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# Curriculum Vitae

## prof. **Roberto Sebastiani**, PhD

(last update: March 19, 2018)



## Brief Resume

### General Information

Born on 31.03.1966. Italian Citizen. Married, with two children. Living in Povo, Trento, Italy.

Mother tongue: Italian. Fluent in English.

Phone: +39.0461.281514; Email: roberto.sebastiani@unitn.it. URL: [disi.unitn.it/rseba/](http://disi.unitn.it/rseba/)

### Current Status

- Qualified as Full Professor (Professore Abilitato di I Fascia) on both sectors 01/B1 (previously INF/01) and 09/H1 (previously ING-INF/05).
- Associate Professor (Professore di II Fascia), sector 09/H1 (previously ING-INF/05), at *DISI – Dipartimento di Ingegneria e Scienza dell'Informazione, Università degli Studi di Trento, Italy* (Dept. of Information Science and Engineering, University of Trento).

### Career Summary

- (January 2014) Qualified as Full Professor (Abilitazione Nazionale a Professore di I Fascia) sector 01/B1.
- (December 2013) Qualified as Full Professor (Abilitazione Nazionale a Professore di I Fascia) sector 09/H1.
- (January 2005-current.) Associate Professor at *Università degli Studi di Trento*, Dipartimento di Ingegneria e Scienza dell'Informazione (DISI), Facoltà di Scienze M.F.N..
- (January 2001-Dec. 2004.) Assistant Professor at *Università degli Studi di Trento*, Facoltà di Scienze M.F.N..
- (February 1999-Dec. 2000.) Research associate (“Ricercatore a tempo determinato”) at *Dipartimento di Informatica e Sistemi Aziendali, DISA, Università degli Studi di Trento*.
- (July 1997-January 1999.) Researcher at *Istituto per la Ricerca Scientifica e Tecnologica – ITC-Irst* (now FBK-Irst), Trento.
- (April-June 1994 and May-June 1996) Visiting Scholar at Dept of Computer Science, Stanford University, CA, USA.
- (November 1993-June 1997.) PhD student at Dipartimento di Informatica, Sistemistica e Telematica (DIST), Università degli Studi di Genova.

### Education

- (September 1997) **PhD in Computer-Science Engineering.** *Dipartimento di Informatica, Sistemistica e Telematica, Università degli Studi di Genova.*  
Thesis: “Una nuova classe di procedure di decisione per logiche modali e terminologiche: teoria, implementazione e testing”<sup>1</sup> Advisors: Mauro Di Manzo (DIST, Genova), Fausto Giunchiglia (IRST Trento).
- (December 1991) **M.S. in Electronic Engineering**, 110/110 cum Laude. *Università degli Studi di Padova.*  
Thesis: “L’astrazione in un dimostratore automatico interattivo: definizione e realizzazione.” Advisors: Enrico Pagello (University of Padua), Fausto Giunchiglia (IRST Trento).

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<sup>1</sup>Before 1998, by Italian Law, both PhD and Master Theses had mandatorily to be written in Italian. Also, unlike M.S., PhD graduations do not have scores.

# Research

## Research Interests

His current research activities deal with the following topics:

**Satisfiability Modulo Theories (SMT) and its applications.** SMT tools are nowadays widely used in industries as horsepower reasoning engines in the verification of both SW and HW systems. (E.g., Microsoft uses its own SMT solver Z3 in at least 10 different program analysis tools; Intel is using SMT solvers such as MathSAT and Boolector for processor verification and microcode verification.)

He is one of the inventors of the “lazy” approach to SMT (now implemented in most state-of-the-art SMT tools), which combines SAT solvers with decision procedures for the conjunctive fragment of the theories.<sup>2</sup>

Since 2002 he has been giving essential contributions, from both theoretical and empirical viewpoint, in SMT solving and in advanced SMT techniques, like theory combination, interpolation, unsatisfiable-core extraction. All these techniques have been implemented into the state-of-the-art SMT tool MATHSAT.

Currently he is particularly pushing forward the new field of **MaxSMT** and **Optimization Modulo Theories (OMT)**, as a very-useful extension of SMT –and viable alternative to MILP and Constraint Programming– in many application domains. All the OMT techniques developed have been implemented into the state-of-the-art OMT tool OPTIMATHSAT.

