Heuristic Opt. Techniques - Assignment 5+6 Report

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1   Assignment 5

1.1   Implementation

In the previous exercise, we developed a genetic algorithm. As stated in the previous report, our algorithm provided quite good results by itself. However, we wanted to improve the results by combining the genetic algorithm with local search.

Our genetic algorithm was implemented to be as simple and fast as possible. This allowed us to have a large population and compute a lot of generations. By incorporating local search, we want to improve the already very diverse solutions by reaching optimality in a certain neighbourhood.

Our Metaheuristic works in the follwing way: First, we execute the genetic algorithm to compute solutions. The best solution will then be used as a starting solution for local search. We can use any local search neighbourhood and step function from the previous exercises. Local search will be executed and the best solution from the genetic algorithm will be improved further. The result of the local search will be a solution that (if first improvement or best improvement is used as step function) is as least as good as the solution from our genetic algorithm and also a local optimum in a certain neighbourhood.

1.2   Experimental setup

1.3   Results + Runtimes

2   Assignment 6