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Preface

This volume comprises the polished and fully refereed versions of a selection of papers presented at the 15th Annual Symposium on Combinatorial Pattern Matching (CPM 2004), held in Istanbul, Turkey, from July 5 to July 7, 2004. Preliminary versions of the papers presented at the symposium appeared in the proceedings of the meeting, published in the volume 3109 of the Lecture Notes in Computer Science (LNCS).

The CPM 2004 Program Committee consisted of Gerth Støltting Brodal, Jeremy Buhler, Ugur Dogrusoz (Organization Chair), Zvi Galil, Ramesh Hariharan, Ming Li, Stefano Lonardi, Craig Neville Manning, Ian Munro, S. Muthukrishnan (PC Co-Chair), Joseph Nadeau, Meral Ozsoyoglu, Ely Porat, Kunihiko Sadakane, S. Cenk Sahinalp (PC Co-Chair), and Mona Singh. Out of 79 “Extended Abstracts” submitted to the CPM 2004 Program Committee, 36 were selected for presentation at the symposium. Five out of those 36 papers were invited to this volume. One of the five papers was found to fall short of TCS standards; this volume includes the remaining four papers.

The selected papers in this volume cover a wide spectrum of algorithmic methods related to the theory and applications of combinatorial pattern matching.

The paper by Amir, Kapah, and Tsur is on a classical pattern matching problem: it presents the first optimal time algorithm for 2-D pattern matching problem where rotations are allowed. The remaining three papers are motivated mainly by applications in computational molecular biology.

The paper by Davydov and Batzoglu aims to predict the secondary structure of related non-coding RNA sequences by presenting a polynomial time approximation algorithm for the RNA multiple structural alignment problem, which is shown to be NP-hard.

The paper by Lonardi, Szpankowski, and Yang aims to find the largest bicluster in a matrix consisting of symbols from a given alphabet. The problem, which asks to find the largest submatrix whose rows are identical, is first shown to be NP-hard. Then a randomized method whose results are assessed by a statistical analysis as well as an experimental study is presented.

Finally the paper by Geary, Rahman, Raman, and Raman presents a highly space efficient representation for a string consisting of balanced paranthesis that supports several operations such as finding the matching parenthesis of a given parenthesis or finding the pair of parentheses that most tightly enclose a given pair.

All papers that appear in this collection were refereed in accordance with TCS’s high standards. We would like to thank all the anonymous referees whose work has significantly contributed to this volume.

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