

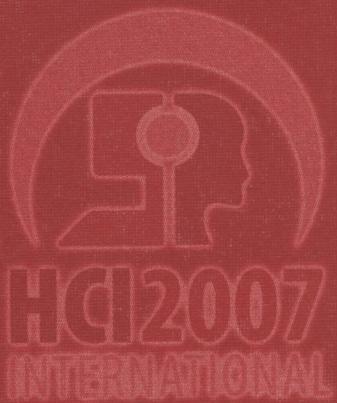
Julie A. Jacko (Ed.)

# Human-Computer Interaction

## Interaction Platforms and Techniques

12th International Conference, HCI International 2007  
Beijing, China, July 2007  
Proceedings, Part II

2  
Part II



Springer

3-53

18 Julie A. Jacko (Ed.)

# Human-Computer Interaction

## Interaction Platforms and Techniques

12th International Conference, HCI International 2007  
Beijing, China, July 2007  
Proceedings, Part II



Springer



E2007003060

Volume Editor

Julie A. Jacko  
Georgia Institute of Technology  
and Emory University School of Medicine  
901 Atlantic Drive, Suite 4100, Atlanta, GA 30332-0477, USA  
E-mail: jacko@ksi.gatech.edu

Library of Congress Control Number: 2007929780

CR Subject Classification (1998): H.5.2, H.5.3, H.3-5, C.2, I.3, D.2, F.3, K.4.2

LNCS Sublibrary: SL 2 – Programming and Software Engineering

ISSN 0302-9743  
ISBN-10 3-540-73106-7 Springer Berlin Heidelberg New York  
ISBN-13 978-3-540-73106-1 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  
[springer.com](http://springer.com)

© Springer-Verlag Berlin Heidelberg 2007  
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India  
Printed on acid-free paper SPIN: 12077953 06/3180 5 4 3 2 1 0

*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

*University of California, Los Angeles, CA, 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*

## Foreword

The 12th International Conference on Human-Computer Interaction, HCI International 2007, was held in Beijing, P.R. China, 22-27 July 2007, jointly with the Symposium on Human Interface (Japan) 2007, the 7th International Conference on Engineering Psychology and Cognitive Ergonomics, the 4th International Conference on Universal Access in Human-Computer Interaction, the 2nd International Conference on Virtual Reality, the 2nd International Conference on Usability and Internationalization, the 2nd International Conference on Online Communities and Social Computing, the 3rd International Conference on Augmented Cognition, and the 1st International Conference on Digital Human Modeling.

A total of 3403 individuals from academia, research institutes, industry and governmental agencies from 76 countries submitted contributions, and 1681 papers, judged to be of high scientific quality, were included in the program. These papers address the latest research and development efforts and highlight the human aspects of design and use of computing systems. The papers accepted for presentation thoroughly cover the entire field of Human-Computer Interaction, addressing major advances in knowledge and effective use of computers in a variety of application areas.

This volume, edited by Julie A. Jacko, contains papers in the thematic area of Human-Computer Interaction, addressing the following major topics:

- Graphical User Interfaces and Visualization
- Mobile Devices and Mobile Interaction
- Virtual Environments and 3D Interaction
- Ubiquitous Interaction
- Emerging Interactive Technologies

The remaining volumes of the HCI International 2007 proceedings are:

- Volume 1, LNCS 4550, Interaction Design and Usability, edited by Julie A. Jacko
- Volume 3, LNCS 4552, HCI Intelligent Multimodal Interaction Environments, edited by Julie A. Jacko
- Volume 4, LNCS 4553, HCI Applications and Services, edited by Julie A. Jacko
- Volume 5, LNCS 4554, Coping with Diversity in Universal Access, edited by Constantine Stephanidis
- Volume 6, LNCS 4555, Universal Access to Ambient Interaction, edited by Constantine Stephanidis
- Volume 7, LNCS 4556, Universal Access to Applications and Services, edited by Constantine Stephanidis
- Volume 8, LNCS 4557, Methods, Techniques and Tools in Information Design, edited by Michael J. Smith and Gavriel Salvendy
- Volume 9, LNCS 4558, Interacting in Information Environments, edited by Michael J. Smith and Gavriel Salvendy
- Volume 10, LNCS 4559, HCI and Culture, edited by Nuray Aykin
- Volume 11, LNCS 4560, Global and Local User Interfaces, edited by Nuray Aykin
- Volume 12, LNCS 4561, Digital Human Modeling, edited by Vincent G. Duffy

