Artificial Intelligence Lab, B.Tech 4th Semester

Instructions

1. This is only for practice. No need to submit it.
2. Complete it by 12:00 PM today. Your completion will be reviewed by the Teaching Assistants.

Practice Assignment 6

1. Implement a Hill Climbing algorithm to find the maximum value of a given function within a specified range.

   Requirements:

   (a) Define a function f(x) for which the Hill Climbing algorithm will find the maximum value.

   (b) Implement the Hill Climbing algorithm to search for the maximum value of f(x) within a specified range.

   (c) Ensure that the algorithm terminates when it reaches a local maximum.

   (d) Experiment with different initial values and step sizes to observe their effects on the algorithm's performance.

2. Implement the Simulated Annealing algorithm to solve the Traveling Salesman Problem (TSP) for a given set of cities and their distances.

   Requirements:

   (a) Given a set of cities and their distances, define a function to represent the TSP objective.

   (b) Implement the Simulated Annealing algorithm to find the shortest tour that visits each city exactly once and returns to the starting city.

   (c) Experiment with different initial temperatures, cooling rates, and number of iterations to observe their effects on the algorithm's performance.