Project Report

On

Optimizing

Travelling Salesman Problem

Using

Genetic Algorithm

Submitted By –

Siddharth Bhadri(Reg. no. 149111620)

Suyash Khemka(Reg. no. 149111136)

Vaidehi Kabra(Reg. no. 149111680)

1. Objective

Travelling Salesman Problem is a NP Complete Problem which deals with finding the shortest set of path to cover all nodes exactly once. For a large number of nodes, finding an optimum solution for TSP is tough. Therefore, we take the help of Genetic Algorithm.

Genetic Algorithm has three parts:

* Selection
* Mutation
* Crossover

As the Genetic Algorithm eliminates some of the paths at every count, calculation for large numbers of nodes is easy and takes shorter time.

Parallelizing the process over CUDA makes use of the underlying GPU and helps further minimize the execution time.

1. Algorithm

* A specified number of paths are taken. Each Path is assigned to a thread.
* The total distance is calculated for each path and threshold value is applied to it.
* Mutation is applied to all the paths that are below the threshold value.
* This happens for a fixed number of counts.
* The path with the least total distance is calculated and given as the result.

1. Result

Thank You