- Volume 13, LNAI 4562, Engineering Psychology and Cognitive Ergonomics, edited by Don Harris
- Volume 14, LNCS 4563, Virtual Reality, edited by Randall Shumaker
- Volume 15, LNCS 4564, Online Communities and Social Computing, edited by Douglas Schuler
- Volume 16, LNAI 4565, Foundations of Augmented Cognition 3rd Edition, edited by Dylan D. Schmorow and Leah M. Reeves
- Volume 17, LNCS 4566, Ergonomics and Health Aspects of Work with Computers, edited by Marvin J. Dainoff

I would like to thank the Program Chairs and the members of the Program Boards of all Thematic Areas, listed below, for their contribution to the highest scientific quality and the overall success of the HCI International 2007 Conference.

## **Ergonomics and Health Aspects of Work with Computers**

### **Program Chair: Marvin J. Dainoff**

Arne Aaras, Norway  
 Pascale Carayon, USA  
 Barbara G.F. Cohen, USA  
 Wolfgang Friesdorf, Germany  
 Martin Helander, Singapore  
 Ben-Tzion Karsh, USA  
 Waldemar Karwowski, USA  
 Peter Kern, Germany  
 Danuta Koradecka, Poland  
 Kari Lindstrom, Finland

Holger Luczak, Germany  
 Aura C. Matias, Philippines  
 Kyung (Ken) Park, Korea  
 Michelle Robertson, USA  
 Steven L. Sauter, USA  
 Dominique L. Scapin, France  
 Michael J. Smith, USA  
 Naomi Swanson, USA  
 Peter Vink, The Netherlands  
 John Wilson, UK

## **Human Interface and the Management of Information**

### **Program Chair: Michael J. Smith**

Lajos Balint, Hungary  
 Gunilla Bradley, Sweden  
 Hans-Jörg Bullinger, Germany  
 Alan H.S. Chan, Hong Kong  
 Klaus-Peter Fähnrich, Germany  
 Michitaka Hirose, Japan  
 Yoshinori Horie, Japan  
 Richard Koubek, USA  
 Yasufumi Kume, Japan  
 Mark Lehto, USA  
 Jiye Mao, P.R. China  
 Fiona Nah, USA  
 Shogo Nishida, Japan  
 Leszek Pacholski, Poland

Robert Proctor, USA  
 Youngho Rhee, Korea  
 Anxo Cereijo Roibás, UK  
 Francois Sainfort, USA  
 Katsunori Shimohara, Japan  
 Tsutomu Tabe, Japan  
 Alvaro Taveira, USA  
 Kim-Phuong L. Vu, USA  
 Tomio Watanabe, Japan  
 Sakae Yamamoto, Japan  
 Hidekazu Yoshikawa, Japan  
 Li Zheng, P.R. China  
 Bernhard Zimolong, Germany

## Human-Computer Interaction

### Program Chair: Julie A. Jacko

Sebastiano Bagnara, Italy	V. Kathlene Leonard, USA
Jianming Dong, USA	Chang S. Nam, USA
John Eklund, Australia	Anthony F. Norcio, USA
Xiaowen Fang, USA	Celestine A. Ntuen, USA
Sheue-Ling Hwang, Taiwan	P.L. Patrick Rau, P.R. China
Yong Gu Ji, Korea	Andrew Sears, USA
Steven J. Landry, USA	Holly Vitense, USA
Jonathan Lazar, USA	Wenli Zhu, P.R. China

## Engineering Psychology and Cognitive Ergonomics

### Program Chair: Don Harris

Kenneth R. Boff, USA	Nicolas Marmaras, Greece
Guy Boy, France	David Morrison, Australia
Pietro Carlo Cacciabue, Italy	Sundaram Narayanan, USA
Judy Edworthy, UK	Eduardo Salas, USA
Erik Hollnagel, Sweden	Dirk Schaefer, France
Kenji Itoh, Japan	Axel Schulte, Germany
Peter G.A.M. Jorna, The Netherlands	Neville A. Stanton, UK
Kenneth R. Laughery, USA	Andrew Thatcher, South Africa

