
SYSTEM MODELING AND OPTIMIZATION

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-profitmaking 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.

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Preface

We publish in this volume the plenary talks and a selection of the papers on numerics, optimization and their applications, presented at the 22nd Conference on System Modeling and Optimization, held at the Politecnico di Torino in July 2005. The conference has been organized by the Mathematical Department of the Politecnico di Torino.

IFIP is a multinational federation of professional and technical organizations concerned with information processes. It was established in 1959 under the auspices of UNESCO. IFIP still maintains friendly connections with specialized agencies of the UN systems. It consists of Technical Committees. The Seventh Technical Committee, established in 1972, was created in 1968 by A.V. Balakrishnan, J.L. Lions and G.I. Marchuk with a joint conference held in Sanremo and Novosibirsk.

The present edition of the conference is dedicated to Camillo Possio, killed by a bomb during the last air raid over Torino, in the sixtieth anniversary of his death. The special session "On the Possio equation and its special role in aeroelasticity" was devoted to his achievements. The special session "Shape Analysis and optimization" commemorates the 100th anniversary of Pompeiu thesis.

All the fields of interest for the seventh Technical Committee of the IFIP, chaired by Prof. I. Lasiecka, had been represented at the conference: Optimization; Optimization with PDE constraints; structural systems optimization; algorithms for linear and nonlinear programming; stochastic optimization; control and game theory; combinatorial and discrete optimization. identification and inverse problems; fault detection; shape identification. complex systems; stability and sensitivity analysis; neural networks; fractal and chaos; reliability. computational techniques in distributed systems and in information processing environments; transmission of information in complex systems; data base design. Applications of optimization techniques and of computational methods to scientific and technological areas (such as medicine, biology, economics, finances, aerospace and aeronautics etc.).

Over 300 researchers took part to the conference, whose organization was possible thanks to the help and support of the Department of Mathematics of the

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