

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, Lancaster, 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, Zurich, Switzerland

John C. Mitchell

Stanford University, Stanford, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

TU Dortmund University, Dortmund, Germany

Demetri Terzopoulos

University of California, Los Angeles, CA, USA

Doug Tygar

University of California, Berkeley, CA, USA

Gerhard Weikum

Max Planck Institute for Informatics, Saarbrücken, Germany

More information about this series at <http://www.springer.com/series/7409>

Aaron Marcus · Wentao Wang (Eds.)

Design, User Experience, and Usability

Understanding Users and Contexts

6th International Conference, DUXU 2017

Held as Part of HCI International 2017

Vancouver, BC, Canada, July 9–14, 2017

Proceedings, Part III

Editors

Aaron Marcus
Aaron Marcus and Associates, Inc.
Berkeley, CA
USA

Wentao Wang
Baidu, Inc.
Beijing
China

ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Computer Science
ISBN 978-3-319-58639-7 ISBN 978-3-319-58640-3 (eBook)
DOI 10.1007/978-3-319-58640-3

Library of Congress Control Number: 2017939729

LNCS Sublibrary: SL3 – Information Systems and Applications, incl. Internet/Web, and HCI

© 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

Foreword

The 19th International Conference on Human–Computer Interaction, HCI International 2017, was held in Vancouver, Canada, during July 9–14, 2017. The event incorporated the 15 conferences/thematic areas listed on the following page.

A total of 4,340 individuals from academia, research institutes, industry, and governmental agencies from 70 countries submitted contributions, and 1,228 papers have been included in the proceedings. These papers address the latest research and development efforts and highlight the human aspects of design and use of computing systems. The papers 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. The volumes constituting the full set of the conference proceedings are listed on the following pages.

I would like to thank the program board chairs and the members of the program boards of all thematic areas and affiliated conferences for their contribution to the highest scientific quality and the overall success of the HCI International 2017 conference.

This conference would not have been possible without the continuous and unwavering support and advice of the founder, Conference General Chair Emeritus and Conference Scientific Advisor Prof. Gavriel Salvendy. For his outstanding efforts, I would like to express my appreciation to the communications chair and editor of *HCI International News*, Dr. Abbas Moallem.

April 2017

Constantine Stephanidis

HCI International 2017 Thematic Areas and Affiliated Conferences

Thematic areas:

- Human–Computer Interaction (HCI 2017)
- Human Interface and the Management of Information (HIMI 2017)

Affiliated conferences:

- 17th International Conference on Engineering Psychology and Cognitive Ergonomics (EPCE 2017)
- 11th International Conference on Universal Access in Human–Computer Interaction (UAHCI 2017)
- 9th International Conference on Virtual, Augmented and Mixed Reality (VAMR 2017)
- 9th International Conference on Cross-Cultural Design (CCD 2017)
- 9th International Conference on Social Computing and Social Media (SCSM 2017)
- 11th International Conference on Augmented Cognition (AC 2017)
- 8th International Conference on Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management (DHM 2017)
- 6th International Conference on Design, User Experience and Usability (DUXU 2017)
- 5th International Conference on Distributed, Ambient and Pervasive Interactions (DAPI 2017)
- 5th International Conference on Human Aspects of Information Security, Privacy and Trust (HAS 2017)
- 4th International Conference on HCI in Business, Government and Organizations (HCIBGO 2017)
- 4th International Conference on Learning and Collaboration Technologies (LCT 2017)
- Third International Conference on Human Aspects of IT for the Aged Population (ITAP 2017)

