

# MachineLearning

December 15, 2023

```
[82]: !pip3 install import_ipynb
```

```
Requirement already satisfied: import_ipynb in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (0.1.4)
Requirement already satisfied: nbformat in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from import_ipynb)
(5.7.0)
Requirement already satisfied: IPython in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from import_ipynb)
(8.5.0)
Requirement already satisfied: pickleshare in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (0.7.5)
Requirement already satisfied: prompt-toolkit<3.1.0,>3.0.1 in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (3.0.36)
Requirement already satisfied: pexpect>4.3 in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (4.8.0)
Requirement already satisfied: decorator in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (5.1.1)
Requirement already satisfied: stack-data in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (0.5.1)
Requirement already satisfied: appnope in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (0.1.2)
Requirement already satisfied: traitlets>=5 in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (5.7.1)
Requirement already satisfied: backcall in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (0.2.0)
Requirement already satisfied: pygments>=2.4.0 in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (2.11.2)
Requirement already satisfied: matplotlib-inline in
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/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (0.1.6)
Requirement already satisfied: jedi>=0.16 in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
IPython->import_ipynb) (0.18.1)
Requirement already satisfied: jupyter-core in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
nbformat->import_ipynb) (5.1.1)
Requirement already satisfied: jsonschema>=2.6 in
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nbformat->import_ipynb) (4.16.0)
Requirement already satisfied: fastjsonschema in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
nbformat->import_ipynb) (2.16.2)
Requirement already satisfied: parso<0.9.0,>=0.8.0 in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
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Requirement already satisfied: pkgutil-resolve-name>=1.3.10 in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
jsonschema>=2.6->nbformat->import_ipynb) (1.3.10)
Requirement already satisfied: attrs>=17.4.0 in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
jsonschema>=2.6->nbformat->import_ipynb) (22.1.0)
Requirement already satisfied: pyparsing!=0.17.0,!0.17.1,!0.17.2,>=0.14.0 in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
jsonschema>=2.6->nbformat->import_ipynb) (0.18.0)
Requirement already satisfied: importlib-resources>=1.4.0 in
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jsonschema>=2.6->nbformat->import_ipynb) (5.2.0)
Requirement already satisfied: ptyprocess>=0.5 in
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Requirement already satisfied: platformdirs>=2.5 in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from jupyter-
core->nbformat->import_ipynb) (2.5.2)
Requirement already satisfied: asttokens in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from stack-
data->IPython->import_ipynb) (2.0.8)
Requirement already satisfied: executing in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from stack-
data->IPython->import_ipynb) (1.1.1)
Requirement already satisfied: pure-eval in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from stack-
data->IPython->import_ipynb) (0.2.2)
Requirement already satisfied: zipp>=3.1.0 in

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/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from importlib-
resources>=1.4.0->jschema>=2.6->nbformat->import_ipynb) (3.11.0)
Requirement already satisfied: six in
/Users/debanilguha/opt/anaconda3/lib/python3.8/site-packages (from
asttokens->stack-data->IPython->import_ipynb) (1.16.0)
```

```
[83]: import import_ipynb
import numpy as np
import pandas as pd
import dataScience as ds
```

```
[84]: def normalize(V,maxV,minV):
    if V==0:
        return V
    normalized_V = (V - minV) / (maxV - minV)

    return normalized_V
```

```
[85]: def createClusteredData(X:list,Y:list):
    newArr = []
    for index,value in enumerate(X):
        newArr.append([normalize(X[index],np.max(X),np.
↪min(X)),normalize(Y[index],np.max(Y),np.min(Y))])
    return newArr
```

