

Ladjel Bellatreche
Filipe Mota Pinto (Eds.)

LNCS 6918

Model and Data Engineering

First International Conference, MEDI 2011
Óbidos, Portugal, September 2011
Proceedings



Springer

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

Alfred Kobsa

University of California, Irvine, CA, 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

TU Dortmund University, Germany

Madhu Sudan

Microsoft Research, Cambridge, MA, USA

Demetri Terzopoulos

University of California, Los Angeles, CA, USA

Doug Tygar

University of California, Berkeley, CA, USA

Gerhard Weikum

Max Planck Institute for Informatics, Saarbruecken, Germany

Ladjel Bellatreche Filipe Mota Pinto (Eds.)

Model and Data Engineering

First International Conference, MEDI 2011
Óbidos, Portugal, September 28-30, 2011
Proceedings



Springer

Volume Editors

Ladjiel Bellatreche
Ecole Nationale Supérieure de Mécanique et d'Aérotechnique
Laboratoire d'Informatique Scientifique et Industrielle
Téléport 2 - avenue Clément Ader
86961 Futuroscope Chasseneuil Cedex, France
E-mail: bellatreche@ensma.fr

Filipe Mota Pinto
Instituto Politécnico de Leiria
Escola Superior Tecnologia e Gestão de Leiria
Departamento Engenharia Informática
Rua General Norton de Matos
Leiria 2411-901, Portugal
E-mail: fpinto@ipleiria.pt

ISSN 0302-9743 e-ISSN 1611-3349
ISBN 978-3-642-24442-1 e-ISBN 978-3-642-24443-8
DOI 10.1007/978-3-642-24443-8
Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2011936866

CR Subject Classification (1998): H.3, H.4, D.2, D.3, I.2, I.6, F.1, H.5

LNCS Sublibrary: SL 2 – Programming and Software Engineering

© Springer-Verlag Berlin Heidelberg 2011

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.

to prosecution under the German Copyright Law.
The use of general descriptive names, registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

The First International Conference on Model and Data Engineering (MEDI 2011) was held in Obidos, Portugal, during September 28–30. MEDI 2011 was a forum for the dissemination of research accomplishments and for promoting the interaction and collaboration between the models and data research communities. MEDI 2011 provided an international platform for the presentation of research on models and data theory, development of advanced technologies related to models and data and their advanced applications. This international scientific event, initiated by researchers from Euro-Mediterranean countries, aimed also at promoting the creation of north–south scientific networks, projects and faculty/student exchanges.

The conference focused on model engineering and data engineering. The scope of the papers covered the most recent and relevant topics in the areas of advanced information systems, Web services, security, mining complex databases, ontology engineering, model engineering, and formal modeling. These proceedings contain the technical papers selected for presentation at the conference.

We received more than 67 papers from over 18 countries and the Program Committee finally selected 18 long papers and 8 short papers. The conference program included three invited talks, namely, “Personalization in Web Search and Data Management” by Timos Sellis, Research Center “Athena” and National Technical University of Athens, Greece; “Challenges in the Digital Information Management Space,” Girish Venkatachaliah, IBM India, and “Formal Modelling of Service-Oriented Systems,” Antónia Lopes, Faculty of Sciences, University of Lisbon, Portugal.

We would like to thank the MEDI 2011 Organizing Committee for their support and cooperation. Many thanks are due to Selma Khouri for providing a great deal of help and assistance. We are very indebted to all Program Committee members and outside reviewers who very carefully and timely reviewed the papers. We would also like to thank all the authors who submitted their papers to MEDI 2011; they provided us with an excellent technical program.

September 2011

Ladjel Bellatreche
Filipe Mota Pinto

Organization

Program Chairs

Ladjel Bellatreche
Filipe Mota Pinto

LISI-ENSMA, France
Polytechnic Institute of Leiria, Portugal

Program Committee

El Hassan Abdelwahed
Yamine Aït Ameur
Reda Alhajj
Franck Barbier
Maurice ter Beek

Ladjel Bellatreche
Boualem Benattallah
Djamal Benslimane
Moh Boughanem
Athman Bouguettaya
Danielle Boulanger
Azedine Boulmakoul
Omar Boussaid
Vassilis Christophides
Christine Collet
Alain Crolotte
Alfredo Cuzzocrea
Habiba Drias
Todd Eavis
Johann Eder
Mostafa Ezziyyani
Jamel Feki
Pedro Furtado
Faiez Gargouri
Ahmad Ghazal
Dimitra Giannakopoulou
Matteo Golfarelli
Vivekanand Gopalkrishnan
Amarnath Gupta
Mohand-Said Hacid
Sachio Hirokawa

