Computational Geometry Column 19

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Abstract

The computational geometry community bibliography is described.

1 History of Bibliography

Herbert Edelsbrunner started a bibliography of papers in computational geometry in the early 1980's. After merging his and van Leeuwen's list with a list of Guibas and Stolfi, and making other updates, he released it to the community in 1987. At that time, Edelsbrunner conceived of a utopian community-owned and -maintained bibliography, and solicited support for his idea [Ede87]. Pessimists will be surprised to learn that, five years later, the bibliography is thriving. After stewardship by Edelsbrunner, and then briefly by myself, it has been managed for the past two years by Bill Jones at the University of Saskatchewan. It is distributed electronically by anonymous ftp, and updated three times a year by the community, who send their additions and corrections in a special form to Jones, who then merges them into the bibliography and announces availability.

2 Format of Entries

The latest (January 1993) release of the bibliography includes 4,273 entries, ranging from Dirichlet's 1850 paper on Voronoi diagrams to 77 entries dated 1993 (which is only one month old as I write this). The number of entries in each publication year since 1970 are shown in Fig. 1. Of course the drop in 1992 and 1993 is an artifact of the collection process!

Each entry is in BibTeX format, to permit easy incorporation into LaTeX documents. Software is provided to convert to and from "refer" format; in fact this software was used to convert to BibTeX a year ago.

A typical entry looks like this:

```
@article{e-cgc1-87
, author =    "H. Edelsbrunner"
, title =     "The computational geometry column"
, journal =   "Bull. EATCS"
, volume =    31
```

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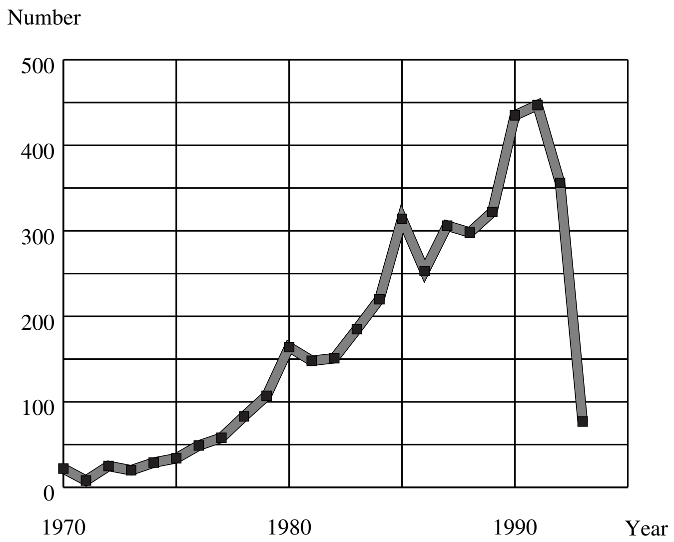

Figure 1: Number of papers per year in the bibliography.

```
, year =      1987
, pages =     "111--114"
, keywords =  "column, bibliography"
, annote =    "Announcement of community bibliography."
}
```

This entry produces the reference to Edelsbrunner at the end of this paper. Not all entries contain the `keywords` or `annote` fields, but contributors are encouraged to use them. Jones has detailed conventions for abbreviations and other formatting issues for each of the fields.

3 Typical Usage

Although a beautiful Postscript version of the bibliography is available, complete with author crossreferencing, I find the electronic version most useful. Each time I write a paper, I prepare a BibTeX file for its references. Now that the community bibliography ("geom.bib") is so extensive, I always look for a reference there first. If I find it, I copy out the entry and save myself typing. If it is not in the bibliography, then I prepare an entry in the above style and add it to my local copy of geom.bib. Every four months Jones collects updates, and I mail him the "difference" between my augmented geom.bib and the original. Others in the community do the same. And the bibliography grows painlessly.

4 Bibliography Queries

Although one can search through the bibliography with standard editing tools (such as the Unix "grep"), Jeff Erickson wrote a interactive database query program ("biblook") specifically for BibTeX bibliographies. The most common queries I use are simple: "f t retract*" **f**inds the two papers in the bibliography whose **t**itle contains a word whose prefix is **retract**; "f k steiner or t steiner" **f**inds 45 papers which have **steiner** as either a **k**eyword or in the **t**itle. More complex queries are possible.

5 Database

Although the database is by no means complete, it is large enough to permit the curious to explore. Sharir is an author or coauthor of 162 papers. 57% of all entries are coauthored; the average entry has 1.9 authors.

Trends are discernible, although they may be biased by the interests of the most active bibliographers. Fig. 2 shows that Voronoi diagram and Delauany triangulation papers (crudely measured by the presence of either "Voronoi" or "Delaunay" in the title) represent about 8% of all papers in recent publication years, that visibility papers grew to about 4% of all papers in the mid 1980's, and that randomization has taken off in the 1990's.

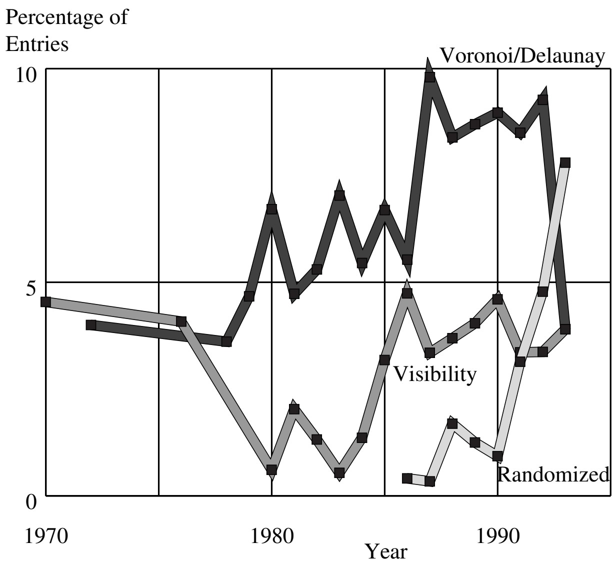

Figure 2: Percentage of all entries whose titles include "Voronoi" or "Delaunay", "visib," and "randomiz" or "Las Vegas."

6 ftp Information

The bibliography and related software are available from cs.usask.ca in the file pub/geometry/geombib.tar.Z. See the file pub/geometry/ftp-hints for hints on ftp'ing.

References

[Ede87] H. Edelsbrunner. The computational geometry column. *Bull. EATCS*, 31:111–114, 1987.

(Written 3 February 1993)