## Universal Access in Human-Computer Interaction

### Program Chair: Constantine Stephanidis

Julio Abascal, Spain	Zhengjie Liu, P.R. China
Ray Adams, UK	Klaus Miesenberger, Austria
Elizabeth Andre, Germany	John Mylopoulos, Canada
Margherita Antona, Greece	Michael Pieper, Germany
Chieko Asakawa, Japan	Angel Puerta, USA
Christian Bühler, Germany	Anthony Savidis, Greece
Noelle Carbonell, France	Andrew Sears, USA
Jerzy Charytonowicz, Poland	Ben Shneiderman, USA
Pier Luigi Emiliani, Italy	Christian Stary, Austria
Michael Fairhurst, UK	Hirotada Ueda, Japan
Gerhard Fischer, USA	Jean Vanderdonckt, Belgium
Jon Gunderson, USA	Gregg Vanderheiden, USA
Andreas Holzinger, Austria	Gerhard Weber, Germany
Arthur Karshmer, USA	Harald Weber, Germany
Simeon Keates, USA	Toshiki Yamaoka, Japan

George Kouroupetroglou, Greece  
Jonathan Lazar, USA  
Seongil Lee, Korea

Mary Zajicek, UK  
Panayiotis Zaphiris, UK

## **Virtual Reality**

### **Program Chair: Randall Shumaker**

Terry Allard, USA  
Pat Banerjee, USA  
Robert S. Kennedy, USA  
Heidi Kroemker, Germany  
Ben Lawson, USA  
Ming Lin, USA  
Bowen Loftin, USA  
Holger Luczak, Germany  
Annie Luciani, France  
Gordon Mair, UK

Ulrich Neumann, USA  
Albert "Skip" Rizzo, USA  
Lawrence Rosenblum, USA  
Dylan Schmorrow, USA  
Kay Stanney, USA  
Susumu Tachi, Japan  
John Wilson, UK  
Wei Zhang, P.R. China  
Michael Zyda, USA

## **Usability and Internationalization**

### **Program Chair: Nuray Aykin**

Genevieve Bell, USA  
Alan Chan, Hong Kong  
Apala Lahiri Chavan, India  
Jori Clarke, USA  
Pierre-Henri Dejean, France  
Susan Dray, USA  
Paul Fu, USA  
Emilie Gould, Canada  
Sung H. Han, South Korea  
Veikko Ikonen, Finland  
Richard Ishida, UK  
Esin Kiris, USA  
Tobias Komischke, Germany  
Masaaki Kurosu, Japan  
James R. Lewis, USA

Rungtai Lin, Taiwan  
Aaron Marcus, USA  
Allen E. Milewski, USA  
Patrick O'Sullivan, Ireland  
Girish V. Prabhu, India  
Kerstin Röse, Germany  
Eunice Ratna Sari, Indonesia  
Supriya Singh, Australia  
Serengul Smith, UK  
Denise Spacinsky, USA  
Christian Sturm, Mexico  
Adi B. Tedjasaputra, Singapore  
Myung Hwan Yun, South Korea  
Chen Zhao, P.R. China

## **Online Communities and Social Computing**

### **Program Chair: Douglas Schuler**

Chadia Abras, USA  
Lecia Barker, USA

Stefanie Lindstaedt, Austria  
Diane Maloney-Krichmar, USA

Amy Bruckman, USA  
Peter van den Besselaar,  
The Netherlands  
Peter Day, UK  
Fiorella De Cindio, Italy  
John Fung, P.R. China  
Michael Gurstein, USA  
Tom Horan, USA  
Piet Kimmers, The Netherlands  
Jonathan Lazar, USA

Isaac Mao, P.R. China  
Hideyuki Nakanishi, Japan  
A. Ant Ozok, USA  
Jennifer Preece, USA  
Partha Pratim Sarker, Bangladesh  
Gilson Schwartz, Brazil  
Sergei Stafeev, Russia  
F.F. Tusubira, Uganda  
Cheng-Yen Wang, Taiwan

## Augmented Cognition

### Program Chair: Dylan D. Schmorow

Kenneth Boff, USA  
Joseph Cohn, USA  
Blair Dickson, UK  
Henry Girolamo, USA  
Gerald Edelman, USA  
Eric Horvitz, USA  
Wilhelm Kincses, Germany  
Amy Kruse, USA  
Lee Kollmorgen, USA  
Dennis McBride, USA