Cadi Ayyad University, Morocco
ENSMA, France
Calgary University, Canada
Pau University, France
Istituto di Scienza e Tecnologie
dell'Informazione, Italy
LISI-ENSMA, France
University of New South Wales, Australia
Claude Bernard University, France
IRIT Toulouse, France
CSIRO, Australia
Lyon-Jean Moulin University, France
FST Mohammedia, Morocco
Eric Lyon 2 University, France
ICS-FORTH Crete, Greece
INPG, France
Teradata, USA
ICAR-NRC, Italy
USTHB, Algeria
Concordia University, Canada
Klagenfurt University, Austria
University of Abdelmalek Essâdi, Morocco
Sfax University, Tunisia
Coimbra University, Portugal
Sfax University, Tunisia
Teradata, USA
Nasa, USA
University of Bologna, Italy
Nanyang Technological University, Singapore
University of California San Diego, USA
Claude Bernard University, France
Kyushu University, Japan

VIII Organization

| | |
|----------------------|--|
| Eleanna Kafeza | Athens University of Economics and Business, Greece |
| Anna-Lena Lamprecht | TU Dortmund, Germany |
| Nhan Le Thanh | Nice University, France |
| Jens Lechtenborger | Münster University, Germany |
| Yves Ledru | Grenoble 1 University, France |
| Li Ma | Chinese Academy of Science, China |
| Mimoun Malki | Sidi Bel Abbs University, Algeria |
| Nikos Mamoulis | University of Hong Kong, China |
| Patrick Marcel | Tours University, France |
| Tiziana Margaria | Potsdam University, Germany |
| Brahim Medjahed | University of Michigan - Dearborn, USA |
| Dominique Mery | LORIA and Université Henri Poincaré Nancy 1, France |
| Mohamed Mezghiche | Boumerdes University, Algeria |
| Mukesh Mohania | IBM India |
| Kazumi Nakamatsu | University of Hyogo, Japan |
| Paulo Novais | Universidade do Minho, Portugal |
| Carlos Ordóñez | Houston University, USA |
| Aris Ouksel | Illinois University, USA |
| Tansel Özyer | Tobb Economics and Technology University, Turkey |
| Heik Paulheim | SAP, Germany |
| Filipe Mota Pinto | Polytechnic Institute of Leiria, Portugal |
| Li Qing | City University of Hong Kong, China |
| Chantal Reynaud | LRI INRIA Saclay, France |
| Bernardete Ribeiro | Coimbra University, Portugal |
| Manuel Filipe Santos | Universidade do Minho, Portugal |
| Catarina Silva | Institute of Leiria, Portugal |
| Alkis Simitsis | HP, USA |
| Veda C. Storey | Georgia State University, USA |
| David Taniar | Monash University, Australia |
| Panos Vassiliadis | University of Ioannina, Greece |
| Virginie Wiels | Onera, France |
| Leandro Krug Wives | Federal University of Rio Grande do Sul, Brazil |
| Robert Wrembel | Poznan University, Poland |

Table of Contents

Keynotes

| | |
|--|---|
| Personalization in Web Search and Data Management | 1 |
| <i>Timos Sellis</i> | |
| Challenges in the Digital Information Management Space | 2 |
| <i>Girish Venkatachaliah</i> | |
| Formal Modelling of Service-Oriented Systems | 3 |
| <i>Antonia Lopes</i> | |

Ontology Engineering

| | |
|--|----|
| Automatic Production of an Operational Information System from a Domain Ontology Enriched with Behavioral Properties | 4 |
| <i>Ana Simonet</i> | |
| Schema, Ontology and Metamodel Matching - Different, But Indeed the Same? | 18 |
| <i>Petko Ivanov and Konrad Voigt</i> | |
| A Framework Proposal for Ontologies Usage in Marketing Databases . . . | 31 |
| <i>Filipe Mota Pinto, Teresa Guarda, and Pedro Gago</i> | |
| Proposed Approach for Evaluating the Quality of Topic Maps | 42 |
| <i>Nebrasse Ellouze, Elisabeth Métais, and Nadira Lammari</i> | |

Web Services and Security

| | |
|---|----|
| BH : <u>B</u> ehavioral <u>H</u> andling to Enhance Powerfully and Usefully the Dynamic Semantic Web Services Composition | 50 |
| <i>Mansour Mekour and Sidi Mohammed Benslimane</i> | |
| Service Oriented Grid Computing Architecture for Distributed Learning Classifier Systems | 62 |
| <i>Manuel Santos, Wesley Mathew, and Filipe Pinto</i> | |
| Securing Data Warehouses: A Semi-automatic Approach for Inference Prevention at the Design Level | 71 |
| <i>Salah Triki, Hanene Ben-Abdallah, Nouria Harbi, and Omar Boussaid</i> | |

Advanced Systems

| | |
|---|-----|
| F-RT-ETM: Toward Analysis and Formalizing Real Time Transaction and Data in Real-Time Database | 85 |
| <i>Mourad Kaddes, Majed Abdouli, Laurent Amanton, Mouez Ali, Rafik Bouaziz, and Bruno Sadeq</i> | |
| Characterization of OLTP I/O Workloads for Dimensioning Embedded Write Cache for Flash Memories: A Case Study | 97 |
| <i>Jalil Boukhobza, Ilyes Khetib, and Pierre Olivier</i> | |
| Toward a Version Control System for Aspect Oriented Software | 110 |
| <i>Hanene Cherait and Nora Bounour</i> | |
| AspeCis: An Aspect-Oriented Approach to Develop a Cooperative Information System | 122 |
| <i>Mohamed Amroune, Jean-Michel Inglebert, Nacereddine Zarour, and Pierre-Jean Charrel</i> | |

