EXPLORING NEW FRONTIERS
OF THEORETICAL INFORMATICS

IFIP – The International Federation for Information Processing

IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP's aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

> *IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.*

IFIP is a non-profit making organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is less rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

Any national society whose primary activity is in information may apply to become a full member of IFIP, although full membership is restricted to one society per country. Full members are entitled to vote at the annual General Assembly, National societies preferring a less committed involvement may apply for associate or corresponding membership. Associate members enjoy the same benefits as full members, but without voting rights. Corresponding members are not represented in IFIP bodies. Affiliated membership is open to non-national societies, and individual and honorary membership schemes are also offered.

EXPLORING NEW FRONTIERS OF THEORETICAL INFORMATICS

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TC1 3rd International Conference on
Theoretical Computer Science (TCS2004)
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PREFACE

IFIP TCS 2004 is the third international conference organized by IFIP TC1, whose activities cover the entire field of theoretical computer science. The major topics of the conference were chosen reflecting the current activities in theoretical computer science forming the two tracks:

Track (1) on Algorithms, Complexity, and Models of Computation,

Track (2) on Logic, Semantics, Specification, and Verification.

The program of IFIP TCS 2004 included the presentations of twenty-two contributed papers in Track (1) and twenty-four contributed papers in Track (2). The Program Committees selected them from sixty-five submissions to Track (1) and eighty-two submissions to Track (2).

The four plenary invited speakers were chosen by the Steering Committee, the Chair and the PC Co-Chairs.

This volume constitutes the record of the technical program, consisting of the contributed papers and the invited talks. We had the pleasure of chairing the conference and the program committees of the third IFIP International Conference on Theoretical Computer Science. We are extremely grateful to Jean-Claude Laprie and his staff, who helped us in preparing and announcing the call for papers, the program, and the web pages, and in putting together the proceedings.

We would like to express our thanks to the other members of the Program Committees, who are listed below, for their help in reviewing all submissions and for selecting the papers.

Jean-Jacques Lévy
Chair
Ernst W. Mayr
John C. Mitchell
Co-Chairs

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