

## Guest Editors' Foreword

Micha Sharir, with his deep geometric and algebraic insights and an uncanny ability to extract the essence of a problem, has been a key player in advancing, maturing, and broadening the field of discrete and computational geometry. It gives us great pleasure to edit this special issue in honor of his 50th birthday.

Micha obtained his Ph.D. in mathematics in 1976 from Tel Aviv University. As an Assistant Research Professor at the Courant Institute, New York University, he pursued research in programming languages and compiler optimization. His close association with Jack Schwartz at the Courant Institute stimulated his interest in robotics, which eventually led him to computational geometry. In 1980 Micha returned to Tel Aviv University, where he is now the Nizri Professor of Computational Geometry and Robotics. In Tel Aviv he has served as Chair of the Department of Computer Science for four years, Head of the School of Mathematical Sciences for two years, and Director of the Herman Minkowski Center for Geometry for a year.

A recipient of several prestigious awards, including a Max-Planck Research Prize in 1992, a Doctor Honoris Causa degree from the University of Utrecht in 1996, an ACM fellow in 1997, and a Feher Prize in Computer Science in 1999, Micha has written one book and has published over three hundred papers in distinguished journals and international conferences. Even more important, he has pioneered many areas and introduced several techniques. To name a few:

- His series of papers with Jack Schwartz on the “piano movers’ problem,” especially *On the Piano Movers’ Problem: II. General Techniques for Computing Topological Properties of Real Algebraic Manifold*, initiated the area of algorithmic motion planning and added a new dimension to computational algebra.
- His papers on “Davenport–Schinzel Sequences” introduced and popularized an elegant technique to analyze geometric algorithms.
- His on-going work on arrangements and random sampling has provided a new set of tools to exploit geometric, combinatorial, and topological structures for developing efficient geometric algorithms.
- His investigations of combinatorial and topological properties of various geometric structures have broadened computational geometry beyond the polygonal world to the world of curved objects.

The range of journals in which Micha has published, from *Transactions of the American Mathematical Society* to *ACM Transactions on Programming Languages and Systems*, from *Journal of ACM* to *International Journal of Robotics Research*, is a testimony to the breadth of his work. Micha thrives on collaborating and sharing his ideas with others—he has had over ninety co-authors!

Micha has served on the editorial boards of several journals and many scientific committees. He has supervised thirteen Ph.D. and seventeen M.S. students, many of whom have gone on to make significant contributions to the field.

The editors of this collection have been fortunate to know Micha well. We have been strongly influenced by his work and his mathematical philosophy. Many of the authors represented in this special issue have been close friends and colleagues of Micha and their work has been influenced by Micha's unbounded energy, generosity, and deep insights.

We had organized a workshop on June 11, 2000, in Hong Kong University of Science and Technology, Hong Kong, in honor of Micha's 50th birthday, and we had invited a number of his long-time collaborators to speak at this event. We requested the speakers of the workshop as well as other close collaborators of Micha who could not attend the workshop to submit papers to this volume. Later, another paper, addressing a problem very dear to Micha, was included in the volume; it was inspired by a talk that Micha gave last year.

We thank the authors for submitting their papers to this special issue and the reviewers for their hard work. We are grateful to Springer-Verlag and to Eli Goodman, coeditor-in-chief of *DCG*, for making this special issue possible.

On behalf of the friends of Micha, we wish him the very best, thank him for all his tangible and intangible contributions, and look forward to his next theorems.

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Dan Halperin  
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