Evolutionary Computation Theory and Application - Assignment 2: Traveling Salesman Problem -

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1 General Remarks

Please Follow those remarks. Deviating will lead to a reduced score

- Label your axis
- Include a descriptive, not covering legend in your plots
- Caption you images with a clear description
- Remember to name the file correctly
- Make sure that both team members submit the same file, with the same name
- Please make sure that all figures and lines are clearly readable

2 Solution

Parameter	**Value**
Population size	50
Crossover Rates	0.01, 0.1, 0.99, 0.5
Mutation Rates	0.01, 0.1, 0.99, 0.5
Repetitions	30
Generations	1000
Average best distance	69.277

Table 1: Table describing all relevant parameters for the experiment.

3 Results

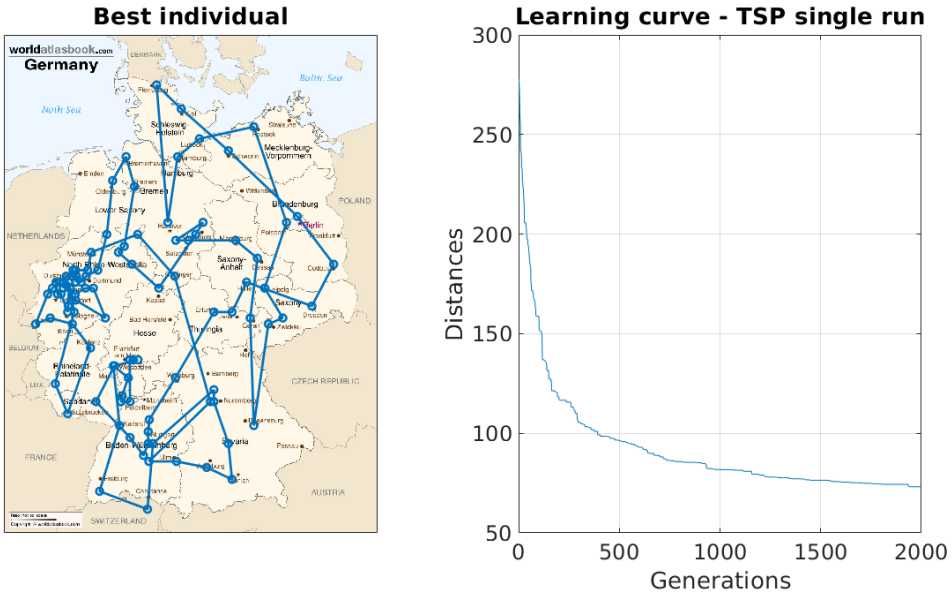

Figure 1: Graph for best fit

3.1 Different crossover rates

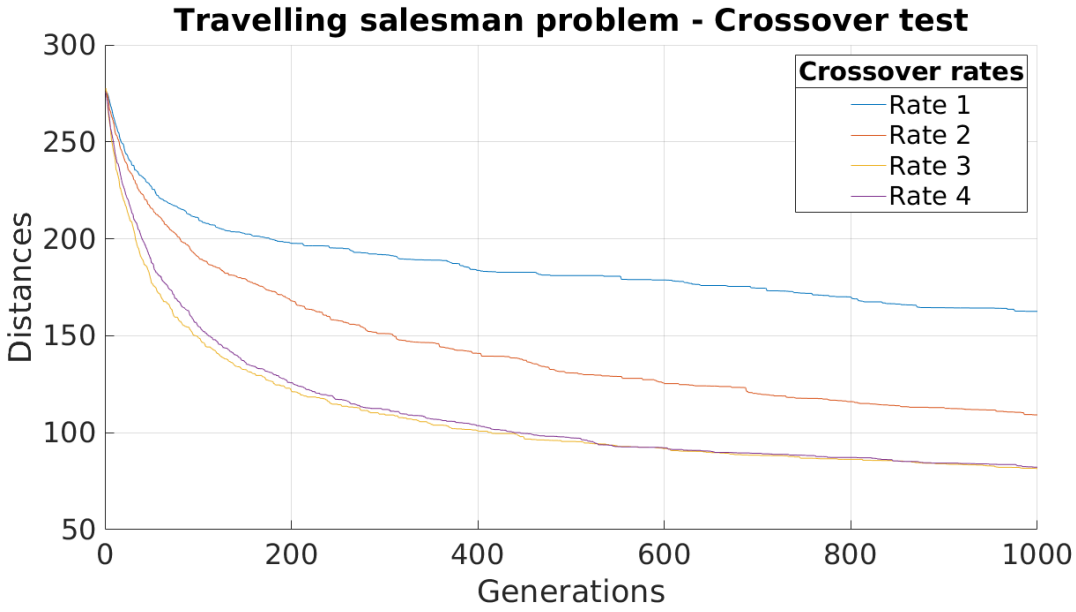

Figure 2: Graph for different crossover rates

