**COMP 3710 Applied Artificial Intelligence**

**Seminar/Lab 3.**

**Local search, and CSPs**

1. **Objectives**

* Use of local search for *n*-queens problem.
* Use of ‘Most-Constrained Variable First’ heuristic for a constraints satisfaction problem.

1. **Local search for 5-queens problem**

* Initial board

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Image result for queen  symbol |  |  |  |  |
|  |  | Image result for queen  symbol |  |  |
|  | Image result for queen  symbol |  |  |  |
|  |  |  | Image result for queen  symbol |  |
|  |  |  |  | Image result for queen  symbol |
|  |  |  |  |  |

A b c d f

2 1 1 2 2 = 8

* Show how local search can be used to find a solution. At each step, you need to show the evaluation of board. (Note that local search can be struck to a local optimum, i.e., not always solution.)

1. **CSP**

* Trace the operation of Most-Constrained Variables First (MCVF) for the 5-queens problem.
  + MCVF:
    - Most constrained variable: You can select a variable that has the least number of choices.
  + List **at least 10 steps**, or till a solution is found.
  + You need to show how next variables are selected.

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.
   2. Submission

* Submit a document for 2 and 3) by email. Any document that include hand drawn images will NOT be accepted.
  + The title of the email should include your name, id, and COMP 3710.
  + Due:
    - 6:00 pm, October 4, 2017
    - Any late submission will NOT be accepted. Even 1 second according to TRU email system.
* Total marks: 10 (= 4 + 6), where 4 marks for 2) and 6 marks for 3).