Artificial Intelligence Lab (CS 236)

Practice Assignment - 6

Instructions
1. This is only for practice. No need to submit it.
2. Your progress will be reviewed by the Teaching Assistants.

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 Travelling 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 a different initial temperature, cooling rate and number of iterations to observe their effects on the algorithm's performance.