

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

A Min Tjoa Gerald Quirchmayr Ilsun You
Lida Xu (Eds.)

Availability, Reliability and Security for Business, Enterprise and Health Information Systems

IFIP WG 8.4/8.9 International Cross Domain
Conference and Workshop, ARES 2011
Vienna, Austria, August 22-26, 2011
Proceedings

Volume Editors

A Min Tjoa

Vienna University of Technology
Institute of Software Technology and Interactive Systems
Favoritenstr. 9/188, 1040 Vienna, Austria
E-mail: amin@ifs.tuwien.ac.at

Gerald Quirchmayr

University of Vienna, Multimedia Information Systems
Liebiggasse 4, 1010 Vienna, Austria
E-mail: gerald.quirchmayr@univie.ac.at

Ilsun You

Korean Bible University, School of Information Science
16 Danghyun 2-gil, Nowon-gu, 139-791 Seoul, Korea
E-mail: isyou@bible.ac.kr

Lida Xu

Old Dominion University, Information Technology and Decision Sciences
2076 Constant Hall, Norfolk, VA 23529, USA
E-mail: lxu@odu.edu

ISSN 0302-9743

e-ISSN 1611-3349

ISBN 978-3-642-23299-2

e-ISBN 978-3-642-23300-5

DOI 10.1007/978-3-642-23300-5

Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2011934288

CR Subject Classification (1998): H.4, H.5, K.6.5, E.3, K.4

LNCS Sublibrary: SL 3 – Information Systems and Application, incl. Internet/Web and HCI

© IFIP International Federation for Information Processing 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.

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 Cross-Domain Conference and Workshop on Multidisciplinary Research and Practice for Business, Enterprise and Health Information Systems is focused on the relevance of availability, reliability and security within the domain of information systems.

The idea of organizing cross-domain scientific events originated from the IFIP president Leon Strous at the IFIP 2010 World Computer Congress in Brisbane which was echoed with acceptance by many IFIP activists in further discussions at this occasion. This scientific event concentrates on the many aspects of availability, reliability and security for information systems as a discipline bridging the application fields and the well-defined computer science field.

This leads us to the consideration of the many important issues of massive information sharing and integration (MISI) which will (in our opinion) dominate scientific work and discussions in the area of information systems in the second decade of this century.

The organizers of this event who are engaged within IFIP in the area of Enterprise Information Systems (WG 8.9) and Business Information Systems (WG 8.4) very much welcome the cross-fertilization of this event by the collocation with the Workshop on Security and Cognitive Informatics for Homeland Defense on a topic where application factors must be regarded as the most essential. Therefore we are very much convinced that homeland security can only be successful if we do not neglect the bridging nature of this field between application aspects and computer science aspects. The cross-domain viewpoint is an inherent characteristic of this area.

The papers presented at this conference were selected after extensive reviews by the Program Committee and associated reviewers. Special emphasis was placed on applications in the area of electronic health organized as a special track. We would like to thank all PC members and the reviewers for their valuable advice, and the authors for their contributions.

July 2011

A Min Tjoa
Gerald Quirchmayr
Lida Xu
Ilsun You

VIII Organization

A Min Tjoa	Vienna University of Technology, Austria
Peter van Rosmalen	Open University of the Netherlands, The Netherlands
Kyu-Young Whang	Korea Advanced Institute of Science and Technology, Korea
John Zeleznikow	Victoria University, Australia

