**Experiment-3.1**

**Student Name:** YANA SRIVASTAVA **UID:** 20BCS2279

**Branch:** CSE **Section/Group:** 20BCS\_WM-906**/**B

**Semester:** 5th **Subject Code:** 21CST-317

**Subject Name:** Machine learning lab

1. **Aim/Overview of the practical:** Implement Kmeans.
2. **Requirements**: Any Dataset for classification, Jupyter notebook or Google collab**.**

# Description/ Code:

**# importing all necessary libraries**

import pandas as pd

import matplotlib.pyplot as plt import seaborn as sns

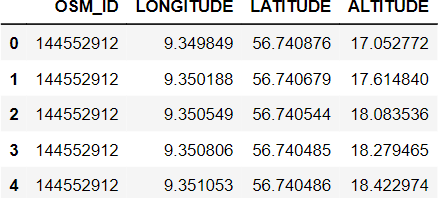
from sklearn.cluster import KMeans

from sklearn.model\_selection import train\_test\_split

# # Reading the data

df=pd.read\_csv("3D\_spatial\_network.txt",names=['OSM\_ID','LONGITUDE','LATITUDE','AL TITUDE'])

df.head()



# # Preprocessing the data and Splitting the dataset into train and test

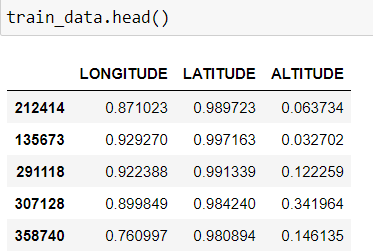
data = df.drop('OSM\_ID',axis=1)

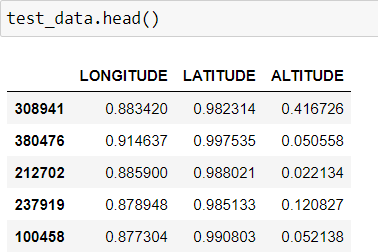
train\_data,test\_data = train\_test\_split(data,test\_size=0.3) std\_scaler = MinMaxScaler()

train\_data['LONGITUDE']=train\_data['LONGITUDE']/train\_data['LONGITUDE'].max()

train\_data['LATITUDE']=train\_data['LATITUDE']/train\_data['LATITUDE'].max() train\_data['ALTITUDE']=train\_data['ALTITUDE']/train\_data['ALTITUDE'].max()

test\_data['LONGITUDE']=test\_data['LONGITUDE']/test\_data['LONGITUDE'].max() test\_data['LATITUDE']=test\_data['LATITUDE']/test\_data['LATITUDE'].max() test\_data['ALTITUDE']=test\_data['ALTITUDE']/test\_data['ALTITUDE'].max()





# **Training Kmeans model for clustering** clustering\_Kmeans = KMeans(n\_clusters=6) clustering\_Kmeans.fit(train\_data)

# **Predicting the test data for SVM** pred=clustering\_Kmeans.predict(test\_data) print(pred)

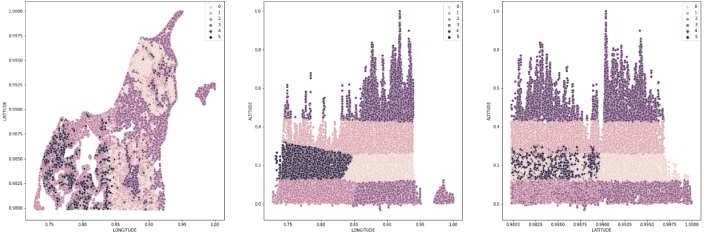
# # Clustering

plt.figure(figsize=(30,5)) plt.subplot(1,3,1)

sns.scatterplot(test\_data['LONGITUDE'],test\_data['LATITUDE'],hue=pred)

plt.subplot(1,3,2) sns.scatterplot(test\_data['LONGITUDE'],test\_data['ALTITUDE'],hue=pred)

plt.subplot(1,3,3) sns.scatterplot(test\_data['LATITUDE'],test\_data['ALTITUDE'],hue=pred)



# Learning outcomes (What I have learnt):

* **Kmeans clustering**

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

|  |  |  |  |
| --- | --- | --- | --- |
| Sr. No. | Parameters | Marks Obtained | Maximum Marks |
| 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |
|  |  |  |  |