

Commenced Publication in 2007

Founding and Former Series Editors:

Alfredo Cuzzocrea, Xiaoyong Du, Orhun Kara, Ting Liu, Dominik Ślęzak,
and Xiaokang Yang

Editorial Board

Simone Diniz Junqueira Barbosa

*Pontifical Catholic University of Rio de Janeiro (PUC-Rio),
Rio de Janeiro, Brazil*

Phoebe Chen

La Trobe University, Melbourne, Australia

Joaquim Filipe

Polytechnic Institute of Setúbal, Setúbal, Portugal

Igor Kotenko

*St. Petersburg Institute for Informatics and Automation of the Russian
Academy of Sciences, St. Petersburg, Russia*

Krishna M. Sivalingam

Indian Institute of Technology Madras, Chennai, India

Takashi Washio

Osaka University, Osaka, Japan

Junsong Yuan

Nanyang Technological University, Singapore, Singapore

Lizhu Zhou

Tsinghua University, Beijing, China

More information about this series at <http://www.springer.com/series/7899>

Mohammad S. Obaidat (Ed.)

E-Business and Telecommunications

13th International Joint Conference, ICETE 2016
Lisbon, Portugal, July 26–28, 2016
Revised Selected Papers



Springer

Editor

Mohammad S. Obaidat

Department of Computer and Information
Science

Fordham University

Bronx, NY

USA

ISSN 1865-0929

ISSN 1865-0937 (electronic)

Communications in Computer and Information Science

ISBN 978-3-319-67875-7

ISBN 978-3-319-67876-4 (eBook)

<https://doi.org/10.1007/978-3-319-67876-4>

Library of Congress Control Number: 2017955725

© Springer International Publishing AG 2017

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, 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.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Printed on acid-free paper

This Springer imprint is published by Springer Nature

The registered company is Springer International Publishing AG

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

The present book includes extended and revised versions of a set of selected papers from the 13th International Joint Conference on e-Business and Telecommunications (ICETE 2016), held in Lisbon, Portugal, during July 26–28, 2016.

ICETE 2016 received 241 paper submissions from 51 countries, of which 14% are included in this book. The papers were selected by the event chairs and their selection is based on a number of criteria including the reviews and suggested comments provided by the Program Committee members, the session chairs' assessments, and also the program chairs' global view of all papers included in the technical program. The authors of selected papers were then invited to submit revised and extended versions of their papers having at least 30% new material.

ICETE 2016 was a joint conference aimed at bringing together researchers, engineers, scientists, and practitioners interested in information and communication technologies, including data communication networking, e-business, optical communication systems, security and cryptography, signal processing and multimedia applications, and wireless networks and mobile systems. These are the main knowledge areas that define the six component conferences, namely: DCNET, ICE-B, OPTICS, SECRIPT, SIGMAP, and WINSYS, which together form the ICETE joint international conference.

The papers selected and included in this book contribute to the understanding of relevant trends of current research in the areas of e-business and telecommunications, including wireless networks and technologies, mobile applications, speech recognition and data protection.

We would like to thank all the authors for their contributions and also the reviewers who helped ensure the quality of this publication. We also hope that you will find this collection of papers an excellent source of inspiration as well as a helpful reference for research in the aforementioned areas.