**Formal Verification of software and hardware.** His main research contributions in formal verifications are divided into two main streams. (See also “Technology transfer to industry”.)

First, he has contributed to the research on model checking (MC), by investigating novel LTL model checking algorithms, both theoretically and empirically.

Second, he is one of the main contributors of SMT-based model checking, which leverages previous SAT-based MC to much more expressive application domains –e.g., real-time & hybrid systems, RTL designs and microcode, software– by exploiting SMT technology.

Currently his main interests are on the application of Optimization Modulo Theories (OMT) to the verification of systems (parametric systems, software).

**Modeling and Formal Reasoning with Software Requirements** Goal models have been widely used in Computer Science to represent software requirements, business objectives, and design quality.

Since 2002 he has been working on formalizing Goal Models and on applying automated reasoning techniques (SAT, and recently OMT) so that to provide tools for modeling and reasoning with goal models within the TROPOS methodology. All these techniques have been implemented into GR-TOOL, a tool for requirement analysis which has been used in many projects.

Currently his research focuses on modeling and reasoning with *constrained goal models*, which extend goal models with SMT constraints, so that to (i) allow to associate resources and quantitative attributes to goals, tasks, requirements and assumptions so that to find optimal realizations, and to (ii) allow for representing and reasoning on the evolution of goal models, minimizing the effort of change. In both cases the OMT tool OPTIMATHSAT is used as automated-reasoning backend.

**Automated Reasoning on Modal and Description Logics.** He has given important contributions to automated reasoning on Modal and Description Logics, by introducing and exploiting SAT-based reasoning techniques there. Lately he has been interested in the problem of debugging ontologies represented by  $\mathcal{EL}^+$  logic.

His past research activities dealt also with the following topics:

**SAT.** He has given a couple of contributions on SAT solving for non-CNF formulas.

**Planning.** He has given some contributions to abstraction-based planning and SAT-based planning.

**Abstraction-based theorem proving.** He has given some contributions to abstraction-based theorem proving.

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<sup>2</sup>This fact is witnessed, e.g., by the explicit statement in the preface of the Special Issue “Satisfiability Modulo theories” by O. Strichman and D. Kroening, Formal Methods in System Designs 42:12, 2013. <http://dl.acm.org/citation.cfm?id=2429205>.

## Development of tools for Automated Reasoning, Formal Verification and Requirement Engineering

The following is a list of tools for Automated Reasoning, Formal Verification and Requirement Engineering whose development I've been involved with.

- (2014-current). I co-lead the development of CGMTOOL, a tool for modeling and reasoning on *constrained goal models* for requirement engineering (<http://www.cgm-tool.eu/>).
- (2011-current). I lead the development of OPTIMATHSAT, a tool for *optimization modulo theories* built on top of the SMT solver MATHSAT (<http://optimathsat.disi.unitn.it/>).
- (2010-current). I lead the development of EL+SAT, a SAT/SMT-based tool for debugging medical ontologies via axiom pinpointing in the description logic  $\mathcal{EL}^+$  (<http://disi.unitn.it/rseba/elsat/>).
- (2001-current). I co-lead the development of MATHSAT, a state-of-the-art SMT solver (<http://mathsat.fbk.eu>).
- (2000-2011) I have participated to the development of the Model Checker NuSMV.2 (<http://nusmv.fbk.eu>).
- (2002-2005) I have participated to the development of the tool GR-TOOL for automated reasoning in goal models for requirement engineering (<http://troposproject.org/tools/grtool/>).

The following is a list of tools for Automated Reasoning and Formal Verification, whose development I was involved with in the past, which are no more available or maintained.

- (2003) I led the development of the tool MODELLEA for LTL model checking.
- (1999-2004) I led the development of a tool for automated career planing and verification of regulations and ordinances, based on a Model Checker.
- (1997-1998) I participated to the development of the decision procedure TABLEAU\* for SAT-encoded planning (interfaced with the planner MEDIC).
- (1995-1998) I developed the theorem prover KSAT for modal & description logics  $K(m)/\mathcal{ALC}$ .
- (1993) I developed NC\_GSAT, a prototype SAT tool extending of GSAT to non-CNF Boolean formulas.
- (1990-1992) I participated to the development of GETFOL, an interactive theorem prover for first-order logic.

