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Spatial Information Theory

A Theoretical Basis for GIS

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Foreword

This volume collects the papers presented at the European Conference on Spatial Information Theory (COSIT'93), held in Marciana Marina on the island of Elba (Italy) in September 1993. Spatial Information Theory collects disciplinary topics and interdisciplinary issues that deal with the conceptualization and formalization of large-scale (geographic) space. It contributes towards a consistent theoretical basis for Geographic Information Systems (GIS).

Advances in computer technology and information science and also geography are applied to the practical problem of collecting, managing and presenting spatial data and have produced Geographic Information Systems. GISs are widely used in administration, planning, and science in many different countries, and for a wide variety of application areas. The unifying concept for the GIS is the relation of all information to space, which is realized differently in different applications and cultures. Spatial Information Theory attempts to discover the universally valid principles and to understand the differences of the particular solution. Research results are relevant for GIS, but are distributed in many disciplines and contacts between researchers are therefore hindered. At the same time, development of GIS is limited by the lack of a sound theoretical base.

COSIT'93 follows the international conference "GIS: From Space to Territory. Theories and Methods of Spatio-Temporal Reasoning" that took place in Pisa in September 1992*. That conference brought together experts from different disciplines, most notably computer science, geography, cognitive science and linguistics and was focused on spatial and temporal reasoning about geographic space. This event has established an interdisciplinary dialog within the international scientific community which has continued since and has led to the organization of COSIT'93.

The call for papers, mostly distributed by electronic mail, resulted in over 60 full papers submitted. They were of very high quality and covered a broad field of different disciplines. Each paper was distributed for review to four members of the program committee or other experts in the field. The program chairs then selected the 32 best papers based on the reviewers' assessment to be presented at COSIT'93 and to be included in the proceedings. Comments from the reviewers were sent back to the authors to help them in producing the final copy. We are grateful for the collaborative efforts of the authors and reviewers that allowed us to get this volume ready for the conference.

We thank all people who helped in organizing the conference. In particular the members of the program committee and the additional reviewers contributed generously. Sincere thanks also to Nahid Nayyeri from the ARA Congressi for the organizational and administrative support.

July 1993

Andrew U. Frank
Irene Campari

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