

Experiment 2.3

K-Nearest Neighbors

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1. Aim/Overview of the practical:

Apply KNN classifier on iris dataset.

2. Source Code:

```
data_path = "/content/drive/MyDrive/ML Lab/Iris.csv"
```

+ Code

+ Text

```
[2] import pandas as pd  
import numpy as np
```

```
[3] df = pd.read_csv(data_path )
```

```
[4] 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] df['Species'].value_counts()
```

```
Iris-setosa      50  
Iris-versicolor 50  
Iris-virginica   50  
Name: Species, dtype: int64
```

```
[15] ## don't need the id column as it is unique to every row  
df.drop('Id', axis = 1, inplace = True)
```

```
✓ [16] ## Now splitting the data independent and dependent variable  
0s X = df.drop('Species', axis = 1)  
y = df['Species']
```

```
[17] ## Now splitting the data into train and test split  
from sklearn.model_selection import train_test_split
```

```
✓ [18] X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.2, random_state = 10)  
0s
```

```
✓ [6] ## Apply the KNN algorithm for classification
0s

✓ [7] from sklearn.neighbors import KNeighborsClassifier as KNN

✓ [20] knn = KNN()
0s      knn.fit(X_train, y_train)
      pred = knn.predict(X_test)

✓ [21] ## Apply metrics to find the accuracy scores
0s      from sklearn.metrics import accuracy_score, confusion_matrix

[23] accuracy_score(pred, y_test)
      ## it gave 96% of accuracy

      0.9666666666666667

✓ [25] confusion_matrix(pred, y_test)
0s
      array([[10,  0,  0],
            [ 0, 12,  0],
            [ 0,  1,  7]])
```



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Learning outcomes (What I have learnt):

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

Evaluation Grid :

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Student Performance (Conduct of experiment) objectives/Outcomes.		12
2.	Viva Voce		10



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3.	Submission of Work Sheet (Record)		8
	Total		30