
HUMAN-COMPUTER INTERACTION SYMPOSIUM

IFIP – The International Federation for Information Processing

IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP's aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is less rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

Any national society whose primary activity is in information may apply to become a full member of IFIP, although full membership is restricted to one society per country. Full members are entitled to vote at the annual General Assembly. National societies preferring a less committed involvement may apply for associate or corresponding membership. Associate members enjoy the same benefits as full members, but without voting rights. Corresponding members are not represented in IFIP bodies. Affiliated membership is open to non-national societies, and individual and honorary membership schemes are also offered.

HUMAN-COMPUTER INTERACTION SYMPOSIUM

*IFIP 20th World Computer Congress, Proceedings
of the 1st TC 13 Human-Computer Interaction
Symposium (HCIS 2008), September 7-10, 2008,
Milano, Italy*

Edited by

Peter Forbrig
*University of Rostock
Germany*

Fabio Paternò
*ISTI-CNR
Italy*

Annelise Mark Pejtersen
*Center of Cognitive Systems Engineering
Denmark*

Editors

Peter Forbrig
University of Rostock
Germany

Fabio Paternò
ISTI-CNR, Pisa
Italy

Annelise Mark Pejtersen
Risoe National Laboratory
Roskilde, Denmark

p. cm. (IFIP International Federation for Information Processing, a Springer Series
in Computer Science)

ISSN: 1571-5736 / 1861-2288 (Internet)

ISBN: 978-0-387-09677-3

e-ISBN: 978-0-387-09678-0

Library of Congress Control Number: 2008929509

Copyright © 2008 by International Federation for Information Processing.

All rights reserved. This work may not be translated or copied in whole or in part without the written permission of the publisher (Springer Science+Business Media, LLC, 233 Spring Street, New York, NY 10013, USA), except for brief excerpts in connection with reviews or scholarly analysis. Use in connection with any form of information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed is forbidden.

The use in this publication of trade names, trademarks, service marks and similar terms, even if they are not identified as such, is not to be taken as an expression of opinion as to whether or not they are subject to proprietary rights.

Printed on acid-free paper

springer.com

IFIP 2008 World Computer Congress (WCC'08)

Message from the Chairs

Every two years, the International Federation for Information Processing hosts a major event which showcases the scientific endeavours of its over one hundred Technical Committees and Working Groups. 2008 sees the 20th World Computer Congress (WCC 2008) take place for the first time in Italy, in Milan from 7-10 September 2008, at the MIC - Milano Convention Centre. The Congress is hosted by the Italian Computer Society, AICA, under the chairmanship of Giulio Occhini.

The Congress runs as a federation of co-located conferences offered by the different IFIP bodies, under the chairmanship of the scientific chair, Judith Bishop. For this Congress, we have a larger than usual number of thirteen conferences, ranging from Theoretical Computer Science, to Open Source Systems, to Entertainment Computing. Some of these are established conferences that run each year and some represent new, breaking areas of computing. Each conference had a call for papers, an International Programme Committee of experts and a thorough peer reviewed process. The Congress received 661 papers for the thirteen conferences, and selected 375 from those representing an acceptance rate of 56% (averaged over all conferences).

An innovative feature of WCC 2008 is the setting aside of two hours each day for cross-sessions relating to the integration of business and research, featuring the use of IT in Italian industry, sport, fashion and so on. This part is organized by Ivo De Lotto. The Congress will be opened by representatives from government bodies and Societies associated with IT in Italy.

This volume is one of fourteen volumes associated with the scientific conferences and the industry sessions. Each covers a specific topic and separately or together they form a valuable record of the state of computing research in the world in 2008. Each volume was prepared for publication in the Springer IFIP Series by the conference's volume editors. The overall Chair for all the volumes published for the Congress is John Impagliazzo.

For full details on the Congress, refer to the webpage <http://www.wcc2008.org>.

