2

There are three variations of hill climbing apart from the greedy version. They are:

1. Scholastic hill climbing : It chooses not only the best successor, it also allows to choose the better successors from all succession, not only parent as well. It allows to choose the better nodes with a probability of the goodness /quality of the selection. In Greedy hill climbing, it does not allow to take a node which is worse than the parent, if it approaches a node which is like that not best, it stops.

2. First choice hill climbing : It works best for huge branching factor problem. It generates the states one by one and ~~chooses the better nodes~~. if the generated node is better than the parent, it chooses. If not, it generates another and continues like this, which we can not see in the greedy version.

3. Random restart Hill Climbing: If it does not get fruitful result, it restarts again from another random state. The where, greedy version stops the procces although if it does not find a better node than the parent. As random restart tries again and again, it can get the optimal result where the greedy version can not.

9

1

We need to choose the value that slowly reduce the value of T. Here,

$T_k = \frac{T_k - 1}{1+\alpha}$. $\alpha = 0.3$

If $T_k = 1000$,

$T_k = \frac{999}{1+0.3} = 768.5$

$T_k = \frac{T_k - 1}{1+\alpha}$ $\alpha = 0.8$

$T_k = 1000$

$T_k = \frac{999}{1+0.8} = 555$

If T decreases very slowly, it will provide optimal results. Therefore, I will choose 0.3, as it decreases T more slowly than 0.8.

6

3

In local beam search, we randomly select K nodes, which are called population. We see the concept of population in Local beam search and Genetic algorithm. By choosing population of states, we get more optimum result, as we are approaching more than 1 state, the probability of getting to the goal node is better. As in Hill climbing and Simulated Annealing, we use single state, ~~but we don't need to manage~~ + By using population of states, it works parallely and passes the useful information, so others unfruitful nodes s' are not being considered then, and the process focuses on the where the grass is greener. which does not happen in single state. single state does not pass information to others. to to get better result.

✓ 5