

# CS 564: Foundations of Machine Learning

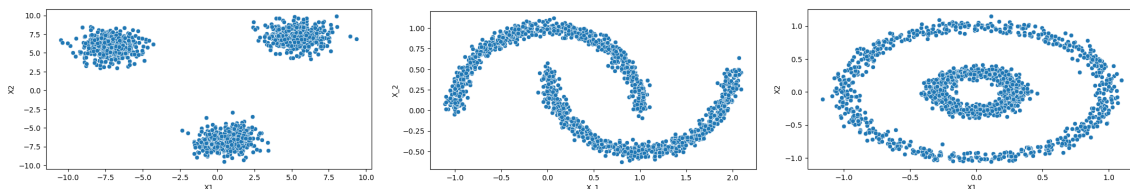
## Assignment 2

**Deadline: 13 September 2022**

- Markings will be based on the correctness and soundness of the outputs.
- Marks will be deducted in case of plagiarism.
- Proper indentation and appropriate comments (if necessary) are mandatory.
- Use of frameworks like scikit-learn etc is allowed.
- *All benchmarks(accuracy etc), answers to questions and supporting examples should be added in a separate file with the name 'report'.*
- *All code needs to be submitted in '.py' format.* Even if you code it in '.ipynb' format, download it in '.py' format and then submit
- You should zip all the required files and name the zip file as:
  - <roll\_no>\_assignment\_<#>.zip, eg. 1501cs11\_assignment\_01.zip.
- Upload your assignment ( the zip file ) in the following link:
  - <https://www.dropbox.com/request/Y7uWRDGgJj2uKkiOYDGi>

### Problem Statement:

- The assignment targets to implement DBSCAN algorithms to cluster the 3 datasets with blob, moon and circle structures. Each csv file consists of two columns in the datasets.
  - <https://www.dropbox.com/scl/fo/9jbpw1ah58jcvva5bzwdl/h?dl=0&rlkey=4ao0wdd9ipyvwuhpp0edvgic2>



### Implementation Steps:

- Design and implement DBSCAN algorithm to cluster the 3 datasets mentioned. Assume hyperparameters wherever necessary.
- Use [Silhouette index](#) to evaluate the clustering quality.
- Run dataset for the K-means algorithm implemented in assignment 1. Set the num\_clusters for K-means to the no. of clusters from DBSCAN. Compare it to DBSCAN in terms of cluster visualization and Silhouette index score.

**Documents to submit:**

- Model code
- Silhouette index
- Visualization of clusters for DBSCAN and K-means clustering

**For any queries regarding this assignment contact:**

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