Judith Bishop, South Africa, Co-Chair, International Program Committee
Ivo De Lotto, Italy, Co-Chair, International Program Committee
Giulio Occhini, Italy, Chair, Organizing Committee
John Impagliazzo, United States, Publications Chair

WCC 2008 Scientific Conferences

| | | |
|----------------|-----------------|--|
| TC12 | AI | Artificial Intelligence 2008 |
| TC10 | BICC | Biologically Inspired Cooperative Computing |
| WG 5.4 | CAI | Computer-Aided Innovation (Topical Session) |
| WG 10.2 | DIPES | Distributed and Parallel Embedded Systems |
| TC14 | ECS | Entertainment Computing Symposium |
| TC3 | ED_L2L | Learning to Live in the Knowledge Society |
| WG 9.7 | HCE3 | History of Computing and Education 3 |
| TC3 | | |
| TC13 | HCI | Human Computer Interaction |
| TC8 | ISREP | Information Systems Research, Education and Practice |
| WG 12.6 | KMIA | Knowledge Management in Action |
| TC2 | OSS | Open Source Systems |
| WG 2.13 | | |
| TC11 | IFIP SEC | Information Security Conference |
| TC1 | TCS | Theoretical Computer Science |

IFIP

- is the leading multinational, apolitical organization in Information and Communications Technologies and Sciences
- is recognized by United Nations and other world bodies
- represents IT Societies from 56 countries or regions, covering all 5 continents with a total membership of over half a million
- links more than 3500 scientists from Academia and Industry, organized in more than 101 Working Groups reporting to 13 Technical Committees
- sponsors 100 conferences yearly providing unparalleled coverage from theoretical informatics to the relationship between informatics and society including hardware and software technologies, and networked information systems

Details of the IFIP Technical Committees and Working Groups can be found on the website at <http://www.ifip.org>.

Contents

Preface xi

HCIS 2008 Conference Organization xiii

Invited Talk

Interacting with Visual Interfaces on Mobile Devices..... 1
LUCA CHITTARO

Task models and interaction

Identification Criteria in Task Modeling 7
JOSEFINA GUERRERO GARCÍA, JEAN VANDERDONCKT,
CHRISTOPHE LEMAIGRE

HCI-Task Models and Smart Environments 21
MAIK WURDEL, STEFAN PROPP, PETER FORBRIG

Themes in Human Work Interaction Design 33
RIKKE ORNGREEN, ANNE LISE MARK PEJTERSEN,
TORKIL CLEMMENSEN

Evaluating User Experience in Technology Pilots 47
MINNA ISOMURSU

Elicitation and Evaluation

Interface Model Elicitation from Textual Scenarios 53

CHRISTOPHE LEMAIGRE, JOSEFINA GUERRERO GARCÍA,
JEAN VANDERDONCKT

Virtual Fixtures for Secondary Tasks 67

GIANVITO LEFEMINE, GUIDO PEDRINI, CRISTIAN SECCHI,
FRANCESCO TESAURI, STEFANO MARZANI

How ‘*learnable*’ are CASE tools in diverse user communities? 83

BRENDA SCHOLTZ, JANET WESSON

A Prospect of Websites Evaluation Tools Based on Event Logs 99

VAGNER FIGUERÊDO DE SANTANA, M. CECILIA C. BARANAUSKAS

Studies and Experiments

Habbo Hotel – Academic Studies in Mixed Feelings 105

RAIIA HALONEN, EEEVA LEINONEN

Improving Accessibility to Governmental Forms..... 119

NORBERT KUHN, STEFAN RICHTER, MICHAEL SCHMIDT,
ANDREAS TRUAR

Communicability in multicultural contexts: A study with the International Children’s Digital Library 129

CLARISSE SIECKENIUS DE SOUZA, ROBIN FRED LAFFON,
CARLA FARIA LEITÃO

Facing the digital divide in a participatory way – an exploratory study 143

ELAINE C. S. HAYASHI, M. CECÍLIA C. BARANAUSKAS

User Interface Input by Device Movement 155

RYOSUKE KOKAJI, TAKAKO NONAKA, TOMOHIRO HASE

Models, Learning and Solicitation

An End User Development Model to Augment Usability of Rule Association Mining Systems..... 161

ELISA ALBERGARIA, FERNANDO MOURÃO, RAQUEL PRATES,
WAGNER MEIRA JR.