## Technology Transfer and External Fundings

### Technology transfer to industry

**Tech-transfer projects with D-Wave Systems Inc.** Since 2015 he has been collaborating with D-Wave Systems Inc. at Burnaby (CA), “The First Quantum Computer Company” (<https://www.dwavesys.com>) on solving SAT and other NP-complete problems with D-Wave’s Quantum Annealers (QAs).

This work, which is currently ongoing and whose first results are presented in a joint publication [C1], aims at developing encoding techniques for D-Wave’s QA’s so that to effectively and efficiently encode and solve SAT problems and related NP-complete problems. A D-Wave-sponsored project QuASi (Quantum Annealing for SAT Solving) has been just signed, effective from 01-04-18.

**Tech-transfer projects with Intel Corporation.** Since 2003, he has been collaborating with the Formal Verification Group of Intel at Haifa, Israel, on SMT-based Formal Verification of industrial RTL designs and microcode, in four projects which were fully or partly funded by Intel (namely BOWLING, ORCHID, WOLFLING, WOLF, see “Fundings”).

Remarkably, this work, which is described in five joint publications [C36, J14, C26, J12, C18], led to the development of a customized version of our SMT solver MATHSAT v.4, which was embedded as backend engine into the production version of Intel’s microcode symbolic simulator  $\mu$ Formal, leading to an average speedup of one order magnitude in the verification processes [C18]. Since then this customized version of MATHSAT v.4 had been used for years by Intel, as backend engine of  $\mu$ Formal, for verifying the microcode of its processors (in particular, the microcode for the Sandy Bridge architecture developed by Intel in Haifa).

The success of this work is witnessed by the following quote from the statement motivating the best-paper award of our joint paper at Formal Methods in Computer-Aided Design conference in 2010 [C18]:<sup>3</sup>

*“The FMCAD10 best paper award goes to the paper “Applying SMT in Symbolic Execution of Microcode” by Anders Franzen, Alessandro Cimatti, Alexander Nadel, Roberto Sebastiani, and Jonathan Shalev. The paper is a pleasure to read, and provides impressive results. The paper shows that SMT-based techniques can beat SAT-techniques in an industrial setting, even for problems where SAT has previously been the dominating technique. These results, although anticipated by the SMT community for a long time, had not been established this conclusively so far. Bravo and congratulations!”*

**Tech-transfer projects with Ansaldo Segnalamento Ferroviario.** From 1997 to 1998, when employed at IRST, Trento, he has very actively participated to the following technology transfer projects with Ansaldo Segnalamento Ferroviario for the usage of formal specification, design and verification methods for safety-critical railway signalling systems:

*SCAPIII - Safety Critical Applications:* formal specification, design and verification of a train-to-station communication protocol;

*ETCS – European Train Control System:* formal specification of a Train-Management system;

*RBC – Radio Block Center:* formal specification of a train-to-station transmission system.

These projects led to two joint publications [C50, C51].

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<sup>3</sup>See <http://fmcad10.iaik.tugraz.at/>.

## Fundings

- (2018-2021) Principal investigator of the 3-year project “*QuASi, Quantum Annealing for SAT Solving*” sponsored by D-Wave Systems Inc. [150K CA\$]
- (2012-2016) Principal investigator of the SRC-GRC 3-year project “*WOLF, Advanced SMT techniques for Word-level formal Verification*” sponsored by Semiconductor Research Corporation. [210K US\$]
- (2011-2017) Participation as Co-investigator to the project “*LUCRETIUS: Foundations for Software Evolution*”, ERC Advanced Grant # 267856
- (2009-2012) Principal investigator of the 3-year SRC-GRC project “*WOLFLING, Word-level formal verification via SMT solving*” sponsored by Intel Corporation via Semiconductor Research Corporation. [180K US\$]
- (2007-2009) Local team leader of the 3-year PRIN project “*Integrating automated reasoning in model checking: towards push-button formal verification of large-scale and infinite-state systems*” funded by MIUR. [24,5K EU]
- (2004-2006) Local team leader of the “Fondo unico” research project “*ORCHID: Enhanced Formal Checkers for RTL Circuit Designs*” sponsored by PAT in collaboration with Intel Corporation. [120K EU]
- (2003-2005) Local team leader of the technology transfer project “*BOWLING: BBoolean and Word-Level Integrated engines for Hybrid Formal Checking of RTL Designs*” sponsored by Intel Corporation. [37,5K US\$]
- (2003-2005) Participation to the research project “*Automazione dell’ Ingegneria del Software basata su Conoscenza – ASTRO*” sponsored by MIUR-FIRB.
- (2003-2004) Local team leader of the research project Partecipazione al progetto di ricerca “*Sistemi avanzati di ragionamento automatico per la rappresentazione e la verifica formale di sistemi complessi basati su estensioni non booleane di decisori per soddisfabilità*” sponsored by MURST.
- (2000-2004) Participation as external consultant of ITC-IRST to the EU IHP-RTN 5th Framework project “*CALCULEMUS*” on the integration of computer algebra and automated deduction systems.
- (2000-2001) Participation to the project “*SAfety Critical SOftware for planning in space robotics*” sponsored by Agenzia Spaziale Italiana.
- (2000-2001) Participation to the project “*Model checking e satisfiability: sviluppo di nuove procedure di decisione, loro valutazione ed analisi sperimentale comparata in ambito applicativo*” sponsored by MURST.

