



# ENRICO GIUNCHIGLIA

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## DATI ANAGRAFICI

- Nasce a Levanto (SP) il 14 giugno 1964.
- Vive a Sestri Levante (GE) con la moglie Francesca e le loro due figlie di 22 e 26 anni.

## CURRICULUM ACCADEMICO

- Professore Ordinario da maggio 2004 presso l'Università di Genova.
- Professore Associato da novembre 1998 ad aprile 2004 presso l'Università di Genova.
- Ricercatore da luglio 1995 a ottobre 1998 presso l'Università di Genova.
- Visiting scholar da ottobre 1993 a marzo 1995 presso il Department of Computer Science at Austin (TX).
- Dottorando di Ricerca in Ingegneria Elettronica ed Informatica da novembre 1989 a ottobre 1992.
- Laureato con Lode e dignità di stampa in Ingegneria Elettronica nel gennaio 1989.

## PRINCIPALE ATTIVITÀ ISTITUZIONALE E GESTIONALE

- Prorettore vicario da novembre 2014.
- Presidente della Scuola Superiore Iauua da novembre 2015 a settembre 2016.
- Prorettore per la ricerca e il trasferimento tecnologico da novembre 2014 a ottobre 2015.
- Direttore del Dipartimento di Informatica, Bioingegneria, Robotica e Ingegneria dei Sistemi (DIBRIS) da luglio 2012 a ottobre 2014.
- Presidente del Comitato Tecnico Scientifico del Distretto Tecnologico Ligure sui Sistemi Intelligenti Integrati (SIIT) da settembre 2013 a ottobre 2014.
- Delegato del rettore per l'informatica e telematica di Ateneo e presidente del Centro Servizi Informatici e Telematici di Ateneo (CSITA) da dicembre 2008 a febbraio 2012.

Attualmente è:

- Componente dell'Assemblea Consortile del Cineca.

## PERIODI DI RICERCA ALL'ESTERO

- Department of Computer Science, Rice University, Houston, dal Prof. Moshe Vardi, nel mese di gennaio 2000.
- Department of Computer Science at Austin (TX) dal Prof. Vladimir Lifschitz, da ottobre 1993 a marzo 1995.
- Department of Computer Science, Stanford dal Prof. John McCarthy, da gennaio 1992 ad aprile 1992.

## ATTIVITÀ DIDATTICA

Titolare degli insegnamenti di:

- *Artificial Intelligence* (corso tenuto in lingua inglese) dal 2010 al 2018.
- Metodi e Modelli per l'Ingegneria del Software dal 2009 al 2012.
- Ingegneria del Software dal 2000 al 2012.
- Ingegneria della Conoscenza dal 2007 al 2009.
- Basi di Dati dal 2003 al 2008.
- Sistemi Informativi presso la sede di Savona dal 1998 al 2004.
- Fondamenti di Informatica presso la sede di Savona dal 1998 al 2000.

## ATTIVITÀ DI RICERCA

L'attività di ricerca, con caratteristiche teorico-applicative, si è sviluppata nei campi dell'Intelligenza Artificiale e della Verifica di Sistemi e, più precisamente, nei seguenti ambiti:

- Rappresentazione della conoscenza.
- Pianificazione automatica.
- Ragionamento automatico.
- Software testing.
- Model checking.

L'attività di ricerca svolta ha dato luogo a oltre 100 pubblicazioni scientifiche, alcune pubblicate nelle più prestigiose sedi internazionali.

*h*-index 26, pubblicazioni 100, citazioni 2904 da banca dati Scopus.

*h*-index 41, citazioni 6884 da banca dati Google Scholar.

È citato dal sito “*Top Italian Scientists*” (<http://www.topitalianscientists.org>).

Tra i ricercatori con cui ha collaborato, vi sono il Prof. John McCarthy (premio Turing nel 1971) e il Prof. Edmund Clarke (premio Turing nel 2007).

Ha ricoperto diversi incarichi a livello internazionale tra cui la presidenza dell'*ICAPS executive council*; è stato editore associato della rivista *Artificial Intelligence*, ed *Editor in Chief* di *AI Communications*, la rivista di riferimento dell'*European Association for Artificial Intelligence*; è stato organizzatore e/o membro del comitato di programma di oltre 100 eventi internazionali.

