Lecture Notes in Computer Science 7317

Commenced Publication in 1973
Founding and Former Series Editors:
Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

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Theory and Applications of Satisfiability Testing – SAT 2012

15th International Conference
Trento, Italy, June 17-20, 2012
Proceedings

Springer

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ISSN 0302-9743 e-ISSN 1611-3349
ISBN 978-3-642-31611-1 e-ISBN 978-3-642-31612-8
DOI 10.1007/978-3-642-31612-8
Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2012941226

CR Subject Classification (1998): F.3.1, F.3, F.1, F.2, I.2, B.7

LNCS Sublibrary: SL 1 – Theoretical Computer Science and General Issues

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

This volume contains the papers presented at SAT 2012, the 15th International Conference on Theory and Applications of Satisfiability Testing, held during June 16–20 in Trento, Italy. SAT 2012 was co-organized and hosted by Fondazione Bruno Kessler (FBK) and the University of Trento (UniTN), Italy.

The SAT series originated in 1996 as a series of workshops, and later developed into the primary annual meeting for researchers studying the propositional satisfiability problem. Importantly, here SAT is interpreted in a rather broad sense: besides plain propositional satisfiability, it includes the domains of MaxSAT and Pseudo-Boolean (PB) constraints, Quantified Boolean Formulae (QBF), Satisfiability Modulo Theories (SMT), Constraints Programming (CSP) techniques for word-level problems and their propositional encoding. To this extent, many hard combinatorial problems can be encoded as SAT instances, in the broad sense mentioned above, including problems that arise in hardware and software verification, AI planning and scheduling, OR resource allocation, etc. The theoretical and practical advances in SAT research over the past 20 years have contributed to making SAT technology an indispensable tool in these domains. The topics of the conference span practical and theoretical research on SAT (in the broader sense above) and its applications, and include, but are not limited to, theoretical issues, solving and advanced functionalities, and applications.

SAT 2012 hosted two workshops: CSPSAT 2012 (Second International Workshop on the Cross-Fertilization Between CSP and SAT), and PoS 2012 (Third International Workshop on Pragmatics of SAT), and four competitive events: Max-SAT 2012 (7th Max-SAT Evaluation), PB12 (Pseudo-Boolean Competition 2012), QBFEVAL 2012 (QBF Competition 2012), and SAT Challenge 2012.

In SAT 2012 we introduced for the first time the possibility of submitting tool-presentation papers, and of directly submitting poster-presentation papers (2-page abstracts). Overall there were 112 submissions (88 full, 10 tool, and 14 poster papers). Each submission was reviewed by at least three Program Committee members; for the fist time for SAT, the review process also involved a rebuttal phase. The committee decided to accept 52 papers (29 full, 7 tool and 16 poster papers). Note that seven full papers were accepted as posters.

The program also included two remarkable invited talks:

- *Aaron Bradley* from the University of Colorado at Boulder, presented "Understanding IC3"
- *Donald Knuth* from Stanford University presented "Satisfiability and The Art of Computer Programming"

Given the interest of the scientific community outside SAT for the work of Donald Knuth, his talk was open to non-SAT 2012 attendees, and included a question-answering session on general topics in computer science.

SAT 2012 was co-located with the Second International SAT/SMT Summer School, with a program over four days that hosted 16 speakers. The school gave many students the opportunity to attend SAT 2012.

Our first thanks go to the Program Committee members and to the additional reviewers, who did a thorough and knowledgeable job and enabled the assembly of this body of high-quality work.

We thank the authors for their submissions, and for their collaboration in further improving their papers. A special thank goes to our invited speakers, Aaron Bradley and Donald Knuth, for accepting our invitation and for their very stimulating contributions.

We thank the organizers of the school, of the workshops and of the competitive events: Alberto Griggio and Stefano Tonetta for SAT/SMT School, Yael Ben Haim and Yehuda Naveh for CSPSAT 2012, Daniel Le Berre and Allen Van Gelder for PoS 2012, Josep Argelich, Chu Min Li, Felip Manya and Jordi Planes for Max-SAT 2012, Vasco Manquinho and Olivier Roussel for PB12, Massimo Narizzano for QBFEVAL 2012, Adrian Balint, Anton Belov, Matti Jarvisalo and Carsten Sinz for SAT Challenge 2012.

A special thank goes to Martina Lorenzi, Silvia Malesardi, Moira Osti, and to all the other members of the Ufficio Eventi of FBK and Ufficio Convegni of UniTN, who largely contributed to the success of this event.

We also thank the developers and maintainers of the EasyChair conference management system, which was of great help with the paper submission, reviewing, discussion, and with the assembly of the proceedings.

We gratefully acknowledge the generous contributions of our sponsors (in alphabetical order): IBM Research, Intel^{TM} Corporation, Jasper Technologies, Microsoft Research INRIA, Microsoft Research, NEC, plus the support of FBK, of UniTN and of the SAT Association. SAT 2012 was held also under the auspices of TrentoRise and of the European Association for Theoretical Computer Science, Italian Chapter.

May 2012

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