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Course - CSE 440

~~Ques~~

Quiz-03



Ans to the Ques No-01

Hill climbing search:

It is an algorithm. It is also known as greedy local search. It uses a loop that continuously moves in the direction of its increasing values. It terminates when a highest point is found.

Advantages of Hill climbing search:

1. This algorithm uses a limited memory space.

2. It is mostly used in large space.

Searching. ~~at~~ ⁱⁿ these kind of large algorithms by using this search we can get quicker and reasonable solution.

Disadvantages of Hill climbing Search:

1. Hill climbing search sometimes or mostly gets stuck in the local maxima/minima. For this ~~sometimes~~ cannot give an optimal solution.
2. It doesnot know when to stop the loop.
3. It doesnot know when to down climb.

Overcome these shortcomings/
disadvantages,

All the disadvantages can be overcome^{ed}
by randomly generating initial

moves. ~~It~~ It will be continue ~~until~~ until the goal/final state is reached. Moreover, sometimes giving wrong moves can find the best solution.

Ans to the Ques No-02

2.

Population-based Search:

It is also a ^{local} search algorithm.

This search based algorithm improve or develop multiple candidate solutions. It maintains an entire set of candidate solution. Each of the corresponding solution indicates to a unique point in the search space of the problem. It uses in population characteristics to

direct search. It includes evolution^{ary} computation and genetic algorithm.

Difference between population based and hill climbing search,

① The main and one and only noticeable difference is population based search algorithm keeps track with several numbers of states at a time. where hill climbing search can only keep track with just one state/condition.

Ans to the Ques No-03

3. Let, take the $n \times n$ chess board arrangement as $(c_1, c_2, c_3, c_4, \dots, c_n)$.

Now, we will check whether more than one Queen is on the same direction, if direction is negative;

For this, $i \in \{1, 2, 3, \dots, n\}$

$j \in \{1, 2, 3, \dots, n\}$

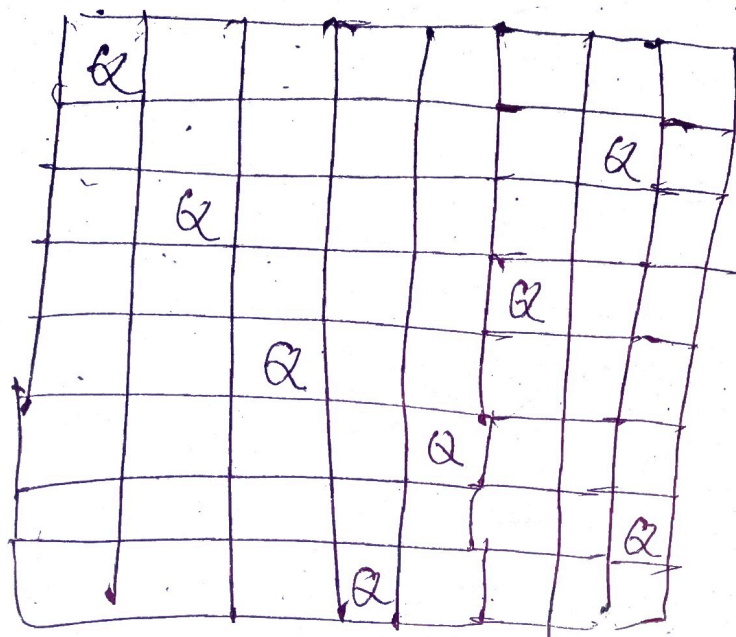
$[i \neq j]$

$$\therefore (c_i - i) = (c_j - j)$$

if direction is positive,

$$c_i + i = c_j + j$$

Crossover function,



crossover,
child 1 - will
get more similar
function as parent
1
and child 2 will get
more functions of
parent 2.

Randomly selected,
[8x8]

Parent 1 - 5 2 (3) 1 6 4 8 7

Parent 2 - 1 8 6 4 7 5 3 2

1 on the crossover, we are considering
first one child,
child - 8 7 (3) 1 6 4 5 2

Mutation, randomly selected values,

Before, 2 6 (8) 3 4 1 (7) 5

After, 2 6 (7) 3 4 1 (8) 5