Preface

This volume contains the papers presented at the workshop on "Integrated Spatial Databases: Digital Images and GIS" (ISD'99) held in Portland, Maine, on June 14-16, 1999. Its scope was to address the integration of digital images and GIS, and the many research issues related to this challenge.

The *need* for this integration is dictated by modern decision-making processes, which are becoming increasingly aware of the spatial nature of data, and by the expanding demand for up-to-date, easily accessible spatial information for everyone. As a result, this need brings forward several issues that have to be addressed by the relevant scientific communities. The necessity of ensuring the spatial and temporal validity of spatial databases, of improving and expanding geospatial analysis capabilities, and of addressing the integration of huge volumes of multiple versions and types of spatial information are but a few of these issues.

The *potential* for integration on the other hand has recently become much more apparent and feasible. In addition to the obvious compatibility of digital imagery and GIS, this potential is supported by concurrent rapid advancements in a variety of fields, especially digital image analysis, geographic information science, and database research. Accordingly, this workshop intended to provide a needed forum for bringing together experts from these overlapping but not always interacting scientific communities.

The 18 papers included in this volume resulted from nearly 40 original submissions, went through a double refereeing process. Extended paper proposals were initially reviewed to select workshop presentations, and full papers were subsequently reviewed for publication in this volume.

The papers in this volume could be grouped in a variety of ways. The classification in four areas selected here was meant to reflect the cyclical nature of the integration process itself: applications bring forward needs for theoretical developments, which in turn enable novel applications, which subsequently impose new needs and demand further extensions in the supporting theoretical concepts and foundations. Therefore, we decided to follow a rather unorthodox path in organizing the contents of this volume. Contrary to tradition, we begin with application-relevant sections and algorithms, and conclude with theoretical models. Of course, this separation is primarily organizational rather than contextual, and at times might appear artificial, as theoretical issues are addressed in application-oriented papers, and vice versa.

We greatly appreciate the work of the many people who made this happen. The National Science Foundation and the National Center for Geographic Information and Analysis provided valuable support, financial and otherwise. The program committee and additional external reviewers helped steer the meeting and mold these proceedings. Blane Shaw, Peter Doucette, and the other members of the organizing committee did an excellent job in taking care of the endless organizational details that accompany such an event and the publication of this volume. Last but not least, we

would like to express our appreciation to the authors and participants of ISD'99, who made the meeting a memorable one, and these proceedings a valuable contribution to the relevant literature.

October 1999 Peggy Agouris and Anthony Stefanidis

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