Lecture Notes in Computer Science

3267

Commenced Publication in 1973
Founding and Former Series Editors:
Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

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

Corrado Priami Paola Quaglia (Eds.)

Global Computing

IST/FET International Workshop, GC 2004 Rovereto, Italy, March 9-12, 2004 Revised Selected Papers



Volume Editors

Corrado Priami Paola Quaglia Dip. Informatica e Telecomunicazioni, Univ. Trento Via Sommarive 14, 38050 Povo (TN), Italy E-mail: {priami, quaglia}@dit.unitn.it

Library of Congress Control Number: Applied for

CR Subject Classification (1998): C.2.4, D.1.3, D.2, D.4.6, F.2.1-2, I.2.11, D.3, F.3

ISSN 0302-9743 ISBN 3-540-24101-9 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media

springeronline.com

© Springer-Verlag Berlin Heidelberg 2005 Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India Printed on acid-free paper SPIN: 11353478 06/3142 5 4 3 2 1 0

Preface

This volume collects revised versions of some of the papers presented at the Second IST/FET International Workshop on Global Computing held in Rovereto, Italy (9–12 March, 2004).

The workshop involved all the thirteen projects funded under the IST/FET proactive initiative on GLOBAL COMPUTING: AGILE; CRESCCO; DART; DBGLOBE; DEGAS; FLAGS; MIKADO; MRG; MYTHS; PEPITO; PROFUNDIS; SECURE; SOCS.

The first aim of the GLOBAL COMPUTING initiative is the development of paradigms for building flexible, dependable, secure, robust and efficient systems. Primary research concerns are the co-ordination, interaction, security, reliability, robustness, and risk control of the entities in the global system. The ultimate goal of the research action is to provide a solid scientific foundation for the design of such systems, and to lay the groundwork for achieving effective principles for building and analysing them.

The workshop covered topics related to programming environments, dynamic reconfiguration, resource guarantees, peer-to-peer networks, analysis of systems and resources, resource sharing, and security, as well as foundational calculi for mobility. The present collection offers a rich sample of research results on the above subjects.

We acknowledge the Dipartimento di Informatica e Telecomunicazioni of the University of Trento for partially funding the workshop, and the Events and Meetings Office of the University of Trento for the valuable collaboration.

Trento 27 July 2004

Corrado Priami and Paola Quaglia

Table of Contents

Symbolic Equivalences for Open Systems Paolo Baldan, Andrea Bracciali, Roberto Bruni	1
Specifying and Verifying UML Activity Diagrams Via Graph Transformation Paolo Baldan, Andrea Corradini, Fabio Gadducci	18
Mobile UML Statecharts with Localities Diego Latella, Mieke Massink, Hubert Baumeister, Martin Wirsing	34
Communities: Concept-Based Querying for Mobile Services Chara Skouteli, Christoforos Panayiotou, George Samaras, Evaggelia Pitoura	59
Towards a Formal Treatment of Secrecy Against Computational Adversaries Angelo Troina, Alessandro Aldini, Roberto Gorrieri	77
For-LySa: UML for Authentication Analysis Mikael Buchholtz, Carlo Montangero, Lara Perrone, Simone Semprini	93
Performance Analysis of a UML Micro-business Case Study Katerina Pokozy-Korenblat, Corrado Priami, Paola Quaglia	107
Efficient Information Propagation Algorithms in Smart Dust and NanoPeer Networks Sotiris Nikoletseas, Paul Spirakis	127
The Kell Calculus: A Family of Higher-Order Distributed Process Calculi Alan Schmitt, Jean-Bernard Stefani	146
A Software Framework for Rapid Prototyping of Run-Time Systems for Mobile Calculi Lorenzo Bettini, Rocco De Nicola, Daniele Falassi, Marc Lacoste, Luís Lopes, Licínio Oliveira, Hervé Paulino, Vasco T. Vasconcelos	179
A Generic Membrane Model (Note) Gérard Boudol	208
A Framework for Structured Peer-to-Peer Overlay Networks Luc Onana Alima, Ali Ghodsi, Seif Haridi	223
Verifying a Structured Peer-to-Peer Overlay Network: The Static Case Johannes Borgström, Uwe Nestmann, Luc Onana, Dilian Gurov	250
A Physics-Style Approach to Scalability of Distributed Systems Erik Aurell, Sameh El-Ansary	266

VIII Table of Contents

BGP-Based Clustering for Scalable and Reliable Gossip Broadcast M. Brahami, P. Th. Eugster, R. Guerraoui, S. B. Handurukande	273
Trust Lifecycle Management in a Global Computing Environment S. Terzis, W. Wagealla, C. English, P. Nixon	291
The SOCS Computational Logic Approach to the Specification and Verification of Agent Societies Marco Alberti, Federico Chesani, Marco Gavanelli, Evelina Lamma, Paola Mello, Paolo Torroni	314
The KGP Model of Agency for Global Computing: Computational Model and Prototype Implementation A. Bracciali, N. Demetriou, U. Endriss, A. Kakas, W. Lu, P. Mancarella, F. Sadri, K. Stathis, G. Terreni, F. Toni	340
Author Index	369