

CS 534 Artificial Intelligence Assignment 1

Group 10

February 14, 2018

Group Member

Yixuan Jiao yjiao@wpi.edu Yinkai Ma yma7@wpi.edu Jiaming Nie jnie@wpi.edu Pinyi Xiao pxiao@wpi.edu

Content

1	\mathbf{N}	Q ueens	Problem	2
	1.1	Metho	odology	2
		1.1.1	Hill Climbing Algorithm	2
		1.1.2	A star Algorithm	2
	1.2	Write	Up Questions	2
		1.2.1	The size of Puzzle	2
		1.2.2	Effective Branching Factor	2
		1.2.3	Cheaper Solutions	2
		1.2.4	Solutions With Less Time Complexity	2
2	\mathbf{Urb}	an Pla	anning	2
2	Urb 2.1		anning odology	2 2
2			8	_
2		Metho	odology	2
2		Metho 2.1.1 2.1.2	odology	2
2	2.1	Metho 2.1.1 2.1.2	dology Hill Climbing Genetic Algorithm	2 2 2
2	2.1	Metho 2.1.1 2.1.2 Write	Hill Climbing	2 2 2 2 2
2	2.1	Metho 2.1.1 2.1.2 Write 2.2.1	Hill Climbing	2 2 2 2 2 2

1 N Queens Problem

- 1.1 Methodology
- 1.1.1 Hill Climbing Algorithm
- 1.1.2 A star Algorithm
- 1.2 Write Up Questions
- 1.2.1 The size of Puzzle
- 1.2.2 Effective Branching Factor
- 1.2.3 Cheaper Solutions
- 1.2.4 Solutions With Less Time Complexity

2 Urban Planning

- 2.1 Methodology
- 2.1.1 Hill Climbing
- 2.1.2 Genetic Algorithm
- 2.2 Write Up Question
- 2.2.1 Genetic Algorithm Mechanism

Selection The selection from a population is to select the individuals according to a probability sequence. The probability is determined by the score of each individual in a certain population.

In a certain population, the higher score will lead to the higher probability to be fetched.

Crossover

Elitism

Culling

Mutation

- 2.2.2 Program Performance
- 2.2.3 Effects of Elitism and Culling

Effects of Elitism

Effects of Culling

2.2.4 Selection and Crossover

Perform of Selection

Perform of Crossover