Editorial Board

David Hutchison
    Lancaster University, UK

Takeo Kanade
    Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler
    University of Surrey, Guildford, UK

Jon M. Kleinberg
    Cornell University, Ithaca, NY, USA

Friedemann Mattern
    ETH Zurich, Switzerland

John C. Mitchell
    Stanford University, CA, USA

Moni Naor
    Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz
    University of Bern, Switzerland

C. Pandu Rangan
    Indian Institute of Technology, Madras, India

Bernhard Steffen
    University of Dortmund, Germany

Madhu Sudan
    Massachusetts Institute of Technology, MA, USA

Demetri Terzopoulos
    New York University, NY, USA

Doug Tygar
    University of California, Berkeley, CA, USA

Moshe Y. Vardi
    Rice University, Houston, TX, USA

Gerhard Weikum
    Max-Planck Institute of Computer Science, Saarbruecken, Germany
Practical Aspects of Declarative Languages

7th International Symposium, PADL 2005
Long Beach, CA, USA, January 10-11, 2005
Proceedings
Preface

The International Symposium on Practical Aspects of Declarative Languages (PADL) is a forum for researchers and practitioners to present original work emphasizing novel applications and implementation techniques for all forms of declarative concepts, including functional, logic, constraints, etc. Declarative languages build on sound theoretical foundations to provide attractive frameworks for application development. These languages have been successfully applied to a wide array of different real-world situations, including database management, active networks, software engineering, decision support systems, or music composition; whereas new developments in theory and implementation have opened up new application areas. Inversely, applications often drive the progress in the theory and implementation of declarative systems, as well as benefit from this progress.

The 7th PADL Symposium was held in Long Beach, California on January 10–11, 2005, and was co-located with ACM’s Principles of Programming Languages (POPL). From 36 submitted papers, the Program Committee selected 17 papers for presentation at the symposium, based upon at least three reviews for each paper, provided from Program Committee members and additional referees.

Two invited talks were presented at the conference: one by Norman Ramsey (Harvard University) entitled “Building the World from First Principles: Declarative Machine Descriptions and Compiler Construction”; and a second by Saumya Debray (University of Arizona) entitled “Code Compression.”

Following what has become a tradition in PADL symposia, the Program Committee selected one paper to receive the “Most Practical Paper” award. This year the paper judged the best in terms of practicality, originality, and clarity was “A Provably Correct Compiler for Efficient Model Checking of Mobile Processes,” by Ping Yang, Yifei Dong, C.R. Ramakrishnan, and Scott A. Smolka. This paper presents an optimizing compiler for the pi-calculus that improves the efficiency of model-checking specifications in a logic-programming-based model checker.

The PADL symposium series is sponsored in part by the Association for Logic Programming (http://www.cs.kuleuven.ac.be/~dtai/projects/ALP/) and COMPULOG Americas (http://www.cs.nmsu.edu/~complog/). Thanks are also due to the University of Texas at Dallas for its support. Finally, we want to thank the authors who submitted papers to PADL 2005 and all who participated in the conference.

November 2004

Manuel Hermenegildo
Daniel Cabeza
Program Chairs

Manuel Hermenegildo  University of New Mexico, USA  and  Technical University of Madrid, Spain
Daniel Cabeza  Technical University of Madrid, Spain

Program Committee

Kenichi Asai  Ochanomizu University, Japan
Manuel Carro  Technical University of Madrid, Spain
Bart Demoen  K.U.Leuven, Belgium
Robert Findler  University of Chicago, USA
John Gallagher  Roskilde University, Denmark
Hai-Feng Guo  University of Nebraska at Omaha, USA
Gopal Gupta  U. of Texas at Dallas, USA (General Chair)
Chris Hankin  Imperial College London, UK
Joxan Jaffar  National U. of Singapore, Singapore
Alan Mycroft  Cambridge University, UK
Gopalan Nadathur  U. of Minnesota, USA
Lee Naish  U. of Melbourne, Australia
Simon Peyton-Jones  Microsoft Research, USA
John Reppy  University of Chicago, USA
Morten Rhiger  Roskilde University, Denmark
Francesca Rossi  University of Padova, Italy
Vitor Santos-Costa  U. Federal do Rio de Janeiro, Brazil
Terrance Swift  S.U. of New York at Stony Brook, USA
David S. Warren  S.U. of New York at Stony Brook, USA