- The different crossover rates (crossover probabilities) have been plotted as shown above. The graph indicates that the best result i.e the least distance that can be traveled is given by rate_3 i.e (99%) and the curve also gives the best result in rate_4 i.e (50%) . However, rate_3 converges better. Also indicated in the graph is for very low crossover rates, the learning curve does not converge to the best solution.
- Since, the provided rates contained extreme values i.e min and max rates. The fourth choice for the different rates was set to 50% i.e median value to check the behavior in the learning curve.

3.2 Different mutation rates

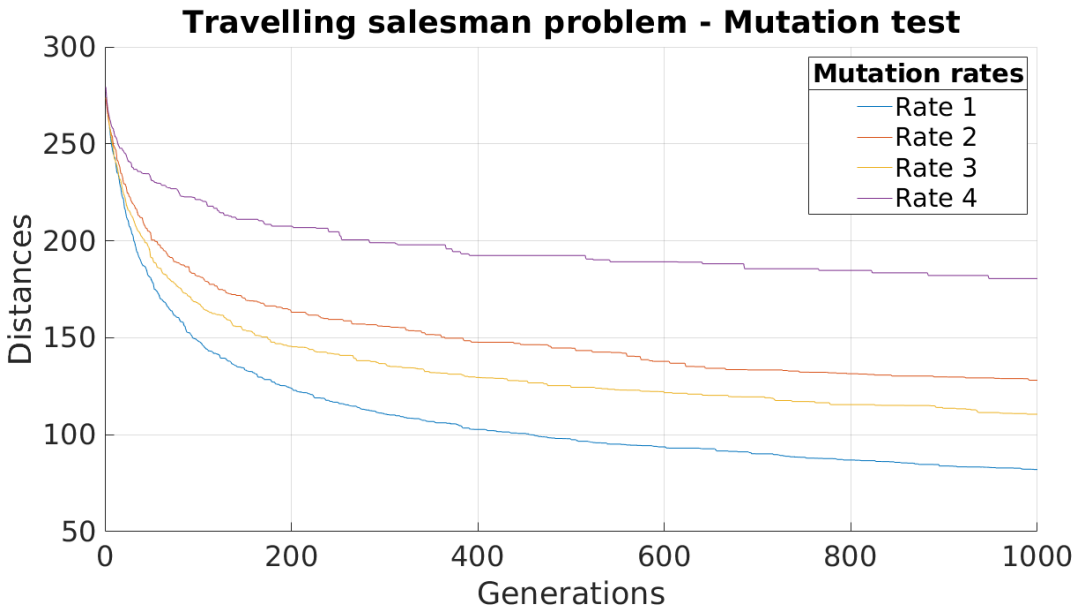

Figure 3: Graph for different mutation rates

- The different mutation rates (mutation probabilities) have been plotted as shown above. The graph indicates that the best result i.e the least distance that can be traveled is given by rate_1 i.e (1%). Also indicated in the graph is for very high mutation rates, the learning curve does not converge to the best solution.
- Since, the provided rates contained extreme values i.e min and max rates. The fourth choice for the different rates was set to 50% i.e median value to check the behavior in the learning curve.