DATE: PAGE:

Lab-5
Stimulated Annealing Algorithm

Step1: Initialize Parameters
(i) Set an initial ~~temperature~~ solution $\neq S$
(ii) Define an initial temperature T
(iii) Set cooling rate α ($0 < \alpha < 1$) and minimum temperature T_{min}
(iv) Define a maximum number of iterations per temperature

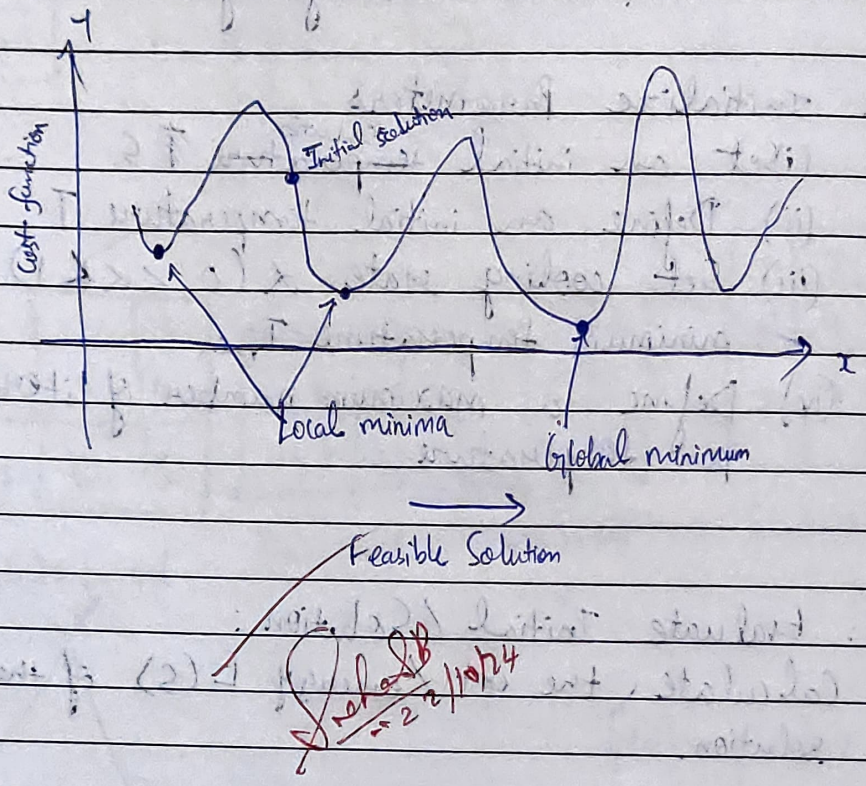
Step2: Evaluate Initial Solution:
Calculate the cost / energy $E(S)$ of the initial solution.

Step3: while ($T > T_{min}$)
For each iteration i in the maximum iterations:
(i) Generate a ~~new~~ neighboring solution S' by making a small random change to S
(ii) Calculate the $E(S')$ of the new solution
(iii) ~~Calculate~~ Calculate the difference in energy:
$\Delta E = E(S') - E(S)$
if $\Delta E < 0$:
Accept the new solution S' as your current solution S.
else if $\Delta E \geq 0$:
Calculate the probability of accepting the worse solution using:
$P = \exp(-\frac{\Delta E}{KT}) = e^{\frac{E(S) - E(S_{new})}{KT}}$
(iv) $T = \alpha T$

Step4: Stop the algorithm when the maximum no. of iterations or ~~temperature~~ lowest temperature is found.

DATE: PAGE:

Step 5: Return the best solution S^* and its cost $E(S^*)$



DATE: PAGE:

Output:

Iteration 0, Temperature 10.000, Best Evaluation 23.63658
Iteration 100, Temperature 0.099, Best Evaluation 9.01327
Iteration 200, Temperature 0.050, Best Evaluation 8.95495
:
:
:
Iteration 800, Temperature 0.012, Best Evaluation 8.95493
Iteration 900, Temperature 0.011, Best Evaluation 8.95493
Best Solution : [-0.0011933906597371077, 2.9846373180916399 4]
Best score : 8.954929764884854

Solved
-22/10/24