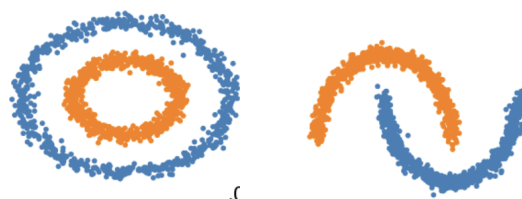

MATH 456 — Mathematical Modeling

Assignment #8: Clustering

Due Date: April 15, 2022, 11:59 PM

The goal of this HW is to cluster two typical synthetic data sets (double moons and double circles) using K-means and spectral clustering. First, you need to generate the following two data sets using `sklearn`.



Here are some codes you may need for generating the data.

```
from sklearn import datasets
x_1, y_2 = datasets.make_moons(200, noise=0.10)
x_1, y_2 = datasets.make_circles(200, noise=0.10)
```

Goal: Run the K-means and spectral clustering algorithm to this model and discuss your findings on the clustering results.

You need to implement K-means and spectral clustering algorithms using either Python or Matlab. If you choose the later, you could generate the data using sklearn and then implement the clustering algorithms using Matlab. You need to document your results in Word/PDF/Markdown/Jupyter Notebook. Upload the document along with the codes.