Preface

WoLLIC’2002

The 9th Workshop on Logic, Language, Information and Computation (WoLLIC’2002) was held at the campus of the Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), Brazil, from the 30th of July until the 2nd of August 2002. Web-page: http://www.cin.ufpe.br/~wollic/wollic2002/.

It was the ninth version of a series of workshops which started in 1994 with the aim of fostering interdisciplinary research in pure and applied logic. Previous versions were held at: Recife (Pernambuco) in 1994 and 1995; Salvador (Bahia) in 1996; Fortaleza (Ceará) in 1997; São Paulo in 1998; Itatiaia (Rio de Janeiro) in 1999; and Natal (Rio Grande do Norte) in 2000; Brasília (Brazil) in 2001.


Funding was given by CNPq (Brazilian Research Council, Ministry of Science and Technology), CAPES (Brazilian Ministry of Education), and the Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio).

Contributions were received in the form of short papers in all areas related to logic, language, information, and computation, including: pure logical systems, proof theory, model theory, algebraic logic, type theory, category theory, constructive mathematics, lambda and combinatory calculi, program logic and program semantics, logics and models of concurrency, logic and complexity theory, proof complexity, foundations of cryptography (zero-knowledge proofs), descriptive complexity, nonclassical logics, nonmonotonic logic, logic and language, discourse representation, logic and artificial intelligence, automated deduction, foundations of logic programming, logic and computation, and logic engineering.

Apart from the contributed papers (14), and the invited talks (6), the program includes 6 tutorial lectures:

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• *Some Model Theory of Ordered Structures*
  by *Ricardo Bianconi* (Departamento de Matemática Pura, Instituto de Matemática e Estatística, Universidade de São Paulo, Brazil)

• *Computing with Real Numbers*
  by *Felipe Cucker* (Department of Mathematics, City University of Hong Kong, People’s Republic of China)

• *Model Checking Games*
  by *Erich Grädel* (Mathematische Grundlagen der Informatik, RWTH Aachen, Germany)

• *The Metalanguage Lambda Prolog and its Implementation*
  by *Gopalan Nadathur* (University of Minnesota, USA)

• *States of Knowledge (Tutorial)*
  by *Rohit Parikh* (Department of Computer and Information Science, Brooklyn College, City University of New York, USA)

• *Automata Theory and Logic*
  by *Igor Walukiewicz* (Bordeaux University, France)

All papers in the volume were reviewed by the program committee consisting of Mauricio Ayala-Rincón (*Department of Mathematics, Universidade de Brasília, Brazil*), Mario Benevides (*Institute of Mathematics, Universidade Federal do Rio de Janeiro, Brazil*), Anuj Dawar (*Computer Laboratory, Cambridge University, England*), Philippe de Groote (*LORIA, France*), Roger Maddux (*Department of Mathematics, Iowa State University, USA*), Toniann Pitassi (*Department of Computer Science, Toronto University, Canada*), Bruno Poizat (*Institut Girard Desargues, Université Claude Bernard Lyon I, France*), Alberto Policriti (*Department of Mathematics and Informatics, Università di Udine, Italy*), Glynn Winskel (*Computer Laboratory, Cambridge University, England*).

The organising committee consisted of Edward Hermann Haeusler (*Department of Informatics, Pontifícia Universidade Católica do Rio de Janeiro, Brazil*), Claus Akira Matsushigue (*Institute of Mathematics and Statistics, Universidade de São Paulo, Brazil*), Anjolina Grisi de Oliveira (*Center of Informatics, Universidade Federal de Pernambuco, Brazil*), Luiz Carlos Pereira (*Department of Philosophy, Pontifícia Universidade Católica do Rio de Janeiro, Brazil*), Ruy de Queiroz (*Center of Informatics, Universidade Federal de Pernambuco, Brazil*), Jorge Petrucio Viana (*Coordination of Postgraduate Programmes in Engineering and Systems, Universidade Federal do Rio de Janeiro, Brazil*).

The proceedings with the extended abstract version of the papers has been published as volume 67 in the series *Electronic Notes in Theoretical Computer Science (ENTCS)*. This series is published electronically through the facilities of Elsevier Science B.V. and its auspices. The volumes in the ENTCS series can be accessed at the URL http://www.math.tulane.edu/~entcs.

This volume of the Annals of Pure and Applied Logic contains the full version of the invited papers, as well as a selection of contributed papers.

Contents

The paper “Undefinability results in o-minimal expansions of the real numbers” by Bianconi explores Ax’s 1971 work, and some of the finer detail in Wilkie’s work on the real exponential function, to get fundamentally interesting results on definability.

Berman and Hartmanis conjecture that all NP-complete sets are isomorphic implies all NP-complete sets are both dense and co-dense and, thus, there are no sparse NP-complete sets. “On sparseness, reducibilities, and complexity” by Cucker shows that (i) there do indeed exist sparse NP-Turing-hard sets over the computation over real numbers with addition and with branching on equality; (ii) there are no sparse NP-Turing-complete sets in Koiran’s weak model; (iii) there are no sparse P-hard or EXP-hard sets in the fully equipped model on real numbers.

Parikh and Väänänen in “Finite information logic” describe a logic that is a kind of common derivative of Hintikka–Sandu independence friendly logic (IF) and logic of local observations.

In “Comparing and implementing calculi of explicit substitutions with eta-reduction” Ayala-Rincón et al. discuss the introduction and implementation of eta reduction in three systems of explicit substitutions: $\lambda\sigma$, $\lambda s_{\varepsilon}$, and the suspension calculus.

In “Safe beliefs for propositional theories” Osorio et al. generalize an approach initially advocated by David Pearce from disjunctive logic programs to arbitrary propositional theories. More precisely, the notion of safe beliefs is introduced, which can be viewed as a generalization of the notion of answer sets.

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