

MA 1600 – Travelling Salesman Project

Suggested Resources

To get you started, you might want to look at the following resources. You *will* want to enhance this list by searching for additional material.

- Section 15.1 in *Insight Through Computing*
- Wikipedia: http://en.wikipedia.org/wiki/Travelling_salesman_problem
- MIT OpenCourseWare slides: http://ocw.mit.edu/courses/sloan-school-of-management/15-053-optimization-methods-in-management-science-spring-2013/lecture-notes/MIT15_053S13_lec17.pdf

Necessary Project Components

1. Implement a direct/brute-force solution (i.e. try all permutations) to the travelling salesman problem. Include a semi-log plot that shows the computation time as a function of the number of cities (vertices) in your sample set.
2. Implement at least one greedy (heuristics) algorithm. One option is the “nearest-neighbor” approach, which chooses the nearest unvisited city as the next location. A second option is the “insertion” approach, – adding a city to the tour which has the least cost.
3. Implement at least one iterative algorithm that refines an initial guess. Some options include: the 2-opt (or pairwise exchange), a more general k-opt exchange, simulated annealing