April 2017

Mohammad S. Obaidat

Organization

Conference Chair

Mohammad S. Obaidat Fordham University, USA

Program Co-chairs

SIGMAP

Enrique Cabello Universidad Rey Juan Carlos, Spain

WINSYS

Pascal Lorenz University of Haute Alsace, France

SECRYPT

Pierangela Samarati Università degli Studi di Milano, Italy

OPTICS

Panagiotis Sarigiannidis University of Western Macedonia, Greece

ICE-B

Marten van Sinderen University of Twente, The Netherlands

DCNET

Christian Callegari RaSS National Laboratory, CNIT, Italy

SIGMAP Program Committee

Harry Agius Brunel University, UK

Rajeev Agrawal North Carolina Agricultural and Technical State
University, USA

João Ascenso Instituto Superior de Engenharia de Lisboa, Portugal

Arvind Bansal Kent State University, USA

Chidansh Amitkumar Bhatt FX Palo Alto Laboratory, Inc., USA

Adrian Bors University of York, UK

Christian Breiteneder Vienna University of Technology, Austria

Wai-Kuen Cham	The Chinese University of Hong Kong, SAR China
Amitava Chatterjee	Jadavpur University, India
Wei Cheng	Garena Online Pte. Ltd., Singapore
Wei-Ta Chu	National Chung Cheng University, Taiwan
Mark Claypool	Worcester Polytechnic Institute, USA
Norishige Fukushima	Nagoya Institute of Technology, Japan
Jakub Galka	University of Science and Technology, Poland
Gheorghita Ghinea	Brunel University, UK
Seiichi Gohshi	Kogakuin University, Japan
Minglun Gong	Memorial University of Newfoundland, Canada
William Grosky	University of Michigan Dearborn, USA
Jing-Ming Guo	National Taiwan University of Science and Technology, Taiwan
Rajarshi Gupta	University of Calcutta, India
Malka Halgamuge	The University of Melbourne, Australia
Emmanuel Ifeachor	Plymouth University, UK
Lazaros S. Iliadis	Democritus University of Thrace, Greece
Razib Iqbal	Missouri State University, USA
Hao Jiang	Boston College, USA
Li-Wei Kang	National Yunlin University of Science and Technology, Taiwan
Sokratis Katsikas	Norwegian University of Science and Technology, Norway
Markus Koskela	University of Helsinki, Finland
Constantine Kotopoulos	Aristotle University of Thessaloniki, Greece
Konrad Kowalczyk	AGH University of Science and Technology, Poland
Sam Kwong	City University of Hong Kong, Hong Kong, SAR China
Adnane Latif	Cadi Ayyad University, Morocco
Choong-Soo Lee	St. Lawrence University, USA
Zitao Liu	University of Pittsburgh, USA
Martin Lopez-Nores	University of Vigo, Spain
Hong Man	Stevens Institute of Technology, USA
Manuel J. Marin-Jimenez	University of Cordoba, Spain
Daniela Moctezuma	Conacyt (CentroGEO), Mexico
Chamin Morikawa	Morpho, Inc., Japan
Alejandro Murua	University of Montreal, Canada
Hiroshi Nagahashi	Tokyo Institute of Technology, Japan
Ioannis Palioskas	Centre for Research and Technology Hellas, Greece
Peter Quax	Hasselt University, Belgium
Maria Paula Queluz	Instituto Superior Técnico, Instituto de Telecomunicações, Portugal
Luis Alberto Morales	CONACYT-Universidad Michoacana de San Nicolás de Hidalgo, Mexico
Rosales	Universidad Autónoma de Madrid, Spain
Simone Santini	Università Degli Studi di Salerno, Italy
Massimo De Santo	

Wee Ser	Nanyang Technological University, Singapore
Kaushik Das Sharma	University of Calcutta, India
Li Song	Institute of Image Communication and Network
Pei-Yun Tsai	Engineering, Shanghai Jiao Tong University, China
Aristeidis Tsitiridis	National Central University, Taiwan
Andreas Uhl	University Rey Juan Carlos, Spain
Iván Vidal	University of Salzburg, Austria
Sudanthy Wijewickrama	Universidad Carlos III de Madrid, Spain
Sanjeeva Witharana	University of Melbourne, Australia
Xin-Shun Xu	Max Planck Institute for Solar System Research, Germany
Kim-hui Yap	Shandong University, China
Hani Camille Yehia	Nanyang Technological University, Singapore
Yongxin Zhang	Universidade Federal de Minas Gerais, Brazil
Bartosz Ziolkowski	Qualcomm R&D, USA
	AGH University of Science and Technology, Poland

SIGMAP Additional Reviewer

Christian Schönauer	IMS, Austria
---------------------	--------------

WINSYS Program Committee

Ali Abedi	University of Maine, USA
Taufik Abrão	Universidade Estadual de Londrina, Brazil
Ramon Aguero	University of Cantabria, Spain
Andreas Ahrens	Hochschule Wismar, University of Technology Business and Design, Germany
Aydin Akan	Istanbul University, Turkey
Vicente Alarcon-Aquino	Universidad de las Americas Puebla, Mexico
Francisco Barcelo Arroyo	Universitat Politècnica de Catalunya, Spain
Jose M. Barcelo-Ordinas	Universitat Politècnica de Catalunya (UPC), Spain
Bert-Jan van Beijnum	University of Twente, The Netherlands
Marko Beko	Universidade Lusófona de Humanidades e Tecnologias, Portugal
Luis Bernardo	Universidade Nova de Lisboa, Portugal
Raffaele Bolla	University of Genoa, Italy
Dajana Cassioli	Universität L'Aquila, Italy
Llorenç Cerdà-Alabern	Universitat Politècnica de Catalunya, Spain
Gerard Chalhoub	Clermont University, France
James M. Conrad	University of North Carolina at Charlotte, USA
Roberto Corvaja	University of Padova, Italy
Orhan Dagdeviren	Ege University, Turkey
Carl Debono	University of Malta, Malta
Bryan Dixon	California State University, USA
Luis Rizo Dominguez	ITESO Jesuit University of Guadalajara, Mexico

