

FOREWORD

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The book is a collection of papers that were presented at the Spatial Computing Workshop held at Curtin University, Perth from the 2nd to the 3rd December, 1995. The chapters represent the bringing together of experts from computer vision, visualization, multi-media and geographic information systems (GIS) to share common interests, problems and technologies. Problems common to all these areas include the encoding of synthetic and natural structures, the efficient detection, recognition, display, interpretation and retrieval of features and patterns. It is our hope that the reader will see these common problems emerging from the selected papers and form a general view of spatial computing.

The chapters essentially fall into two groups. The first deals with computer vision and interpretation systems. The second covers representative papers in visualization, multi-media and GIS. In the first section, topics vary from recent Bayesian formulations for image processing (Liu), feature extraction (West), recognition/matching techniques (Bunke, Caelli, Dickinson) and spatial reasoning (Matsuyama). One of the emerging themes in this domain is the need to consider domain knowledge or constraints in both high- and low-level vision processes. Such knowledge can be approached and modeled by Bayesian methods, machine learning or computer-aided design (CAD)/graphical models.

The same theme is evident in the second group of papers. Whether it be with visualization in general (Maeder, Robertson) or GIS in particular (Gahegan) — domain knowledge plays a critical role in determining what to display and how to display it or even if it can be displayed. Equally in multi-media the representation of image data and its relation to domain knowledge play critical roles in the development of efficient and robust image database query techniques (Shearer, Smith).

In all, then, this collection of papers clearly points to the need for communication between researchers in these different areas of spatial computing and it is the hope that this volume will help this dialogue come to fruition. This collection of papers has also been published as a special issue of the *International Journal of Pattern Recognition and Artificial Intelligence* (Volume 11, Numbers 1 & 2, 1997).

Finally, we want to thank all authors for a very friendly and stimulating atmosphere during the Workshop and for their co-operation in the preparation of these manuscripts.