Conference Proceedings Volumes Full List

1. LNCS 10271, Human–Computer Interaction: User Interface Design, Development and Multimodality (Part I), edited by Masaaki Kurosu
2. LNCS 10272 Human–Computer Interaction: Interaction Contexts (Part II), edited by Masaaki Kurosu
3. LNCS 10273, Human Interface and the Management of Information: Information, Knowledge and Interaction Design (Part I), edited by Sakae Yamamoto
4. LNCS 10274, Human Interface and the Management of Information: Supporting Learning, Decision-Making and Collaboration (Part II), edited by Sakae Yamamoto
5. LNAI 10275, Engineering Psychology and Cognitive Ergonomics: Performance, Emotion and Situation Awareness (Part I), edited by Don Harris
6. LNAI 10276, Engineering Psychology and Cognitive Ergonomics: Cognition and Design (Part II), edited by Don Harris
7. LNCS 10277, Universal Access in Human–Computer Interaction: Design and Development Approaches and Methods (Part I), edited by Margherita Antona and Constantine Stephanidis
8. LNCS 10278, Universal Access in Human–Computer Interaction: Designing Novel Interactions (Part II), edited by Margherita Antona and Constantine Stephanidis
9. LNCS 10279, Universal Access in Human–Computer Interaction: Human and Technological Environments (Part III), edited by Margherita Antona and Constantine Stephanidis
10. LNCS 10280, Virtual, Augmented and Mixed Reality, edited by Stephanie Lackey and Jessie Y.C. Chen
11. LNCS 10281, Cross-Cultural Design, edited by Pei-Luen Patrick Rau
12. LNCS 10282, Social Computing and Social Media: Human Behavior (Part I), edited by Gabriele Meiselwitz
13. LNCS 10283, Social Computing and Social Media: Applications and Analytics (Part II), edited by Gabriele Meiselwitz
14. LNAI 10284, Augmented Cognition: Neurocognition and Machine Learning (Part I), edited by Dylan D. Schmorow and Cali M. Fidopiastis
15. LNAI 10285, Augmented Cognition: Enhancing Cognition and Behavior in Complex Human Environments (Part II), edited by Dylan D. Schmorow and Cali M. Fidopiastis
16. LNCS 10286, Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management: Ergonomics and Design (Part I), edited by Vincent G. Duffy
17. LNCS 10287, Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management: Health and Safety (Part II), edited by Vincent G. Duffy
18. LNCS 10288, Design, User Experience, and Usability: Theory, Methodology and Management (Part I), edited by Aaron Marcus and Wentao Wang

19. LNCS 10289, Design, User Experience, and Usability: Designing Pleasurable Experiences (Part II), edited by Aaron Marcus and Wentao Wang
20. LNCS 10290, Design, User Experience, and Usability: Understanding Users and Contexts (Part III), edited by Aaron Marcus and Wentao Wang
21. LNCS 10291, Distributed, Ambient and Pervasive Interactions, edited by Norbert Streitz and Panos Markopoulos
22. LNCS 10292, Human Aspects of Information Security, Privacy and Trust, edited by Theo Tryfonas
23. LNCS 10293, HCI in Business, Government and Organizations: Interacting with Information Systems (Part I), edited by Fiona Fui-Hoon Nah and Chuan-Hoo Tan
24. LNCS 10294, HCI in Business, Government and Organizations: Supporting Business (Part II), edited by Fiona Fui-Hoon Nah and Chuan-Hoo Tan
25. LNCS 10295, Learning and Collaboration Technologies: Novel Learning Ecosystems (Part I), edited by Panayiotis Zaphiris and Andri Ioannou
26. LNCS 10296, Learning and Collaboration Technologies: Technology in Education (Part II), edited by Panayiotis Zaphiris and Andri Ioannou
27. LNCS 10297, Human Aspects of IT for the Aged Population: Aging, Design and User Experience (Part I), edited by Jia Zhou and Gavriel Salvendy
28. LNCS 10298, Human Aspects of IT for the Aged Population: Applications, Services and Contexts (Part II), edited by Jia Zhou and Gavriel Salvendy
29. CCIS 713, HCI International 2017 Posters Proceedings (Part I), edited by Constantine Stephanidis
30. CCIS 714, HCI International 2017 Posters Proceedings (Part II), edited by Constantine Stephanidis

Design, User Experience and Usability

**Program Board Chair(s): Aaron Marcus, USA,
and Wentao Wang, P.R. China**

- Sisira Adikari, Australia
- Claire Ancient, UK
- Jan Brejcha, Czech Republic
- Hashim Iqbal Chunpir, Germany
- Silvia de los Rios Perez, Spain
- Marc Fabri, UK
- Patricia Flanagan, Australia
- Nouf Khashman, Qatar
- Tom MacTavish, USA
- Judith A. Moldenhauer, USA
- Francisco Rebelo, Portugal
- Kerem Rizvanoglu, Turkey
- Christine Riedmann-Streitz, Germany
- Patricia Search, USA
- Carla Galvão Spinillo, Brazil
- Marcelo Márcio Soares, Brazil
- Virginia Tiradentes Souto, Brazil