Christos Douligeris	University of Piraeus, Greece
Amit Dvir	BME-HIT, Hungary
George Efthymoglou	University of Piraeus, Greece
Mohammed El-Hajjar	University of Southampton, UK
Jocelyne Elias	Paris Descartes University, France
Ozgur Ergul	Cankaya University, Turkey
Panayotis Fouliras	University of Macedonia, Greece
Antonio Grilo	INESC/IST, Portugal
Stefanos Gritzalis	University of the Aegean, Greece
Alexander Guitton	University Blaise Pascal, France
Aaron Gulliver	University of Victoria, Canada
Cynthia Hood	Illinois Institute of Technology, USA
Chih-Lin Hu	National Central University, Taiwan
Ali Abu-el Humos	Jackson State University, USA
Josep Miquel Jornet	University at Buffalo, USA
Georgios Kambourakis	University of the Aegean, Greece
Ala' Khalifeh	German Jordanian University, Jordan
Charalampos Konstantopoulos	University of Piraeus, Greece
Polychronis Koutsakis	Technical University of Crete, Greece
Gurhan Kucuk	Yeditepe University, Turkey
Chong Hyun Lee	Jeju National University, Korea, Republic of
Heejo Lee	Korea University, Korea, Republic of
Wookwon Lee	Gannon University, USA
Wei Li	University of Sydney, Australia
Elsa Macias López	University of Las Palmas de Gran Canaria, Spain
Chung-Horng Lung	Carleton University, Canada
S. Kami Makki	Lamar University, USA
Reza Malekian	University of Pretoria, South Africa
Pietro Manzoni	Universidad Politecnica de Valencia, Spain
Luis Mendes	Escola Superior de Tecnologia e Gestão de Leiria, Portugal
Marek Natkaniec	AGH University of Science and Technology, Poland
Ioannis Nikolaidis	University of Alberta, Canada
Kenjiro Nishikawa	Kagoshima University, Japan
Cristiano Panazio	Escola Politécnica of São Paulo University, Brazil
Grammati Pantziou	Technological Educational Institution of Athens, Greece
Al-Sakib Khan Pathan	IIUM, Malaysia and Islamic University in Madinah, KSA, Bangladesh
Jordi Pérez-Romero	Universitat Politècnica de Catalunya (UPC), Spain
Jorge Portilla	Universidad Politécnica de Madrid, Spain
Nancy El Rachid	LIMOS, France
Julian Reichwald	Cooperative State University Mannheim, Germany
Jörg Roth	University of Applied Sciences Nuremberg, Germany
Angelos Rouskas	University of Piraeus, Greece

Farag Sallabi	United Arab Emirates University, United Arab Emirates
Manuel García Sánchez	Universidade de Vigo, Spain
Altair Olivo Santin	Pontifical Catholic University of Paraná, Brazil
Nicola Santoro	Carleton University, Canada
Christian Schindelhauer	University of Freiburg, Germany
Winston Khoon Guan Seah	Victoria University of Wellington, New Zealand
Kuei-Ping Shih	Tamkang University, Taiwan
Mujdat Soyturk	Marmara University, Turkey
Srinath Srinivasa	International Institute of Information Technology, India
Alvaro Suárez-Sarmiento	University of Las Palmas de Gran Canaria, Spain
Bulent Tavli	TOBB University of Economics and Technology, Turkey
Cesar Vargas-Rosales	Tecnologico de Monterrey, Campus Monterrey, Mexico
Sheng-Shih Wang	Minghsin University of Science and Technology, Taiwan
Hyoung-Sun Youn	HCAC, University of Hawai'i, USA
Magda El Zarki	University of California Irvine, USA
Shibing Zhang	Nantong University, China
Zhenyun Zhuang	LinkedIn Corp., USA
Dimirios Zorbas	Inria Lille, Nord Europe, France

WINSYS Additional Reviewers

Marcelo Pellenz	Pontifical Catholic University of Parana, Brazil
Eduardo Viegas	PUCPR, Brazil
Ian Welch	Victoria University of Wellington, New Zealand

