Guest Editor's Foreword

This special issue of *Discrete & Computational Geometry* contains a selection of six papers whose preliminary versions appeared in the theoretical track of the *Sixteenth Annual Symposium on Computational Geometry* held June 12–14, 2000, at Hong Kong University of Science and Technology, Hong Kong. These papers display a wide range of topics and illustrate a rich variety of combinatorial, algorithmic, probabilistic, and algebraic techniques.

Tóth describes a configuration of n points in the plane with many k -sets—a set of k points that can be separated from the remaining $n - k$ by a line. His construction provides the first improvement in the 30-year old lower bound by Lovász.

Sharir, Smorodinsky, and Tardos obtain an improved upper bound on the maximum number of k -sets in a set of n points in 3-space.

Wagner and Welzl prove an upper bound on the probability of the origin lying inside the convex hull of a set of n random points chosen independently from some distribution. They establish an elegant relationship between this problem and the Upper Bound Theorem for the maximal number of faces in the convex polytopes with a given number of vertices.

Chazelle and Lvov obtain lower bounds on the hereditary discrepancy of a set system as a function of the trace of its incidence matrix. Their result leads to new lower bounds on certain off-line range-searching problems.

Ramos proposes an optimal deterministic algorithm for computing the diameter of a point set in 3-space, thereby settling a long-standing open problem. His algorithm is not only faster than the previously known deterministic algorithms for this problem, but it is also considerably simpler than some of the recent algorithms. An optimal randomized algorithm was proposed in 1988 by Clarkson and Shor.

Amato, Goodrich, and Ramos present a randomized algorithm for triangulating a simple polygon whose expected running time is linear. Using the random-sampling technique in a clever way, they present an algorithm that is simpler than the deterministic algorithm by Chazelle.

I enjoyed editing this special issue, and I thank the authors for agreeing to submit the full versions of the papers and the referees for reviewing the papers carefully and promptly.

Pankaj K. Agarwal
Guest Editor