

Lecture 6: Exercises

MSE Algorithms - Metaheuristics



* Relevant for Exam

* Task 1: Order-1 and Partially Mapped Crossover

- a) Apply Order-1 Crossover to the following two permutations, swapping positions 4-7 (in blue).
- b) Apply Partially Mapped Crossover to the following two permutations, swapping positions 4-7 (in blue).

P1: 1 4 2 **8 5 7 3** 6 9

P2: 7 5 3 **1 9 8 6** 4 2

Task 2: Genetic Algorithm for TSP

If you want to implement a meta heuristic for a certain problem, there are typically several implementations already available on the internet. In this exercise, your task is to evaluate and optimize one of these.

- a) Search an existing implementation of a Genetic Algorithm for TSP from the internet.
- b) Evaluate the performance and stability of the tool for various sample data (using e.g. the random generator for new solutions from the previous exercises)
- c) Experiment with various settings for the parameters of your system
- d) Apply your "best" setting for the selected algorithm to the standard instances of TSP (see Exercises of Lecture 2) and report your results at:

https://docs.google.com/forms/d/e/1FAIpQLSdUJNjQL0oymeKHRXhznQcUcK67Xh0mPD_bM2mOymg1kUDMfNQ/viewform?usp=sf_link