The full list with the Program Board Chairs and the members of the Program Boards of all thematic areas and affiliated conferences is available online at:

<http://www.hci.international/board-members-2017.php>



HCI International 2018

The 20th International Conference on Human–Computer Interaction, HCI International 2018, will be held jointly with the affiliated conferences in Las Vegas, NV, USA, at Caesars Palace, July 15–20, 2018. 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. More information is available on the conference website: <http://2018.hci.international/>.

General Chair

Prof. Constantine Stephanidis

University of Crete and ICS-FORTH

Heraklion, Crete, Greece

E-mail: general_chair@hcii2018.org

<http://2018.hci.international/>



Contents – Part III

Information Design

An Interactive Behavior-Based Hierarchical Design Method for Form Hints	3
<i>Cao Huai and Zhou Qi</i>	
Usability Modeling of Academic Search User Interface	16
<i>Tsangyao Chen and Melissa Gross</i>	
The Influence of Task-Oriented Human-Machine Interface Design on Usability Objectives	31
<i>Julia N. Czerniak, Christopher Brandl, and Alexander Mertens</i>	
ViVid: A Video Feature Visualization Engine.	42
<i>Jianyuan Fan, Philippe Pasquier, Luciane Maria Fadel, and Jim Bizzocchi</i>	
Comparison of Circle and Dodecagon Clock Designs for Visualizing 24-Hour Cyclical Data	54
<i>Chen Guo, Shuang Wei, Mingran Li, Zhenyu Cheryl Qian, and Yingjie Victor Chen</i>	
Design of Tooltips for Data Fields: A Field Experiment of Logging Use of Tooltips and Data Correctness	63
<i>Helene Isaksen, Mari Iversen, Jens Kaasbøll, and Chipso Kanjo</i>	
The Application of Multi-view and Multi-task Learning for On-Board Interaction Design Based on Visual Selection	79
<i>Bin Jiang, Jianghui Ma, and Di Zhou</i>	
Research on the Experience Design of Chinese Knowledge Sharing in the Information Age	94
<i>Wenkui Jin, Renke He, and Xinxin Sun</i>	
The Effect of Video Loading Symbol on Waiting Time Perception	105
<i>Woojoo Kim and Shuping Xiong</i>	
Research on Image Emotional Semantic Retrieval Mechanism Based on Cognitive Quantification Model	115
<i>Tian Liang, Liqun Zhang, and Min Xie</i>	
A Recommender System for Political Information Filtering	129
<i>Kevin Lim, Chunghwan Kim, Gangsan Kim, and Hyebyong Choi</i>	

Look at My Face: A New Home Screen User Interface 146
Young Hoon Oh and Da Young Ju

Understanding the User

Extending the Concept of User Satisfaction in E-Learning Systems
 from ISO/IEC 25010 167
*Andrés F. Aguirre, Ángela Villareal-Freire, Rosa Gil,
 and César A. Collazos*

The International Effect of the Convention on Rights of Persons
 with Disabilities on Access in Society and Information 180
*Leo Baldiga, Jacob Gattuso, Sophia Baker, Holly Gruber,
 and Phillip J. Deaton*

Coffee Cup Reading as an Inspiration for Looking into Augmented Mugs
 in Social Interaction 199
*Ahmet Börütecene, İdil Bostan, Gülben Şanlı, Çağlar Genç,
 Tilbe Göksun, and Oğuzhan Özcan*

A LifeLike Experience to Train User Requirements Elicitation Skills. 219
Silvia De Ascaniis, Lorenzo Cantoni, Erkki Sutinen, and Robert Talling

Comfortable Subjective Duration and User Experience of Face Recognition. 238
Tingting Gan and Chengqiang Yi

Taiwanese People’s Wayfinding Personas and Tool Preferences 249
Chih-Wei Joy Lo, Chia-Ning Liao, I-Ping Chen, and Tsuei-Ju Hsieh

The Role of Narrative Transportation Experience in Design Communication 265
Qiong Peng and Jean-Bernard Martens