Conference Special Track eHealth

eHealth Track Chair

Thomas Neubauer	Vienna University of Technology, Austria
Peter Birner	Medical University of Vienna, Austria

eHealth Track Committee

Rashid L. Bashshur	University of Michigan Health System, USA
Olivier Bodenreider	National Library of Medicine
Asuman Dogac	Middle East Technical University, Ankara, Turkey
John A. Doucette	University of Waterloo, Canada
Stefan Fenz	Vienna University of Technology, Austria
Stanley Finkelstein	University of Minnesota, USA
Yang Gong	University of Missouri, USA
Tyrone Grandison	IBM Almaden Research Center
Trisha Greenhalgh	University of London, UK
Katharina Kaiser	Vienna University of Technology, Austria
Klaus Kuhn	Munich University of Technology, Germany
Stan Matwin	University of Ottawa, Canada
Luciano Milanese	CNR-bioinformatics, Italy
Henning Müller	University of Applied Sciences Western Switzerland
Goran Nenadic	University of Manchester, UK
Christopher Nugent	University of Ulster, UK
Rob Procter	University of Edinburgh School of Informatics, UK
Roy Rada	University of Maryland, USA
Andrey Rzhetsky	University of Chicago, USA
Stefan Schulz	Medical University of Graz, Austria
Hiroshi Takeda	Jikei Institute, Japan
Philipp Tomsich	Theobroma Systems Design und Consulting GmbH, Austria
Xinwen Zhang	Huawei America Research Center at Santa Clara, CA, USA

International Workshop on Security and Cognitive Informatics for Homeland Defense (SeCIHD)

General Chair

Ilsun You Korean Bible University, Republic of Korea

General Vice Chair

Jinshu Su National University of Defense Technology
Moin Uddin Delhi Technological University, India

Program Chair

Marek R. Ogiela AGH University of Science and Technology
Institute of Automatics, Poland

Publicity Chair

N.S. Raghava Delhi Technological University, India

Program Committee

Anirban Basu	Tokai University, Japan
Pascal Bouvry	Luxembourg University, Luxembourg
Jorg Cassens	Norwegian University of Science and Technology, Norway
Aniello Castiglione	University of Salerno, Italy
Fumiharu Etoh	ISIT, Japan
Tomasz Hachaj	Pedagogical University in Krakow, Poland
Zhang Jie	Nanyang Technological University, Singapore
Rahul Katarya	Delhi Technological University, India
Hoon Ko	Institute of Engineering-Polytechnic of Porto, Portugal
Gabriele Lenzini	SnT - University of Luxembourg, Luxembourg
Fang-Yie Leu	Tunghai University, Taiwan
Lidia D. Ogiela	AGH University of Science and Technology, Poland
Dhananjay Singh	National Institute for Mathematical Sciences, Korea
James Stanier	University of Sussex, UK
Chul Sur	Kyushu University, Japan
Mirosław Trzupek	AGH University of Science and Technology, Poland
Baokang Zhao	National University of Defense Technology, China
Toshihiro Yamauchi	Okayama University, Japan
Kangbin Yim	Soonchunhyang University, Republic of Korea

Table of Contents

Conference

Multidisciplinary Research and Practice for Business, Enterprise and Health Information Systems

Benefits of Federated Identity Management - A Survey from an Integrated Operations Viewpoint	1
<i>Jostein Jensen</i>	
A Security Policy Model for Agent Based Service-Oriented Architectures	13
<i>Eckehard Hermann</i>	
A Risk-Based Evaluation of Group Access Control Approaches in a Healthcare Setting	26
<i>Maria B. Line, Inger Anne Tøndel, and Erlend Andreas Gjøere</i>	
Usage Control Enforcement - A Survey	38
<i>Asmund Ahlmann Nyre</i>	

Massive Information Sharing and Integration and Electronic Healthcare

Discovery and Integration of Web 2.0 Content into Geospatial Information Infrastructures: A Use Case in Wild Fire Monitoring	50
<i>Manuela Núñez-Redó, Laura Díaz, José Gil, David González, and Joaquín Huerta</i>	
The Problem of Conceptual Incompatibility: Exploring the Potential of Conceptual Data Independence to Ease Data Integration	69
<i>Simon McGinnes</i>	
Health Care Reform and the Internet	82
<i>Patricia MacTaggart and Stephanie Fiore</i>	
Integrating Patient-Related Entities Using Hospital Information System Data and Automatic Analysis of Free Text	89
<i>Svetla Boytcheva, Galia Angelova, Zhivko Angelov, Dimitar Tcharaktchiev, and Hristo Dimitrov</i>	

