Delaunay Triangulation Spanner Notes

Simon Pratt

March 20, 2013

Dobkin's Results

The Delaunay triangulation of a set of points in the plane is a spanner with spanning ratio $c \leq ((1+\sqrt{5})/2)\pi \approx 5.08$. This was proven in the paper "Delaunay Graphs Are Almost as Good as Complete Graphs" by Dobkin, Friedman, and Supowit [1] [2].

[1] David P. Dobkin, Steven J. Friedman, and Kenneth J. Supowit. Delaunay graphs are almost as good as complete graphs. In *Proceedings of the 28th Annual Symposium on Foundations of Computer Science*, SFCS '87, pages 20–26, Washington, DC, USA, 1987. IEEE Computer Society

[2] David P. Dobkin, Steven J. Friedman, and Kenneth J. Supowit. Delaunay graphs are almost as good as complete graphs. *Discrete Comput. Geom.*, 5(4):399–407, May 1990

Introduction

Let S be a set of points in the plane and $DT(S)$ be the edges of the Delaunay triangulation of S. Let a path along the Delaunay edges be a *direct DT path*.

One-Sided Path: The Easy Case

If all edges along the direct DT path between points $a, b \in S$ are either all above or all below the line connecting a, b, we say that this is a one-sided path.

The Harder Case

Blah blah blah, blah blah blah blah. Blah blah blah, blah blah blah blah. Blah blah blah, blah blah blah blah.

Keil's Results

Blah blah blah, blah blah blah blah. Blah blah blah, blah blah blah blah. Blah blah blah, blah blah blah blah.

References

[1] David P. Dobkin, Steven J. Friedman, and Kenneth J. Supowit. Delaunay graphs are almost as good as complete graphs. In *Proceedings of the 28th Annual Symposium on Foundations of Computer Science*, SFCS '87, pages 20–26, Washington, DC, USA, 1987. IEEE Computer Society.

[2] David P. Dobkin, Steven J. Friedman, and Kenneth J. Supowit. Delaunay graphs are almost as good as complete graphs. *Discrete Comput. Geom.*, 5(4):399–407, May 1990.