

## Preface

This volume contains the papers presented at the 19th International Conference on Theory and Applications of Satisfiability Testing (SAT 2016) held during July 5–8, 2016, in Bordeaux, France. SAT 2016 was hosted by the Computer Science Laboratory of Bordeaux (LaBRI).

The International Conference on Theory and Applications of Satisfiability Testing (SAT) is the premier annual meeting for researchers focusing on the theory and applications of the propositional satisfiability problem, broadly construed. Aside from plain propositional satisfiability, the scope of the meeting 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 Boolean-level reasoning. Many hard combinatorial problems can be tackled using SAT-based techniques, including problems that arise in formal verification, artificial intelligence, operations research, computational 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 a variety of domains.

SAT 2016 welcomed scientific contributions addressing different aspects of SAT interpreted in a broad sense, 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 (including both novel applications domains and improvements to existing approaches), as well as case studies and reports on findings based on rigorous experimentation.

A total of 70 papers were submitted this year distributed into 48 long papers, 13 short papers, and nine tool papers. The papers were reviewed by the Program Committee (33 members), with the help of 65 additional reviewers. Only one regular paper was found by the Program Committee to be out of the scope for the conference. Each of the remaining submissions was reviewed by at least three different reviewers. A rebuttal period allowed the authors to provide a feedback to the reviewers. After that, the discussion among the Program Committee took place. External reviewers supporting the Program Committee were also invited to participate directly in the discussions for the papers they reviewed. This year, the authors received a meta-review, summarizing the discussion that occurred after the rebuttal and the reasons of the final recommendation. The final recommendation was to accept 31 submissions (22 long, four short, and five tool papers) and to accept conditionally five additional papers. The latter (four long and one short) eventually satisfied the conditions for acceptance.

In addition to presentations on the accepted papers, the scientific program of SAT 2016 included three invited talks:

- Phokion Kolaitis (University of California Santa Cruz, IBM, USA) “Coping with Inconsistent Databases: Semantics, Algorithms, and Complexity”
- David Monniaux (VERIMAG University of Grenoble, CNRS, France) “Satisfiability Testing, a Disruptive Technology in Program Verification”
- Torsten Schaub (University of Potsdam, Germany, EurAI sponsored) “From SAT to ASP and Back!?”

As in previous years, SAT 2016 hosted various associated events, including four workshops on July 4:

- 6th International Workshop on the Cross-Fertilization Between CSP and SAT (CSPSAT 2016) organized by Yael Ben-Haim, Valentin Mayer-Eichberger, and Yehuda Naveh
- “Graph Structure and Satisfiability Testing” organized by Simone Bova and Stefan Mengel
- 7th Pragmatics of SAT International Workshop (PoS 2016) organized by Olivier Roussel and Allen Van Gelder
- 4th International Workshop on Quantified Boolean Formulas (QBF 2016) organized by Florian Lonsing and Martina Seidl

There were also four competitive events, which ran before the conference and whose results were disclosed during the conference:

- MAXSAT evaluation organized by Josep Argelich, Chu Min Li, Felip Manyà and Jordi Planes
- PB competition organized by Olivier Roussel
- QBF evaluation organized by Luca Pulina
- SAT competition organized by Marijn Heule, Matti Jarvisalo, and Tomas Baylo

Moreover, this year a full day of tutorials — “How to Solve My Problem with SAT?” — was organized right after the conference, on July 9.

March 2016 was a terrible month for the SAT community. On March 12, Helmut Veith, our esteemed colleague from TU Vienna, passed away at the age of 45. His work on counter example guided abstraction refinement is widely used in the SAT community, especially in recent years to tackle QBF problems: A specific session on that topic was organized during the conference. On March 13, Hilary Putnam, one of the authors of the seminal “Davis and Putnam” procedure, central in current SAT research, passed away at the age of 90. The first session on SAT solving was dedicated to his memory. Our thoughts are with their families during this difficult time.

We would like to thank everyone who contributed to making SAT 2016 a success. First and foremost we would like to thank the members of the Program Committee and the additional reviewers for their careful and thorough work, without which it would not have been possible for us to put together such an outstanding conference. 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. The EasyChair conference systems provided invaluable assistance in coordinating the submission and review process, in organizing the program, as well as in the assembly of these

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