

## DATA 55100: Unsupervised Machine Learning

### Assignment #7

**Submission:** Submit an electronic copy of a short report (2-4 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, **don't use any built-in packages** in MATLAB and Python. Instead **develop your own code** for all the algorithms and techniques we are going to study. 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:**

**Design and implement the Self-Organizing map (SOM)** for travelling salesman problem (TSM). Experiment with two different initial coordinates and different neighborhood sizes (i.e. +/- 2, +/- 1, and 0).

I have provided you with the Matlab code required to implement the TSM problem for +/- 2 neighborhood size. The name of that file is DATA55100\_TSP\_SOMs.m

Your report should contain sections on:

1. The technical description of the SOMs.
2. The design of the SOMs algorithm (pseudo-code, flowcharts, or some other structured descriptive means),
3. The results of the algorithm.
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.