SECRYPT Program Committee

Luís Antunes	Faculdade de Ciências da U. Porto Instituto de telecomunicações Porto, Portugal
Alessandro Armando	FBK, Italy
Prithvi Bisht	Adobe, USA
Carlo Blundo	Università di Salerno, Italy
Andrey Bogdanov	Technical University of Denmark, Denmark
Francesco Buccafurri	University of Reggio Calabria, Italy
Dario Catalano	Università di Catania, Italy
Sherman S.M. Chow	Chinese University of Hong Kong, Hong Kong, SAR China
Frederic Cuppens	TELECOM Bretagne, France
Nora Cuppens-Boulahia	Institut Mines Telecom/Telecom Bretagne, France
Jun Dai	California State University, USA
Tassos Dimitriou	Computer Technology Institute, Greece and Kuwait University, Kuwait

Josep Domingo-Ferrer	Universitat Rovira i Virgili, Spain
Alberto Ferrante	Università della Svizzera Italiana, Switzerland
Josep-Lluis Ferrer-Gomila	Balearic Islands University, Spain
William M. Fitzgerald	Johnson Controls (Tyco), Ireland
Sara Foresti	Università degli Studi di Milano, Italy
Steven Furnell	Plymouth University, UK
Joaquin Garcia-Alfaro	Institut Mines-Telecom, TELECOM SudParis, France
Mark Gondree	Sonoma State University, USA
Dimitris Gritzalis	AUEB, Greece
Waël Kanoun	NOKIA, France
Murat Kantarcioglu	University of Texas at Dallas, USA
Sokratis Katsikas	Norwegian University of Science and Technology, Norway
Florian Kerschbaum	SAP, Germany
Shinsaku Kiyomoto	KDDI Research Inc., Japan
Ruggero Donida Labati	Università degli Studi di Milano, Italy
Costas Lambrinoudakis	University of Piraeus, Greece
Albert Levi	Sabanci University, Turkey
Jiguo Li	Hohai University, China
Peng Liu	Penn State University, USA
Giovanni Livraga	Università degli Studi di Milano, Italy
Javier Lopez	University of Malaga, Spain
Haibing Lu	Santa Clara University, USA
Evangelos Markatos	ICS, Forth, Greece
Olivier Markowitch	Université Libre de Bruxelles, Belgium
Fabio Martinelli	Consiglio Nazionale delle Ricerche, Italy
Vashek Matyas	Masaryk University, Czech Republic
Carlos Maziero	UFPR, Federal University of Paraná, Brazil
Chandrashekhar Meshram	Rani Durgavati University, Jabalpur, India
Atsuko Miyaji	Japan Advanced Institute of Science and Technology, Japan
Refik Molva	Eurecom, France
Eiji Okamoto	University of Tsukuba, Japan
Rolf Oppliger	eSECURITY Technologies, Switzerland
Stefano Paraboschi	University of Bergamo, Italy
Joon Park	Syracuse University, USA
Gerardo Pelosi	Politecnico di Milano, Italy
Günther Pernul	University of Regensburg, Germany
Roberto Di Pietro	Università di Roma Tre, Italy
Joachim Posegga	Institute of IT Security and Security Law, Germany
Silvio Ranise	Fondazione Bruno Kessler, Italy
Indrakshi Ray	Colorado State University, USA
Kui Ren	State University of New York at Buffalo, USA
Nuno Santos	INESC, Portugal
Andreas Schaad	Huawei European Research Center, Germany

Cristina Serban	AT&T, USA
Daniele Sgandurra	Imperial College, London, UK
Juan Tapiador	Universidad Carlos III de Madrid, Spain
Vicenc Torra	University of Skövde, Sweden
Jaideep Vaidya	Rutgers Business School, USA
Luca Viganò	King's College London, UK
Sabrina de Capitani di Vimercati	Università degli Studi di Milano, Italy
Corrado Aaron Visaggio	Università degli Studi del Sannio, Italy
Ivan Visconti	University of Salerno, Italy
Cong Wang	City University of Hong Kong, Hong Kong, SAR China
Haining Wang	The College of William and Mary, USA
Lingyu Wang	Concordia University, Canada
Xinyuan (Frank) Wang	George Mason University, USA
Edgar Weippl	SBA Research, Austria
Qiben Yan	University of Nebraska Lincoln, USA
Alec Yasinsac	University of South Alabama, USA
Meng Yu	Virginia Commonwealth University, USA
Jiawei Yuan	Embry-Riddle Aeronautical University, USA
Lei Zhang	Thomson Reuters, USA

