

Genetic Algorithms

The Traveling Salesman Problem

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# Introduction

The travelling salesman problem (TSP) asks the following question: Given a list of cities and the distances between each pair of cities, what is the shortest possible route that visits each city exactly once and returns to the origin city? It is an NP-hard problem in combinatorial optimization, important in operations research and theoretical computer science.

In Machine Learning course, we were asked to resolve a TSP problem given fourteen latitudes and longitudes located in Burma, after some training on simple genetic algorithms problems. Those simple problems leaded us to imagine, create and test a solution for this problem

Our solution tends to test a lot of possibilities, we tested mutation, crossover, population size, mutation, crossover used, number of generations

# Our shortest path

0 : (16.47, 94.44)

1 : (20.09, 94.55)

2 : (20.09, 92.54)

3 : (22.39, 93.37)

4 : (25.23, 97.24)

5 : (22.0, 96.05)

6 : (21.52, 95.59)

7 : (20.47, 97.02)

8 : (19.41, 97.13)

9 : (17.2, 96.29)

10 : (16.53, 97.38)

11 : (16.3, 97.38)

12 : (14.05, 98.12)

13 : (16.47, 96.1)