A Methodological Approach for Ontologising and Aligning Health Level Seven (HL7) Applications 102
Ratnesh Sahay, Ronan Fox, Antoine Zimmermann, Axel Polleres, and Manfred Hauswirth

Application of Answer Set Programming for Public Health Data Integration and Analysis 118
Monica L. Nogueira and Noel P. Greis

Workshop

International Workshop on Security and Cognitive Informatics for Homeland Defense

Augmented Reality Approaches in Intelligent Health Technologies and Brain Lesion Detection 135
Tomasz Hachaj and Marek R. Ogiela

Hierarchical Knowledge Structure Applied to Image Analyzing System - Possibilities of Practical Usage 149
Krzysztof Wójcik

Evaluation of Topological Vulnerability of the Internet under Regional Failures 164
Wei Peng, Zimu Li, Jinshu Su, and Muwei Dong

VMBSL: Virtual Machine Based Logging Scheme for Prevention of Tampering and Loss 176
Masaya Sato and Toshihiro Yamauchi

Augmenting Surveillance System Capabilities by Exploiting Event Correlation and Distributed Attack Detection 191
Francesco Flammini, Nicola Mazzocca, Alfio Pappalardo, Concetta Pragliola, and Valeria Vittorini

Shifting Primes: Extension of Pseudo-Mersenne Primes to Optimize ECC for MSP430-Based Future Internet of Things Devices 205
Leandro Marin, Antonio J. Jara, and Antonio F.G. Skarmeta

Semantic Modelling of Coronary Vessel Structures in Computer Aided Detection of Pathological Changes 220
Miroslaw Trzupek

Pose and Expression Recognition Using Limited Feature Points Based on a Dynamic Bayesian Network 228
Wei Zhao, Goo-Rak Kwon, and Sang-Woong Lee

Extended Spatio-temporal Relations between Moving and Non-moving Objects	243
<i>Chang Choi, Junho Choi, Juhyun Shin, Ilsun You, and Pankoo Kim</i>	
A Handover Security Mechanism Employing Diffie-Hellman PKDS for IEEE802.16e Wireless Networks	255
<i>Fang-Yie Leu, Yi-Fu Ciou, and Yi-Li Huang</i>	
Securing Location-Aware Services Based on Online/Offline Signatures in VANETs	271
<i>Chul Sur, Youngho Park, Takashi Nishide, Kouichi Sakurai, and Kyung Hyune Rhee</i>	
A Novel Secure Image Hashing Based on Reversible Watermarking for Forensic Analysis	286
<i>Munkhbaatar Doyoddorj and Kyung-Hyune Rhee</i>	
Learning Web Application Firewall - Benefits and Caveats	295
<i>Dariusz Patka and Marek Zachara</i>	
A Novel Chaining Approach to Indirect Control Transfer Instructions	309
<i>Wei Chen, Zhiying Wang, Qiang Dou, and Yongwen Wang</i>	
A Study on Context Services Model with Location Privacy	321
<i>Hoon Ko, Goretí Marreiros, Zita Vale, and Jongmyung Choi</i>	
Digital Profiling: A Computer Forensics Approach	330
<i>Clara Colombini and Antonio Colella</i>	
New Steganographic Techniques for the OOXML File Format	344
<i>Aniello Castiglione, Bonaventura D'Alessio, Alfredo De Santis, and Francesco Palmieri</i>	
Automated Construction of a False Digital Alibi	359
<i>Alfredo De Santis, Aniello Castiglione, Giuseppe Cattaneo, Giancarlo De Maio, and Mario Ianulardo</i>	
IT Issues on Homeland Security and Defense	374
<i>Kangbin Yim and Ilsun You</i>	
Author Index	387