

# Alessandro Cimatti

## List of Publications by Year in descending order

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164  
papers

7,145  
citations

126708

33  
h-index

74018

75  
g-index

181  
all docs

181  
docs citations

181  
times ranked

2669  
citing authors

#	ARTICLE	IF	CITATIONS
1	Symbolic Model Checking without BDDs. Lecture Notes in Computer Science, 1999, , 193-207.	1.0	1,037
2	Bounded Model Checking. Advances in Computers, 2003, 58, 117-148.	1.2	490
3	NUSMV: a new symbolic model checker. International Journal on Software Tools for Technology Transfer, 2000, 2, 410-425.	1.7	467
4	The MathSAT5 SMT Solver. Lecture Notes in Computer Science, 2013, , 93-107.	1.0	318
5	The nuXmv Symbolic Model Checker. Lecture Notes in Computer Science, 2014, , 334-342.	1.0	268
6	Safety, Dependability and Performance Analysis of Extended AADL Models. Computer Journal, 2011, 54, 754-775.	1.5	171
7	The MathSAT4 SMT Solver. Lecture Notes in Computer Science, 2008, , 299-303.	1.0	127
8	Software model checking via large-block encoding. , 2009, , .		96
9	Software Model Checking via IC3. Lecture Notes in Computer Science, 2012, , 277-293.	1.0	95
10	OCRA: A tool for checking the refinement of temporal contracts. , 2013, , .		82
11	RATSY " A New Requirements Analysis Tool with Synthesis. Lecture Notes in Computer Science, 2010, , 425-429.	1.0	69
12	IC3 Modulo Theories via Implicit Predicate Abstraction. Lecture Notes in Computer Science, 2014, , 46-61.	1.0	64
13	Verifying Industrial Hybrid Systems with MathSAT. Electronic Notes in Theoretical Computer Science, 2005, 119, 17-32.	0.9	62
14	Planning via model checking: A decision procedure for AR. Lecture Notes in Computer Science, 1997, , 130-142.	1.0	61
15	The COMPASS Approach: Correctness, Modelling and Performability of Aerospace Systems. Lecture Notes in Computer Science, 2009, , 173-186.	1.0	59
16	A SAT Based Approach for Solving Formulas over Boolean and Linear Mathematical Propositions. Lecture Notes in Computer Science, 2002, , 195-210.	1.0	58
17	Contracts-refinement proof system for component-based embedded systems. Science of Computer Programming, 2015, 97, 333-348.	1.5	54
18	Formal Verification of a Railway Interlocking System using Model Checking. Formal Aspects of Computing, 1998, 10, 361-380.	1.4	51

#	ARTICLE	IF	CITATIONS
19	Satisfiability Modulo the Theory of Costs: Foundations and Applications. Lecture Notes in Computer Science, 2010, , 99-113.	1.0	51
20	Spacecraft early design validation using formal methods. Reliability Engineering and System Safety, 2014, 132, 20-35.	5.1	49
21	A Property-Based Proof System for Contract-Based Design. , 2012, , .		48
22	HyComp: An SMT-Based Model Checker for Hybrid Systems. Lecture Notes in Computer Science, 2015, , 52-67.	1.0	47
23	The xSAP Safety Analysis Platform. Lecture Notes in Computer Science, 2016, , 533-539.	1.0	47
24	MathSAT: Tight Integration of SAT and Mathematical Decision Procedures. Journal of Automated Reasoning, 2005, 35, 265-293.	1.1	46
25	Strong planning under partial observability. Artificial Intelligence, 2006, 170, 337-384.	3.9	46
26	Efficient generation of Craig interpolants in satisfiability modulo theories. ACM Transactions on Computational Logic, 2010, 12, 1-54.	0.7	45
27	Symbolic Fault Tree Analysis for Reactive Systems. , 2007, , 162-176.		45
28	Efficient Interpolant Generation in Satisfiability Modulo Theories. , 2008, , 397-412.		45
29	Kratos – A Software Model Checker for SystemC. Lecture Notes in Computer Science, 2011, , 310-316.	1.0	44
30	An Incremental and Layered Procedure for the Satisfiability of Linear Arithmetic Logic. Lecture Notes in Computer Science, 2005, , 317-333.	1.0	43
31	Efficient theory combination via boolean search. Information and Computation, 2006, 204, 1493-1525.	0.5	41
32	Bounded Model Checking for Past LTL. Lecture Notes in Computer Science, 2003, , 18-33.	1.0	41
33	Requirements Validation for Hybrid Systems. Lecture Notes in Computer Science, 2009, , 188-203.	1.0	40
34	Software Model Checking SystemC. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2013, 32, 774-787.	1.9	39
35	Symbolic Computation of Schedulability Regions Using Parametric Timed Automata. , 2008, , .		38
36	Validation of requirements for hybrid systems. ACM Transactions on Software Engineering and Methodology, 2012, 21, 1-34.	4.8	38