A Requirements Engineering Process for User Centered IT Services – Gathering
 Service Requirements for the University of the Future. 275
Dominik Rudolph, Anne Thoring, Christian Remfert, and Raimund Vogl

Understanding Voting Barriers to Access for Americans
 with Low Literacy Skills 294
*Kathryn Summers, Jonathan Langford, Caitlin Rinn, Joel Stevenson,
 Emily Rhodes, Jaime Lee, and Rachel Sherard*

Bifurcating the User 313
*Nicholas True, Shad Gross, Chelsea Linder, Amber McAlpine,
 and Sri Putrevu*

The Challenges Found in the Access to Digital Information by People
 with Visual Impairment 330
Karolina Vieira da Silva Bastos and Ivette Kafure Muñoz

How the Inhabited Space Helps Consumers Customize Good Products 347
Liang Zhou and Kanliang Wang

DUXU for Children and Young Users

Teenagers’ Destination Website Navigation. A Comparison Among Eye-Tracking, Web Analytics, and Self-declared Investigation 359
Edoardo Cantoni, Elena Marchiori, and Lorenzo Cantoni

Using Storytelling to Support the Education of Deaf Children: A Systematic Literature Review 371
Leandro Flórez Aristizábal, Sandra Cano, and César Collazos

Research on Online Education Products Designed for Chinese Young Women’s Interest Development. 383
Xuan Li, Jingya Zhang, Qijun Chen, Nan Wang, and Yi Yang

Technology as an Extension of the Self: Socialising Through Technology for Young People with Autism 393
Lye Ee Ng

Service Design for Improving Adolescents’ Cyber Language Habit 403
Jae Sun Yi, Chanmi Jeon, and Yeji Yu

Let’s Play (While Far Away)! Using Technology to Mediate Remote Playdates for Children with Autism 415
Annuska Zolyomi, Ankitha Bharadwaj, and Jaime Snyder

DUXU for Art, Culture, Tourism and Environment

Perception of Source Credibility Within Touristic Virtual Communities: A Cross-Generational Examination 435
Aleksander Groth, Giulietta Constantini, and Stephan Schlögl

Gender Differences in Tourism Website Usability: An Empirical Study 453
Zhao Huang and Liu Yuan

Energy UX: Leveraging Multiple Methods to See the Big Picture 462
Beth Karlin, Sena Koleva, Jason Kaufman, Angela Sanguinetti, Rebecca Ford, and Colin Chan

Optimizing User Interface Design and Interaction Paths for a Destination Management Information System 473
Dimitri Keil, Wolfram Höpken, Matthias Fuchs, and Maria Lexhagen

Modeling a Systematic-Innovation Approach for Green Product Design 488
Yao-Tsung Ko, Meng-Cong Zheng, and Chi-Hung Lo

Cultural Calibration: Technology Design for Tourism Websites	501
<i>Emanuele Mele and Erkki Sutinen</i>	
“deBallution” - A Prototype of Interactive Artwork Based on Cultural Heritage	514
<i>Je-ho Oh, So-young Kim, Yun Tae Nam, and Chung-kon Shi</i>	
Research on the Design of Nanjing Museum Cultural and Creative Product from the Perspective of Experience	529
<i>Xinxin Sun, Wenkui Jin, and Chao Li</i>	
An Exploratory Case Study into Curatorial Intervention Within the Context of HCI.	540
<i>Deborah Turnbull Tillman, Jorge Forseck, and Mari Velonaki</i>	
DUXU Practice and Case Studies	
The Role of UX in Government System Expansion.	559
<i>Fuad Abujarad, Ian O’Bara, Sarah J. Swierenga, and Eric D. Raile</i>	
Pervasive Information Architecture and Media Ecosystem: A Brazilian Video on Demand User Experience.	570
<i>Luiz Agner, Barbara Jane Neczy, and Adriano Bernardo Renzi</i>	
Simplified Thermal Comfort Evaluation on Public Busses for Performance Optimization.	581
<i>Guilherme Valle Loures Brandão, Wilian Daniel Henriques do Amaral, Caio Augusto Rabite de Almeida, and Jose Alberto Barroso Castañon</i>	
Shaping the Experience of a Cognitive Investment Adviser	594
<i>Heloisa Candello, Claudio Pinhanez, David Millen, and Bruna Daniele Andrade</i>	
User Experience Evaluation for User Interface Redesign: A Case Study on a Bike Sharing Application	614
<i>Jonas Forte and Ticianne Darin</i>	
Teleconsultation Process for Physicians Working with ASD Patients: Insights from a Usability Evaluation	632
<i>Jennifer Ismirle, Hannah Klautke, Sarah J. Swierenga, and Lauren O’Connell</i>	
Visual Standards for Southern California Tsunami Evacuation Information: Applications of Information Design in Disaster Risk Management.	645
<i>Claudine Jaenichen and Steve Schandler</i>	

