VLSI-SoC: Design and Engineering of Electronics Systems Based on New Computing Paradigms

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> *IFIP is the global non-profit federation of societies of ICT professionals that aims at achieving a worldwide professional and socially responsible development and application of information and communication technologies.*

IFIP is a non-profit-making organization, run almost solely by 2500 volunteers. It operates through a number of technical committees and working groups, which organize events and publications. IFIP's events range from large international open conferences to working conferences and local seminars.

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 generally smaller and occasionally by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also 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.

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VLSI-SoC: Design and Engineering of Electronics Systems Based on New Computing Paradigms

26th IFIP WG 10.5/IEEE International Conference on Very Large Scale Integration, VLSI-SoC 2018
Verona, Italy, October 8–10, 2018
Revised and Extended Selected Papers

Springer

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Preface

This book contains extended and revised versions of the highest-quality papers presented during the 26th edition of the IFIP/IEEE WG10.5 International Conference on Very Large Scale Integration (VLSI-SoC), a global System-on-Chip Design and CAD conference. The 26th edition of the conference was held during October 8–10, 2018, at the Hotel Leon d'Oro, Verona, Italy. Previous conferences have taken place in Edinburgh, Scotland (1981); Trondheim, Norway (1983); Tokyo, Japan (1985); Vancouver, Canada (1987); Munich, Germany (1989); Edinburgh, Scotland (1991); Grenoble, France (1993); Chiba, Japan (1995); Gramado, Brazil (1997); Lisbon, Portugal (1999); Montpellier, France (2001); Darmstadt, Germany (2003); Perth, Australia (2005); Nice, France (2006); Atlanta, GA, USA (2007); Rhodes Island, Greece (2008); Florianopolis, Brazil (2009); Madrid, Spain (2010); Kowloon, Hong Kong, SAR China (2011), Santa Cruz, CA, USA (2012), Istanbul, Turkey (2013), Playa del Carmen, Mexico (2014), Daejeon, South Korea (2015), Tallin, Estonia (2016), and Abu Dhabi, United Arab Emirates (2017).

The purpose of this conference, sponsored by IFIP TC 10 Working Group 10.5, the IEEE Council on Electronic Design Automation (CEDA), and the IEEE Circuits and Systems Society, with the In-Cooperation of ACM SIGDA, is to provide a forum for the presentation and discussion of the latest academic and industrial results and developments as well as the future trends in the field of system-on-chip (SoC) design, considering the challenges of nano-scale, state-of-the-art and emerging manufacturing technologies. In particular, VLSI-SoC 2018 was held under the theme "Design and Engineering of Electronics Systems Based on New Computing Paradigms" by addressing cutting-edge research fields like heterogeneous, neuromorphic, and brain-inspired, biologically inspired, approximate computing systems. The chapters of this new book in the VLSI-SoC series continue its tradition of providing an internationally acknowledged platform for scientific contributions and industrial progress in this field.

For VLSI-SoC 2018, 27 papers out of 106 submissions were selected for presentation, and out of these 27 full papers presented at the conference, 13 papers were chosen by a special selection committee to have an extended and revised version included in this book. The selection process of these papers considered the evaluation scores during the review process as well as the review forms provided by members of the Technical Program Committee and the Session Chairs as a result of the presentations.

The chapters of this book have authors from Germany, India, Italy, Japan, Mexico, Singapore, The Netherlands, UAE, and USA. The Technical Program Committee for the regular tracks comprised 98 members from 25 countries.

VLSI-SoC 2018 was the culmination of the work of many dedicated volunteers: paper authors, reviewers, session chairs, invited speakers, and various committee chairs. We thank them all for their contributions.

This book is intended for the VLSI community at large, and in particular the many colleagues who did not have the chance to attend the conference. We hope you will enjoy reading this book and that you will find it useful in your professional life and for the development of the VLSI community as a whole.

June 2019

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Organization

The IFIP/IEEE International Conference on Very Large Scale Integration System-on-Chip (VLSI-SoC) 2018 took place during October 8–10, 2018, at the Hotel Leon d'Oro, Verona, Italy. VLSI-SoC 2018 was the 26th in a series of international conferences, sponsored by IFIP TC 10 Working Group 10.5 (VLSI), IEEE CEDA and ACM SIGDA.

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