Lecture Notes in Computer Science 2054

Edited by G. Goos, J. Hartmanis and J. van Leeuwen

Springer
Berlin
Heidelberg
New York
Barcelona
Hong Kong
London
Milan
Paris
Singapore
Tokyo

Anne Condon Grzegorz Rozenberg (Eds.)

DNA Computing

6th International Workshop on DNA-Based Computers, DNA 2000
Leiden, The Netherlands, June 13-17, 2000
Revised Papers

Springer

Series Editors

Gerhard Goos, Karlsruhe University, Germany
Juris Hartmanis, Cornell University, NY, USA
Jan van Leeuwen, Utrecht University, The Netherlands

Volume Editors

Anne Condon
University of British Columbia
Department of Computer Science
201-2366 Main Mall
Vancouver, B.C., Canada V6T 1Z4
E-mail: condon@cs.ubc.ca

Grzegorz Rozenberg
Leiden University
Leiden Institute of Advanced Computer Science (LIACS)
Niels Bohrweg 1
2333 CA Leiden, The Netherlands
E-mail: rozenberg@liacs.nl

Cataloging-in-Publication Data applied for

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

DNA computing : revised papers / 6th International Workshop on DNA Based Computers, DNA 2000, Leiden, The Netherlands, June 13 - 17, 2000. Anne Condon ; Grzegorz Rozenberg (ed.). - Berlin ; Heidelberg ; New York ; Barcelona ; Hong Kong ; London ; Milan ; Paris ; Singapore ; Tokyo : Springer, 2001
(Lecture notes in computer science ; 2054)
ISBN 3-540-42076-2

CR Subject Classification (1998): F.1, F.2.2, I.2.9, J.3

ISSN 0302-9743
ISBN 3-540-42076-2 Springer-Verlag Berlin Heidelberg New York

Springer-Verlag Berlin Heidelberg New York
a member of BertelsmannSpringer Science+Business Media GmbH

http://www.springer.de

Printed in Germany

Typesetting: Camera-ready by author, data conversion by PTP Berlin, Stefan Sossna
Printed on acid-free paper SPIN 10781535 06/3142 5 4 3 2 1 0

Preface

The papers in this volume were presented at the 6th International Meeting on DNA Based Computers, organized by the Leiden Center for Natural Computing and held from June 13 to June 17, 2000 at The Lorentz Center, University of Leiden, Leiden, The Netherlands. DNA Computing is a novel and fascinating development at the interface of computer science and molecular biology. It has emerged in recent years, not simply as an exciting technology for information processing, but also as a catalyst for knowledge transfer between information processing, nanotechnology, and biology. This area of research has the potential to change our understanding of the theory and practice of computing.

The call for papers and poster presentations sought contributions of original research and technical expositions in all areas of bio-computation. A total of 33 abstracts were submitted of which 16 were accepted for presentation and included in the proceedings. The papers were selected by the program committee based on originality and quality of research and on relevance to the bio-computing field. Invited talks were given by Masami Hagiya (Tokyo University), Laura Landweber (Princeton University), John Reif (Duke University), Thomas Schmidt (Leiden University), and Lloyd M. Smith (University of Wisconsin). Invited papers based on the talks by Hagiya and Reif are included in this volume, along with the contributed papers. Additional tutorials were held on the first and last days of the conference.

The conference was held under the auspices of the ACM Special Interest Group on Algorithms and Computation Theory (ACM SIGACT) and the European Association for Theoretical Computer Science (EATCS). We gratefully acknowledge support and sponsorship from the following organizations: the European Molecular Computing Consortium (EMCC), the European Commission (EC) Institute for Programming research and Algorithmics (IPA), the Leiden Institute of Advanced Computer Science (LIACS), the Lorentz Visitor Center (LC), and the Netherlands Organization for Scientific Research (NWO).

The program committee wishes to thank all those who submitted papers for consideration.

March 2001

Anne Condon
Program Chair

Organization

Program Committee

M Amos	Univ. Liverpool, UK
J. Chen	Univ. Delaware, USA
A. Condon	Univ. British Columbia, Canada (Program Chair)
T. Head	Binghamton Univ., USA
N. Jonoska	Univ. South Florida, USA
L. Landweber	Princeton Univ., USA
G. Paun	Romanian Acad., Romania
G. Rozenberg	Univ. Leiden, The Netherlands
A. Suyama	Univ. Tokyo, Japan
E. Winfree	Caltech, USA
T. Yokomori	Waseda Univ., Japan
B. Yurke	Lucent Technologies, USA

International Organizing Committee

M Amos	Univ. Liverpool, UK
A. Condon	Univ. British Columbia, Canada
T. Head	Binghamton Univ., USA
L. Kari	Univ. Western Ontario, Canada
G. Rozenberg	Univ. Leiden, The Netherlands (Organizing Committee Chair)
H. Rubin	Univ. Pennsylvania, USA
E. Winfree	Caltech, USA

Table of Contents