ECTA Homework 2
Traveling Salesman Problem

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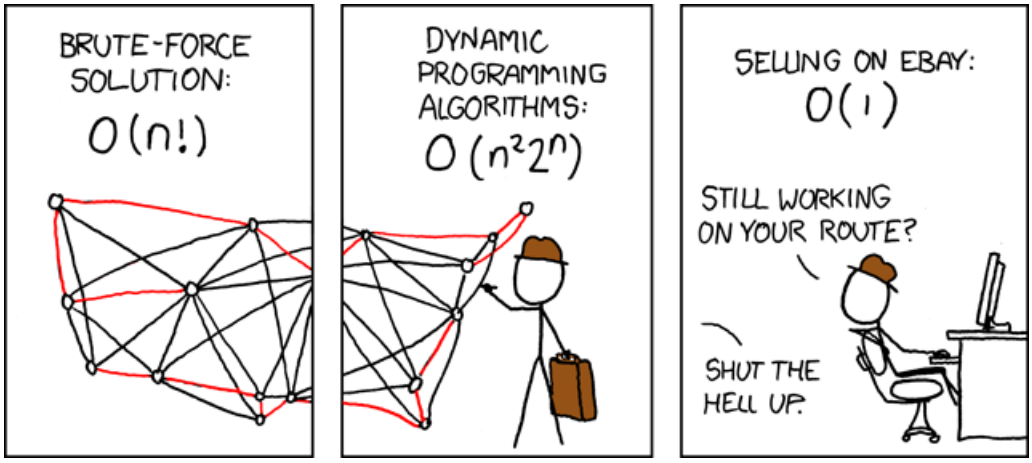

1 Assignment Description

Traveling Salesman Problem

1. Write a Genetic Algorithm to solve the Traveling Salesman Problem (TSP)
   - All cities visited once, coming back to the start city
   - 100 largest cities in Germany (data files on LEA)
   - Minimize the distance traveled
2. This time, to give you further insight into the inner workings of genetic algorithms we would like you to compare different mutation and crossover rates. Please use the plotting templates from the last weeks homework for your comparision. Use the parameters listed below for you comparision and explain the observed effects. Therefore please test and compare the effects of 4 different mutation rates and 4 different crossover rates.
3. Ensure a large enough sample for reliable results by repeating the experiments at least 30 times and reporting the median

- 1%
- 10%
- 99%
- A paramter of your own choice. Explain your choice and elaborate on it's behaviour

Figure 1: Parameters

2 Submission Instructions

Follow along with the instructions in this PDF, filling in your own code, data, and observations as noted. Your own data should be inserted into the latex code of the PDF and recompiled. All code must be done in MATLAB. The basic structure of the code and fitness function are provided, but all code should be submitted as a separate zipped file in LEA. Relevant sections of code can be inserted directly into this document using the mcode latex package. This package is attached with documentation, and in this document I have provided usage examples.

To be perfectly clear we expect two submissions to LEA:

1. 1 PDF (report) – a modified version of your submission PDF, with your own code snippets, figures, and responses inserted
2. 1 ZIP (code and data) – a .zip file containing all code use to run experiments (.m files) *and* resulting data as a .mat file
3. Make sure to follow the naming scheme HW_NUMBER_LASTNAME1_LASTNAME2.suffix
4. → A valid name would be HW_02_Smith_Fernandez.pdf
5. Use this name for the zip and the PDF!
6. Make sure both team members use the same filename!