

Second Fuji International Workshop on

FUNCTIONAL AND LOGIC PROGRAMMING

Editors

Tetsuo Ida

Atsushi Ohori

Masato Takeichi

World Scientific

FUNCTIONAL AND LOGIC PROGRAMMING

BIBLIOTHEQUE DU CERIST

Second Fuji International Workshop on

FUNCTIONAL AND LOGIC PROGRAMMING

Shonan Village Center, Japan

Nov 1 – 4, 1996

Editors

Tetsuo Ida

University of Tsukuba

Atsushi Ohori

Kyoto University

Masato Takeichi

University of Tokyo



World Scientific

Singapore • New Jersey • London • Hong Kong

Published by

World Scientific Publishing Co. Pte. Ltd.

P O Box 128, Farrer Road, Singapore 912805

USA office: Suite 1B, 1060 Main Street, River Edge, NJ 07661

UK office: 57 Shelton Street, Covent Garden, London WC2H 9HE

1-199

Library of Congress Cataloging-in-Publication Data

Fuji International Workshop on Functional and Logic Programming (2nd :
1996 : Shonan Village Center, Japan)

Functional and logic programming : proceedings of the Second Fuji
International Workshop : Shonan Village Center, Japan, November
1-4, 1996 / editors, Tetsuo Ida . . . [et al.]

p. cm.

Includes bibliographical references.

ISBN 9810229232

1. Functional programming (Computer science) -- Congresses.
 2. Logic programming -- Congresses. I. Ida, Tetsuo. II. Title.
- QA76.62.F85 1996

005.13--dc21

96-50013
CIP

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library.

Copyright © 1997 by World Scientific Publishing Co. Pte. Ltd.

All rights reserved. This book, or parts thereof, may not be reproduced in any form or by any means, electronic or mechanical, including photocopying, recording or any information storage and retrieval system now known or to be invented, without written permission from the Publisher.

For photocopying of material in this volume, please pay a copying fee through the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, USA. In this case permission to photocopy is not required from the publisher

This book is printed on acid-free paper.

Printed in Singapore by Uto-Print

Contents

<i>Foreword</i>	vii
-----------------------	-----

Invited talk (1)

<i>Mathematica as a Rewrite Language</i>	1
Bruno Buchberger (Univ. Linz)	

Rewriting and Constraint Solving

<i>Strong Completeness of a Lazy Conditional Narrowing Calculus</i>	14
Mohamed Hamada and Aart Middeldorp (Univ. Tsukuba)	
<i>Extension of WAM for a Linear Logic Programming Language</i>	33
Naoyuki Tamura and Yukio Kaneda (Kobe Univ.)	
<i>A Computational Study of Two Cumulative Scheduling Problems</i>	51
Hendrik C. R. Lock (Univ. Karlsruhe)	

Invited Talk (2)

<i>The Design and Implementation of Mondrian</i>	69
Erik Meijer (Oregon Graduate Inst. & Utrecht Univ.), Joost van Dijk (Utrecht Univ.), Koen Claessen (Oregon Graduate Inst. & Utrecht Univ.), and Arjan van Yzendoorn (Utrecht Univ.)	

Functional Programming

<i>A Functional Perspective of Array Primitives</i>	71
Tyng-Ruey Chuang (Academia Sinica, Taiwan)	
<i>An Extension of the Acid Rain Theorem</i>	91
Zhenjiang Hu, Hideya Iwasaki, and Masato Takeichi (Univ. Tokyo)	
<i>A New Formulation of the Catch/Throw Mechanism</i>	106
Yukiyoshi Kameyama (Kyoto Univ.)	

Tutorial Lecture

<i>Curry – A Truly Functional Logic Language</i>
Michael Hanus (RWTH Aachen)

Program Analysis

<i>On the Inference of Structured Recursive Effects with Subtyping</i>	123
Mourad Debbabi, Zahia Aidoud, and Ali Faour (Laval Univ.)	

<i>Slicing Concurrent Logic Programs</i>	143
Jianjun Zhao, Jingde Cheng, and Kazuo Ushijima (Kyushu Univ.)	

Concurrency

<i>Temporal Semantics of a Concurrency Monad with Choice and Services</i>	163
Thomas Frauenstein, Wolfgang Grieskamp, and Mario Suedholt (Technical Univ. Berlin)	

<i>Concurrent Programming Using Traces in HASKELL</i>	176
Victor M. Culiás, Juan J. Quintela, and José L. Freire (Univ. La Coruña)	

Invited Talk (3)

<i>Interactive Functional Programming</i>	192
Henk Barendregt (Univ. Nijmegen)	

Semantics and Logic

<i>Algebraic Semantics for Higher-Order Functional-Logic Programming</i>	194
Makoto Hamana (Univ. Tsukuba)	
<i>Subtype Relations Yielding Filter Lambda-Models</i>	210
Toshihiko Kurata (Tokyo Institute of Technology)	
<i>Böhm Trees, Bisimulations and Observations in Lambda Calculus</i>	230
Fer-Jan de Vries (ETL)	

Invited Talk (4)

<i>Higher-Order Functional-Logic Programming: A Systematic Development</i>	246
Christian Prehofer (Technical Univ. München)	

Type Systems

<i>Carrying Multi Methods in a Merge Calculus</i>	266
Hideki Tsuki (Kyoto Sangyo Univ.)	
<i>Type Inference for the Mixture of Matching and Implicit Subtyping</i>	286
Koji Kagawa (Kagawa Univ.)	
<i>Compilation Based on a Calculus for Explicit Type Passing</i>	301
Yasuhiko Minamide (Kyoto Univ.)	