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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.

Adam Korytowski Kazimierz Malanowski
Wojciech Mitkowski Maciej Szymkat (Eds.)

System Modeling and Optimization

23rd IFIP TC 7 Conference
Cracow, Poland, July 23-27, 2007
Revised Selected Papers

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Preface

This book constitutes a collection of extended versions of papers presented at the 23rd IFIP TC7 Conference on System Modeling and Optimization, which was held in Cracow, Poland, on July 23–27, 2007. It contains 7 plenary and 22 contributed articles, the latter selected via a peer reviewing process. Most of the papers are concerned with optimization and optimal control. Some of them deal with practical issues, e.g., performance-based design for seismic risk reduction, or evolutionary optimization in structural engineering. Many contributions concern optimization of infinite-dimensional systems, ranging from a general overview of the variational analysis, through optimization and sensitivity analysis of PDE systems, to optimal control of neutral systems. A significant group of papers is devoted to shape analysis and optimization. Sufficient optimality conditions for ODE problems, and stochastic control methods applied to mathematical finance, are also investigated. The remaining papers are on mathematical programming, modeling, and information technology.

The conference was the 23rd event in the series of such meetings biennially organized under the auspices of the Seventh Technical Committee “Systems Modeling and Optimization” of the International Federation for Information Processing (IFIP TC7). It was attended by over 200 participants from 33 countries and 5 continents, who presented talks on a wide spectrum of topics covering all areas of interest of the IFIP TC7, including optimization theory, algorithms of nonlinear optimization, discrete optimization, stochastic optimization, distributed parameter systems: modeling and optimization, optimal control, stochastic control and financial mathematics, structural design, stability and sensitivity analysis in optimal control, and complex systems.

The conference was organized by the AGH University of Science and Technology in Cracow, one of the greatest technical universities in Poland. The organization was mainly carried out at the Faculty of Electrical Engineering, Automatics, Computer Science and Electronics.

We would like to thank the members of the Program Committee of the conference for their help and valuable advice. In particular we are grateful to Irena Lasiecka, the chairperson of the IFIP TC7, who also chaired the PC of the conference. Thanks are due to G. Augusti, L.T. Biegler, H. Furuta, M. Grötschel, A. Lewis, H. Maurer, B.S. Mordukhovich, S. Scholtes, V. Schulz, Ł. Stettner, and J.-P. Zolésio for delivering plenary talks, and to N.U. Ahmed, G. Avalos, L.T. Biegler, T. Burczyński, J. Cagnol, M. Delfour, D. Dentcheva, D. Dolk, J. Granat, J. Henry, I. Lasiecka, U. Ledzewicz, T. Lewiński, M. Makowski, S. Migórski, M. Pietrzyk, H. Schättler, V. Schulz, H.-J. Sebastian, J. Sokołowski, Ł. Stettner, A. Świerniak, R. Tichatschke, F. Tröltzsch, S. Volkwein, J. Zabczyk, J.-P. Zolésio, and A. Żochowski, who organized the invited sessions, thus greatly contributing to the success of the conference. We would also like to thank all the reviewers, who refereed the abstracts of talks delivered at the conference as well as the articles published in this book.

The organization of the conference was largely dependent on the financial support of the AGH UST, which is gratefully acknowledged. The success of the conference and the publication of this book would not have been possible without the help and support of many individuals. We owe sincere thanks to them all, and in particular to Antoni Tajduś, Rector of the AGH UST, Tomasz Szmuc, the then Dean of the Faculty of Electrical Engineering of AGH, and Karol Musioł, Rector of the Jagiellonian University. Our special thanks go to Anna Sury, whose help in all organizational matters was invaluable. We also thank Grzegorz J. Nalepa and his co-workers for their help in the preparation of the camera ready form of this volume.

June 2009

Adam Korytowski
Kazimierz Malanowski
Wojciech Mitkowski
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