Evolutionary Computation Theory and Application (ECTA) – Assignment 2: Traveling Salesman Problem and Multiobjective Optimization
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Assignment 2.1: Traveling Salesman Problem

Traveling Salesman Problem

- 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
- Test the effects of 2 different mutation and 2 different crossover methods
- Ensure a large enough sample for reliable results by repeating the experiments at least 30 times and reporting the median

Assignment 2.1: Traveling Salesman Problem

Traveling Salesman Problem - Hints

- Start with only a few (10) cities until you are confident it works
- Visualizing the solution will help you get that confidence
- Precompute the distances between all cities in a lookup table, even a simple computation adds up when it's done tens of thousands of times (This can be done with for loops, or MATLAB's *pdist* function)

Assignment 2.2: Traveling Salesman Problem

NSGA-II

- Implement the NSGA-II algorithm on a toy problem (shown in class)
    - Leading Zeros
    - Trailing Ones
- Visualize parent population at every generation

Assignment 2: MOO and TSP

The Report

- Every .m file used should include comments describing the code
- Every .m file should be accompanied by an autogenerated report
- Use Sections (started with %%) to create headings out of comments within the code
- TSP Report: Experimental Results with illustrative figures and texts describing those figures
- NSGA-II Report: Visualized parent poulation at 25%, 50%, 75%, 100% of maximum generations