#	ARTICLE	IF	CITATIONS
37	Parameter synthesis with IC3. , 2013, , .		38
38	Efficient Satisfiability Modulo Theories via Delayed Theory Combination. Lecture Notes in Computer Science, 2005, , 335-349.	1.0	34
39	A Lazy and Layered SMT( $\text{mathcal{BV}}$ ) Solver for Hard Industrial Verification Problems. , 2007, , 547-560.		34
40	SMT-based scenario verification for hybrid systems. Formal Methods in System Design, 2013, 42, 46-66.	0.9	30
41	Semi-ProtoPNet Deep Neural Network for the Classification of Defective Power Grid Distribution Structures. Sensors, 2022, 22, 4859.	2.1	30
42	Infinite-state invariant checking with IC3 and predicate abstraction. Formal Methods in System Design, 2016, 49, 190-218.	0.9	28
43	Incremental Linearization for Satisfiability and Verification Modulo Nonlinear Arithmetic and Transcendental Functions. ACM Transactions on Computational Logic, 2018, 19, 1-52.	0.7	28
44	Boolean Abstraction for Temporal Logic Satisfiability. Lecture Notes in Computer Science, 2007, , 532-546.	1.0	28
45	Symbolic execution with existential second-order constraints. , 2018, , .		25
46	Improving the Encoding of LTL Model Checking into SAT. Lecture Notes in Computer Science, 2002, , 196-207.	1.0	25
47	A Simple and Flexible Way of Computing Small Unsatisfiable Cores in SAT Modulo Theories. , 2007, , 334-339.		25
48	Computing Predicate Abstractions by Integrating BDDs and SMT Solvers. , 2007, , .		24
49	Safety assessment of AltaRica models via symbolic model checking. Science of Computer Programming, 2015, 98, 464-483.	1.5	24
50	Model Checking at Scale: Automated Air Traffic Control Design Space Exploration. Lecture Notes in Computer Science, 2016, , 3-22.	1.0	24
51	Formal Verification and Validation of ERTMS Industrial Railway Train Spacing System. Lecture Notes in Computer Science, 2012, , 378-393.	1.0	23
52	Bounded Verification of Past LTL. Lecture Notes in Computer Science, 2004, , 245-259.	1.0	22
53	Verification of a safety-critical railway interlocking system with real-time constraints. Science of Computer Programming, 2000, 36, 53-64.	1.5	21
54	Formal Verification of Infinite-State BIP Models. Lecture Notes in Computer Science, 2015, , 326-343.	1.0	21

#	ARTICLE	IF	CITATIONS
55	Conformant Planning via Model Checking. Lecture Notes in Computer Science, 2000, , 21-34.	1.0	20
56	Solving strong controllability of temporal problems with uncertainty using SMT. Constraints, 2015, 20, 1-29.	0.4	19
57	An Integrated Process for FDIR Design in Aerospace. Lecture Notes in Computer Science, 2014, , 82-95.	1.0	19
58	Efficient Anytime Techniques for Model-Based Safety Analysis. Lecture Notes in Computer Science, 2015, , 603-621.	1.0	19
59	A Model Checker for AADL. Lecture Notes in Computer Science, 2010, , 562-565.	1.0	19
60	A Modular Approach to MaxSAT Modulo Theories. Lecture Notes in Computer Science, 2013, , 150-165.	1.0	19
61	Encoding RTL Constructs for MathSAT: a Preliminary Report. Electronic Notes in Theoretical Computer Science, 2006, 144, 3-14.	0.9	18
62	From PSL to NBA: a Modular Symbolic Encoding. , 2006, , .		18
63	Extending nuXmv with Timed Transition Systems and Timed Temporal Properties. Lecture Notes in Computer Science, 2019, , 376-386.	1.0	18
64	Assumption-Based Runtime Verification with Partial Observability and Resets. Lecture Notes in Computer Science, 2019, , 165-184.	1.0	18
65	Verifying LTL Properties of Hybrid Systems with K-Liveness. Lecture Notes in Computer Science, 2014, , 424-440.	1.0	18
66	Formalizing requirements with object models and temporal constraints. Software and Systems Modeling, 2011, 10, 147-160.	2.2	17
67	Sound and Complete Algorithms for Checking the Dynamic Controllability of Temporal Networks with Uncertainty, Disjunction and Observation. , 2014, , .		17
68	Invariant Checking of NRA Transition Systems via Incremental Reduction to LRA with EUF. Lecture Notes in Computer Science, 2017, , 58-75.	1.0	17
69	$\text{SC}^2$ : Satisfiability Checking Meets Symbolic Computation. Lecture Notes in Computer Science, 2016, , 28-43.	1.0	17
70	HRETL: A temporal logic for hybrid systems. Information and Computation, 2015, 245, 54-71.	0.5	16
71	HyDI: A Language for Symbolic Hybrid Systems with Discrete Interaction. , 2011, , .		15
72	Infinite-State Liveness-to-Safety via Implicit Abstraction and Well-Founded Relations. Lecture Notes in Computer Science, 2016, , 271-291.	1.0	15

