**CS438 Introduction to Artificial Intelligence (Spring 2014)**

**Project 1 (5 Marks)**

**Given On: 24th Feb, 2014 Due On: 9th Mar, 11:59 PM**

Note: This is a group assignment. Please make sure that every member in a group equally participates.

Task

Implement Genetic Algorithms to solve 8-Queen Problem. This will consist of implementing the following.

* Representing states (or individuals) for the 8-Queen Problem and generating initial population. [0.5 Mark].
* Writing a function to determine fitness of a state. A fitness function should return higher values for better states. For the 8-queens problem we use the number of non attacking pairs of queens, which has a value of 28 for a solution. [1.5 Mark]
* Selecting two pairs for reproduction at random in accordance with the probabilities. This will include the probability based selection we discussed in the class. [1.5 Mark]
* Choosing a crossover point randomly from the positions in the string and creating the offspring by crossing over the parent strings at the crossover point. [1 Mark]
* Applying mutation [0.5 Marks]
* A state with fitness value of 28 will be the solution.

You can implement it in any programming language (C, C++ or Java).

E-mail me your code before the deadline. The name of the compressed file you will e mail should be “groupmember1ID\_groupmember2ID\_groupmember3ID.zip”.

In case you are using visual studio, please delete the debug folder before sending it as it contains the .exe which is blocked by most e mail servers.

There will be a detailed viva based on which marks will be awarded.