Artificial Intelligence

Program – The n-Queen Problem

Nov 22, 2018

Objectives

Practice and get familiar with the way to solve problem by searching. In this assignment you need to make use of the taught subject matters about Informed Search and Exploration (ch. 4) and Genetic Algorithm (ch. 4.3.5).

Program

Write programs (in C/C++/Java/Python) to solve **the n-queen problem**.

1. Use Hill Climbing (HC)
2. Use Genetic Algorithm (GA)

Report

Execute your codes of the above methods to solve the n-queen problem. Due to randomness, HC and GA require the statistics from 30 runs.

1. For the **8**-queen problem ($n = 8$):
   (a) List all the results (**average #attacks** in the final configuration) from the two methods.
   (b) Compare the **average running time** for the three methods to get a solution.
   (c) Compare the **success rate** (SR) of HC and GA.

$$\text{SR} = \frac{\text{Number of times to get the } \textbf{optimal} \text{ solution}}{\text{Number of trials}} .$$

2. What if the **50**-queen problem ($n = 50$) provided a 50×50 chessboard? Also answer the above questions.
3. Must describe your methods and list their parameter settings for the experiments.

Submission

- **2018/12/05 24:00 (degrade by 10 points for each day delay)**
- Source code + Report (no more than **six** A4 pages)
- Zip the files and **upload to iLMS**