Jeffrey Morrison, USA  
Denise Nicholson, USA  
Dennis Proffitt, USA  
Harry Shum, P.R. China  
Kay Stanney, USA  
Roy Stripling, USA  
Michael Swetnam, USA  
Robert Taylor, UK  
John Wagner, USA

## Digital Human Modeling

### Program Chair: Vincent G. Duffy

Norm Badler, USA  
Heiner Bubb, Germany  
Don Chaffin, USA  
Kathryn Cormican, Ireland  
Andris Freivalds, USA  
Ravindra Goonetilleke, Hong Kong  
Anand Gramopadhye, USA  
Sung H. Han, South Korea  
Pheng Ann Heng, Hong Kong  
Dewen Jin, P.R. China  
Kang Li, USA

Zhizhong Li, P.R. China  
Lizhuang Ma, P.R. China  
Timo Maatta, Finland  
J. Mark Porter, UK  
Jim Potvin, Canada  
Jean-Pierre Verriest, France  
Zhaoqi Wang, P.R. China  
Xiugan Yuan, P.R. China  
Shao-Xiang Zhang, P.R. China  
Xudong Zhang, USA

In addition to the members of the Program Boards above, I also wish to thank the following volunteer external reviewers: Kelly Hale, David Kobus, Amy Kruse, Cali Fidopiastis and Karl Van Orden from the USA, Mark Neerinckx and Marc Grootjen from the Netherlands, Wilhelm Kincses from Germany, Ganesh Bhutkar and Mathura

Prasad from India, Frederick Li from the UK, and Dimitris Grammenos, Angeliki Kastrinaki, Iosif Klironomos, Alexandros Mourouzis, and Stavroula Ntoa from Greece.

This conference could not have been possible without the continuous support and advise of the Conference Scientific Advisor, Prof. Gavriel Salvendy, as well as the dedicated work and outstanding efforts of the Communications Chair and Editor of HCI International News, Abbas Moallem, and of the members of the Organizational Board from P.R. China, Patrick Rau (Chair), Bo Chen, Xiaolan Fu, Zhibin Jiang, Congdong Li, Zhenjie Liu, Mowei Shen, Yuanchun Shi, Hui Su, Linyang Sun, Ming Po Tham, Ben Tsiang, Jian Wang, Guangyou Xu, Winnie Wanli Yang, Shuping Yi, Kan Zhang, and Wei Zho.

I would also like to thank for their contribution towards the organization of the HCI International 2007 Conference the members of the Human Computer Interaction Laboratory of ICS-FORTH, and in particular Margherita Antona, Maria Pitsoulaki, George Paparoulis, Maria Bouhli, Stavroula Ntoa and George Margetis.

Constantine Stephanidis  
General Chair, HCI International 2007

## **HCI International 2009**

The 13th International Conference on Human-Computer Interaction, HCI International 2009, will be held jointly with the affiliated Conferences in San Diego, California, USA, in the Town and Country Resort & Convention Center, 19-24 July 2009. It will cover a broad spectrum of themes related to Human Computer Interaction, including theoretical issues, methods, tools, processes and case studies in HCI design, as well as novel interaction techniques, interfaces and applications. The proceedings will be published by Springer. For more information, please visit the Conference website: <http://www.hci2009.org/>

General Chair

Professor Constantine Stephanidis  
ICS-FORTH and University of Crete  
Heraklion, Crete, Greece  
Email: [program@hcii2009.org](mailto:program@hcii2009.org)