Responsabile e/o co-responsabile di numerosi progetti di ricerca di base e industriale finanziati da enti nazionali e internazionali. Ha svolto attività di revisione di progetti per diversi enti tra cui il MIUR, ERC, NASA, NSF, EPSRC.

Genova, 6 aprile 2020

Enrico Giunchiglia

A handwritten signature in blue ink, appearing to read 'E. Giunchiglia', positioned below the printed name.

## PUBBLICAZIONI SCIENTIFICHE (DBLP)

1. Francesco Leofante, Enrico Giunchiglia, Erika Abrahàm, Armando Tacchella. Optimal planning modulo theories. Submitted.
2. Enrico Giunchiglia, Marco Maratea, and Luca Pulina. Translation-based approaches for solving disjunctive temporal problems with preferences. *Constraints*, 23(4):383–402, 2018.
3. Paolo Marin, Massimo Narizzano, Luca Pulina, Armando Tacchella, and Enrico Giunchiglia. Twelve years of QBF evaluations: QSAT is pspace-hard and it shows. *Fundam. Inform.*, 149(1-2):133–158, 2016.
4. Paolo Marin, Massimo Narizzano, Luca Pulina, Armando Tacchella, and Enrico Giunchiglia. An empirical perspective on ten years of QBF solving. In Stefano Bistarelli, Andrea Formisano, and Marco Maratea, editors, *Proceedings of the 22nd RCRA International Workshop on Experimental Evaluation of Algorithms for Solving Problems with Combinatorial Explosion 2015 (RCRA 2015) A workshop of the XIV International Conference of the Italian Association for Artificial Intelligence (AI\*IA 2015), Ferrara, Italy, September 22, 2015*, volume 1451 of *CEUR Workshop Proceedings*, pages 62–75. CEUR-WS.org, 2015.
5. Ali Khalili, Massimo Narizzano, Armando Tacchella, and Enrico Giunchiglia. Automatic test-pattern generation for grey-box programs. In Hong Zhu, Dan Hao, Leonardo Mariani, and Rajesh Subramanyan, editors, *10th IEEE/ACM International Workshop on Automation of Software Test, AST 2015, Florence, Italy, May 23-24, 2015*, pages 33–37. IEEE Computer Society, 2015.
6. Emanuele Di Rosa and Enrico Giunchiglia. Combining approaches for solving satisfiability problems with qualitative preferences. *AI Commun.*, 26(4):395–408, 2013.
7. Alessandro Armando, Enrico Giunchiglia, Marco Maratea, and Serena Elisa Ponta. Modeling and reasoning about business processes under authorization constraints: A planning-based approach. In Daniel Borrajo, Subbarao Kambhampati, Angelo Oddi, and Simone Fratini, editors, *Proceedings of the Twenty-Third International Conference on Automated Planning and Scheduling, ICAPS 2013, Rome, Italy, June 10-14, 2013*. AAAI, 2013.
