

## DATA 55100: Unsupervised Machine Learning

### Assignment #5

**Submission:** Submit an electronic copy of a short report (2-5 pages) in Blackboard.

**Grading:** Your report is the most important part of this assignment. You need to program up the assignment, but your presentation, description and analysis is what I will grade!! In addition, you are allowed to use Jupyter IPython notebooks for analysis with documentation as a substitute for a Word document when writing the report.

**Description:**

In general, the goal of this assignment is:

1. Apply the **Fuzzy C-means (FCM) algorithm** on the **same datasets** you used in assignment #4.

Specifically, you are to:

1. Design and implement Fuzzy C-Means (FCM) algorithm on the same datasets you used in assignment #4.
2. Experiment with different C values (number of clusters), and q values (fuzzifier).
3. Compare the results you obtained for VAT and iVAT algorithms with the results you get after implementing FCM algorithm.

Your report should contain sections on:

1. The technical description of all techniques utilized
2. The design of the algorithms (pseudo-code, flowcharts, or some other structured descriptive means),
3. The results of the algorithms
4. An analysis of the results, i.e., did you obtain what you expected? Were there any surprises? What conclusions can you draw from the experiments? etc.
5. Well documented, structured, modular program listings.