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Preface

This volume contains the papers presented at ITP 2010: the First International Conference on Interactive Theorem Proving. It was held during July 11–14, 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 conference and the ACL2 workshop. The former conference originated in 1988 as a workshop for users of the HOL proof assistant. The first 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 Proving in Higher-Order Logics*, TPHOLs for short, and was henceforth organized as 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 higher-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 first-order logic. The ACL2 community has run its own series of workshops since 1999. By merging TPHOLs with the ACL2 workshop, we include 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. The Programme Committee accepted 33 papers and asked two leading researchers, Gerwin Klein and Benjamin Pierce, to present invited lectures about their work. We were able to assemble a strong programme covering topics such as counter-example generation, hybrid system verification, translations from one formalism to another, and cooperation between tools. Several verification case studies were presented, with applications to computational geometry, unification, real analysis, etc. The tool used most in the presented papers was Coq, followed by Isabelle/HOL.

Of the 33 accepted papers, five were "proof pearls" (concise and elegant worked examples) and three were "rough diamonds" (promising ideas in an early form). All 33 papers are included in these proceedings; unlike with TPHOLs, there are no separate proceedings consisting of "Track B" papers.

We would like to thank Moshe Vardi (FLoC General Chair), Leonid Libkin and Gordon Plotkin (FLoC Co-chairs), and the other members of the FLoC Organizing Committee. David Aspinall took care of ITP local arrangements, while Michael Norrish looked after ITP's satellite workshops. We gratefully knowledge the generous support of FLoC's sponsors: the EPSRC (the UK's Engineering and Physical Sciences Research Council), NSF (the US National Science Foundation), the Association for Symbolic Logic, CADE Inc. (Conference on Automated

Deduction), Hewlett-Packard Corporation, Microsoft Research, Google Inc., and Intel Corporation.

Every aspect of the editorial process, including the production of these proceedings, was facilitated by the EasyChair conference management system. We are grateful to the EasyChair team, Andrei Voronkov and Bartek Klin, for their advice and for fixing problems quickly as they arose. We are grateful to Springer for publishing these proceedings, as they have done for TPHOLs and its predecessors since 1993.

Next year's conference, ITP 2011, will be held at the Radboud University Nijmegen, The Netherlands. This site was chosen by a ballot of the interactive theorem proving research community.

This volume is dedicated to Susan Paulson, the second editor's wife, who went into hospital around the time that these proceedings were being assembled. She had been struggling with cancer for several years. As of this writing, she was not expected to live long enough to see this volume in print.

April 2010

Matt Kaufmann
Lawrence Paulson

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