SmartPA: An Electronic Solution for Secure Prior Authorization Processing . . . 664
Ramandeep Kaur, Patricia Morreale, and Marvin Andujar

Research on the Cognitive Evaluation Method of Subway Signs Design
in the Aging Society 677
*Jian Liu, Jian Dai, Yanrui Qu, Zhenwei You, Xiaochun Wang,
and Junfeng Cui*

Developing an ATM Interface Using User-Centered Design Techniques. 690
*Arturo Moquillaza, Edward Molina, Edilson Noguera, Leidi Enríquez,
Adrián Muñoz, Freddy Paz, and César Collazos*

Challenges to Patient Experience: Documenting Evidence-Based Practice
in the Family Health Center 702
Dawn S. Opel and William Hart-Davidson

The Labor Judicial Expert from Sergipe State, Brazil and Propositions
of Use of Tools Ergonomic in the Sustenance of Causal Connections
in Disturbances Bone-Muscle 713
*Marcos André Santos Guedes, Maria Goretti Fernandes,
and Marcelo Marcio Soares*

The Open University of the Unified Health System in Brazil
(UNA-SUS/UFMA): Identification and Hierarchization
of Problems in Distance Learning Courses 724
*Carla Galvão Spinillo, Stephania Padovani, Kelli C.A.S. Smythe,
Juliana Bueno, and Ana Emília Figueiredo de Oliveira*

Case Study: Building UX Design into Citizen Science Applications 740
Brian Traynor, Tracy Lee, and Danah Duke

Participatory Design in the Development of a Smart Pedestrian Mobility
Device for Urban Spaces 753
Wiktoria Wilkowska, Katrin Arning, and Martina Ziefle

Service Design for Inter Floor Noise Problem: Using a Floor Noise
Reduction Device Technology and Network System in Apartment Complex . . . 773
Jae Sun Yi, Seona Kim, and Hahyeon Sung

Analysis of Users’ Mental Model and Expectations from Usability
and Information Design Point of View in e-Contracts: A Case
of Hotel Reservation 784
*Renata Zappelli Marzullo, André Ribeiro Oliveira,
and Adriano Bernardo Renzi*

Author Index 805

Contents – Part I

Design Thinking and Design Philosophy

Towards Establishing Design Principles for Balancing Usability and Maintaining Cognitive Abilities	3
<i>Gayathri Balasubramanian, Hyowon Lee, King Wang Poon, Wee-Kiat Lim, and Wai Keet Yong</i>	
User Operational Design Thinking	19
<i>Peipei Cai</i>	
Disappearing Boundary	28
<i>Wai Ping Chan</i>	
Investigating User Interpretation of Dynamic Metaphorical Interfaces	45
<i>Kenny K.N. Chow</i>	
Thinking in Interdisciplinary Design Teams Based on Workshop	60
<i>Ying Hu, Ying Li, and Xing Du</i>	
Digitization of the Design Thinking Process Solving Problems with Geographically Dispersed Teams	71
<i>Christoph Lattemann, Dominik Siemon, David Dorawa, and Beke Redlich</i>	
Processless Design Extended	89
<i>Joon-Suk Lee</i>	
The Categorization of Document for Design Thinking	100
<i>Tingyi S. Lin and Min-Zhe Yi</i>	
Internet Product Design Is the Whole Design Around the “Product Strategy”	114
<i>Chao Liu</i>	
Reflection on Exploring and Designing Generation Y Interaction Qualities	122
<i>Wei Liu</i>	
Design-Based Evidence Collection and Evidence-Based Design (DEED) Model	134
<i>Caitlyn McColeman, Robin Barrett, and Mark Blair</i>	

