**COMP 3710 Applied Artificial Intelligence**

**Seminar/Lab 5.**

**Genetic algorithm for TSP**

1. **Objectives**

* Genetic algorithm for TSP.

1. **Exercises for TSP Genetic Algorithm**

* Complete the posted exercise program.
  + Fitness values – Idea 3
  + Crossover – Idea 1
  + Mutation – Idea 1

1. **TSP Genetic Algorithm**

* Complete the posted program that solves TSP using genetic algorithm. You can use the functions in the above exercise program.
  + Cities
    - Cities have their ids: 0, 1, …, NO\_CITIES – 1.
  + Individual
    - A linear array of city ids. E.g., [2, 3, 1, 0, 7, 6, 5, 4] when NO\_CITES is 8.
  + Constants
    - NO\_CITIES
    - POPULATION\_SIZE
    - CROSSOVER\_RATE
    - MUTATION\_RATE
    - MAX\_GENERATION
    - CITIES – An array for city locations; (CITIES[i].x, CITIES[i].y) is the location of the city of id=i, where 0 <= i < NO\_CITIES.
  + Global variables
    - population – A linear array of individuals

1. **Assignment**
   1. You will be given roughly 1 assignment or 2 assignments every week to help you understand all the topics in the lectures. The title of the email should include your name, id, and COMP 3710.
   2. Submission 1

* The program in 3)
  + Due:
    - 11:59 pm, February 4, 2019 – with bonus 10%
    - 6:00 pm, February 6, 2019 – with the full marks
    - 6:00 pm, February 7, 2019 – with penalty 5%
    - 6:00 pm, February 8, 2019 – with penalty 10%
* Total marks: 10
  + - It is a good winning habit to complete whatever projects/assignments you start.
  1. You should NOT use any assignments submitted in the previous semesters.