**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.