

ASSIGNMENT 5

Acknowledge your sources. Don't copy. Please hand in your assignment on paper.

This assignment is on Delaunay triangulations and line arrangements.

1. Give an $O(n \log n)$ time algorithm for the following problem. The input is a set S of n points in the plane and a distance threshold $d > 0$. Partition S into a maximum number of disjoint subsets S_1, S_2, \dots, S_k such that the minimum distance between two points from different subsets is strictly greater than d .
2. Let \mathcal{A} be a line arrangement of n lines in the plane. Let B be the union of all the bounded cells of the arrangement. Show that the boundary of B has $O(n)$ edges of the arrangement. (In the figure below B is shaded and its boundary has 9 edges of the arrangement.)