SECRYPT Additional Reviewers

Spiros Antonatos	IBM, Ireland
Ricardo Chaves	INESC-ID, IST, ULisbon, Portugal
Gabriele Costa	University of Genova, Italy
Kaoutar Elkhiyaoui	EURECOM, France
Martianus Frederic Ezerman	Nanyang Technological University, Singapore
Lorena Gonzalez	University Carlos III of Madrid, Spain
Liran Lerman	Université Libre de Bruxelles, Belgium
Alessio Merlo	E-Campus University, Italy
Melek Önen	EURECOM, France
Miguel Pardal	Instituto Superior Técnico, Universidade de Lisboa, Portugal
Sergio Pastrana	Carlos III University of Madrid, Spain
Andrea Paudice	Imperial College London, UK
Pedro Pereira	Center for Research in Advanced Computing Systems, Portugal
Chuangang Ren	Pennsylvania State University, USA
Jennifer Rexford	Princeton University, USA
Cédric Van Rompay	EURECOM, France
Massimiliano Sala	University of Trento, Italy
Vishal Saraswat	CRRAo AIMSCS, India
Dimitrios Vasilopoulos	Eurecom, France
Tao Zhang	CUHK, Hong Kong, SAR China

Bin Zhao Palo Alto Networks, Inc., USA
 Yongjun Zhao The Chinese University of Hong Kong, Hong Kong,
 SAR China

OPTICS Program Committee

Tiago Alves	Instituto Superior Técnico/Instituto de Telecomunicações, Portugal
Siti Barirah Barirah Ahmad Anas	Universiti Putra Malaysia, Malaysia
Nicola Andrioli	Scuola Superiore Sant'Anna, Italy
Adolfo Cartaxo	Instituto de Telecomunicações, Instituto Superior Técnico, Portugal
C.W. Chow	National Chiao Tung University, Taiwan
Giampiero Contestabile	Scuola Superiore Sant'Anna, Italy
Bernard Cousin	University of Rennes 1, France
Brian Culshaw	University of Strathclyde, UK
Anna Manolova Fagertun	Technical University of Denmark, Denmark
Matteo Fiorani	Royal Institute of Technology, Sweden
Marija Furdek	KTH Royal Institute of Technology, Sweden
Sang-Kook Han	Yonsei University, Korea, Republic of
Nicholas Ioannides	London Metropolitan University, UK
Guifang Li	The University of Central Florida, USA
Qi Li	Columbia University, USA
Malamati Louta	University of Western Macedonia, Greece
Guo-Wei Lu	Tokai University, Japan
Barbara Martini	Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), Italy
Rainer Martini	Stevens Institute of Technology, USA
Lenin Mehedy	IBM Research Australia, Australia
Tetsuya Miyazaki	National Institute of Information and Communications, Japan
Maria Morant	Universitat Politècnica de València, Spain
Michela Svaluto Moreolo	Centre Tecnologic de Telecomunicacions de Catalunya (CTTC), Spain
Thas A Nirmalathas	The University of Melbourne, Australia
Yasutake Ohishi	Research Center for Advanced Photon Technology, Japan
Satoru Okamoto	Keio University, Japan
Albert Pages	Universitat Politècnica de Catalunya, Spain
Anirban Pathak	Jaypee Institute of Information Technology, India
Periklis Petropoulos	University of Southampton, UK
João Rebola	Instituto de Telecomunicações, ISCTE-IUL, Portugal
Enrique Rodriguez-Colina	Universidad Autónoma Metropolitana, Mexico
Jitendra Nath Roy	National Institute of Technology, India
Panagiotis Sarigiannidis	University of Western Macedonia, Greece

Mehdi Shadaram	University of Texas at San Antonio, USA
Hamada Al Shaer	University of Edinburgh, Li-Fi Research and Development Centre, UK
Surinder Singh	Sant Longowal Institute of Engineering and Technology, Longowal, India
Georgios Siviloglou	University of Amsterdam, The Netherlands
Salvatore Spadaro	Universitat Politecnica de Catalunya, Spain
Yikai Su	Shanghai Jiao Tong University, China
Ashok Kumar Turuk	National Institute of Technology Rourkela, India
L. Valcarenghi	Scuola Superiore Sant'Anna, Italy
Bal Virdee	London Metropolitan University, UK
Stefan Wabnitz	Università degli Studi di Brescia, Italy
Xingjun Wang	Peking University, China
Yixin Wang	Institute for Infocomm Research, Singapore
Andreas O.J. Wiberg	University of California San Diego, USA
Hui Yang	Beijing University of Posts and Telecommunications, China
Yi Zhu	Hawaii Pacific University, USA
Kyriakos E. Zoiros	Democritus University of Thrace, Greece