Information Behaviour in Design; A Conceptual Framework	152
<i>Farnaz Nickpour</i>	
Four Biases in Interface Design Interactions	163
<i>Alamir Novin and Eric M. Meyers</i>	
Fire in the Kitchen: The Campfire Experience that Led to Innovation in Human Product Interaction	174
<i>Marlen Promann</i>	
User Participatory Methods for Inclusive Design and Research in Autism: A Case Study in Teaching UX Design.	186
<i>Debra Satterfield and Marc Fabri</i>	
Constructing Cognitive Pattern in Design Thinking Based on Complementary Perspective	198
<i>Xiaoxian Wang</i>	
Aesthetics and Perception in Design	
U-index: An Eye-Tracking-Tested Checklist on Webpage Aesthetics for University Web Spaces in Russia and the USA	219
<i>Svetlana S. Bodrunova and Alexander V. Yakunin</i>	
An Association Analysis Between Content Topic and Appeal Type of Infographics	234
<i>Tzu-Fan Hsu</i>	
Automatic Information Loss Detection and Color Compensation for the Color Blind	248
<i>Sung Soo Hwang</i>	
Research on the Form Design of Mini Car in Perceptual Consumption Times	258
<i>Xinhui Kang, Minggang Yang, Weiwei Yang, and Yixiang Wu</i>	
The Effects of Website White Space on University Students.	272
<i>Yu-Chun Liu and Chih-Hsiang Ko</i>	
Research on the Effect of Visual Conventions on Perception and Inference	284
<i>Ningyue Peng, Chengqi Xue, Haiyan Wang, Yafeng Niu, and Yingjie Victor Chen</i>	
Research on the Style of Product Shape Based on NURBS Curve.	298
<i>Zhangfan Shen, Chengqi Xue, Jing Zhang, and Haiyan Wang</i>	

A Quantitative Study of Emotional Experience of *Daqi* Based
on Cognitive Integration 306
Min Xie, Liqun Zhang, and Tian Liang

User Experience Evaluation Methods and Tools

Bringing Content Understanding into Usability Testing in Complex
Application Domains—a Case Study in eHealth 327
Simon Bruntse Andersen, Claire Kirchert Rasmussen, and Erik Frøkjær

The Use of Neurometric and Biometric Research Methods in Understanding
the User Experience During Product Search of First-Time Buyers
in E-Commerce. 342
*Tuna Çakar, Kerem Rızvanoğlu, Özgürol Öztürk, Deniz Zengin Çelik,
and İrfan Gürvardar*

ErgoMobile: A Software to Support Usability Evaluations
in Mobile Devices Using Observation Techniques. 363
*Thiago Adriano Coleti, Leticia da Silva Souza, Marcelo Morandini,
Suzie Allard, and Pedro Luiz Pizzigatti Correa*

Addressing Mobile Usability and Elderly Users: Validating
Contextualized Heuristics. 379
*André de Lima Salgado, Leandro Agostini do Amaral,
Renata Pontin de Mattos Fortes, Marcos Hortes Nisihara Chagas,
and Ger Joyce*

Is a Holistic Criteria-Based Approach Possible in User Experience?:
Study of the Classification of 58 Criteria Linked to UX. 395
Josefina Isabel Gil Urrutia, Eric Brangier, and Laurent Cessat

Mobile Application Usability Heuristics: Decoupling Context-of-Use. 410
Ger Joyce, Mariana Lilley, Trevor Barker, and Amanda Jefferies

Developmental Process of Interface Design Evaluations. 424
Lucila Mercado Colin and Alejandro Rodea Chávez

Usability Testing as a Complement of Heuristic Evaluation: A Case Study. . . 434
*Braulio Murillo, Silvia Vargas, Arturo Moquillaza, Luis Fernández,
and Freddy Paz*

What Drives Perceived Usability in Mobile Web Design:
Classical or Expressive Aesthetics? 445
Kiemute Oyibo and Julita Vassileva