## Lecturing and Teaching

### Invited Talks at conferences

- “SMT: From Satisfiability to Optimization” at Alpine Verification Meeting (AVM13) workshop, 2013.
- “From SAT to Satisfiability Modulo Theories” at Guangzhou Symposium on Satisfiability in Logic-Based Modeling, 2010
- “From Description Logics to Satisfiability Modulo Theories (and back?)” at Description Logic Workshop (2010)
- “Lazy Satisfiability Modulo Theories” at DoD Workshop on Advances in Satisfiability (2008)
- “Delayed theory combination” at Dagstuhl Seminar on Decision Procedures (2007)
- “From KSAT to Delayed Theory Combination: Exploiting DPLL Outside the SAT Domain” at Frontier on Combining Systems (2007)
- “On Efficiently Integrating Boolean and Theory-Specific Solving Procedures” at STRATEGIES (2004)
- “Evaluating the Efficiency of Decision Procedures for Modal Logics” Methods for Modalities (1999)

### Courses & Tutorials at International Schools and Conferences

- (2015. Stanford, CA, USA) “Optimization Modulo Theories” at *International SAT/SMT School*.
- (2011. Barcellona, Spain) Tutorial “Satisfiability Modulo Theories” at *International Joint Conference on Artificial Intelligence - IJCAI’11*.
- (2008. Gargnano, Italy). “Logic at Work.” Summer School of Logic, Gargnano, Italy.
- (2005-2006. Brixen, Italy.) “Efficient Boolean Reasoning” at “Int. BIT summer school in ICT”.
- (2003, Acapulco, Mex) Tutorial “SAT beyond propositional satisfiability”, *International Joint Conference on Artificial Intelligence – IJCAI’03*
- (2003, Miami, USA) Tutorial “SAT beyond propositional satisfiability”, *International Conference on Automated Deduction CADE’03*
- (2002, Trento). Advanced Course “SAT beyond propositional satisfiability”, *14th European Summer School in Logic, Language and Information – ESSLLI’2002*.

### PhD Courses

- (2017-18, 2015-16, 2013-14, 2011-12, 2009-10, 2007-8, 2005-6, 2004-5, 2003-4, 2002-3, 2001-2002.) [3CFU] PhD Course “Efficient Boolean Reasoning”, “Int. Graduate School on ICT”, Trento.

### M.S. Courses (at c.d.l.m. “Informatica”, Facoltà di Scienze M.F.N., Università di Trento.)

- (2017-18, 2016-17, 2015-16, 2014-15, 2013-14, 2012-13, 2011-12, 2010-11, 2009-10, 2008-9, 2007-8, 2006-7, 2005-6, 2004-5, 2003-4) [12CFU] M.S. course “Introduction to Formal Methods”.

### B.S. Courses (at c.d.l. “Scienze e Ingegneria dell’Informazione”, Free University of Bozen/Bolzano.)

- (2010-11) [8 CFU] B.S. course “Data Structures and Algorithms”.

### B.S. Courses (at c.d.l. “Informatica”, Facoltà di Scienze M.F.N., Università di Trento.)

- (2017-18, 2016-17, 2015-16, 2014-15, 2012-13, 2011-12, 2010-11, 2009-10, 2008-9, 2007-8, 2006-7, 2005-6, 2004-5, 2003-4) [12CFU] B.S. course “Programmazione 1” (“Programming, 1”).
- (2002-2003, 2001-2002) [6 CFU] B.S. course “Laboratorio di Informatica: Programmazione 1”.
- (2000-2001) [6 CFU] B.S. course “Laboratorio di Informatica: Programmazione 2”.

