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David Sands (Ed.)

Programming Languages and Systems

10th European Symposium on Programming, ESOP 2001
Held as Part of the Joint European Conferences
on Theory and Practice of Software, ETAPS 2001
Genova, Italy, April 2-6, 2001
Proceedings

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Foreword

ETAPS 2001 was the fourth instance of the European Joint Conferences on Theory and Practice of Software. ETAPS is an annual federated conference that was established in 1998 by combining a number of existing and new conferences. This year it comprised five conferences (FOSSACS, FASE, ESOP, CC, TACAS), ten satellite workshops (CMCS, ETI Day, JOSES, LDTA, MMAABS, PFM, RelMiS, UNIGRA, WADT, WTUML), seven invited lectures, a debate, and ten tutorials.

The events that comprise ETAPS address various aspects of the system development process, including specification, design, implementation, analysis, and improvement. The languages, methodologies, and tools which support these activities are all well within its scope. Different blends of theory and practice are represented, with an inclination towards theory with a practical motivation on one hand and soundly-based practice on the other. Many of the issues involved in software design apply to systems in general, including hardware systems, and the emphasis on software is not intended to be exclusive.

ETAPS is a loose confederation in which each event retains its own identity, with a separate program committee and independent proceedings. Its format is open-ended, allowing it to grow and evolve as time goes by. Contributed talks and system demonstrations are in synchronized parallel sessions, with invited lectures in plenary sessions. Two of the invited lectures are reserved for "unifying" talks on topics of interest to the whole range of ETAPS attendees. The aim of cramming all this activity into a single one-week meeting is to create a strong magnet for academic and industrial researchers working on topics within its scope, giving them the opportunity to learn about research in related areas, and thereby to foster new and existing links between work in areas that were formerly addressed in separate meetings.

ETAPS 2001 was hosted by the Dipartimento di Informatica e Scienze dell'Informazione (DISI) of the Università di Genova and was organized by the following team:

Egidio Astesiano (General Chair)
Eugenio Moggi (Organization Chair)
Maura Cerioli (Satellite Events Chair)
Gianna Reggio (Publicity Chair)
Davide Ancona
Giorgio Delzanno
Maurizio Martelli

with the assistance of Convention Bureau Genova. Tutorials were organized by Bernhard Rumpe (TU München). Overall planning for ETAPS conferences is the responsibility of the ETAPS Steering Committee, whose current membership is:

Egidio Astesiano (Genova), Ed Brinksma (Enschede), Pierpaolo Degano (Pisa), Hartmut Ehrig (Berlin), José Fiadeiro (Lisbon), Marie-Claude Gaudel (Paris), Susanne Graf (Grenoble), Furio Honsell (Udine), Nigel Horspool (Victoria), Heinrich Hußmann (Dresden), Paul Klint (Amsterdam), Daniel Le Métayer (Rennes), Tom Maibaum (London), Tiziana Margaria (Dortmund), Ugo Montanari (Pisa), Mogens Nielsen (Aarhus), Hanne Riis Nielson (Aarhus), Fernando Orejas (Barcelona), Andreas Podelski (Saarbrücken), David Sands (Göteborg), Don Sannella (Edinburgh), Perdita Stevens (Edinburgh), Jerzy Tiuryn (Warsaw), David Watt (Glasgow), Herbert Weber (Berlin), Reinhard Wilhelm (Saarbrücken)

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the European Association for Programming Languages and Systems
the European Association of Software Science and Technology
the European Association for Theoretical Computer Science

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I would like to express my sincere gratitude to all of these people and organizations, the program committee chairs and PC members of the ETAPS conferences, the organizers of the satellite events, the speakers themselves, and finally Springer-Verlag for agreeing to publish the ETAPS proceedings.

January 2001 Donald Sannella
ETAPS Steering Committee chairman

Preface

This volume contains the 28 papers presented at ESOP 2001, the Tenth European Symposium on Programming, which took place in Genova, Italy, April 4–6, 2001. The ESOP series began in 1986, and addresses both practical and theoretical issues in the design, specification, and analysis of programming languages and systems.

The call for ESOP 2001 encouraged papers addressing (but not limited to)

- Programming paradigms (including functional, logic, concurrent, and object-oriented) and their integration;
- Semantics with applications to the development of correct, secure, and efficient software and systems;
- Advanced type systems, program analysis, program transformation.

The volume begins with two invited contributions. The first contribution belongs to ETAPS as a whole, and accompanies the "unifying" ETAPS invited talk given by Luca Cardelli. The second contribution is from the ESOP invited speaker, John Mitchell. The remaining 26 papers were selected by the program committee from the 76 submissions, and include one short paper which accompanied a tool-demo presentation.

Each submission was reviewed by at least three referees, and papers were selected in the latter stages of a two week discussion phase. My thanks to the members of the program committee and other referees for their hard work. Thanks also to Christian Probst for help with the conference management software, and to Don Sannella for steering the ETAPS ship so smoothly.

January 2001 David Sands

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