Application of the Semiotic Inspection Method: A Case Study in Web Domain	463
<i>Freddy Paz, Freddy A. Paz, Luis Collantes, Manuel Sánchez, and José Antonio Pow-Sang</i>	
UX Heuristics for Cross-Channel Interactive Scenarios	481
<i>Adriano Bernardo Renzi</i>	
A Systematic Review of User Experience Evaluation Methods in Information Driven Websites	492
<i>Ana Cecilia Ten and Freddy Paz</i>	
The UX Metrics Table: A Missing Artifact.	507
<i>Dieter Wallach, Jan Conrad, and Toni Steimle</i>	
Research on “4D” Evaluation System Construction for Information Interaction Design	518
<i>Yangshuo Zheng and Yongzhen Zou</i>	
User Centered Design in the Software Development Lifecycle	
Converging Data with Design Within Agile and Continuous Delivery Environments	533
<i>Jay Brewer, Ger Joyce, and Saurabh Dutta</i>	
Model-Based HCI System Development Methodology	543
<i>Kyung Won Cha and Changbeom Choi</i>	
Integrating Participatory and Interaction Design of an Authoring Tool for Learning Objects Involving a Multidisciplinary Team	554
<i>André Luiz de Brandão Damasceno, Carlos de Salles Soares Neto, and Simone Diniz Junqueira Barbosa</i>	
A Human-Centered Perspective on Software Quality: Acceptance Criteria for Work 4.0.	570
<i>Holger Fischer, Michael Engler, and Stefan Sauer</i>	
Building a Team to Champion User-Centered Design Within an Agile Process	584
<i>Eleonora Ibragimova, Leanda Verboom, and Nick Mueller</i>	
Prototype-Centric Explorative Interaction Design Approach in the Case of Office Energy Coaches Projects	597
<i>Tomasz Jaskiewicz, Aadjan van der Helm, and Wei Liu</i>	
UCD and Agile Methodology in the Development of a Cultural Heritage Platform	614
<i>Eduardo Merino, Claudia Zapata, and Maria del Carmen Aguilar</i>	

Research on Interactive Prototype Design and Experience Method Based on Open Source	633
<i>Yanrui Qu, Yanhong Jia, Tong Qu, Zhaoyu Chen, Heng Li, and Wanqiang Li</i>	
Programming a Robotic Toy with a Block Coding Application: A Usability Study with Non-programmer Adults	652
<i>Muhammet Ramoğlu, Çağlar Genç, and Kerem Rızvanoğlu</i>	
IT Governance for Cyber-Physical Systems: The Case of Industry 4.0	667
<i>Maximilian Savtschenko, Frederik Schulte, and Stefan Voß</i>	
Relationship Between the Scientific and Traditional Software Engineering Considering the Ethical Aspects of Human-Computer Interaction	677
<i>Natalie Mie Takahashi and Plinio Thomaz Aquino Jr.</i>	
Technical to Teachable: The Flint Water Crisis and the Design of Instructions for Assembling Water Sampling Kits	697
<i>Audrey R. Zarb, Shawn P. McElmurry, and Judith A. Moldenhauer</i>	
DUXU Education and Training	
Using Prototyping in Authentic Learning of Human-Centred Design of Mobile Apps	713
<i>Ghislain Maurice Norbert Isabwe, Hellen Mula Apondi Olum, and Maren Schelbred Thormodsæter</i>	
Collaborative System for Generative Design: Manipulating Parameters, Generating Alternatives	727
<i>Luisa Paraguaí, Heloisa Candello, and Paulo Costa</i>	
Design of Digital Products in the Future: A Study of Interaction Design Students and Their Perceptions on Design Issues	740
<i>Hanne Sørum</i>	
Creativity in Digital Design: Differences from Print-Based Graphic Design.	755
<i>Virginia Tiradentes Souto</i>	
Establishing China’s First UX Master Program Based on Applied Psychology Perspective	767
<i>Shuping Sun and Limei Teng</i>	
Knowledge Graph Design: A Way to Promote User Experience for Online Education	776
<i>Wentao Wang and Qi Feng</i>	
Author Index	787

