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Computational Geometry and its Applications

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Hartmut Noltemeier
Lehrstuhl für Informatik I, Universität Würzburg
Am Hubland, D-8700 Würzburg, Federal Republic of Germany

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PREFACE

The International Workshop CG'88 on "Computational Geometry" was held at the University of Würzburg (West Germany), March 24-25, 1988.

Previous meetings of a smaller and much more regional kind were organized 1983 in Zürich (J. Nievergelt), 1984 in Bern (W. Nef, H. Bieri) and 1985 in Karlsruhe (A. Schmitt, H. Müller).

As the interest in the fascinating field of Computational Geometry and its Applications has grown very quickly in recent years we felt the need to have a workshop, where a suitable number of invited participants could concentrate their efforts in this field to cover a broad spectrum of topics and to communicate in a stimulating atmosphere.

This workshop was attended by some fifty invited scientists. The scientific program consisted of 22 contributions, of which 18 papers with one additional paper (M. Reichling) are contained in the present volume.

The contributions covered important areas not only of fundamental aspects of Computational Geometry but a lot of interesting and most promising applications:

Algorithmic Aspects of Geometry
Arrangements
Nearest-Neighbor-Problems and Abstract Voronoi-Diagrams
Data Structures for Geometric Objects
Geo-Relational Algebra
Geometric Modeling
Clustering and Visualizing Geometric Objects
Finite Elements Methods, Triangulating in Parallel,
Animation and Ray Tracing
Robotics: Motion Planning, Collision Avoidance
Visibility
Smooth Surfaces
Basic Models of Geometric Computations
Automatizing Geometric Proofs and Constructions.

The scientific program was accompanied by presentations of some Graphics- and CAD-software systems (University of Karlsruhe and Würzburg) which attracted similar interest to the demonstration of a computer assisted course on "Geometric Algorithms" (by Th. Ottmann and his coauthors, University of Freiburg).

I am very indebted to all participants of the workshop and especially to all contributors to this volume.

Thanks are also due to Hugo Heusinger, who carried much of the burden of preparing the workshop, and to all my fellows and staff members of Lehrstuhl für Informatik I, who did their best for a smooth local organization.

Last but not least I owe thanks to Springer-Verlag and to Dr. Hans Wössner for their support.

Würzburg, July 1988 Hartmut Noltemeier

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