CS6380 : Artificial Intelligence
Assignment 1

CS14B043
Harshal Gawai

The travelling salesman problem is one of the most-studied problems in combinatorial optimisation. It is regarded as 'The Holy Grail of Computer Science'.It couldn't be easier to state: Given a list of cities and their locations (usually specified as Cartesian co-ordinates on a plane), what is the shortest itinerary which will visit every city exactly once and return to the point of origin?

Simulated Annealing Algorithm for Traveling Salesman Problem

Simulated annealing (SA) algorithm is a popular intelligent optimization algorithm which has been successfully applied in many fields. Parameters' setting is a key factor for its performance.
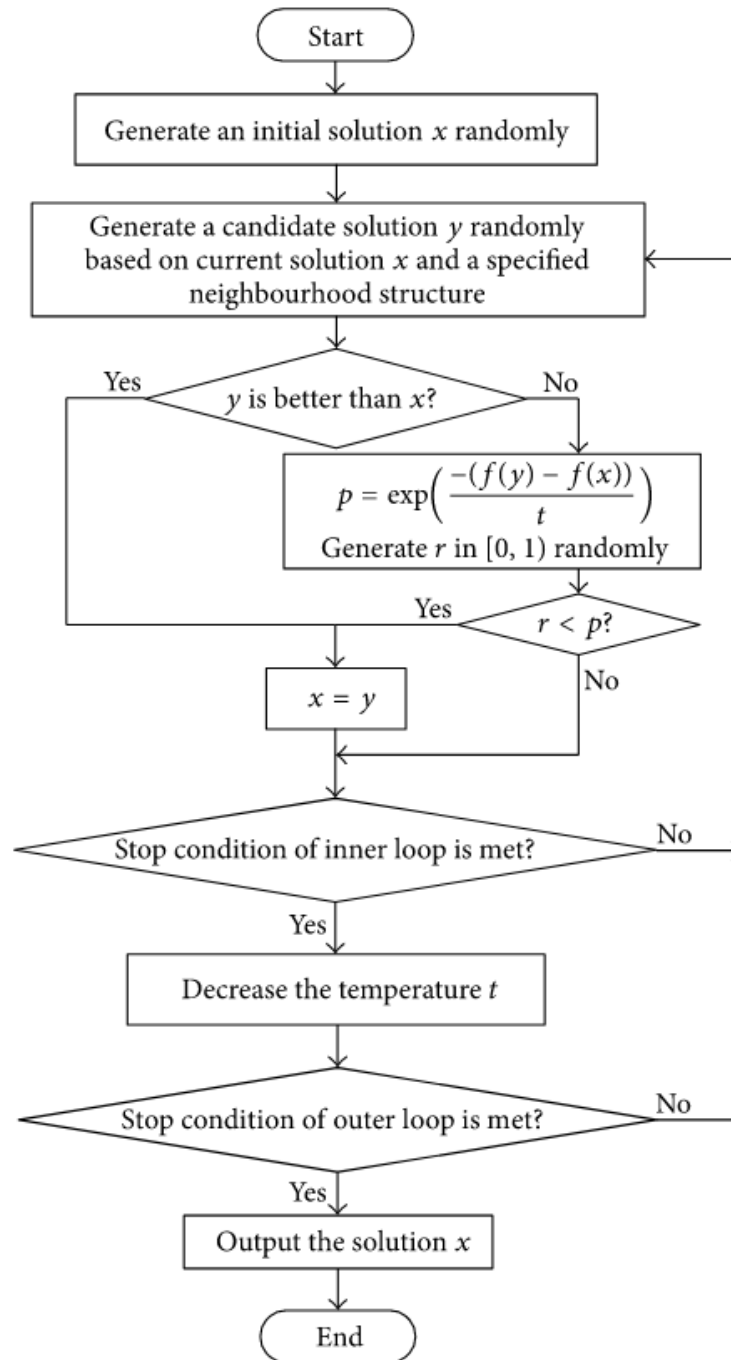It is a popular iterative metaheuristic algorithm widely used to address discrete and continuous optimization problems.
The key feature of SA algorithm lies in means to escape from local optima by allowing hill-climbing moves to find a global optimum.
TSP problem may be symmetric or asymmetric. Therefore both euclidean and non-euclidean ways of problem solving are addressed in this project.
In the asymmetric TSP, paths may not exist in both directions or the distances might be different, forming a directed graph. (Think as -- Traffic collisions, one-way streets, and airfares for cities with different departure and arrival fees are examples of how this symmetry could break down.)

Flowchart of simulated annealing algorithm.