| | |
|---|------------|
| Investigating Entertainment and Learning in a Multi-User 3D Virtual Environment | 175 |
| NICOLETTA DI BLAS, CATERINA POGGI | |
| Openphone User Engagement and Requirements Solicitation in Low Literacy Users | 189 |
| TEMBALETHU JAMA NDWE, ETIENNE BARNARD, MQHELE DLODLO, DANIEL MASHAO, CHRISTIAAN KUUN, ADITI SHARMA | |
| Complex and Dynamic Data Representation by Sonification | 195 |
| MAHER CHEMSEDDINE, MONIQUE NOIRHOMME-FRAITURE | |
| Collaboration and Visualization | |
| Collaborative Knowledge Building for Decision-Support System Development | 201 |
| HELENA LINDGREN | |
| Multitouch Sensing for Collaborative Interactive Walls | 207 |
| ALESSANDRO SORO, GAVINO PADDEU, MIRKO LUCA LOBINA | |
| Visualization of Personalized Faceted Browsing | 213 |
| MICHAL TVAROŽEK, MÁRIA BIELIKOVÁ | |

Preface

The IFIP World Computer Congress (WCC) is one of the most important conferences in the area of computer science and a number of related Human and Social Science disciplines at the worldwide level and it has a federated structure, which takes into account the rapidly growing and expanding interests in this area. Human-Computer Interaction is now a mature and still dynamically evolving part of this area, which is represented in IFIP by the Technical Committee 13 on HCI. We are convinced that in this edition of WCC, which takes place for the first time in Italy, it will be interesting and useful to have a Symposium on Human-Computer Interaction in order to present and discuss a number of contributions in this field.

There has been increasing awareness among designers of interactive systems of the importance of designing for usability, but we are still far from having products that are really usable, and usability can mean different things depending on the application domain. We are all aware that too many users of current technology feel often frustrated because computer systems are not compatible with their abilities and needs with existing work practices. As designers of tomorrow technology, we have the responsibility of creating computer artefacts that would permit better user experience with the various computing devices, so that users may enjoy more satisfying experiences with information and communications technologies. This has raised new research areas, such as ambient intelligence, natural interaction, end user development, work analysis and cultural and social interaction.

The interest to the conference has been positive in terms of submissions and participation for an event at its first edition. We have received 40 contributions, and 12 have been accepted as long papers and 8 as short ones. The selection has been carried out carefully by the International Programme Committee. The result is a set of interesting and stimulating papers that address such important issues as Elicitation and Evaluation, Collaboration and Visualization, E-learning, Task Models and Interaction. The interest shown in the conference has truly been world-wide: if we consider both full and short papers we have authors from West and East Europe, South America, Japan, and South Africa. The final programme of the symposium includes one technical invited speaker: Luca Chittaro from University of Udine on Interacting with Visual Interfaces on Mobile Devices. This is a topic, which is acquiring an increasing interest, given that recent years have seen the introduction of many types of computers and devices (e.g. cellphones, PDA's, etc.) and the availability of such a wide range of devices has become a fundamental challenge for designers of interactive software systems.

In general, the continuous development of new research topics in the human-computer interaction area shows how the field is able to dynamically evolve and address both new and old challenges. All the results obtained are never an arrival point but they are the basis for new research and results and we hope that the IFIP Symposium on Human-Computer Interaction can contribute to this process.

April 2008,

Peter Forbrig, Fabio Paternò, Annelise Mark Pejtersen

HCIS 2008 Conference Organization

The 1st IFIP Human-Computer Interaction Symposium (HCIS 2008)

is a co-located conference organized under the auspices of the
IFIP World Computer Congress (WCC) 2008
in Milano, Italy

Peter Forbrig

HCIS 2008 Co-Chair

Peter.forbrig@uni-rostock.de

Fabio Paternò

HCIS 2008 Co-Chair

fabio.paterno@isti.cnr.it

Annelise Mark Pejtersen

HCIS 2008 Co-Chair

ampcse@mail.dk

HCIS 2008 Program Committee

Julio Abascal, Spain
Nikos Avouris, Greece
Simone Diniz Junqueira Barbosa, Brazil
Anke Dittmar, Germany
Luca Chittaro, Italy
Torkil Clemmensen, Denmark
Maria Francesca Costabile, Italy
Michael Harrison, United Kingdom
Philippe Palanque, France
Phil Gray, United Kingdom
Paula Kotze, South Africa
Effie Law, Switzerland
Gitte Lindgaard, Canada
Monique Noirhomme, Belgium
Lars Oestreicher, Sweden
Gerd Szwillus, Germany
Gerrit van der Veer, The Netherlands
Chengqing Zong, China