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Machine Learning

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**Repeat Optimisation Assignment -
Report**

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Cork Institute of Technology

For this optimisation assignment, I was required to write a Python program to perform an optimisation algorithm. The optimisation problem in this assignment was the Travelling Salesman Problem.

I used simulated annealing to solve the problem. At the beginning of the program the coordinates are read from the file. There are two files: a small and large. The small contains 15 cities and the large contains 48 cities. The distances between all points are then calculated and put into a list.

To get an initial solution to the problem a “greedy algorithm” nearest neighbour is performed. The solution’s efficiency is then calculated. Simulated annealing can then be performed. When running simulated annealing each time the current solution is calculated. A temperature is assigned at the beginning. At the end of each iteration, the temperature is slightly decremented. To keep track of each efficiency a list of them is created.

Eventually at the end the optimum solution is found. A graph of the efficiencies is printed to show how it improved over each iteration. The optimum efficiency is printed along with the improvement over the initial solution’s efficiency.