ICE-B Program Committee

Andreas Ahrens	Hochschule Wismar, University of Technology Business and Design, Germany
Dimitris Apostolou	University of Piraeus, Greece
Ana Azevedo	CEOS.PP-ISCAP/IPP, Portugal
Elarbi Badidi	United Arab Emirates University, United Arab Emirates
Michael R. Bartolacci	Pennsylvania State University, USA
Morad Benyoucef	University of Ottawa, Canada
Ilia Bider	DSV, Stockholm University, Sweden
Efthimios Bothos	Institute of Communication and Computer Systems, Greece
Rebecca Bulander	Pforzheim University of Applied Science, Germany
Wojciech Cellary	Poznan University of Economics, Poland
Chun-Liang Chen	National Taiwan University of Arts, Taiwan
Dickson Chiu	The University of Hong Kong, Hong Kong, SAR China
Jacek Chmielewski	Poznan University of Economics, Poland
Soon Ae Chun	CUNY-CSI, USA
Lawrence Chung	The University of Texas at Dallas, USA
Michele Colajanni	University of Modena and Reggio Emilia, Italy
Mikael Collan	Lappeenranta University of Technology, Finland
Rafael Corchuelo	University of Seville, Spain
Ioanna Dionysiou	University of Nicosia, Cyprus
Peter Dolog	Aalborg University, Denmark

Yanqing Duan	University of Bedfordshire, UK
Elsa Estevez	United Nations University, Portugal
Marie-Christine Fauvet	Université Grenoble Alpes, France
Erwin Fielt	Queensland University of Technology, Australia
Erwin Folmer	TONO Information and Communication Technology, The Netherlands
Geoffrey Charles Fox	Indiana University, USA
José María García	University of Seville, Spain
Inma Hernández	Universidad de Sevilla, Spain
Marijn Janssen	Delft University of Technology, The Netherlands
Stephan Kassel	University of Applied Sciences Zwickau, Germany
Kin Keung Lai	City University of Hong Kong, Hong Kong, SAR China
Winfried Lamersdorf	University of Hamburg, Germany
Olga Levina	FZI Research Center for Information Technology, Germany
Yung-Ming Li	National Chiao Tung University, Taiwan
Ben van Lier	Centric, The Netherlands
Rungtai Lin	National Taiwan University of Arts, Taiwan
Peter Loos	German Research Center for Artificial Intelligence, Germany
Gavin McArdle	University College Dublin, Ireland
Brian Mennecke	Iowa State University, USA
Gianluca Carlo Misuraca	European Commission, Joint Research Centre, Spain
Wai Yin Mok	The University of Alabama in Huntsville, USA
Ali Reza Montazemi	McMaster University, Canada
Maurice Mulvenna	Ulster University, UK
Paulo Novais	Universidade do Minho, Portugal
Wilma Penzo	University of Bologna, Italy
Krassie Petrova	Auckland University of Technology, New Zealand
Willy Picard	Poznan University of Economics, Poland
Charmaine Du Plessis	University of South Africa, South Africa
Pak-Lok Poon	RMIT University, Australia
Ela Pustulka-Hunt	FHNW Olten, Switzerland
Arkalgud Ramaprasad	University of Illinois at Chicago, USA
Wolfgang Reinhardt	University of the Bundeswehr, Germany
Manuel Resinas	Universidad de Sevilla, Spain
Carlos Rivero	Universidad de Sevilla, Spain
Gustavo Rossi	University of La Plata, Argentina
Jarogniew Rykowski	The Poznan University of Economics (PUE), Poland
Ahm Shamsuzzoha	Sultan Qaboos University, Oman
Boris Shishkov	Bulgarian Academy of Sciences/IICREST, Bulgaria
Marten van Sinderen	University of Twente, The Netherlands
Hassan A. Sleiman	Commissariat à l'énergie atomique et aux énergies alternatives (CEA), France
Riccardo Spinelli	Università degli Studi di Genova, Italy

Zhaohao Sun	PNG University of Technology;
James Y.L. Thong	Federation University Australia, Papua New Guinea
Anthony Townsend	Hong Kong University of Science and Technology, Hong Kong, SAR China
Alfredo Vellido	Iowa State University, USA
Yiannis Verginadis	Universitat Politècnica de Catalunya, Spain
Wlodek Zadrozny	ICCS, National Technical University of Athens, Greece
Edzus Zeiris	University of North Carolina, Charlotte, USA
Lina Zhou	ZZ Dats Ltd., Latvia University of Maryland, Baltimore County, USA

