Guest Editor's Foreword

For this special issue, six papers from the Eleventh Annual Symposium on Computational Geometry in Vancouver were invited (from one paper an additional short note was detached). All contributions were refereed according to the usual standards of the journal.

Agarwal and Sharir supply a new combinatorial bound for the vertical decomposition of certain diagrams. Applications of the result include improved time bounds for solving optimization problems such as computing the width of a point set in $3d$ or determining the minimum-width annulus covering a planar point set.

The paper by Aichholzer and six coauthors emerged from two independent discoveries of (and around) the following beautiful fact: For any two triangulations of the same planar point set there exists a matching between edges, so that each edge in one triangulation is matched either to the identical edge in the other triangulation, or to an edge that crosses it.

Chan contributes new algorithms with improved output-sensitive time bounds for convex hull construction. The optimal methods in two and three dimensions are amazingly simple, and they are described in a separate note.

Erickson presents lower bound arguments for Hopcroft's problem: Given n points and m hyperplanes in d -space, is there any point contained in any hyperplane? He argues that—within the framework of currently used partitioning based methods—the known upper time bounds in the plane for the problem are close to optimal.

Pocchiola and Vegter develop a new algorithm for computing visibility graphs. It ensures optimal time and optimal working space. It is based on the new concept of pseudotriangulations.

Finally, Tagansky introduces a new probabilistic technique (a variant of the Clarkson–Shor method) for the analysis of arrangements. The method is simple and allows for improvements in combinatorial bounds (complexity of lower envelopes, single cells, vertical decomposition). It has already proven useful in other instances.

The collection of papers at hand does not reflect the full spectrum of the symposium—a selection of more experimental and application oriented papers appears in the journal *Computational Geometry: Theory and Applications*.

I wish to thank the authors, referees, and last but not least my secretary in Berlin, Bärbel Bruder, for their cooperation and assistance in the preparation of the special issue.

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