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Nota di contenuto	Invited Talks -- A Formally Verified OS Kernel. Now What? -- Proof Assistants as Teaching Assistants: A View from the Trenches -- Proof Pearls -- A Certified Denotational Abstract Interpreter -- Using a First Order Logic to Verify That Some Set of Reals Has No Lesbegue Measure -- A New Foundation for Nominal Isabelle -- (Nominal) Unification by Recursive Descent with Triangular Substitutions -- A Formal Proof of a

Necessary and Sufficient Condition for Deadlock-Free Adaptive Networks -- Regular Papers -- Extending Coq with Imperative Features and Its Application to SAT Verification -- A Tactic Language for Declarative Proofs -- Programming Language Techniques for Cryptographic Proofs -- Nitpick: A Counterexample Generator for Higher-Order Logic Based on a Relational Model Finder -- Formal Proof of a Wave Equation Resolution Scheme: The Method Error -- An Efficient Coq Tactic for Deciding Kleene Algebras -- Fast LCF-Style Proof Reconstruction for Z3 -- The Optimal Fixed Point Combinator -- Formal Study of Plane Delaunay Triangulation -- Reasoning with Higher-Order Abstract Syntax and Contexts: A Comparison -- A Trustworthy Monadic Formalization of the ARMv7 Instruction Set Architecture -- Automated Machine-Checked Hybrid System Safety Proofs -- Coverset Induction with Partiality and Subsorts: A Powerlist Case Study -- Case-Analysis for Rippling and Inductive Proof -- Importing HOL Light into Coq -- A Mechanized Translation from Higher-Order Logic to Set Theory -- The Isabelle Collections Framework -- Interactive Termination Proofs Using Termination Cores -- A Framework for Formal Verification of Compiler Optimizations -- On the Formalization of the Lebesgue Integration Theory in HOL -- From Total Store Order to Sequential Consistency: A Practical Reduction Theorem -- Equations: A Dependent Pattern-Matching Compiler -- A Mechanically Verified AIG-to-BDD Conversion Algorithm -- Inductive Consequences in the Calculus of Constructions -- Validating QBF Invalidity in HOL4 -- Rough Diamonds -- Higher-Order Abstract Syntax in Isabelle/HOL -- Separation Logic Adapted for Proofs by Rewriting -- Developing the Algebraic Hierarchy with Type Classes in Coq.

Sommario/riassunto

This volume contains the papers presented at ITP 2010: the First International ConferenceonInteractiveTheoremProving. It washeldduring July11-14,2010 in Edinburgh, Scotland as part of the Federated Logic Conference (FLoC, July 9-21, 2010) alongside the other FLoC conferences and workshops. ITP combines the communities of two venerable meetings: the TPHOLs c- ference and the ACL2 workshop. The former conference originated in 1988 as a workshop for users of the HOL proof assistant. The ?rst two meetings were at the University of Cambridge, but afterwards they were held in a variety of venues. By 1992, the workshop acquired the name Higher-Order Logic Theorem Proving and Its Applications. In 1996, it was christened anew as Theorem Pr- ing in Higher-Order Logics, TPHOLs for short, and was henceforth organizedas a conference. Each of these transitions broadened the meeting's scope from the original HOL system to include other proof assistants based on forms of high- order logic, including Coq, Isabelle and PVS. TPHOLs has regularly published research done using ACL2 (the modern version of the well-known Boyer-Moore theorem prover), even though ACL2 implements a unique computational form of ?rst-order logic. The ACL2 community has run its own series of workshops since1999. BymergingTPHOLswith the ACL2workshop,weinclude a broader community of researchers who work with interactive proof tools. With our enlarged community, it was not surprising that ITP attracted a record-breaking 74 submissions, each of which was reviewed by at least three Programme Committee members.