ICE-B Additional Reviewers

Nick Russell	QUT, Australia
Nagarajan Venkatachalam	Science and Engineering Faculty, Queensland University of Technology, Australia

DCNET Program Committee

Ilija Basicevic	University of Novi Sad, Serbia
Marco Beccuti	University of Turin, Italy
Pablo Belzarena	UdelaR, Uruguay
Chiara Buratti	Università di Bologna, Italy
Valentín Carela-Español	TALAIA.io, Spain
Maurizio Casoni	University of Modena and Reggio Emilia, Italy
Fernando Cerdan	Polytechnic University of Cartagena, Spain
Paskorn Champrasert	Chiang Mai University, Thailand
Kang Chen	Southern Illinois University, USA
Min-Xiou Chen	National Dong Hwa University, Taiwan
Zesheng Chen	Indiana University, Purdue University Fort Wayne, USA
Rolf Clauberg	IBM Research, Switzerland
Jitender Deogun	University of Nebraska-Lincoln, USA
Josep Domenech	Universitat Politècnica de València, Spain
Ziqian Dong	New York Institute of Technology, USA
Mahmood Fathi	Iranian University of Science and Technology, Iran, Islamic Republic of
Carlos Fernandez-Llatas	ITACA -TSB Universidad Politécnica de Valencia, Spain
Hiroaki Fukuda	Shibaura Institute of Technology, Japan
François Gagnon	Cégep Sainte-Foy, Canada
Pawel Gburzynski	Vistula University, Poland
Katja Gilly	Miguel Hernandez University, Spain
Francesco Gringoli	University of Brescia, Italy
Carlos Guerrero	Universitat de les Illes Balears, Spain

Antonio Izquierdo-Manzanares	National Institute of Standards and Technology (NIST), USA
Brigitte Jaumard	Concordia University, Canada
Dimitris Kanellopoulos	University of Patras, Greece
Randi Karlsen	University of Tromso, Norway
Randy Katz	University of California Berkeley, USA
Peng-Yong Kong	Khalifa University of Science, Technology and Research (KUSTAR), United Arab Emirates
Michael Kounavis	Intel Corporation, USA
Matthieu Latapy	LIP6, CNRS and UPMC, France
Changhyun Lee	Electronics and Telecommunications Research Institute (ETRI), Korea, Republic of
Isaac Lera	Universitat de les Illes Balears, Spain
Hai Lin	Victoria University of Welling, New Zealand
Yaoqing Liu	Clarkson University, USA
Ziping Liu	Southeast Missouri State University, USA
Pascal Lorenz	University of Haute Alsace, France
Stéphane Maag	TELECOM SudParis, France
Olaf Maennel	Tallinn University of Technology, Estonia
S. Kami Makki	Lamar University, USA
Marco Milanesio	Eurecom, France
Carlos León de Mora	University of Seville, Spain
Liam Murphy	University College Dublin, Ireland
Ibrahim Onyuksel	Northern Illinois University, USA
Maurizio Patrignani	Roma Tre University, Italy
José Pelegri-Sebastia	Universidad Politécnica de Valencia, Spain
Adrian Popescu	Blekinge Institute of Technology, Sweden
Gianluca Reali	Università degli Studi di Perugia, Italy
Nasser-Eddine Rikli	King Saud University, Saudi Arabia
Guanying Ru	AT&T Lab, USA
Matteo Sereno	University of Turin, Italy
Adel Soudani	King Saud University, Saudi Arabia
Maciej Stasiak	Poznan University of Technology, Poland
Giovanni Stea	University of Pisa, Italy
Tatsuya Suda	University Netgroup Inc., USA
Krzysztof Szczypiorski	Warsaw University of Technology (WUT), Poland
Sebastien Tixeuil	Université Pierre et Marie Curie, Paris 6, France
Kurt Tutschku	Blekinge Institute of Technology, Sweden
Thierry Val	Toulouse University, France
Adriano Valenzano	National Research Council of Italy, Italy
Luis Javier García Villalba	Universidad Complutense de Madrid, Spain
Bernd E. Wolfinger	University of Hamburg, Germany
Józef Wozniak	Gdansk University of Technology, Poland
Christos Xenakis	University of Piraeus, Greece
Gaoxi Xiao	Nanyang Technological University, Singapore

