

MS& E 315 PROJECT: 2004

The purpose of the project is to gain some experience in the difficulties of defining a problem, implementing an algorithm and interpreting output. Also to gain some appreciate that good optimization algorithms are necessary.

Consider the problem of providing services such as schools, fire stations or wireless hubs in a city. The issue at hand is where to place them. The assumption is that the shorter the distance to the nearest facility the better. Each point in the city is serviced by only one (the nearest) facility. Start by assuming you have a rectangular region and that demand from any point is uniformly distributed. Define distance as being euclidean. Pose the problem so that the number of facilities is an input parameter. Part of the project is to observe how effort increases as the number of variables increases. Also to see how large a problem your code can successful solve. Construct the voronoi disgram of your solutions.

<http://mathworld.wolfram.com/VoronoiDiagram.html>

<http://www.cs.cornell.edu/Info/People/chew/Delaunay.html>

Once you have posed and solved the above problem consider two extensions: other measures of minimum distance, nonuniform cost.

I am not interested in your code and it should not be part of your submission. Also you need to organize your output that you put in report in such a manner that it is not overwhelming. You need to include in your report how you confirmed you have the correct solution and how you checked the correctness of you code. The report is due in the final week of the quarter.