## Student Advising and Service Activities

### Advisor of PhD students

- (2015-current.). Advisor of Stefano Varotti. Topics in automated reasoning and optimization.
- (2014-current.). Advisor of Patrick Trentin. Topics in automated reasoning and optimization.
- (2012-2017.). Advisor of Mai Chi Nguyen. Topics in automated reasoning and requirement specification.
- (2012-current.). Co-advisor of Ahmed Irfan. Topics in automated reasoning and formal verification.
- (2010-2013.). Advisor of Bastian Joost Schaafsma. Topics in automated reasoning and formal verification.
- (2009-2012.). Advisor of Jeremy Ridgeway. Topics in automated reasoning and formal verification.
- (2009-2013.). Advisor of Silvia Tomasi. Topics in automated reasoning and optimization.
- (2006-2011.). Advisor of Michele Vescovi. Topics in automated reasoning in description logics.
- (2005-2010.). Co-Advisor of Anders Franzen. Topics in automated reasoning and formal verification.
- (2005-2009.). Advisor of Alberto Griggio. Topics in automated reasoning and formal verification.
- (2004-2008). Co-Advisor of Roberto Bruttomesso. Topics in automated reasoning and formal verification.
- (2003-2005.). Co-Advisor of Veselin Kirov. Topics in automated reasoning and formal verification.
- (2001-2006.). Advisor of Stefano Tonetta. Topics in automated reasoning and formal verification.

### Advisor of M.S. and B.S students

He is supervising/he has supervised:

- 17 M.S. theses in Computer Science,
- 1 M.S. thesis in Mathematics,
- 1 M.S. thesis in Economical Science,
- 20 B.S. theses in Computer Science.

### Current or past Service Activities

- member for student-teacher joint commission (membro “Commissione Paritetica Docenti-Studenti”)
- Delegate for student secondary-school stages (“delegato per l’alternanza scuola-lavoro”) at DISI, University of Trento.
- Delegate for student orientation and guidance (“delegato per l’orientamento”) at DISI, University of Trento.
- Member of the Executive Committee of the “Int. Graduate School on ICT” of University of Trento.
- Member of the Board of the “Int. Graduate School on ICT” of University of Trento.
- Formerly head of the Research Program “*Software Engineering and Formal methods*” at DISI, University of Trento.
- Formerly delegate for student tutoring (“delegato per il tutorato”) at DISI, University of Trento.
- Formerly head of the committee for the Qualifying Exam of the “Int. Graduate School on ICT” of University of Trento.
- Formerly member of the committee for the Admission Exam of the “Int. Graduate School on ICT” of University of Trento.

## International visibility

### Citation Indexes

Google Scholar: <sup>4</sup>

- # citations: 7143,
- h-index: 37
- 1 paper with more than 1500 citations, other 15 papers with more than 100 citations each

Scopus: <sup>5</sup>

- # citations: 2707,
- h-index: 24

Microsoft Academic Search: <sup>6</sup>

- # citations: 2044
- Occurs as # 2299 (over >1,500,000 ) in the ranking of the most-cited authors in computer science

Top Italian Scientists: Occurs in the list of *Top Italian Scientists*.<sup>7</sup>

### Ranking of publications

As author, at present date he has published:

- 25 papers on refereed journals, among which 14 on class 1 (“prima fascia”) according to ANVUR journal classification;<sup>8</sup>
- 4 book chapters, among which 2 chapters of *Handbook of Satisfiability*;
- 60 papers on refereed conference proceedings, among which 44 of rating *A\** (Flagship) or *A* (Excellent) according to the *Computer Research & Education International Conference Ranking, CORE*.<sup>9</sup>

### Editing & Membership of Editorial Boards

- (2006-current): Associate editor “*Journal on Boolean Modeling, Reasoning and Computation*”. IOS Press.
- (2003-current) Member of the Ed. Board of “*Journal on Boolean Modeling, Reasoning and Computation*”.
- (2007) Guest co-editor, with dr. B. Cook of Microsoft Research, of *Journal on Satisfiability, Boolean Modeling and Computation, JSAT*, “Special Issue on Satisfiability Modulo Theories”. IOS Press.
- (2001-02). Guest Co-Editor, with prof. S. Linton of St. Andrews University, of *Journal of Symbolic Computation: Special Issue on Integration of Automated Reasoning and Computer Algebra Systems*. Elsevier.

