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Nota di contenuto	A Billion SMT Queries a Day -- Program Verification with Constrained Horn Clauses -- Formal Methods for Probabilistic Programs Data-Driven Invariant Learning for Probabilistic Programs -- Sound and Complete Certificates for Quantitative Termination Analysis of Probabilistic Programs.-Does a Program Yield the Right Distribution? Verifying Probabilistic Programs via Generating Functions -- Abstraction-Renement for Hierarchical Probabilistic Models -- Formal Methods for Neural Networks Shared Certificates for Neural Network Verification -- Example Guided Synthesis of Linear Approximations for Neural Network Verification -- Verifying Neural Networks Against Backdoor Attacks -- Trainify: A CEGAR-Driven Training and Verification Framework for Safe Deep Reinforcement Learning -- Neural Network

Robustness as a Verication Property: A Principled Case Study -- Software Verication and Model Checking The Lattice-Theoretic Essence of Property Directed Reachability Analysis -- Ane Loop Invariant Generation via Matrix Algebra -- Data-driven Numerical Invariant Synthesis with Automatic Generation of Attributes -- Proof-guided Underapproximation Widening for Bounded Model Checking -- SolCMC: Solidity Compiler's Model Checker -- Sharygina Hyperproperties and Security Software Verication of Hyperproperties Beyond k-Safety -- Abstraction Modulo Stability for Reverse Engineering -- A Modular and Highly Extensible API Fuzzer for SMT Solvers -- Automata and Logic FORQ-based Language Inclusion Formal Testing -- Sound Automation of Magic Wands -- Divide-and-Conquer Determinization of Büchi Automata based on SCC Decomposition -- Complementing Büchi Automata with Ranker -- Deductive Verication and Decision Procedures Even Faster Conicts and Lazier Reductions for String Solvers -- Local Search For SMT on Linear Integer Arithmetic -- Reasoning about Data Trees using CHCs -- Veried Erasure Correction in Coq with MathComp and VST -- Appel End-to-end Mechanised Proof of an eBPF Virtual Machine for Microcontrollers -- A DSL and Verication Tools to Guide Design and Proof of Hierarchical Cache-Coherence Protocols -- Machine Learning Specication-Guided Learning of Nash Equilibria with High Social Welfare -- Synthesizing Fair Decision Trees via Iterative Constraint Solving -- SMT-based Translation Validation for Machine Learning Compiler -- Lee Verifying Fairness in Quantum Machine Learning -- MoGym: Using Formal Models for Training and Verifying Decision-making Agents -- Synthesis and Concurrency Synthesis and Analysis of Petri Nets from Causal Specications -- Verifying generalised and structural soundness of workow netsvia relaxations -- Capture, Analyze, Diagnose: Realizability Checking of Requirements in FRET -- Information Flow Guided Synthesis -- Randomized Synthesis for Diversity and Cost Constraints with Control Improvisation.

Sommario/riassunto

This open access two-volume set LNCS 13371 and 13372 constitutes the refereed proceedings of the 34rd International Conference on Computer Aided Verification, CAV 2022, which was held in Haifa, Israel, in August 2022. The 40 full papers presented together with 9 tool papers and 2 case studies were carefully reviewed and selected from 209 submissions. The papers were organized in the following topical sections: Part I: Invited papers; formal methods for probabilistic programs; formal methods for neural networks; software Verification and model checking; hyperproperties and security; formal methods for hardware, cyber-physical, and hybrid systems. Part II: Probabilistic techniques; automata and logic; deductive verification and decision procedures; machine learning; synthesis and concurrency. This is an open access book.