05-H-05

Delaunay Triangulation

Construction

- Strategies

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Deterministic Algorithms

❖ Duality with Voronoi Diagrams

Actually, by constructing VD(S) before applying a dual transform,

DT(S) can be computed in $O(n\log n)$ + $O(n)$ = $O(n\log n)$ time

❖ Divide & conquer

- L. Guibas and J. Stolfi, 1985
- R. A. Dwyer, 1987

❖ Plane sweeping

- S. Fortune, 1987

Brute-Force + Randomization

- The evolution process based on edge-flip gives a naive algorithm
  - First, simply build an initial triangulation
  - Repeat applying edge-flip
    to triangle neighbors violating the empty circle property
  - until the empty circle property holds everywhere
- Unfortunately
  - no good bounds are known on the number edge flips required, and
  - no good strategies are known for selecting an edge to flip
- We will refine this algorithm by randomization next ...