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73	Integrating BDD-Based and SAT-Based Symbolic Model Checking. Lecture Notes in Computer Science, 2002, , 49-56.	1.0	15
74	Symbolic Compilation of PSL. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2008, 27, 1737-1750.	1.9	14
75	Formal Safety Assessment via Contract-Based Design. Lecture Notes in Computer Science, 2014, , 81-97.	1.0	14
76	Combining MILS with Contract-Based Design for Safety and Security Requirements. Lecture Notes in Computer Science, 2015, , 264-276.	1.0	14
77	Boosting Lazy Abstraction for SystemC with Partial Order Reduction. Lecture Notes in Computer Science, 2011, , 341-356.	1.0	14
78	Comparing different functional allocations in automated air traffic control design. , 2015, , .		13
79	Dynamic controllability via Timed Game Automata. Acta Informatica, 2016, 53, 681-722.	0.5	13
80	Delayed theory combination vs. Nelson-Oppen for satisfiability modulo theories: a comparative analysis. Annals of Mathematics and Artificial Intelligence, 2009, 55, 63-99.	0.9	12
81	Time-aware relational abstractions for hybrid systems. , 2013, , .		12
82	To Ackermann-ize or Not to Ackermann-ize? On Efficiently Handling Uninterpreted Function Symbols in $\text{SMT}(\text{EUF} \cup \text{T})$ . Lecture Notes in Computer Science, 2006, , 557-571.	1.0	12
83	Interpolant Generation for UTVPI. Lecture Notes in Computer Science, 2009, , 167-182.	1.0	12
84	A provably correct embedded verifier for the certification of safety critical software. Lecture Notes in Computer Science, 1997, , 202-213.	1.0	11
85	A Model-Based Approach to the Design, Verification and Deployment of Railway Interlocking System. Lecture Notes in Computer Science, 2020, , 240-254.	1.0	11
86	SYMBOLIC IMPLEMENTATION OF ALTERNATING AUTOMATA. International Journal of Foundations of Computer Science, 2007, 18, 727-743.	0.8	10
87	Strong temporal planning with uncontrollable durations. Artificial Intelligence, 2018, 256, 1-34.	3.9	10
88	COMPASS <sup>3</sup> . Lecture Notes in Computer Science, 2019, , 379-385.	1.0	10
89	Verifying Heap-Manipulating Programs in an SMT Framework. , 2007, , 237-252.		10
90	Model Checking of Hybrid Systems Using Shallow Synchronization. Lecture Notes in Computer Science, 2010, , 155-169.	1.0	10

