kernel  
#Train the model using the training sets  
clf.fit(x_train, y_train)  
#Predict the response for test dataset  
y_pred1 = clf.predict(x_test)  
y_pred1
```

```
array(['Iris-setosa', 'Iris-virginica', 'Iris-virginica',
      'Iris-virginica', 'Iris-virginica', 'Iris-setosa',
      'Iris-versicolor', 'Iris-virginica', 'Iris-versicolor',
      'Iris-virginica', 'Iris-virginica', 'Iris-setosa', 'Iris-setosa',
      'Iris-virginica', 'Iris-versicolor', 'Iris-versicolor',
      'Iris-virginica', 'Iris-setosa', 'Iris-versicolor',
      'Iris-virginica', 'Iris-versicolor', 'Iris-setosa', 'Iris-setosa',
      'Iris-versicolor', 'Iris-virginica', 'Iris-virginica',
      'Iris-virginica', 'Iris-virginica', 'Iris-setosa', 'Iris-setosa',
      'Iris-setosa', 'Iris-versicolor', 'Iris-virginica', 'Iris-setosa',
      'Iris-virginica', 'Iris-versicolor', 'Iris-setosa', 'Iris-setosa',
      'Iris-setosa', 'Iris-setosa', 'Iris-virginica', 'Iris-virginica',
      'Iris-versicolor', 'Iris-versicolor', 'Iris-versicolor',
      'Iris-versicolor', 'Iris-virginica', 'Iris-setosa',
      'Iris-versicolor', 'Iris-versicolor', 'Iris-setosa',
      'Iris-versicolor', 'Iris-virginica', 'Iris-setosa',
      'Iris-versicolor', 'Iris-virginica', 'Iris-versicolor',
      'Iris-setosa', 'Iris-setosa', 'Iris-virginica'], dtype=object)
```

```
✓ [9] print("Accuracy: ",accuracy_score(y_test,y_pred1))
```

```
Accuracy: 0.7333333333333333
```

```
✓ [10] from sklearn.metrics import confusion_matrix
```

```
✓ [11] #This is for SVM
      confusion_matrix(y_test, y_pred1)
```

```
array([[20, 3, 0],
       [ 0, 9, 7],
       [ 0, 6, 15]])
```

Learning outcomes (What I have learnt):

1. Learn about the Logistic regression algorithm
2. Learn to perform the Logistic regression algorithm on iris dataset
3. Learnt about the exploratory data analysis
4. Learn to optimize the Model
5. Got the clear concept of logistic regression classifier



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Evaluation Grid :

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Student Performance (Conduct of experiment) objectives/Outcomes.		12
2.	Viva Voce		10
3.	Submission of Work Sheet (Record)		8
	Total		30