

# Preface

This volume is a collection of papers on automated deduction in classical, modal, and many-valued logics, with an emphasis on first-order theories. Some authors bridge the gap to higher-order logic by dealing with simple type theory in a first-order setting, or by resolving shortcomings of first-order logic with the help of higher-order notions. Most papers rely on resolution or tableaux methods, with a few exceptions choosing the equational paradigm.

In its entirety the volume is a mirror of contemporary research in first-order theorem proving. One trend to be observed is the interest in effective decision procedures. The main aim of first-order theorem proving was and still is to demonstrate the validity or unsatisfiability of formulas, by more and more sophisticated methods. Within the last years, however, the other side of the medal – falsifiability and satisfiability – has received growing attention. Though in general non-terminating, theorem provers sometimes act as decision procedures on subclasses of first-order logic. In particular cases their output can even be used to extract finite representations of models or counter-examples. Another development is the extension of deduction techniques from classical logic to many-valued and modal logics. By suitably generalizing classical concepts many results carry over to non-classical logics. This line of research is stimulated by artificial intelligence with its need for more expressive logics capable of modeling real-world reasoning.

From a formal point of view this volume comprises two types of papers, invited and contributed ones. Gilles Dowek, Melvin Fitting, Deepak Kapur, Alexander Leitsch, and David Plaisted accepted our invitation to present recent developments in and their view of the field. Contributed papers on the other hand underwent a two-staged selection process. The first selection took place when choosing extended abstracts for presentation at *FTP'98 – International Workshop on First-Order Theorem Proving* held in November 1998 in Vienna. Authors of accepted abstracts were invited to submit full versions, which were again thoroughly refereed. Therefore this volume owes much to those people who helped evaluating the submissions. In particular we would like to thank Maria Paola Bonacina, Adel Bouhoula, Anatoli Degtyarev, Jürgen Dix, Uwe Egly, Christian G. Fermüller, Ulrich Furbach, Fausto Giunchiglia, Rajeev Gore, Bernhard Gramlich, Miki Hermann, Jieh Hsiang, Florent Jacquemard, Alexander Leitsch, Reinhold Letz, Georg Moser, Hans Jürgen Ohlbach, David Plaisted, Michael Rusinowitch, Rolf Socher-Ambrosius, Jane Spurr, Mark Stickel, Andrei Voronkov, and Hantao Zhang for their efforts and support.

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Selected Papers

Caferra, R.; Salzer, G. (Eds.)

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