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91	Solving Temporal Problems Using SMT: Strong Controllability. Lecture Notes in Computer Science, 2012, , 248-264.	1.0	10
92	Formal Design of Asynchronous Fault Detection and Identification Components using Temporal Epistemic Logic. Logical Methods in Computer Science, 2015, 11, .	0.4	10
93	Delayed Theory Combination vs. Nelson-Oppen for Satisfiability Modulo Theories: A Comparative Analysis. Lecture Notes in Computer Science, 2006, , 527-541.	1.0	10
94	Beyond Boolean SAT: Satisfiability modulo theories. , 2008, , .		9
95	Verification and performance evaluation of aadl models. , 2009, , .		9
96	Analysis of Relay Interlocking Systems via SMT-based Model Checking of Switched Multi-Domain Kirchhoff Networks. , 2018, , .		9
97	Experimenting on Solving Nonlinear Integer Arithmetic with Incremental Linearization. Lecture Notes in Computer Science, 2018, , 383-398.	1.0	9
98	Formal Methods for Aerospace Systems. , 2017, , 133-159.		9
99	Chapter 22 Automated Planning. Foundations of Artificial Intelligence, 2008, , 841-867.	0.9	8
100	Structure-aware computation of predicate abstraction. , 2009, , .		8
101	Supporting Requirements Validation: The EuRailCheck Tool. , 2009, , .		8
102	SMT-based satisfiability of first-order LTL with event freezing functions and metric operators. Information and Computation, 2020, 272, 104502.	0.5	8
103	Industrial Applications of Model Checking. Lecture Notes in Computer Science, 2001, , 153-168.	1.0	8
104	Satisfiability Modulo Transcendental Functions via Incremental Linearization. Lecture Notes in Computer Science, 2017, , 95-113.	1.0	8
105	A Symbolic Model Checking Framework for Safety Analysis, Diagnosis, and Synthesis. Lecture Notes in Computer Science, 2006, , 1-18.	1.0	8
106	An Analytic Evaluation of SystemC Encodings in Promela. Lecture Notes in Computer Science, 2011, , 90-107.	1.0	8
107	Introspective metatheoretic reasoning. Lecture Notes in Computer Science, 1994, , 425-439.	1.0	7
108	Codesign of dependable systems: A component-based modeling language. , 2009, , .		7

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109	Automated Analysis of Reliability Architectures. , 2013, , .		7
110	An SMT-based approach to weak controllability for disjunctive temporal problems with uncertainty. Artificial Intelligence, 2015, 224, 1-27.	3.9	7
111	Formal reliability analysis of redundancy architectures. Formal Aspects of Computing, 2019, 31, 59-94.	1.4	7
112	Universal Invariant Checking of Parametric Systems with Quantifier-free SMT Reasoning. Lecture Notes in Computer Science, 2021, , 131-147.	1.0	7
113	Building Efficient Decision Procedures on Top of SAT Solvers. Lecture Notes in Computer Science, 2006, , 144-175.	1.0	7
114	Software Model Checking with Explicit Scheduler and Symbolic Threads. Logical Methods in Computer Science, 0, Volume 8, Issue 2, .	0.4	7
115	Assumption-Based Runtime Verification of Infinite-State Systems. Lecture Notes in Computer Science, 2021, , 207-227.	1.0	7
116	NORMA: a tool for the analysis of Relay-based Railway Interlocking Systems. Lecture Notes in Computer Science, 2022, , 125-142.	1.0	7
117	Quantifier-free encoding of invariants for hybrid systems. Formal Methods in System Design, 2014, 45, 165-188.	0.9	6
118	Integrating Boolean and Mathematical Solving: Foundations, Basic Algorithms, and Requirements. Lecture Notes in Computer Science, 2002, , 231-245.	1.0	6
119	Requirements Refinement and Component Reuse. Advances in Systems Analysis, Software Engineering, and High Performance Computing Book Series, 2014, , 209-241.	0.5	6
120	Efficient Analysis of Reliability Architectures via Predicate Abstraction. Lecture Notes in Computer Science, 2013, , 279-294.	1.0	6
121	Parametric analysis of distributed firm real-time systems: A case study. , 2010, , .		5
122	Timed Failure Propagation Analysis for Spacecraft Engineering: The ESA Solar Orbiter Case Study. Lecture Notes in Computer Science, 2017, , 255-271.	1.0	5
123	Formal Specification and Verification of Dynamic Parametrized Architectures. Lecture Notes in Computer Science, 2018, , 625-644.	1.0	5
124	Model-based Safety Assessment of a Triple Modular Generator with xSAP. Formal Aspects of Computing, 2021, 33, 251-295.	1.4	5
125	Syntactic Optimizations for PSL Verification. , 2007, , 505-518.		5
126	Efficient Scenario Verification for Hybrid Automata. Lecture Notes in Computer Science, 2011, , 317-332.	1.0	5



