CSCI 4560/6560 Evolutionary Computation

Assignment Number 2: Due 9/28/2023 by eLC

[100 points]

The Traveling-salesperson problem is stated as follows. Given a set of N cities, find a tour that minimizes the total distance traveled while visiting all the cities and returning to the point of origin. In this assignment you should use the locations of the cities in the file:

`cobweb.cs.uga.edu/~khaled/ECcourse/TSPDATA.txt`

and use Euclidean distance. The file has the X and Y coordinates of 127 cities.

Use an evolutionary algorithm to solve the traveling salesperson problem. You may download and use an existing EA or implement your own. You should try to find the shortest tour among the cities. The shortest known tour has length 118282. **Turn in a printout of your code and your solutions**. If you use an existing package, you should only turn in a printout of the parts you modify/introduce, such as the fitness function.

Note:

- You can use a package that supports permutation representation to solve the Traveling-salesperson problems. However, you cannot use a package or program written specifically to solve the Traveling-salesperson problems. **This will not be acceptable as you will not learn much.** If a package has a built in permutation example such as the N-Queens, you can modify the example to solve the Traveling-salesperson problem. In such case you need to modify the fitness function and possibly other settings and choice of operators.
- **You should also include a brief description of your problem formulation (representation, parenthood selection, mutation, crossover, survival selection).**