Knowledge Management

| | |
|---|-----|
| An Application of Locally Linear Model Tree Algorithm for Predictive Accuracy of Credit Scoring | 133 |
| <i>Mohammad Siami, Mohammad Reza Gholamian, Javad Basiri, and Mohammad Fathian</i> | |
| Predicting Evasion Candidates in Higher Education Institutions | 143 |
| <i>Remis Balaniuk, Hercules Antonio do Prado, Renato da Veiga Guadagnin, Edilson Ferneda, and Paulo Roberto Cobbe</i> | |
| Search and Analysis of Bankruptcy Cause by Classification Network | 152 |
| <i>Sachio Hirokawa, Takahiro Baba, and Tetsuya Nakatoh</i> | |
| Conceptual Distance for Association Rules Post-Processing | 162 |
| <i>Ramdane Maamri and Mohamed said Hamani</i> | |
| Manufacturing Execution Systems Intellectualization: Oil and Gas Implementation Sample | 170 |
| <i>Stepan Bogdan, Anton Kudinov, and Nikolay Markov</i> | |
| Get Your Jokes Right: Ask the Crowd | 178 |
| <i>Joana Costa, Catarina Silva, Mário Antunes, and Bernardete Ribeiro</i> | |

Model Specification and Verification

| | |
|---|-----|
| An Evolutionary Approach for Program Model Checking | 186 |
| <i>Nassima Aleb, Zahia Tamen, and Nadjet Kamel</i> | |

| | |
|---|-----|
| Modelling Information Fission in Output Multi-Modal Interactive Systems Using Event-B | 200 |
| <i>Linda Mohand-Oussaïd, Idir Aït-Sadoune, and Yamine Aït-Ameur</i> | |
| Specification and Verification of Model-Driven Data Migration | 214 |
| <i>Mohammed A. Aboulsamh and Jim Davies</i> | |
| Models Engineering | |
| Towards a Simple Meta-Model for Complex Real-Time and Embedded Systems | 226 |
| <i>Yassine Ouhammou, Emmanuel Grolleau, Michael Richard, and Pascal Richard</i> | |
| Supporting Model Based Design | 237 |
| <i>Rémi Delmas, David Doose, Anthony Fernandes Pires, and Thomas Polacsek</i> | |
| Modeling Approach Using Goal Modeling and Enterprise Architecture for Business IT Alignment | 249 |
| <i>Karim Doumi, Salah Baïna, and Karim Baïna</i> | |
| MDA Compliant Approach for Data Mart Schemas Generation | 262 |
| <i>Hassene Choura and Jamel Feki</i> | |
| A Methodology for Standards-Driven Metamodel Fusion | 270 |
| <i>András Pataricza, László Gönczy, András Kövi, and Zoltán Szatmári</i> | |
| Metamodel Matching Techniques in MDA: Challenge, Issues and Comparison | 278 |
| <i>Lamine Lafi, Slimane Hammoudi, and Jamel Feki</i> | |
| Author Index | 287 |

Toward a Version Control System for Aspect Oriented Software

Hanene Cherait and Nora Bounour

Dept. of Computer Science, Badji Mokhtar University, BP.12, 23000, Annaba,
Computer Science Research Laboratory (LRI)
Algeria
{hanene_cherait,nora_bounour}@yahoo.fr

Abstract. During the lifetime of a software system, series of changes are made to the software. So many versions will be produced. Version control systems contain significant amounts of data that could be exploited in the study of software evolution. Analyzing the source code of these versions can help to identify necessary changes, understand the impact of changes, and provides a facility to track the changes and to deduce logical relations between changed entities. We are interested in this paper to the evolution analysis of Aspect Oriented Systems. This last will become the legacy systems of the future and will be subject to the same evolutionary demands as today's software systems. In this paper, we propose a Version Control System for Aspect Oriented Programs, using graph transformation formalism to manage and control their evolution.

Keywords: Version Control Systems, Aspect Oriented Programming, Software evolution, Graph rewriting.

1 Introduction

Software evolution analysis refers generally to progressive change in the software's properties or characteristics. This process of change in one or more of their attributes leads to the emergence of new properties or to improvement, in some sense [26]. Divers studies have shown that more time is spent on changing than developing the software [3].

Version control systems contain large amounts of historical information that can give deep insight into the evolution of a software project. The majority of research has focused on examining the artifacts stored in a software repository, and their associated metadata. Analyzing the source code of the software repository can help identify necessary changes, understand the impact of changes, provides a facility to track the changes and to deduce logical relations between changed entities.

Aspect-oriented programming (AOP) languages provide a new kind of modules, called aspects that allow one to modularize the implementation of crosscutting concerns which would otherwise be spread across various modules. In spite of the more advanced modularization mechanisms, aspect-oriented programs still suffer from evolution problems i.e. more relationships are introduced by this paradigm