User Guide

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1 Introduction

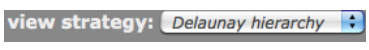
This documents is intended to be an user guide for the point location javascript software, and is organized as follow: Section 2 describes the software's functionalities, whereas Section 3 describes its standard use case.

2 Software Functionalities

Input. Building the Delaunay triangulation of a set of points; the input set can be chosen amongst several random, realistic, and synthetic point sets. You can additionally choose the number of points in the triangulation (plus four starting points, one at each corner of the display).

Queries. Generating a custom or random query point. Random query points are generated by pressing the Query button, and custom query points are generated by simply mouse clicking inside the triangulation domain.

Spatial Coherence. Choosing the spatial coherence of random query points; The options are weak, normal, and strong; selecting one of them can be done by choosing the appropriate option in the Spatial Coherence select box.

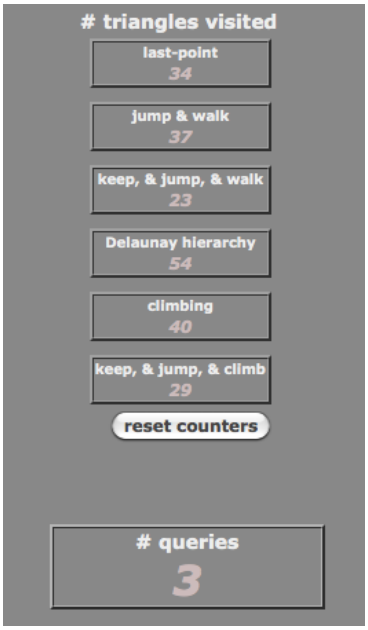


Strategies. Visualizing six different strategies working in order to retrieve the current query point. Choosing and switching between strategies can be done by selecting the appropriate option in the View Strategy select box.

Size of Hierarchy. Choosing the size of the hierarchy. The options are normal, big, and huge size; selecting one of them can be done by choosing the appropriate option in the HIERARCHY select box. Note: For pedagogical purpose, the hierarchy sizes used here are a bit too high; this is because theoretically optimal hierarchy size for small sets is too small to obtain any good depiction.

View. Choosing between the standard 2D view (*normal*), or the hierarchical view (*hierarchy*); the later is more appropriate for the strategies that are based on hierarchy, while the former is more appropriate for the strategies that are not based on hierarchy.

Vertices and Edges. Viewing/Hiding vertices and edges can be done by choosing the appropriate options in the SHOW VERTICES and SHOW EDGES check boxes.



Counters. Counting the number of triangles visited per strategy (a rectangle per strategy), and the number of queries (big rectangle). There is also a RESET button in order to reset all the counters.

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3 Software Use: A Typical Flow

1 Choose a point set by selecting a kind of input in the Point Set select box, and the number of points.

2 Hit the Query button, or the display; this produces a query.

3 Visualize how different strategies handle the query by selecting the appropriate strategy in the View Strategy select box.

4 See the statistics at the right. There are several counters; see Section 2.

5 Repeat this process by selecting several queries in sequence, and see the statistics in the counters.

6 Reset the counters by pressing the Reset button.

7 Choose other values for spatial coherence and hierarchy size in their select boxes; see Section 2.

8 Repeat these last three steps in sequence.

Obs. When choosing a lot of input points (more than 4000), a better depiction can be obtained by hiding the edges and/or vertices (below the View select box). If you intend to generate point sets with many points, we have observed different performances depending on the browser. By decreasing performance, we recommend safari, google chrome, and firefox.