8. Michael Cashmore, Maria Fox, and Enrico Giunchiglia. Partially grounded planning as quantified boolean formula. In Daniel Borrajo, Subbarao Kambhampati, Angelo Oddi, and Simone Fratini, editors, *Proceedings of the Twenty-Third International Conference on Automated Planning and Scheduling, ICAPS 2013, Rome, Italy, June 10-14, 2013*. AAAI, 2013.
9. Alessandro Armando, Enrico Giunchiglia, Marco Maratea, and Serena Elisa Ponta. An action-based approach to the formal specification and automatic analysis of business processes under authorization constraints. *J. Comput. Syst. Sci.*, 78(1):119–141, 2012.
10. Enrico Giunchiglia and Marco Maratea. Algorithms for solving satisfiability problems with qualitative preferences. In Esra Erdem, Joohyung Lee, Yuliya Lierler, and David Pearce, editors, *Correct Reasoning - Essays on Logic-Based AI in Honour of Vladimir Lifschitz*, volume 7265 of *Lecture Notes in Computer Science*, pages 327–344. Springer, 2012.
11. Michael Cashmore, Maria Fox, and Enrico Giunchiglia. Planning as quantified boolean formula. In Luc De Raedt, Christian Bessiere, Didier Dubois, Patrick Doherty, Paolo Frasconi, Fredrik Heintz, and Peter J. F. Lucas, editors, *ECAI 2012 - 20th European Conference on Artificial Intelligence. Including Prestigious Applications of Artificial Intelligence (PAIS2012) System Demonstrations Track, Montpellier, France, August 27-31, 2012*, volume 242 of *Frontiers in Artificial Intelligence and Applications*, pages 217–222. IOS Press, 2012.
12. Matthew D. T. Lewis, Tobias Schubert, Bernd Becker, Paolo Marin, Massimo Narizzano, and Enrico Giunchiglia. Parallel QBF solving with advanced knowledge sharing. *Fundam. Inform.*, 107(2-3):139–166, 2011.
13. Enrico Giunchiglia and Marco Maratea. Introducing preferences in planning as satisfiability. *J. Log. Comput.*, 21(2):205–229, 2011.
14. Emanuele Di Rosa, Enrico Giunchiglia, and Barry O’Sullivan. Optimal stopping methods for finding high quality solutions to satisfiability problems with preferences. In William C. Chu, W. Eric Wong, Mathew J. Palakal, and Chih-Cheng Hung, editors, *Proceedings of the 2011 ACM Symposium on Applied Computing (SAC), TaiChung, Taiwan, March 21 - 24, 2011*, pages 901–906. ACM, 2011.
15. Enrico Giunchiglia, Massimo Narizzano, and Armando Tacchella. Clause/term resolution and learning in the evaluation of quantified boolean formulas. *CoRR*, abs/1111.0860, 2011.
16. Emanuele Di Rosa, Enrico Giunchiglia, and Marco Maratea. Solving satisfiability problems with preferences. *Constraints*, 15(4):485–515, 2010.

