

Task 1

Implement A* search techniques to assist a traveler in reaching his/her destination.

You can choose a suitable data structure to provide the following information to your program:

- List of cities
- The road network specifying the cities that are connected to each other with their respective distances
- Aerial distance of every two nodes

It is your choice to hard-code this information in your program or read it from an external file but your program logic MUST NOT be dependent on a particular dataset.

Given a current and a destination city, your program will find the shortest path between two nodes.

Task 2

Implement Hill Climbing and Simulated Annealing algorithm to find the global maximum of *Rosenbrock* function.

$$f(x, y) = (1 - x)^2 + 100(y - x^2)^2$$

Constraint your 'x' and 'y' to be in the range of [-1 2] and [-1 3] respectively (as shown in the graph below). Give different points as starting point and analyze the final results.

