

Preface

This volume contains the papers presented at the 18th International Conference on Theory and Applications of Satisfiability Testing (SAT 2015), held during September 24–27, 2015 in Austin, Texas, USA. SAT 2015 was colocated with Formal Methods in Computer-Aided Design (FMCAD 2015) and was hosted by the University of Texas at Austin.

The International Conference on Theory and Applications of Satisfiability Testing (SAT) is the primary annual meeting for researchers focusing on the theory and applications of the propositional satisfiability problem, broadly construed: Besides plain propositional satisfiability, it includes Boolean optimization (including MaxSAT and Pseudo-Boolean (PB), constraints), Quantified Boolean Formulas (QBF), Satisfiability Modulo Theories (SMT), and Constraint Programming (CP) for problems with clear connections to propositional reasoning. Many hard combinatorial problems can be tackled using SAT-based techniques, including problems that arise in formal verification, artificial intelligence, operations research, biology, cryptology, data mining, machine learning, mathematics, etc. Indeed, the theoretical and practical advances in SAT research over the past 20 years have contributed to making SAT technology an indispensable tool in various domains.

SAT 2015 welcomed scientific contributions addressing different aspects of SAT, including (but not restricted to) theoretical advances (including exact algorithms, proof complexity, and other complexity issues), practical search algorithms, knowledge compilation, implementation-level details of SAT solvers and SAT-based systems, problem encodings and reformulations, applications, as well as case studies and reports on insightful findings based on rigorous experimentation.

A total of 70 papers were submitted to SAT 2015, distributed into 44 regular papers (up to 15 pages excluding references), 17 short papers (up to eight pages excluding references), and nine tool papers (up to six pages excluding references). In contrast to recent SAT conferences, no paper submission was found to be out of scope for the conference. All 70 submissions were assigned for review to at least four Program Committee members and their selected external reviewers. Continuing the procedure initiated in SAT 2012, the review process included an author-response period, during which the authors of submitted papers were given the opportunity to respond to the initial reviews for their submissions. For reaching final decisions, a Program Committee discussion period followed the author-response period. This year, external reviewers supporting the Program Committee were also invited to participate directly in the discussions for the papers they reviewed. In the end, the Program Committee decided to accept 21 regular papers, two short papers, and seven tool papers. Two short papers were downgraded to tool papers.

In addition to presentations on the accepted papers, the scientific program of SAT 2015 included three invited talks:

- Dimitris Achlioptas (University of California Santa Cruz, USA)
Random Formulas are Irrelevant, Right?
- Anna Slobodova (Centaur Technology, USA)
Pragmatic Approach to Formal Verification
- Aaron Tomb (Galois, Inc., USA)
Applying Satisfiability to the Analysis of Cryptography

SAT 2015 hosted various affiliated events, including two workshops on September 23:

- Sixth International Workshop on Pragmatics of SAT (PoS 2015)
Organizers: Daniel Le Berre and Allen Van Gelder;
- Third International Workshop on Quantified Boolean Formulas (QBF 2015)
Organizers: Florian Lonsing and Martina Seidl;

and three competitions and system evaluations:

- SAT Race 2015
Organizers: Tomas Balyo, Carsten Sinz, and Markus Iser;
- Max-SAT Evaluation 2015
Organizers: Josep Argelich, Chu-Min Li, Felip Manyà, and Jordi Planes;
- Pseudo-Boolean Evaluation 2015
Organizers: Norbert Manthey and Peter Steinke

We would like to thank everyone who contributed to making SAT 2015 a success. First and foremost we would like to thank the members of the Program Committee and the additional external reviewers for their careful and thorough work, without which it would not have been possible for us to put together such an outstanding conference program. We also wish to thank all the authors who submitted their work for our consideration. We thank the SAT Association chair Armin Biere, vice chair John Franco, and treasurer Hans Kleine Büning for their help and advice in organizational matters. We wish to thank the workshop chair Albert Oliveras. The EasyChair conference system provided invaluable assistance in coordinating the submission and review process, as well as in the assembly of these proceedings. We also thank the local organization team for their efforts with practical aspects of local organization.

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