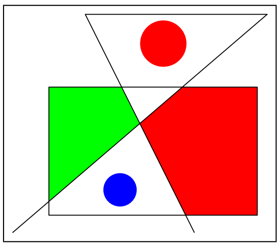
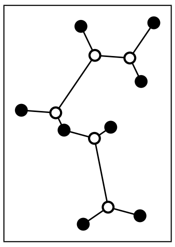
Tues 10:20–10:33
3A, room 054, #33

Bottleneck Distances and Steiner Trees

Don Sheehy, Peyman Afshani, Yannik Stein





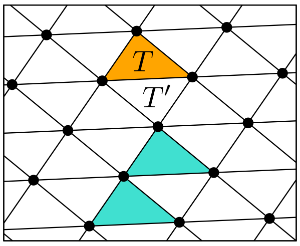
An s-workspace algorithm is an algorithm that has read-only access to the values of the input and only uses $O(s)$ additional words of space. We give a randomized s-workspace algorithm for triangulating a simple polygon P of n vertices, for any s in the range between $s = \Omega(\log n)$ and $s = O(n)$. The algorithm runs in $O(n^2/s)$ expected time.

We extend the approach to compute other similar structures such as the shortest-path map or the shortest-path tree from a point $p \in P$, or a partition of P using only diagonals of the polygon so that the resulting sub-polygons have $\Theta(s)$ vertices each. We extend the approach to compute other similar structures such as the shortest-path map or the shortest-path tree from a point $p \in P$, or a partition of P using only diagonals of the polygon so that the resulting sub-polygons have $\Theta(s)$ vertices each.

Tues 10:20–10:33
3A, room 054, #33

Curves with Increasing Chords and Curves with Increasing Chords and Curves with Increasing Chords and Curves with Increasing Chords and an Overly Long Title

Boris Klemz, Günter Rote



We consider the following two problems:

(a) Floodlight illumination: We are given n infinite wedges (sectors, spotlights) that can cover the whole plane when placed at the origin. They are to be assigned to n given locations (in arbitrary order, but without rotation) such that they still cover the whole plane.

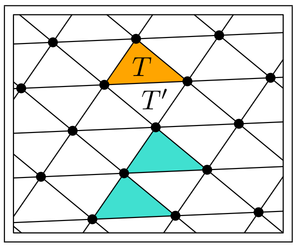
(b) Convex partition: We are given a convex m-gon P and a finite set of points S from the interior of P, and m positive integers s_i with $s_1 + \cdots + s_m = |S|$. We want to partition P into m convex parts. The i-th part should contain the i-th edge of P and n_i points of S.

We will show that these two seemingly quite different problems can be solved in a uniform way by a reduction to a minimum-weight bipartite matching problem.

Tues 10:20–10:33
3A, room 054, #33

Some Interesting Results about Recent Progress and Regress

First Author, The Speaker, Günter Rote, Fourth Author



We consider the problem of floodlight illumination: Illuminate a lecture hall with the smallest possible number of floodlights. I will illustrate the problem with amazing powerpoint animations. I will bring flashlighs to the talk and with my coauthors, we will demonstrate our approach with interactive game that involves the audience.

The thumbnail figure contains already a surrounding box. It would have been appropriate to use the command `\FigureBorderfalse`.