Automated Reasoning with Analytic Tableaux and Related Methods

International Conference, TABLEAUX'99, Saratoga Springs, NY, USA, June 7-11, 1999, Proceedings

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Foreword

This volume contains a selection of papers presented at the International Conference on Analytic Tableaux and Related Methods (TABLEAUX’99) held on June 7-11, 1999 at the Inn at Saratoga, Saratoga Springs, NY, USA. This conference was the continuation of international meetings on Theorem Proving with Analytic Tableaux and Related Methods held in Lautenbach near Karlsruhe (1992), Marseille (1993), Abingdon near Oxford (1994), St. Goar near Koblenz (1995), Terrasini near Palermo (1996), Pont-à-Mousson near Nancy (1997), and Oisterwijk near Tilburg (1998). TABLEAUX’99 marks the first time the conference has been held in North America.

Tableau and related methods have been found to be convenient and effective for automating deduction in various non-standard logics as well as in classical logic. Examples taken from this meeting alone include temporal, description, tense, quantum, modal, projective, hybrid, intuitionistic, and linear logics. Areas of application include verification of software and computer systems, deductive databases, knowledge representation and its required inference engines, and system diagnosis. The conference brought together researchers interested in all aspects – theoretical foundations, implementation techniques, systems development and applications – of the mechanization of reasoning with tableaux and related methods.

The members of the program committee worked diligently in selecting the presented papers. Each research paper was given a formal evaluation by three referees – to whom we are indeed grateful. From the 41 submissions received, 18 original research papers and 3 original system descriptions were chosen by the program committee for presentation at the conference and for inclusion in these proceedings, together with the invited lectures. Also included are the abstracts of 2 tutorials, a summary of the non classical systems comparison conducted for TABLEAUX’99, descriptions of the comparison entries, and the titles and authors of position papers, which were also presented at the conference.

Acknowledgements  First, I would like to thank the local arrangements chair, Joan Nellhaus, who helped with virtually all aspects of organizing the conference. I also thank Fabio Massacci, who organized the comparison. Ron Goebel put much time and effort into installing the web software that facilitated secure discussions amongst program committee members.

I also thank the authors of all submissions, the speakers, the tutorial organizers, the comparison entrants, program committee members, and, last but not least, the sponsors, who made it possible to organize this conference in Saratoga Springs, NY.

March 1999

Neil V. Murray
Previous Tableaux Workshops/Conferences

1992 Lautenbach, Germany  1993 Marseille, France
1994 Abingdon, England  1995 St. Goar, Germany
1996 Terrasini, Italy  1997 Pont-a-Mousson, France
1998 Oisterwijk, The Netherlands

Invited speakers

Randal Bryant Carnegie Mellon Univ., Pittsburgh, U.S.A.
David S. Warren Univ. at Stony Brook – SUNY, Stony Brook, U.S.A.

Program Chair

Neil V. Murray University at Albany - SUNY

Local Arrangements

Joan Nellhaus Inst. for Programming & Logics (SUNY)

Program Committee

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P. Schmitt University of Karlsruhe, Germany
H. de Swart Tilburg University, The Netherlands
Referees

Each submitted paper was refereed by three members of the program committee. In some cases, they consulted specialists who were not on the committee. We gratefully mention their names.

Wolfgang Ahrendt          D. Larchey-Wendling
Alessandro Avellone        Alexander Leitsch
Matthias Baaz              Donald Loveland
Matteo Baldoni             James Lu
Felice Cardone             Ornaghi Mario
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- Department of Computer Science
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Position Papers

The regular conference program included the presentation of nine (of eleven accepted) position papers. Informal proceedings containing these papers appeared as the internal scientific report “Position Papers, TABLEAUX’99”, TR 99-1, Department of Computer Science, University at Albany - SUNY, Albany, NY, U.S.A.

Sequent Decomposition: A Sequent Calculus as Efficient as Resolution.  
Noriko H. Arai, Shinji Inoue, and Ryuji Masukawa

Tactics for Translation of Tableau in Natural Deduction.  
Alessandro Avellone, Marco Benini, and Ugo Moscato

Depth-First Proof Search without Backtracking for Free Variable Semantic Tableaux.  
Bernhard Beckert

Gentzen-Like Methods in Quantum Logic.  
Uwe Egly and Hans Tompits

Unification-Based Proof Method for Modal Logic with Well-Founded Frames.  
Shigeki Hagihara and Naoki Yonezaki

Model Generation for Natural-Language Semantic Analysis.  
Karsten Konrad

A Proof of Completeness for Non-Horn Magic Sets and Its Application to Proof Condensation.  
Miyuki Koshimura and Ryuzo Hasegawa

An Application of Labelled Tableaux to Parsing.  
Karl-Michael Schneider

COLOSSEUM An Automated Theorem Prover for Intuitionistic Predicate Logic Based on Dialogue Games.  
Claus Zinn

Goal Lift-Up: A Technique for Improving Proof Search in Connection Tableau Calculi.  
Dirk Fuchs and Marc Fuchs

Simultaneous Sorted Unification for Free Variable Tableaux: An Elegant Calculus.  
Pedro J. Martín de la Calle and Antonio Gavilanes Franco