17. Damiano Angeletti, Enrico Giunchiglia, Massimo Narizzano, Alessandra Puddu, and Salvatore Sabina. Using bounded model checking for coverage analysis of safety-critical software in an industrial setting. *J. Autom. Reasoning*, 45(4):397–414, 2010.
18. Enrico Giunchiglia, Paolo Marin, and Massimo Narizzano. Qube7.0. *J. Satisf. Boolean Model. Comput.*, 7(2-3):83–88, 2010.
19. Emanuele Di Rosa, Enrico Giunchiglia, Massimo Narizzano, Gabriele Palma, and Alessandra Puddu. Automatic generation of high quality test sets via CBMC. In Markus Aderhold, Serge Autexier, and Heiko Mantel, editors, *6th International Verification Workshop, VERIFY2010, Edinburgh, UK, July 20-21, 2010*, volume 3 of *EPiC Series in Computing*, pages 65–78. EasyChair, 2010.
20. Enrico Giunchiglia, Paolo Marin, and Massimo Narizzano. squeezebf: An effective preprocessor for qbfs based on equivalence reasoning. In Ofer Strichman and Stefan Szeider, editors, *Theory and Applications of Satisfiability Testing - SAT 2010, 13th International Conference, SAT 2010, Edinburgh, UK, July 11-14, 2010. Proceedings*, volume 6175 of *Lecture Notes in Computer Science*, pages 85–98. Springer, 2010.
21. Damiano Angeletti, Enrico Giunchiglia, Massimo Narizzano, Gabriele Palma, Alessandra Puddu, and Salvatore Sabina. Improving the automatic test generation process for coverage analysis using CBMC. In Marco Gavanelli and Toni Mancini, editors, *Proceedings of the 16th RCRA workshop on Experimental Evaluation of Algorithms for Solving Problems with Combinatorial Explosion, RCRA@AI\*IA 2009, Reggio Emilia, Italy, December 11-12, 2009*, volume 589 of *CEUR Workshop Proceedings*. CEUR-WS.org, 2009.
22. Enrico Giunchiglia and Marco Maratea. Improving plan quality in sat-based planning. In Roberto Serra and Rita Cucchiara, editors, *AI\*IA 2009: Emergent Perspectives in Artificial Intelligence, XIth International Conference of the Italian Association for Artificial Intelligence, Reggio Emilia, Italy, December 9-12, 2009, Proceedings*, volume 5883 of *Lecture Notes in Computer Science*, pages 253–263. Springer, 2009.
23. Paolo Marin, Matthew D. T. Lewis, Tobias Schubert, Massimo Narizzano, Bernd Becker, and Enrico Giunchiglia. Evaluation of knowledge sharing strategies in a parallel QBF solver. In Marco Gavanelli and Toni Mancini, editors, *Proceedings of the 16th RCRA workshop on Experimental Evaluation of Algorithms for Solving Problems with Combinatorial Explosion, RCRA@AI\*IA 2009, Reggio Emilia, Italy, December 11-12, 2009*, volume 589 of *CEUR Workshop Proceedings*. CEUR-WS.org, 2009.
24. Damiano Angeletti, Enrico Giunchiglia, Massimo Narizzano, Alessandra Puddu, and Salvatore Sabina. Automatic test generation for coverage analysis using CBMC. In Roberto Moreno-Díaz, Franz Pichler, and Alexis Quesada-Arencibia, editors, *Computer Aided Systems Theory - EUROCAST 2009, 12th International Conference, Las Palmas de Gran Canaria, Spain, February 15-20, 2009, Revised Selected Papers*, volume 5717 of *Lecture Notes in Computer Science*, pages 287–294. Springer, 2009.
25. Damiano Angeletti, Enrico Giunchiglia, Massimo Narizzano, Alessandra Puddu, and Salvatore Sabina. Automatic test generation for coverage analysis of ERTMS software. In *Second International Conference on Software Testing Verification and Validation, ICST 2009, Denver, Colorado, USA, April 1-4, 2009*, pages 303–306. IEEE Computer Society, 2009.
26. Paolo Marin, Massimo Narizzano, Enrico Giunchiglia, Matthew D. T. Lewis, Tobias Schubert, and Bernd Becker. Comparison of knowledge sharing strategies in a parallel QBF solver. In Waleed W. Smari and John P. McIntire, editors, *2009 International Conference on High Performance Computing & Simulation, HPCS 2009, Leipzig, Germany, June 21-24, 2009*, pages 161–167. IEEE, 2009.
27. Matthew D. T. Lewis, Paolo Marin, Tobias Schubert, Massimo Narizzano, Bernd Becker, and Enrico Giunchiglia. Paqube: Distributed QBF solving with advanced knowledge sharing. In Oliver Kullmann, editor, *Theory and Applications of Satisfiability Testing - SAT 2009, 12th International Conference, SAT 2009, Swansea, UK, June 30 - July 3, 2009. Proceedings*, volume 5584 of *Lecture Notes in Computer Science*, pages 509–523. Springer, 2009.
28. Alessandro Armando, Enrico Giunchiglia, and Serena Elisa Ponta. Formal specification and automatic analysis of business processes under authorization constraints: An action-based approach. In Simone Fischer-Hübner, Costas Lambrinoudakis, and Günther Pernul, editors, *Trust, Privacy and Security in Digital Business, 6th International Conference, TrustBus 2009, Linz, Austria, September 3-4, 2009. Proceedings*, volume 5695 of *Lecture Notes in Computer Science*, pages 63–72. Springer, 2009.
29. Enrico Giunchiglia, Paolo Marin, and Massimo Narizzano. Reasoning with quantified boolean



