

Programming Assignment (optional)

due: January 18th, 2017, 23:59

Exercise: Given a real parameter $r > 0$ and a set P of n points in the plane, find the disc of radius r that covers the maximum number of points in P . Implement an $O(n^2 \log n)$ algorithm to solve the problem.

The program needs to produce the exact solution. If there is more than one solution with the same maximum number of points, then the disc with the lexicographically smallest center should be output.

A demo program that constructs an arrangements of circles using CGAL, as well as further technical details about the program and the submission will be provided in the course website.

Your implementation will be benchmarked for time efficiency and the results will be published in the course website.

There will be a competition for efficiency among all the submissions. For the competition you can submit any (C++) implementation abiding by the rules of input/output and for that you can implement **any algorithm of your choice** as long as it is $o(n^3)$. If you submit a different implementation for the competition make sure to explicitly indicate this.

References

- [1] Efi Fogel, Ron Wein, and Dan Halperin. *CGAL Arrangements and Their Applications, A Step-by-Step Guide*. Springer, 2012.