## 0.1 Using K Means Clustering Algorithm

```
[101]: from sklearn.cluster import KMeans
import matplotlib.pyplot as plt
from sklearn.preprocessing import scale
dataForClustering = np.array(createClusteredData(sorted(ds.expectedPayment),
↪sorted(ds.paymentDoneByChampion)))
print(f"==> dataForClustering.shape: ",dataForClustering[:
↪,0],dataForClustering)

model = KMeans(n_clusters=3)

model = model.fit(dataForClustering)

plt.figure(figsize=(8, 6))

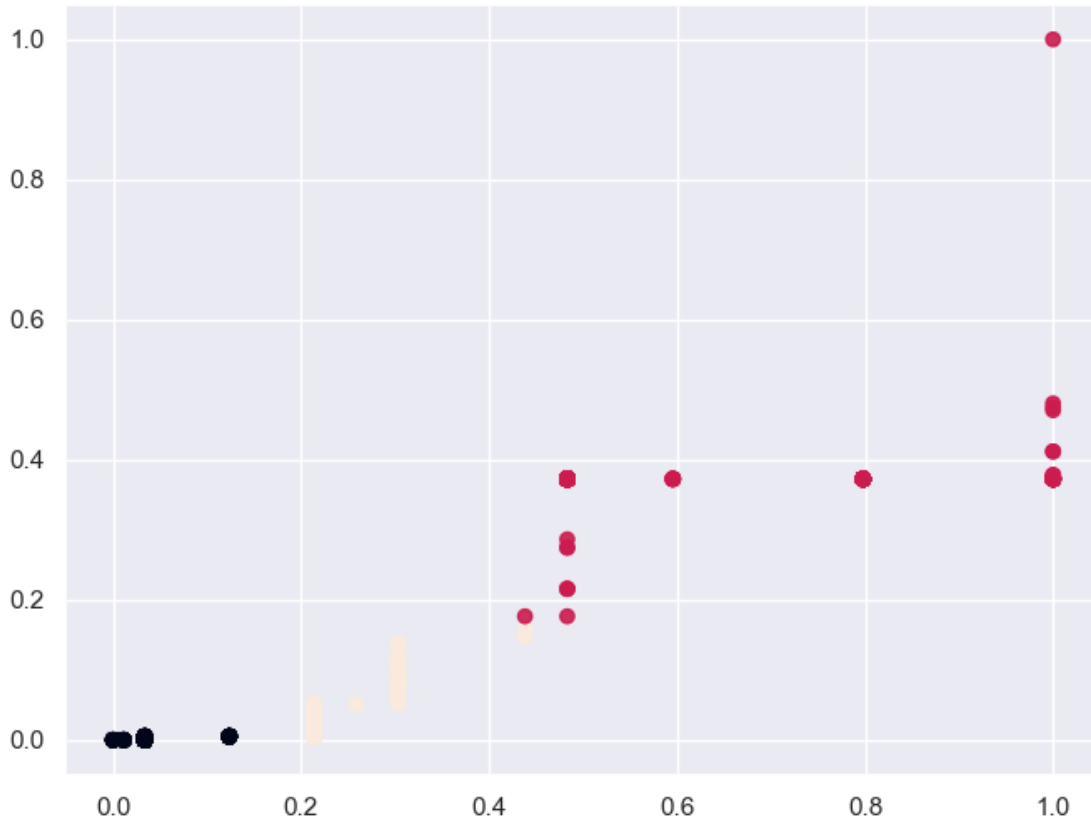
plt.scatter(dataForClustering[:,0], dataForClustering[:,1], c=model.labels_,
↪astype(float),alpha=0.9)
plt.show()
```

```
==> dataForClustering.shape: [0. 0. 0. ... 1. 1. 1.] [[0.          0.          ]
[0.          0.          ]
```

```

[0.      0.      ]
...
[1.      0.4745098 ]
[1.      0.48039216]
[1.      1.      ]

```



## 0.2 Real World Clustering on Active Project

Here this is an example of Clustering of Data in a real life scenario where Datas are clustered Together to give the Kmeans value . This is the scattered plot for Payment Done by the Champion verses Payment to be done on a daily basis