- formulas. In Armin Biere, Marijn Heule, Hans van Maaren, and Toby Walsh, editors, *Handbook of Satisfiability*, volume 185 of *Frontiers in Artificial Intelligence and Applications*, pages 761–780. IOS Press, 2009.
30. Enrico Giunchiglia, Nicola Leone, and Marco Maratea. On the relation among answer set solvers. *Ann. Math. Artif. Intell.*, 53(1-4):169–204, 2008.
  31. Emanuele Di Rosa, Enrico Giunchiglia, and Marco Maratea. Computing all optimal solutions in satisfiability problems with preferences. In Peter J. Stuckey, editor, *Principles and Practice of Constraint Programming, 14th International Conference, CP 2008, Sydney, Australia, September 14-18, 2008. Proceedings*, volume 5202 of *Lecture Notes in Computer Science*, pages 603–607. Springer, 2008.
  32. Emanuele Di Rosa, Enrico Giunchiglia, and Marco Maratea. A new approach for solving satisfiability problems with qualitative preferences. In Malik Ghallab, Constantine D. Spyropoulos, Nikos Fakotakis, and Nikolaos M. Avouris, editors, *ECAI 2008 - 18th European Conference on Artificial Intelligence, Patras, Greece, July 21-25, 2008, Proceedings*, volume 178 of *Frontiers in Artificial Intelligence and Applications*, pages 510–514. IOS Press, 2008.
  33. Enrico Giunchiglia, Paolo Marin, and Massimo Narizzano. Preprocessing techniques for qbfs. In Marco Gavaneli and Toni Mancini, editors, *Proceedings of the 15th RCRA workshop on Experimental Evaluation of Algorithms for Solving Problems with Combinatorial Explosion, Udine, Italy, December 12-13, 2008*, volume 451 of *CEUR Workshop Proceedings*. CEURWS.org, 2008.
  34. Enrico Giunchiglia, Massimo Narizzano, and Armando Tacchella. Quantifier structure in search-based procedures for qbfs. *IEEE Trans. on CAD of Integrated Circuits and Systems*, 26(3):497–507, 2007.
  35. Enrico Giunchiglia and Marco Maratea. Planning as satisfiability with preferences. In *Proceedings of the Twenty-Second AAAI Conference on Artificial Intelligence, July 22-26, 2007, Vancouver, British Columbia, Canada*, pages 987–992. AAAI Press, 2007.
  36. Enrico Giunchiglia and Marco Maratea. Sat-based planning with minimal-#actions plans and "soft" goals. In Roberto Basili and Maria Teresa Paziienza, editors, *AI\*IA 2007: Artificial Intelligence and Human-Oriented Computing, 10th Congress of the Italian Association for Artificial Intelligence, Rome, Italy, September 10-13, 2007, Proceedings*, volume 4733 of *Lecture Notes in Computer Science*, pages 422–433. Springer, 2007.
  37. Luigia Carlucci Aiello, Enrico Giunchiglia, and Luciano Serafini. Logics for artificial intelligence. *Intelligenza Artificiale*, 3(1-2):7–13, 2006.
  38. Enrico Giunchiglia, Massimo Narizzano, and Armando Tacchella. Clause/term resolution and learning in the evaluation of quantified boolean formulas. *J. Artif. Intell. Res.*, 26:371–416, 2006.
  39. Enrico Giunchiglia, Yuliya Lierler, and Marco Maratea. Answer set programming based on propositional satisfiability. *J. Autom. Reasoning*, 36(4):345–377, 2006.
  40. Enrico Giunchiglia, Massimo Narizzano, and Armando Tacchella. Quantifier structure in search based procedures for qbfs. In Georges G. E. Gielen, editor, *Proceedings of the Conference on Design, Automation and Test in Europe, DATE 2006, Munich, Germany, March 6-10, 2006*, pages 812–817. European Design and Automation Association, Leuven, Belgium, 2006.
  41. Enrico Giunchiglia and Marco Maratea. Solving optimization problems with DLL. In Gerhard Brewka, Silvia Coradeschi, Anna Perini, and Paolo Traverso, editors, *ECAI 2006, 17th European Conference on Artificial Intelligence, August 29 - September 1, 2006, Riva del Garda, Italy, Including Prestigious Applications of Intelligent Systems (PAIS 2006), Proceedings*, volume 141 of *Frontiers in Artificial Intelligence and Applications*, pages 377–381. IOS Press, 2006.
  42. Enrico Giunchiglia and Marco Maratea. optsat: A tool for solving SAT related optimization problems. In Michael Fisher, Wiebe van der Hoek, Boris Konev, and Alexei Lisitsa, editors, *Logics in Artificial Intelligence, 10th European Conference, JELIA 2006, Liverpool, UK, September 13-15, 2006, Proceedings*, volume 4160 of *Lecture Notes in Computer Science*, pages 485–489. Springer, 2006.
  43. Alessandro Armando, Claudio Castellini, Enrico Giunchiglia, Massimo Idini, and Marco Maratea. TSAT++: an open platform for satisfiability modulo theories. *Electron. Notes Theor. Comput. Sci.*, 125(3):25–36, 2005.
  44. Alexander Nareyek, Eugene C. Freuder, Robert Fourer, Enrico Giunchiglia, Robert P. Goldman, Henry A. Kautz, Jussi Rintanen, and Austin Tate. Constraints and AI planning. *IEEE Intell. Syst.*, 20(2):62–72, 2005.