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127	NuRV: A nuXmv Extension for Runtime Verification. Lecture Notes in Computer Science, 2019, , 382-392.	1.0	5
128	Object Models with Temporal Constraints. , 2008, , .		4
129	Proving the Existence of Fair Paths in Infinite-State Systems. Lecture Notes in Computer Science, 2021, , 104-126.	1.0	4
130	Validation of Multiagent Systems by Symbolic Model Checking. Lecture Notes in Computer Science, 2003, , 32-46.	1.0	4
131	MathSAT: Tight Integration of SAT and Mathematical Decision Procedures. , 2005, , 265-293.		4
132	From Electrical Switched Networks to Hybrid Automata. Lecture Notes in Computer Science, 2016, , 164-181.	1.0	4
133	Computation of the Transient in Max-Plus Linear Systems via SMT-Solving. Lecture Notes in Computer Science, 2020, , 161-177.	1.0	4
134	Solving Temporal Problems Using SMT: Weak Controllability. Proceedings of the AAAI Conference on Artificial Intelligence, 2012, 26, 448-454.	3.6	4
135	OthelloPlay. , 2011, , .		3
136	Implicit Semi-Algebraic Abstraction for Polynomial Dynamical Systems. Lecture Notes in Computer Science, 2021, , 529-551.	1.0	3
137	Efficient SMT-Based Analysis of Failure Propagation. Lecture Notes in Computer Science, 2021, , 209-230.	1.0	3
138	Model-Based Design of an Energy-System Embedded Controller Using Taste. Lecture Notes in Computer Science, 2016, , 741-747.	1.0	3
139	Building and executing proof strategies in a formal metatheory. Lecture Notes in Computer Science, 1993, , 11-22.	1.0	3
140	Synthesis of P-Stable Abstractions. Lecture Notes in Computer Science, 2020, , 214-230.	1.0	3
141	MRC: BUILDING PLANNERS FOR REAL-WORLD COMPLEX APPLICATIONS. Applied Artificial Intelligence, 1994, 8, 333-357.	2.0	2
142	Flexible planning by integrating multilevel reasoning. Engineering Applications of Artificial Intelligence, 1995, 8, 401-412.	4.3	2
143	Formal specification of beliefs in multi-agent systems. Lecture Notes in Computer Science, 1997, , 117-130.	1.0	2
144	Innovative Rover Operations Concepts - Autonomous Planner (IRONCAP) - Concluding the adventure. , 2014, , .		2

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145	A Temporal Logics Approach to Contract-Based Design. , 2016, , .		2
146	Satisfiability checking and symbolic computation. ACM Communications in Computer Algebra, 2017, 50, 145-147.	0.2	2
147	Model-Based Run-Time Synthesis of Architectural Configurations for Adaptive MILS Systems. Lecture Notes in Computer Science, 2019, , 200-215.	1.0	2
148	Automatic Discovery of Fair Paths in Infinite-State Transition Systems. Lecture Notes in Computer Science, 2021, , 32-47.	1.0	2
149	Temporal Planning with Intermediate Conditions and Effects. Proceedings of the AAAI Conference on Artificial Intelligence, 2020, 34, 9975-9982.	3.6	2
150	A Many-Sorted Natural Deduction. Computational Intelligence, 1998, 14, 134-149.	2.1	1
151	SMT-Based Software Model Checking. Lecture Notes in Computer Science, 2010, , 1-3.	1.0	1
152	Tightening the contract refinements of a system architecture. Formal Methods in System Design, 2018, 52, 88-116.	0.9	1
153	Robustness Envelopes for Temporal Plans. Proceedings of the AAAI Conference on Artificial Intelligence, 2019, 33, 7538-7545.	3.6	1
154	Optimization Modulo Non-linear Arithmetic via Incremental Linearization. Lecture Notes in Computer Science, 2021, , 213-231.	1.0	1
155	Tightening a Contract Refinement. Lecture Notes in Computer Science, 2016, , 386-402.	1.0	1
156	Formalization and Validation of Safety-Critical Requirements. Electronic Proceedings in Theoretical Computer Science, EPTCS, 0, 20, 68-75.	0.8	1
157	From Sequential Extended Regular Expressions to NFA with Symbolic Labels. Lecture Notes in Computer Science, 2011, , 87-94.	1.0	1
158	Extended bounded response LTL: a new safety fragment for efficient reactive synthesis. Formal Methods in System Design, 0, , 1.	0.9	1
159	Diagnosability of Fair Transition Systems. Artificial Intelligence, 2022, , 103725.	3.9	1
160	A Comprehensive Approach to On-board Autonomy Verification and Validation. ACM Transactions on Intelligent Systems and Technology, 2021, 12, 1-29.	2.9	0
161	A Context-Based Mechanization of Multi-Agent Reasoning. Applied Logic Series, 2000, , 65-83.	0.3	0
162	Temporal logic satisfiability for the design of complex systems. Electronic Proceedings in Theoretical Computer Science, EPTCS, 0, 119, 4-6.	0.8	0

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163	Safe Decomposition of Startup Requirements: Verification and Synthesis. Lecture Notes in Computer Science, 2020, , 155-172.	1.0	0
164	Requirements Refinement and Component Reuse. , 0, , 1397-1432.		0