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TAPSOFT '87



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on Theory and Practice of Software Development
Pisa, Italy, March 23–27, 1987

Volume 1:

Advanced Seminar on Foundations of
Innovative Software Development I and
Colloquium on Trees in Algebra and
Programming (CAAP '87)

Edited by Hartmut Ehrig, Robert Kowalski,
Giorgio Levi and Ugo Montanari



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PREFACE

TAPSOFT '87 is the Second International Joint Conference on Theory and Practice of Software Development.

TAPSOFT '87 is being held from March 23 to March 27, 1987 in Pisa. TAPSOFT '87 has been organized by Dipartimento di Informatica (Università di Pisa), I.E.I. - C.N.R. and CNUCE - C.N.R., and has been supported by AICA and EATCS.

TAPSOFT '87 consists of three parts:

Advanced Seminar on Foundations of Innovative Software Development

New directions in software development have been proposed, on the basis of recent technological and theoretical advances. Following these trends, the software production process should be made more rigorous, and its result should be expressed in a more abstract and understandable form.

The aim of the Advanced Seminar is to bring together leading experts in the various fields which form the foundations of this renovation still in progress and to provide a forum to discuss the possible integration of available theories and methods in view of their applications.

The Advanced Seminar will consist of a number of invited talks, two panel discussions and several working groups. The invited talks will be either long, i.e. comprehensive and general, or short, i.e. dedicated to hot topics.

Invited Speakers

E. Astesiano (Univ. Genova)	R. Milner (Univ. Edinburgh)
K. Clark (Imp. C., London)	M. Nivat (LITP, Paris)
K. Furukawa (ICOT, Tokyo)	J. Thatcher (IBM, Yorktown Heights)
J. Goguen (SRI, Menlo Park)	D. Warren (Univ. Manchester)
G. Huet (INRIA, Paris)	

Panels

- On Industrial Activity and Trends. Chairman: J. Goguen (SRI, Menlo Park)
- The Future of Software Engineering. Chairman: D. Bjørner (Lyngby)

The seminar organizers are H. Ehrig (Tech. Univ. Berlin) G. Levi (Univ. Pisa)
R. Kowalski (Imperial College, London) U. Montanari (Univ. Pisa)

Colloquium on Trees in Algebra and Programming

Traditionally, the topics of the Colloquium cover a wider area of theoretical Computer Science than that indicated by the title. Actually, topics include the formal aspects and properties of trees and, more generally, of combinatorial and algebraic structures in all fields of Computer Science.

Besides the customary topics, in keeping with the overall theme of TAPSOFT, the program will include contributions related to specifications, communicating systems and type theory.

The preceding eleven colloquia were held in France and Italy as autonomous conferences, except in Berlin 1985, when for the first time CAAP was integrated into the TAPSOFT Conference.

In keeping with the tradition of CAAP as well as with the overall theme of the TAPSOFT conference, the selected papers are presented in the sections listed below.

- Algorithms
- Proving techniques
- Algebraic specifications
- Concurrency
- Foundations

The program committee for CAAP '87 is the following:

A. Arnold, Bordeaux	G. Ausiello, Roma
J. de Bakker, Amsterdam	A. Bertoni, Milano
B. Buchberger, Linz	M. Dauchet, Lille
J. Diaz, Barcelona	H. Ehrig, Berlin
Ph. Flajolet, Paris	N. Francez, Haifa
H. Ganzinger, Dortmund	U. Montanari, Pisa (Chairman)
P. Mosses, Aarhus	M. Nivat, Paris
J. Thatcher, Yorktown Heights	G. Winskel, Cambridge
M. Wirsing, Passau	

Colloquium on Functional and Logic Programming and Specifications

In keeping with the overall theme of the TAPSOFT conferences, CFPL focuses on those aspects of Functional and Logic Programming which are most important in innovative software development. The integration of formal methods and practical aspects of software production is also stressed.

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The selected papers are presented in six sessions covering the following topics.

- Theory and Semantics of Functional Languages
- Types, Polymorphism and Abstract Data Type Specifications
- Unification of Functional and Logic Programming Languages
- Program Proving and Transformation
- Language Features and Compilation in Logic Programming
- Implementation Techniques

The Programme Committee for CFLP is the following

C. Böhm, Roma	K. Clark, London
K. Furukawa, Tokyo	H. Gallaire, München
C. Ghezzi, Milano	J. Goguen, Menlo Park
G. Huet, Paris	G. Kahn, Sophia Antipolis
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R. Milner, Edinburgh	L. Moniz Pereira, Lisboa
E. Sandewall, Linköping	E. Shapiro, Rehovot
D. Warren, Manchester	

The TAPSOFT '87 Conference proceedings are published in advance of the conference in two volumes. The first volume includes the final versions of 17 papers from CAAP '87, selected from a total of 51 submitted papers. The second volume includes the final versions of 17 papers from CFLP, selected from a total of 80 submitted papers. Invited papers from the Advanced Seminar are divided between the two volumes.

We would like to extend our sincere thanks to all the Program Committee members as well as to the referees listed below for their care in reviewing and selecting the submitted papers:

J. Alegria, A. Alfons, S. Anderson, J.L. Balcázar, F. Barbic, R. Barbuti, M. Bellia, R. Bird, E. Börger, P.G. Bosco, A. Bossi, G. Boudol, K. Broda, D. Brough, D. Chan, L. Carlucci Aiello, G. Castelli, T. Chikayama, T. Chusho, E. Ciapessoni, N. Cocco, L. Colussi, M. Coppo, T. Coquand, B. Courcelle, G. Cousineau, W. Coy, P.L. Curien, A. Davison, P. Degano, R. De Nicola, M. Dezani, M. Dincbas, M. Ducassé, P. Dufresne, J. Ebert, B. Eggers, P. van Emde Boas, R. Enders, G. Engels, K. Estenfeld, E. Fachini, A. Fantechi, I. Foster, D. Frutos, J. Gabarro, D. Gabbay, F. Galdbay, G. Gambosi, G. Ghelli, P. Giannini, M. Goldwurm, A. Goto, S. Goto, G. Guida, C. Gunter, T. Iato, H. Habel, M. Hagiya, N. Halbwacks, H. Hansen, S. Haqqlund, J. Heering, P. Henderson, R. Hennincker, D. Henry de Villeneuve, C. Hogger, F. Honsell, M. Huntback, H. Hussmann, P. Inverardi, R.C.L. Koymans, L. Kott, H.J. Kreowski, F. Kriwaczek, S. Kunifuji, Y. Lafont, B. Lang, R. Lasas, A.

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- Tecsiel, Roma
- Università di Pisa

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Pisa, March 1987

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