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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 ist member countries and to encourage technology transfer to developing nations. As ist 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.

José L. Ayala David Atienza Alonso
Ricardo Reis (Eds.)

VLSI-SoC: Forward-Looking Trends in IC and Systems Design

18th IFIP WG 10.5/IEEE International Conference on Very Large Scale Integration, VLSI-SoC 2010
Madrid, Spain, September 27-29, 2010
Revised Selected Papers

Springer

Volume Editors

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Preface

This book contains extended and revised versions of the best papers that were presented during the 18th edition of the IFIP/IEEE WG10.5 International Conference on Very Large Scale Integration, a global System-on-a-Chip Design and CAD conference. The 18th conference was held at the Complutense University, Madrid, Spain (September 27–29, 2010). Previous conferences have taken place in Edinburgh, Trondheim, Vancouver, Munich, Grenoble, Tokyo, Gramado, Lisbon, Montpellier, Darmstadt, Perth, Nice, Atlanta, Rhodes and Florianópolis.

The purpose of this conference sponsored by IFIP TC 10 Working Group 10.5, the IEEE Council on Electronic Design Automation (CEDA), and by IEEE Circuits and Systems Society, with the In-Cooperation of ACM SIGDA, is to provide a forum to exchange ideas and show industrial and academic research results in the field of microelectronics design. The current trend toward increasing chip integration and technology process advancements brings about stimulating new challenges both at the physical and system-design levels, as well in the test of these systems. VLSI-SOC conferences aim to address these exciting new issues.

The 2010 edition of VLSI-SoC maintained the traditional structure, which has been successful at the previous VLSI-SOC conferences. The quality of submissions (175 papers from 22 countries) made the selection process difficult, but finally 52 papers for oral presentation and 17 posters were accepted for presentation in VLSI-SoC 2010. Out of the 52 full papers presented at the conference, 14 regular papers were chosen by a selection committee to have an extended and revised version included in this book. The chapters of this book have authors from Belgium, China, Egypt, France, Singapore, Spain, Switzerland, Taiwan and the USA. The Technical Program Committee was composed of 109 members.

VLSI-SoC 2010 was the culmination of many dedicated volunteers: paper authors, reviewers, session chairs, invited speakers and various committee chairs, especially the local arrangements organizers. We thank them all for their contribution.

This book is intended for the VLSI community, mainly those who did not have the chance to take part in the VLSI-SOC 2010 conference. The papers were selected to cover a wide variety of excellence in VLSI technology and the advanced research they describe. We hope you will enjoy reading this book and find it useful in your professional life and for the development of the VLSI community as a whole.

December 2011

José L. Ayala
David Atienza
Ricardo Reis

Organization

The IFIP/IEEE International Conference on Very Large Scale Integration-System-on-Chip (VLSI-SoC) 2010 took place during September 27–29, 2010, in the Complutense University, Madrid, Spain. VLSI-SoC 2010 was the 18^{th}in a series of international conferences, sponsored by IFIP TC 10 Working Group 10.5 (VLSI), IEEE CEDA and ACM SIGDA. The conference was organized by:

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