# Table of Contents

## Part I: Graphical User Interfaces and Visualization

When Does a Difference Make a Difference? A Snapshot on Global Icon Comprehensibility . . . . .	3
<i>Sonja Auer and Ester Dick</i>	
Interface and Visualization Metaphors . . . . .	13
<i>Vladimir Averbukh, Mikhail Bakhterev, Aleksandr Baydalin, Damir Ismagilov, and Polina Trushenkova</i>	
Displays Attentive to Unattended Regions: Presenting Information in a Peripheral-Vision-Friendly Way . . . . .	23
<i>Mon-Chu Chen and Roberta L. Klatzky</i>	
Screen Layout on Color Search Task for Customized Product Color Combination Selection . . . . .	32
<i>Cheih-Ying Chen, Ying-Jye Lee, Fong-Gong Wu, and Chi-Fu Su</i>	
Experimental Comparison of Adaptive vs. Static Thumbnail Displays . . . . .	41
<i>Pilsung Choe, Chulwoo Kim, Mark R. Lchto, and Jan Allebach</i>	
Improving Document Icon to Re-find Efficiently What You Need . . . . .	49
<i>Changzhi Deng, Mingjun Zhou, Feng Tian, Guozhong Dai, and Hong'an Wang</i>	
The Design of a Computer Mouse Providing Three Degrees of Freedom . . . . .	53
<i>Daniel Fallman, Anneli Mikaelsson, and Björn Yttergren</i>	
Facilitating Conditional Probability Problems with Visuals . . . . .	63
<i>Vince Kellen, Susy Chan, and Xiaowen Fang</i>	
Interface Design Technique Considering Visual Cohesion-Rate by Object Unit . . . . .	72
<i>Chang-Mog Lee and Ok-Bae Chang</i>	
A Color Adjustment Method for Automatic Seamless Image Blending . . . . .	82
<i>Xianji Li and Dongho Kim</i>	
Interactive Visual Decision Tree Classification . . . . .	92
<i>Yan Liu and Gavriel Salvendy</i>	
Anchored Maps: Visualization Techniques for Drawing Bipartite Graphs . . . . .	106
<i>Kazuo Misue</i>	

ParSketch: A Sketch-Based Interface for a 2D Parametric Geometry Editor . . . . .	115
<i>Ferran Naya, Manuel Contero, Nuria Aleixos, and Pedro Company</i>	
The Effects of Various Visual Enhancements During Continuous Pursuit Tracking Tasks . . . . .	125
<i>Jaekyu Park and Sung Ha Park</i>	
Stylus Enhancement to Enrich Interaction with Computers . . . . .	133
<i>Yu Suzuki, Kazuo Misue, and Jiro Tanaka</i>	
An Experimental Evaluation of Information Visualization Techniques and Decision Style . . . . .	143
<i>WanAdilah Wan Adnan, NorLaila MdNoor, and Rasimah Aripin</i>	
Enhancing the Map Usage for Indoor Location-Aware Systems . . . . .	151
<i>Hui Wang, Henning Lenz, Andrei Szabo, Joachim Bamberger, and Uwe D. Hanebeck</i>	
Freehand Sketching Interfaces: Early Processing for Sketch Recognition . . . . .	161
<i>Shu-xia Wang, Man-tun Gao, and Le-hua Qi</i>	
Bilingual Mapping Visualizations as Tools for Chinese Language Acquisition . . . . .	171
<i>Jens Wissmann and G. Susanne Bahr</i>	
The Perceptual Eye View: A User-Defined Method for Information Visualization . . . . .	181
<i>Liang-Hong Wu and Ping-Yu Hsu</i>	
A Discriminative Color Quantization Depending on the Degree of Focus . . . . .	191
<i>Hong-Taek Yang and Doowon Paik</i>	
Getting Lost? Touch and You Will Find! The User Centered Design Process of a Touch Screen . . . . .	197
<i>Bieke Zaman and Rogier Vermaut</i>	
CoConceptMap: A System for Collaborative Concept Mapping . . . . .	207
<i>Mingjun Zhou, Xiang Ao, Lishuang Xu, Feng Tian, and Guozhong Dai</i>	
<b>Part II: Mobile Devices and Mobile Interaction</b>	
User Expectations from Dictation on Mobile Devices . . . . .	217
<i>Santosh Basapur, Shuang Xu, Mark Ahlenius, and Young Seok Lee</i>	