Referees

Maurice Bruynooghe  Ricardo Lopes  Tom Schrijvers
Ins de Castro Dutra  Noelia Maya  David Scott
Chiyan Chen  Dale Miller  Mark Shinwell
Henning Christiansen  Rudradeb Mitra  Leon Sterling
Gregory Cooper  Andrew Moss  Tom Stuart
Yifei Dong  Pablo Nogueira  Peter Stuckey
Mrio Florido  Michael O’Donnell  Eric Van Wyk
David Greaves  Bernard Pope  Kristen Brent Venable
angel Herranz  Ricardo Rocha  Joost Vennekens
Bharat Jayaraman  Mads Rosendahl  Razvan Voicu
Siau-Cheng Khoo  Abhik Roychoudhury  Hongwei Xi
## Table of Contents

### Invited Talks

Building the World from First Principles: Declarative Machine Descriptions and Compiler Construction .......... 1  
*Norman Ramsey*

Code Compression ................................................ 5  
*Saumya Debray*

### Papers

Functional Framework for Sound Synthesis .......................... 7  
*Jerzy Karczmareczuk*

Specializing Narrowing for Timetable Generation: A Case Study .......... 22  
*Nadia Brauner, Rachid Echahed, Gerd Finke, Hanns Gregor, and Frederic Prost*

Character-Based Cladistics and Answer Set Programming ............ 37  
*Daniel R. Brooks, Esra Erdem, James W. Minett, and Donald Ringe*

Role-Based Declarative Synchronization for Reconfigurable Systems ..... 52  
*Vlad Tanasescu and Paweł T. Wojciechowski*

Towards a More Practical Hybrid Probabilistic Logic Programming Framework .................................................. 67  
*Emad Saad and Enrico Pontelli*

Safe Programming with Pointers Through Stateful Views ............... 83  
*Dengping Zhu and Hongwei Xi*

Towards Provably Correct Code Generation via Horn Logical Continuation Semantics ................................. 98  
*Qian Wang, Gopal Gupta, and Michael Leuschel*

A Provably Correct Compiler for Efficient Model Checking of Mobile Processes ........................................... 113  
*Ping Yang, Yifei Dong, C.R. Ramakrishnan, and Scott A. Smolka*

An Ordered Logic Program Solver ........................................ 128  
*Davy Van Nieuwenborgh, Stijn Heymans, and Dirk Vermeir*

Improving Memory Usage in the BEAM ...................................... 143  
*Ricardo Lopes and Vítor Santos Costa*
Solving Constraints on Sets of Spatial Objects .......................... 158
   Jesús M. Almendros-Jiménez and Antonio Corral

Discovery of Minimal Unsatisfiable Subsets of Constraints
Using Hitting Set Dualization ........................................... 174
   James Bailey and Peter J. Stuckey

Solving Collaborative Fuzzy Agents Problems with CLP($FD$) .......... 187
   Susana Munoz-Hernandez and Jose Manuel Gomez-Perez

Improved Fusion for Optimizing Generics ............................. 203
   Artem Alimarine and Sjaak Smetsers

The Program Inverter LRinv and Its Structure .......................... 219
   Masahiko Kawabe and Robert Glück

A Full Pattern-Based Paradigm for XML Query Processing ............. 235
   Véronique Benzaken, Giuseppe Castagna, and Cédric Miachon

Type Class Directives .................................................. 253
   Bastiaan Heeren and Jurriaan Hage

Author Index ..................................................................... 269