Jianbin Xiong

Guangdong University of Petrochemical Technology,
China

Bo Zhang

Concurrent Computer Corporation, USA

Cliff C. Zou

University of Central Florida, USA

DCNET Additional Reviewers

Gabriele Lospoto

Roma Tre University, Italy

Massimo Rimondini

Roma Tre University, Italy

Piotr Sapiecha

Warsaw University of Technology, Poland

Invited Speakers

Hamid Aghvami

King's College London, UK

Giuseppe Bianchi

University of Roma Tor Vergata, Italy

Anastasios Economides

University of Macedonia, Greece

Mateo Valero

Universidad Politecnica de Catalunya, Spain

Indrakshi Ray

Colorado State University, USA

Contents

Invited Paper

User Perceptions of Internet of Things (IoT) Systems	3
<i>Anastasios A. Economides</i>	

Data Communication Networking

Multipath Forwarding in Named Data Networking: Flow, Fairness, and Context-Awareness	23
<i>Abdelkader Bouacherine, Mustapha Reda Senouci, and Billal Merabti</i>	

Towards Understanding the Role of Execution Context for Observing Malicious Behavior in Android Malware	48
<i>Catherine Boileau, François Gagnon, Jérémie Poisson, Simon Frenette, and Mohammed Mejri</i>	

e-Business

Security Framework for Adopting Mobile Applications in Small and Medium Enterprises.	75
<i>Basel Hasan and Jorge Marx Gómez</i>	

BPMN4V for Modeling and Handling Versions of BPMN Collaborations and Choreographies	99
<i>Imen Ben Said, Mohamed Amine Chaâbane, Eric Andonoff, and Rafik Bouaziz</i>	

Content Protection Scheme to Realize Edit Control Including Diversion Control and Composition Control	124
<i>Tatsuya Fujimoto, Keiichi Iwamura, and Masaki Inamura</i>	

Product Service System Design and Implementation in a Customer Centric World: An Approach to a User Oriented PSS Framework	139
<i>Alexander Richter, Rebecca Bulander, Bernhard Kölmel, and Johanna Schoblik</i>	

Optical Communication Systems

- Mode Excitation and Multiplexing for MIMO Systems Focusing
on Digital Mirror Devices 161

*André Sandmann, Andreas Ahrens, Steffen Lochmann,
and Peter Bartmann*

Security and Cryptography

- Hardware Implementation of HS1-SIV 179
Sergei Volokitin and Gerben Geltink

- Runtime Classification of Mobile Malware
for Resource-Constrained Devices 195
Jelena Milosevic, Miroslaw Malek, and Alberto Ferrante

- Towards Realising Oblivious Voting 216
*Dirk Achenbach, Anne Borcherding, Bernhard Löwe,
Jörn Müller-Quade, and Jochen Rill*

- A Methodology for Silent and Continuous Authentication
in Mobile Environment 241
*Gerardo Canfora, Paolo di Notte, Francesco Mercaldo,
and Corrado Aaron Visaggio*

- A Javascript Voting Client for Remote Online Voting 266
Jordi Cucurull, Sandra Guasch, and David Galindo

- Attribute-Based Privacy-Friendly Access Control with Context 291
Andreas Put and Bart De Decker

- Protecting Smartphone Users' Private Locations Through Caching 316
Asma Patel and Esther Palomar

Signal Processing and Multimedia Applications

- Investigation into the Use of WFSTs and DNNs for Speech Activity
Detection in Broadcast Data Transcription 341
Lukas Mateju, Petr Cerva, and Jindrich Zdansky

- Boundless Reconstruction Using Regularized 3D Fusion 359
M.A.A. Rajput, E. Funk, A. Börner, and O. Hellwich

Wireless Networks and Mobile Systems

Social-DBSCAN: A Presence Analytics Approach for Mobile Users' Social Clustering	381
<i>Muawya Habib Sarnoub Eldaw, Mark Levene, and George Roussos</i>	
Tracking Down High Interference and Low Coverage in 3G/4G Radio Networks Using Automatic RF Measurement Extraction	401
<i>Marco Sousa, André Martins, and Pedro Vieira</i>	
On the Use of Load Balancing for Saving Capacity in Dual Layer 3G Radio Access Networks	426
<i>Tiago Pedro, André Martins, António Rodrigues, and Pedro Vieira</i>	
Coverage Range Analysis and Performance Evaluation of Wireless Technologies in Industrial Channel Conditions	450
<i>Armin Wulf, Lisa Underberg, Ramona Croonenbroeck, and Rüdiger Kays</i>	
Author Index	475