Design Guidelines for PDA User Interfaces in the Context of Retail Sales Support .....	226
<i>Rainer Blum and Karim Khakzar</i>	
Influence of Culture on Attitude Towards Instant Messaging: Balance Between Awareness and Privacy .....	236
<i>Jinwei Cao and Andrea Everard</i>	
Usability Evaluation of Designed Image Code Interface for Mobile Computing Environment .....	241
<i>Cheolho Cheong, Dong-Chul Kim, and Tack-Don Han</i>	
The Effects of Gender Culture on Mobile Phone Icon Recognition .....	252
<i>Shunan Chung, Chiyi Chau, Xufan Hsu, and Jim Jiunde Lee</i>	
Designing for Mobile Devices: Requirements, Low-Fi Prototyping and Evaluation .....	260
<i>Marco de Sá and Luís Carriço</i>	
Playback of Rich Digital Books on Mobile Devices .....	270
<i>Carlos Duarte, Luís Carriço, and Fernando Morgado</i>	
Using Mobile Devices to Improve the Interactive Experience of Visitors in Art Museums .....	280
<i>J.A. Gallud, M. Lozano, R. Tesoriero, and V.M.R. Penichet</i>	
Model-Based Approaches to Quantifying the Usability of Mobile Phones .....	288
<i>Dong-Han Ham, Jeongyun Heo, Peter Fossick, William Wong, Sanghyun Park, Chiwon Song, and Mike Bradley</i>	
Accelerated Rendering of Vector Graphics on Mobile Devices .....	298
<i>Gaoqi He, Baogang Bai, Zhigeng Pan, and Xi Cheng</i>	
Pulling Digital Data from a Smart Object: Implementing the PullMe-Paradigm with a Mobile Phone .....	306
<i>Steve Hinske</i>	
Reading Performance of Chinese Text with Automatic Scrolling .....	311
<i>Yao-Hung Hsieh, Chiuhsiang Joe Lin, Hsiao-Ching Chen, Ting-Ting Huang, and James C. Chen</i>	
WAP Access Methods on Mobile Phones .....	320
<i>Zhang Hua and Cui Yoon Ping</i>	
Evaluation of Content Handling Methods for Tabletop Interface .....	326
<i>Ryoko Ishido, Keigo Kitahara, Tomoo Inoue, and Ken-ichi Okada</i>	
Interacting with a Tabletop Display Using a Camera Equipped Mobile Phone .....	336
<i>Seokhee Jeon, Gerard J. Kim, and Mark Billinghurst</i>	

XVI Table of Contents

Mobile Video Editor: Design and Evaluation..... <i>Tero Jokela, Minna Karukka, and Kaj Mäkelä</i>	344
Perceived Magnitude and Power Consumption of Vibration Feedback in Mobile Devices .....	354
<i>Jaehoon Jung and Seungmoon Choi</i>	
Application of a Universal Design Evaluation Index to Mobile Phones .....	364
<i>Miyeon Kim, Eui S. Jung, Sungjoon Park, Jongyong Nam, and     Jaeho Choe</i>	
Understanding Camera Phone Imaging: Motivations, Behaviors and Meanings .....	374
<i>Grace Kim and Wilson Chan</i>	
The Design and Evaluation of a Diagonally Splitted Column to Improve Text Readability on a Small Screen .....	384
<i>Yeon-Ji Kim and Woohun Lee</i>	
Development of Interactive Logger for Understanding User's Interaction with Mobile Phone .....	394
<i>Daeeop Kim and Kun-pyo Lee</i>	
An Improved Model to Evaluate Menu Hierarchies for Mobile Phones... <i>Jeesu Lee and Doowon Paik</i>	401
Support Zooming Tools for Mobile Devices .....	408
<i>Kwang B. Lee</i>	
Design of a Pen-Based Electric Diagram Editor Based on Context-Driven Constraint Multiset Grammars .....	418
<i>Sébastien Macé and Eric Anquetil</i>	
To Effective Multi-modal Design for Ringtones, Ringback Tones and Vibration of Cell Phones .....	429
<i>Taezoon Park, Wonil Hwang, and Gavriel Salvendy</i>	
Automatic Word Detection System for Document Image Using Mobile Devices .....	438
<i>Anjin Park and Keechul Jung</i>	
User Customization Methods Based on Mental Models: Modular UI Optimized for Customizing in Handheld Device .....	445
<i>Boeun Park, Scott Song, Joonhwan Kim, Wanje Park, and     Hyunkook Jang</i>	
Fisheye Keyboard: Whole Keyboard Displayed on PDA .....	452
<i>Mathieu Raynal and Philippe Truillet</i>	

