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Nota di contenuto	Session 1: Invited Talk -- Software Verification: Roles and Challenges for Automatic Decision Procedures -- Session 2: Specific Theories -- Proving Bounds on Real-Valued Functions with Computations -- Linear Quantifier Elimination -- Quantitative Separation Logic and Programs with Lists -- On Automating the Calculus of Relations -- Session 3: Automated Verification -- Towards SMT Model Checking of Array-Based Systems -- Preservation of Proof Obligations from Java to the Java Virtual Machine -- Efficient Well-Definedness Checking -- Session 4: Protocol Verification -- Proving Group Protocols Secure Against Eavesdroppers -- Session 5: System Descriptions 1 -- Automated Implicit Computational Complexity Analysis (System Description) -- LogAnswer - A Deduction-Based Question Answering System (System Description) -- A High-Level Implementation of a System for Automated Reasoning with Default Rules (System Description) -- The Abella Interactive Theorem Prover (System Description) -- LEO-II - A Cooperative Automatic Theorem Prover for Classical Higher-Order Logic (System Description) -- KeYmaera: A Hybrid Theorem Prover for Hybrid Systems (System Description) -- The Complexity of Conjunctive Query Answering in Expressive Description Logics -- A General Tableau Method for Deciding Description Logics, Modal Logics and Related First-Order Fragments -- Terminating Tableaux for Hybrid Logic with

the Difference Modality and Converse -- Session 8: Herbrand Award Ceremony -- Automata-Based Axiom Pinpointing -- Individual Reuse in Description Logic Reasoning -- The Logical Difference Problem for Description Logic Terminologies -- Session 10: System Descriptions 2 -- Aligator: A Mathematica Package for Invariant Generation (System Description) -- leanCoP 2.0 and ileanCoP 1.2: High Performance Lean Theorem Proving in Classical and Intuitionistic Logic (System Descriptions) -- iProver – An Instantiation-Based Theorem Prover for First-Order Logic (System Description) -- An Experimental Evaluation of Global Caching for (System Description) -- Multi-completion with Termination Tools (System Description) -- MTT: The Maude Termination Tool (System Description) -- Celf – A Logical Framework for Deductive and Concurrent Systems (System Description) -- Canonicity! -- Unification and Matching Modulo Leaf-Permutative Equational Presentations -- Modularity of Confluence -- Automated Complexity Analysis Based on the Dependency Pair Method -- Canonical Inference for Implicational Systems -- Challenges in the Automated Verification of Security Protocols -- Session 14: Theorem Proving 1 -- Deciding Effectively Propositional Logic Using DPLL and Substitution Sets -- Proof Systems for Effectively Propositional Logic -- MaLARea SG1 - Machine Learner for Automated Reasoning with Semantic Guidance -- CASC-J4 The 4th IJCAR ATP System Competition -- Session 16: Theorem Proving 2 -- Labelled Splitting -- Engineering DPLL(T) + Saturation -- THF0 – The Core of the TPTP Language for Higher-Order Logic -- Focusing in Linear Meta-logic -- Certifying a Tree Automata Completion Checker -- Automated Induction with Constrained Tree Automata.

Sommario/riassunto

This book constitutes the refereed proceedings of the 4th International Joint Conference on Automated Reasoning, IJCAR 2008, held in Sydney, Australia, in August 2008. The 26 revised full research papers and 13 revised system descriptions presented together with 4 invited papers and a summary of the CASC-J4 systems competition were carefully reviewed and selected from 80 full paper and 17 system description submissions. The papers address the entire spectrum of research in automated reasoning and are organized in topical sections on specific theories, automated verification, protocol verification, system descriptions, modal logics, description logics, equational theories, theorem proving, CASC, the 4th IJCAR ATP system competition, logical frameworks, and tree automata.