### Chairmanships & Memberships of Steering and Program Committees

- (2018) Co-chair of *International Joint Conference on Automated Reasoning (IJCAR'18)*. Proc. in LNCS, Springer.
- (2012) Co-chair of *Theory and Applications of Satisfiability Testing (SAT'12)*. Proc. in LNCS, Springer.
- (2009) Co-chair of *Frontier on Combining Systems - FroCoS'09*. Proc. in LNCS, Springer.
- (2006) Co-chair of *Pragmatics of Decision Procedures in Automated Reasoning - PDPAR'06 (now called “SMT”)*. Proc. in ENTCS, Elsevier.

<sup>4</sup>[http://scholar.google.com/citations?user=qmndYsAAAAJ&view\\_op=list\\_works&pagesize=100](http://scholar.google.com/citations?user=qmndYsAAAAJ&view_op=list_works&pagesize=100).

<sup>5</sup><http://www.scopus.com/authid/detail.url?authorId=8859979400>

<sup>6</sup><http://academic.research.microsoft.com/RankList?entitytype=2&topdomainid=2&subdomainid=0&last=0&orderBy=6&start=2201&end=2300>. MAS is no more maintained.

<sup>7</sup><http://www.topitalianscientists.org>

<sup>8</sup><http://www.anvur.org>.

<sup>9</sup><http://core.edu.au>.



- (2001) Co-chair of *CALCULEMUS-2001, 9th Symposium on the Integration of Symbolic Computation and Mechanized Reasoning*.
- Member of the Steering Committee of the following conferences: SAT, IJCAR, FRODOS, SMT, CALCULEMUS.
- Member of the Program Committee of the following conferences AAAI, AIMS, CADE, CAV, FRODOS, IJCAI, IJCAR, KR, PDPAR, SAT, SMT, VMCAI, plus some workshops.

### International collaborations

He has published more than 80 papers with more than 50 coauthors, including world-class scientists like:

- Prof. Edmund Clarke, CMU (ACM Turing Award 2007);
- Prof. Moshe Vardi, Rice Univ, TX (ACM Goedel Prize 2000, ACM Kanellakis Award 2005);
- Prof. Alan Bundy, Univ. of Edimburgh (Herbrand Award, 2007);
- Prof. Ian Horrocks, Oxford Univ. (BCS Needham award 2005);
- Prof. John Mylopoulos, Univ. of Ottawa, CA
- Prof. Toby Walsh, Camberra;
- Dr. Ziyad Hanna, Vice President of R&D, Cadence Design Systems;
- Dr. Peter Patel-Schneider, Lucent;
- Prof. Fausto Giunchiglia, University of Trento;
- Dr. Alessandro Cimatti, FBK-IRST.

### Awards

- *AWARD “EAAI Top-Cited Article 2005-2010” by Elsevier ([J17])*.  
for the paper “Goal-Oriented Requirements Analysis and Reasoning in the Tropos Methodology” by P. Giorgini, J. Mylopoulos, R. Sebastiani, *Engineering Application of Artificial Intelligence Journal*. Volume 18/2, March 2005. Ed. Elsevier.
- *BEST PAPER AWARD at Formal Methods for Computed-Aided Design conference, 2010 ([C18])*.  
for the paper “Applying SMT in Symbolic Execution of Microcode” by A. Franzen, A. Cimatti, A. Nadel, R. Sebastiani, J. Shalev. Lugano, Switzerland, October 2010.
- *Official nomination for Best Paper Award at TACAS’11 conference* for the paper “Efficient interpolant generation in satisfiability modulo linear integer algebra” [C17] by A. Griggio, T.T.H. Le and R. Sebastiani (see <http://www.etaps.org/index.php/2011/best-papers>)

## Publications – Editor

### Edited Journal Special Issues

- (i) B. Cook, R. Sebastiani, Editors. “Special Issue on Satisfiability Modulo Theories”. *Journal on Satisfiability, Boolean Modeling and Computation*, JSAT. Vol. 3, 2007. IOS Press.
- (ii) S. Linton, R. Sebastiani, Editors. “Special Issue on Integration of Automated Reasoning and Computer Algebra Systems.” *Journal of Symbolic Computation*, Vol 34 (4) October 2002, Elsevier.

