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   Disciplina   005.1

   Soggetti   Software engineering
                     Machine theory
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   Nota di contenuto Complexity and Termination -- Learning Probabilistic Termination
                     Proofs -- Ghost Signals: Verifying Termination of Busy Waiting --
                     Reflections on Termination of Linear Loops -- Decision Tree Learning
                     in CEGIS-Based Termination Analysis -- ATLAS: Automated Amortised
                     Complexity Analysis of Self-Adjusting Data Structures -- Decision
                     Procedures and Solvers -- Theory Exploration Powered by Deductive
                     Synthesis -- CoqQFBV: A Scalable Certified SMT Quantifier-Free Bit-
                     Vector Solver -- Porous Invariants -- JavaSMT 3: Interacting with SMT
                     Solvers in Java -- Efficient SMT-based Analysis of Failure Propagation
                     -- ToolX : Better Delta Debugging for the SMT-LIBv2 Language and
                     Friends -- Learning Union of Integer Hypercubes with Queries (with

applications to monadic decomposition) -- Interpolation and Model Checking for Nonlinear Arithmetic -- An SMT Solver for Regular Expressions and Linear Arithmetic over String Length -- Counting Minimal Unsatisfiable Subsets -- Sound Verification Procedures for Temporal Properties of Infinite-State Systems -- Hardware and Model Checking -- Progress in Certifying Hardware Model Checking Results -- Model-Checking Structured Context-Free Languages -- Model Checking ! -Regular Properties with Decoupled Search -- AIGEN: Random Generation of Symbolic Transition Systems -- GPU Acceleration of Bounded Model Checking with ParaFROST -- Pono: A Flexible and Extensible SMT-based Model Checker -- Logical Foundations -- Towards a Trustworthy Semantics-Based Language Framework via Proof Generation -- Formal Foundations of Fine-Grained Explainability -- Latticed k-Induction with an Application to Probabilistic Programs -- Stochastic Systems -- Runtime Monitors for Markov Decision Processes -- Model Checking Finite-Horizon Markov Chains with Probabilistic Inference -- Enforcing Almost-Sure Reachability in POMDPs -- Rigorous Floating-Point Roundo Error Analysis of Probabilistic Computations -- Model-free Reinforcement Learning for Branching Markov Decision Processes -- Software Verification -- Cameleer: a Deductive Verification Tool for OCaml -- LLMC: Verifying High-Performance Software -- Formally Validating a Practical Verification Condition Generator -- Automatic Generation and Validation of Instruction Encoders and Decoders -- An SMT Encoding of LLVM's Memory Model for Bounded Translation Validation -- Automatically Tailoring Abstract Interpretation to Custom Usage Scenarios -- Functional Correctness of C implementations of Dijkstra's, Kruskal's, and Prim's Algorithms -- Gillian, Part II: Real-World Verification for JavaScript and C -- Debugging Network Reachability with Blocked Paths -- Lower-Bound Synthesis using Loop Specialization and Max-SMT -- Fast Computation of Strong Control Dependencies -- Di y: Inductive Reasoning of Array Programs using Difference Invariants.

| Sommario/riassunto | This open access two-volume set LNCS 12759 and 12760 constitutes the refereed proceedings of the 33rd International Conference on Computer Aided Verification, CAV 2021, held virtually in July 2021. The 63 full papers presented together with 16 tool papers and 5 invited papers were carefully reviewed and selected from 290 submissions. The papers were organized in the following topical sections: Part I: invited papers; AI verification; concurrency and blockchain; hybrid and cyber-physical systems; security; and synthesis. Part II: complexity and termination; decision procedures and solvers; hardware and model checking; logical foundations; and software verification. |