Mobile Phone Video Camera in Social Context .....	460
<i>Erika Reponen, Jaakko Lehtinen, and Jussi Impiö</i>	
Developing a Motion-Based Input Model for Mobile Devices .....	470
<i>Mark Richards, Tim Dunn, and Binh Pham</i>	
Designing Input Method of Hand-Held Device with International User Studies .....	480
<i>Scott Song, Joonhwan Kim, Wanje Park, Boeun Park, and Hyunkook Jang</i>	
Positional Mapping Multi-tap for Myanmar Language .....	486
<i>Ye Kyaw Thu and Yoshiyori Urano</i>	
Pen-Based User Interface Based on Handwriting Force Information .....	496
<i>ZhongCheng Wu, LiPing Zhang, and Fei Shen</i>	
BetweenKeys: Looking for Room Between Keys .....	504
<i>Youngwoo Yoon and Geehyuk Lee</i>	
Mobile Magic Hand: Camera Phone Based Interaction Using Visual Code and Optical Flow .....	513
<i>Yuichi Yoshida, Kento Miyaoku, and Takashi Satou</i>	
Online Chinese Characters Recognition Based on Force Information by HMM .....	522
<i>Mozi Zhu, Fei Shen, and ZhongCheng Wu</i>	
<b>Part III: Virtual Environments and 3D Interaction</b>	
Comparative Characteristics of a Head-Up Display for Computer-Assisted Instruction .....	531
<i>Kikuo Asai and Hideaki Kobayashi</i>	
Flight Crew Perspective on the Display of 4D Information for En Route and Arrival Merging and Spacing .....	541
<i>Vernon Battiste, Walter W. Johnson, Nancy H. Johnson, Stacie Granada, and Arik-Quang Dao</i>	
Designing a Direct Manipulation HUD Interface for In-Vehicle Infotainment .....	551
<i>Vassilis Charissis, Martin Naef, Stylianos Papanastasiou, and Marianne Patera</i>	
Using Agent Technology to Study Human Action and Perception Through a Virtual Street Simulator .....	560
<i>Chiung-Hui Chen and Mao-Lin Chiu</i>	

## XVIII Table of Contents

Visualizing Interaction in Digitally Augmented Spaces: Steps Toward a Formalism for Location-Aware and Token-Based Interactive Systems . . . . .	569
<i>Yngve Dahl and Dag Svanæs</i>	
Assessment of Perception of Visual Warning Signals Generated Using an Augmented Reality System . . . . .	579
<i>Marek Dzwiarek, Anna Luczak, Andrzej Najmiec, Cezary Rzymkowski, and Tomasz Strawinski</i>	
Force Field Based Expression for 3D Shape Retrieval . . . . .	587
<i>Xi Geng, Wenyu Liu, and Hairong Liu</i>	
Comparing Two Head-Mounted Displays in Ultrasound Scanning . . . . .	597
<i>Juha Havukumpu, Jukka Häkkinen, Eija Grönroos, Pia Vähäkangas, and Göte Nyman</i>	
Evaluating the Usability of an Auto-stereoscopic Display . . . . .	605
<i>Zhao Xia Jin, Ya Jun Zhang, Xin Wang, and Thomas Plocher</i>	
Aspiring for a Virtual Life . . . . .	615
<i>Hee-Cheol Kim</i>	
Immersive Viewer System for 3D User Interface . . . . .	624
<i>Dongwuk Kyoung, Yunli Lee, and Keechul Jung</i>	
Resolving Occlusion Between Virtual and Real Scenes for Augmented Reality Applications . . . . .	634
<i>Lijun Li, Tao Guan, and Bo Ren</i>	
Augmented Reality E-Commerce Assistant System: Trying While Shopping . . . . .	643
<i>Yuzhu Lu and Shana Smith</i>	
RealSound Interaction: A Novel Interaction Method with Mixed Reality Space by Localizing Sound Events in Real World . . . . .	653
<i>Mai Otsuki, Asako Kimura, Takanobu Nishiura, Fumihisa Shibata, and Hideyuki Tamura</i>	
A New Model of Collaborative 3D Interaction in Shared Virtual Environment . . . . .	663
<i>Nassima Ouramdane-Djerrah, Samir Otmane, and Malik Mallek</i>	
Multi-finger Haptic Interface for Collaborative Tasks in Virtual Environments . . . . .	673
<i>Maria Oyarzabal, Manuel Ferre, Salvador Cobos, Mary Monroy, Jordi Barrio, and Javier Ortego</i>	
Measuring Presence in Mobile 3D . . . . .	681
<i>Hyun Jong Ryu, Rohae Myung, and Byongjun Lee</i>	