### Edited Archival Conference Proceedings

- (a) D. Galmiche, S. Schulz, R. Sebastiani, Editors. “Automated Reasoning - IJCAR’18, 9th International Joint Conference”. Oxford, UK, July 14-17, 2018. LNCS, Springer. Forthcoming.
- (b) A. Cimatti, R. Sebastiani, Editors. “Theory and Applications of Satisfiability Testing - SAT 2012 - 15th International Conference”. Trento, Italy, June 17-20, 2012. Vol. 7317 LNCS, Springer.
- (c) S. Ghilardi, R. Sebastiani, Editors. “Frontiers of Combining Systems, 7th International Symposium, FroCoS 2009”, Trento, Italy, September 16-18, 2009. Vol. 5749 LNCS, Springer.
- (d) B. Cook, R. Sebastiani, Editors. ”Proceedings of the Fourth Workshop on Pragmatics of Decision Procedures in Automated Reasoning (PDPAR 2006)”. ENTCS, Vol 174, (8) June 1007, Elsevier.

### Edited Workshop Proceedings (non archival)

- (a) S. Linton and R. Sebastiani editors. Proc. *CALCULEMUS-2001, 9th Symposium on the Integration of Symbolic Computation and Mechanized Reasoning*. Siena, Italy, 21-22 June 2001.

## Publications – Author

All publications are available from <http://disi.unitn.it/rseba/publist.html>.

### Papers on Journals

- J1. A. Cimatti, A. Griggio, A. Irfan, M. Roveri, R. Sebastiani “Incremental Linearization for Satisfiability and Verification Modulo Nonlinear Arithmetic and Transcendental Functions”. 2017. Accepted for publication at *ACM Transactions on Computational Logics, TOCL*.
- J2. M. C. Nguyen, R. Sebastiani, P. Giorgini, J. Mylopoulos “Multi-Objective Reasoning with Constrained Goal Models”. *Requirements Engineering*, published online December 2016. Paper version in print.
- J3. S. Teso, R. Sebastiani, A. Passerini. “Structured Learning Modulo Theories”. *Artificial Intelligence*. Volume 244, pages 166-187, March 2017. (Published online 29 April 2015.)
- J4. R. Sebastiani and S. Tomasi “Optimization Modulo Theories with Linear Rational Costs” *ACM Transactions on Computational Logics, TOCL*. Volume 16, Issue 2, March 2015.
- J5. A. Griggio, T.T.H. Le, and R. Sebastiani “Efficient Interpolant Generation in Satisfiability Modulo Linear Integer Arithmetic” *Logical Methods in Computer Science*. Volume 8, Issue 3, pages 1-31, August 2012.
- J6. A. Cimatti, A. Griggio and R. Sebastiani “Computing Small Unsatisfiable Cores in Satisfiability Modulo Theories”. (Extended version of SAT’07 paper.) *Journal of Artificial Intelligence Research, JAIR*. Volume 40, pages 701-728, April 2011.
- J7. R. Sebastiani, S. Tonetta, M. Y. Vardi “Symbolic Systems, Explicit Properties: on Hybrid Approaches for LTL Symbolic Model Checking”. *International Journal on Software Tools for Technology Transfer (STTT) Springer*. Volume 13, Number 4, p. 319-335 2011.

- J8. A. Cimatti, A. Griggio and R. Sebastiani “Efficient Interpolant Generation in Satisfiability Modulo Theories”. *ACM Transactions on Computational Logics, TOCL*, vol. 12, number 1, October 2010.
- J9. R. Sebastiani, M. Vescovi “Automated Reasoning in Modal and Description Logics via SAT Encoding: the Case Study of  $K(m)/ALC$ -Satisfiability” *Journal of Artificial Intelligence Research, JAIR*. Volume 35, June 2009
- J10. R. Bruttomesso, A. Cimatti, A. Franzén, A. Griggio, R. Sebastiani “Delayed Theory Combination vs. Nelson-Oppen for Satisfiability Modulo Theories: a Comparative Analysis.” Extended version. *Annals of Mathematics and Artificial Intelligence*, 55(1-2), pp. 63-99, February 2009. Ed. Springer.
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