

MACHINE LEARNING LAB

EXERCISE :: 7

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KNN Classification ::

Code ::

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn

from sklearn import datasets
wine = datasets.load_wine()

df = pd.DataFrame(wine.data, columns = wine.feature_names)
df[""]=wine.target
df.to_csv(r"C:\Users\SAPTARSHI\Desktop\ML\KNN Classification\Data\wine.csv")

print(wine.target_names)

['class_0' 'class_1' 'class_2']

print(wine.data[0:5])
[[1.423e+01  1.710e+00  2.430e+00  1.560e+01  1.270e+02  2.800e+00  3.060e+00
  2.800e-01  2.290e+00  5.640e+00  1.040e+00  3.920e+00  1.065e+03]
 [1.320e+01  1.780e+00  2.140e+00  1.120e+01  1.000e+02  2.650e+00  2.760e+00
  2.600e-01  1.280e+00  4.380e+00  1.050e+00  3.400e+00  1.050e+03]
 [1.316e+01  2.360e+00  2.670e+00  1.860e+01  1.010e+02  2.800e+00  3.240e+00
  3.000e-01  2.810e+00  5.680e+00  1.030e+00  3.170e+00  1.185e+03]
 [1.437e+01  1.950e+00  2.500e+00  1.680e+01  1.130e+02  3.850e+00  3.490e+00
  2.400e-01  2.180e+00  7.800e+00  8.600e-01  3.450e+00  1.480e+03]
 [1.324e+01  2.590e+00  2.870e+00  2.100e+01  1.180e+02  2.800e+00  2.690e+00
  3.900e-01  1.820e+00  4.320e+00  1.040e+00  2.930e+00  7.350e+02]]
```

[illegible] $(178, 13)$

(178,)

```
X_train, X_test, y_train, y_test = train_test_split(wine.data, wine.target, test_size=0.4)
```

```
from sklearn import metrics
```

```
df.to_csv(r"C:\Users\SAPTARSHI\Desktop\ML\KNN Classification\Data\wine_out.csv")
```

```
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]
[0.8333333333333334, 0.6805555555555556, 0.7361111111111112, 0.708333333333
3334, 0.7083333333333334, 0.6666666666666666, 0.6527777777777778, 0.6666666
666666666, 0.6527777777777778, 0.625, 0.6388888888888888, 0.638888888888888
8, 0.625, 0.6805555555555556, 0.6527777777777778, 0.6527777777777778, 0.583
3333333333333334, 0.6527777777777778, 0.6527777777777778]
```

```
import matplotlib.pyplot as plt
plt.title("Clusters (k) Vs Accuracy_score")
plt.xlabel("Clusters (k)")
plt.ylabel("Accuracy_score")
plt.plot(Clusters, Accuracy)
plt.show()
```