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47. Enrico Giunchiglia and Marco Maratea. Evaluating search strategies and heuristics for efficient answer set programming. In Stefania Bandini and Sara Manzoni, editors, *AI\*IA 2005: Advances in Artificial Intelligence, 9th Congress of the Italian Association for Artificial Intelligence, Milan, Italy, September 21-23, 2005, Proceedings*, volume 3673 of *Lecture Notes in Computer Science*, pages 122–134. Springer, 2005.
48. Enrico Giunchiglia and Marco Maratea. An experimental study of search strategies and heuristics in answer set programming. In Marina De Vos and Alessandro Provetti, editors, *Answer Set Programming, Advances in Theory and Implementation, Proceedings of the 3rd Intl. ASP'05 Workshop, Bath, UK, September 27-29, 2005*, volume 142 of *CEUR Workshop Proceedings*. CEUR-WS.org, 2005.
49. Alessandro Armando, Claudio Castellini, Enrico Giunchiglia, Fausto Giunchiglia, and Armando Tacchella. Sat-based decision procedures for automated reasoning: A unifying perspective. In Dieter Hutter and Werner Stephan, editors, *Mechanizing Mathematical Reasoning, Essays in Honor of Jorg H. Siekmann on the Occasion of His 60th Birthday*, volume 2605 of *Lecture Notes in Computer Science*, pages 46–58. Springer, 2005.
50. Fausto Giunchiglia, Mikalai Yatskevich, and Enrico Giunchiglia. Efficient semantic matching. In Asuncion Gómez-Pérez and Jérôme Euzenat, editors, *The Semantic Web: Research and Applications, Second European Semantic Web Conference, ESWC 2005, Heraklion, Crete, Greece, May 29 - June 1, 2005, Proceedings*, volume 3532 of *Lecture Notes in Computer Science*, pages 272–289. Springer, 2005.
51. Enrico Giunchiglia and Marco Maratea. On the relation between answer set and SAT procedures (or, between *cmodels* and *smodels*). In Maurizio Gabbriellini and Gopal Gupta, editors, *Logic Programming, 21st International Conference, ICLP 2005, Sitges, Spain, October 25, 2005, Proceedings*, volume 3668 of *Lecture Notes in Computer Science*, pages 37–51. Springer, 2005.
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56. Enrico Giunchiglia, Massimo Narizzano, and Armando Tacchella. Monotone literals and learning in QBF reasoning. In Mark Wallace, editor, *Principles and Practice of Constraint Programming - CP 2004, 10th International Conference, CP 2004, Toronto, Canada, September 27 - October 1, 2004, Proceedings*, volume 3258 of *Lecture Notes in Computer Science*, pages 260–273. Springer, 2004.
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- decision procedure for the boolean combination of difference constraints. In Holger H. Hoos and David G. Mitchell, editors, *Theory and Applications of Satisfiability Testing, 7th International Conference, SAT 2004, Vancouver, BC, Canada, May 10-13, 2004, Revised Selected Papers*, volume 3542 of *Lecture Notes in Computer Science*, pages 16–29. Springer, 2004.
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  65. Claudio Castellini, Enrico Giunchiglia, and Armando Tacchella. Sat-based planning in complex domains: Concurrency, constraints and nondeterminism. *Artif. Intell.*, 147(1-2):85–117, 2003.
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  69. Enrico Giunchiglia, Armando Tacchella, and Fausto Giunchiglia. Sat-based decision procedures for classical modal logics. *J. Autom. Reasoning*, 28(2):143–171, 2002.
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  71. Alessandro Cimatti, Edmund M. Clarke, Enrico Giunchiglia, Fausto Giunchiglia, Marco Pistore, Marco Roveri, Roberto Sebastiani, and Armando Tacchella. Nusmv 2: An opensource tool for symbolic model checking. In Ed Brinksma and Kim Guldstrand Larsen, editors, *Computer Aided Verification, 14th International Conference, CAV 2002, Copenhagen, Denmark, July 27-31, 2002, Proceedings*, volume 2404 of *Lecture Notes in Computer Science*, pages 359–364. Springer, 2002.
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