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Algorithms and Applications

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Preface

This book presents refereed and revised papers presented at GREC 2001, the 4th IAPR International Workshop on Graphics Recognition, which took place in Kingston, Ontario, Canada in September 2001. Graphics recognition is a branch of document image analysis that focuses on the recognition of two-dimensional notations such as engineering drawings, maps, mathematical notation, music notation, tables, and chemical structure diagrams. Due to the growing demand for both off-line and on-line document recognition systems, the field of graphics recognition has an exciting and promising future.

The GREC workshops provide an opportunity for researchers at all levels of experience to share insights into graphics recognition methods. The workshops enjoy strong participation from researchers in both industry and academia. They are sponsored by IAPR TC-10, the Technical Committee on Graphics Recognition within the International Association for Pattern Recognition. Edited volumes from the previous three workshops in this series are available as Lecture Notes in Computer Science, Vols. 1072, 1389, and 1941.

After the GREC 2001 workshop, authors were invited to submit enhanced versions of their papers for review. Every paper was evaluated by three reviewers. We are grateful to both authors and reviewers for their careful work during this review process. Many of the papers that appear in this volume were thoroughly revised and improved, in response to reviewers' suggestions.

This book is organized into eight sections, reflecting the session topics in the GREC 2001 workshop: technical drawings and forms; validation, user interfaces; symbol segmentation and recognition; perceptual organization; map recognition; graphics recognition technology; vectorization and early processing; and math notation, charts, music notation. As is traditional in the GREC workshops, each session included ample time for panel discussions. A summary of these panel discussions, prepared by Karl Tombre and Atul Chhabra, appears at the end of this book.

Graphics recognition contests are held at GREC workshops to foster the development of high-performance algorithms, and the development of methods for performance evaluation. GREC 2001 featured an arc segmentation contest, organized by Liu Wenyin and Dov Dori. During the workshop, contestants ran their programs on given test images, using evaluation criteria developed by the contest organizers. A special section of this volume is devoted to the arc segmentation contest. The three papers in this section describe the contest, the images, the evaluation criteria, and the algorithms developed by the contestants.

We gratefully acknowledge the support provided by the sponsors of GREC 2001: the IAPR (International Association for Pattern Recognition), Queen's University, Canada (Department of Computing and Information Science, Office of Research Services, and Faculty of Arts and Science), CSERIC (Computer Science and Engineering Research Information Center, Korea), the Xerox Founda-

tion (Xerox Palo Alto Research Center, California), and CITO (Communications and Information Technology Ontario).

The next Graphics Recognition Workshop (www.cvc.uab.es/grec2003/) will be held in Barcelona, Spain, in July 2003.

April 2002

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