Contents – Part II

Persuasive and Emotional Design

Mix and Match: Designing an Installation for Music Festivals Aiming to Increase Social Sustainability	3
<i>Vlad-Doru Epure, Beatrix Ivicsics, István Kovács, Louise Skjoldborg Lessel, Nikolaj Schlüter Nielsen, Jakob Ranum, and Evangelia Triantafyllou</i>	
Explore the Categories on Different Emotional Branding Experience for Optimising the Brand Design Process	18
<i>Amic G. Ho</i>	
Guiding Human Behavior Through Alternate Reality Experience.	35
<i>Fumiko Ishizawa and Tatsuo Nakajima</i>	
A Quality Table-Based Method for Sentiment Expression Word Identification in Japanese	48
<i>Shujiro Miyakawa, Fumiaki Saitoh, and Syohei Ishizu</i>	
EcoTrips: Leveraging Co-benefits and Metaphorical Metrics in a Mobile App to Promote Walking and Biking for Short Trips.	60
<i>Hannah Park, Angela Sanguinetti, and Gabriel Castillo Cortes</i>	
Experience, Usability and Sense of Things	77
<i>Axel Sande, Adriano Bernardo Renzi, and Silvia Schnaider</i>	
GreenFLY: Adding Carbon to the Equation in Online Flight Searches	87
<i>Angela Sanguinetti, Andrew Kwon, Yitong Li, Vishal Chakraborty, Suhaila Sikand, Otavio Tarelho, Ying Chen, and Nina Amenta</i>	
Electric Vehicle Explorer: Educating and Persuading Consumers with an Online Vehicle Energy Cost Calculator	104
<i>Angela Sanguinetti, Kiernan Salmon, Mike Nicholas, Gil Tal, and Matt Favetti</i>	
Beyond Hedonic Enjoyment: Conceptualizing Eudaimonic Motivation for Personal Informatics Technology Usage	119
<i>Ayoung Suh and Christy M.K. Cheung</i>	
A Suggestion to Improve User-Friendliness Based on Monitoring Computer User’s Emotions.	134
<i>Keum Young Sung</i>	

EMOVLE: An Interface Design Guide: Through the Design of Emotive Virtual Learning Environments	142
<i>Angela Villareal-Freire, Andrés F. Aguirre, and César A. Collazos</i>	
Auditory User Interface Guideline for Emotional User Experience.	162
<i>Hoon Sik Yoo and Da Young Ju</i>	
Reassurance Experience Design for “Financial Planning Users”	170
<i>Yang Zhang and Pengbo Zhu</i>	
Mobile DUXU	
Towards Designing Mobile Banking User Interfaces for Novice Users.	181
<i>Victor Ndako Adama, Ibrahim Shehi Shehu, Solomon Adelowo Adepoju, and Rasheed Gbenga Jimoh</i>	
Feasibility of Utilizing E-Mental Health with Mobile APP Interface for Social Support Enhancement: A Conceptional Solution for Postpartum Depression in Taiwan	198
<i>Wen-Ko Chiou, Chun-Ying Kao, Liang-Ming Lo, Ding-Hau Huang, Ming-Hsu Wang, and Bi-Hui Chen</i>	
Exploring the Interaction Between Visual Flux and Users on Mobile Devices	208
<i>Shih-Wen Hsiao and Yi-Cheng Tsao</i>	
New Mobile Service Development Process.	221
<i>Hans-Peter Hutter and Andreas Ahlenstorf</i>	
Designing User Experiences of Novel Technologies	233
<i>Masayuki Ihara, Takayuki Adachi, and Hiroshi Watanabe</i>	
Do Car Drivers Really Need Mobile Parking Payment?: A Critical Evaluation of the Smart Service <i>apparkB</i> in Barcelona	241
<i>Aylin Ilhan, Kaja J. Fietkiewicz, and Wolfgang G. Stock</i>	
The Study of Factors Affecting Minimum Center Distance of Mobile Touch Screen	255
<i>Hong Ji, Jingqin He, Hong Sun, and Jie Yin</i>	
Mobile Phone – Offers Exchanged as Cultural Practice	262
<i>Arminda Guerra Lopes</i>	
The Smartwatch in Multi-device Interaction	275
<i>Donald McMillan</i>	
The Interaction Design of Mobile Apps for Chinese Early Education.	288
<i>Qiong Peng</i>	

Breaking Through the Traditional Form of News Communication—User Experience Design of Live Broadcast 300
Xueting Xie

Innovation Design in Personal Center Interface of Mobile Application. 310
Xin Xin, Wei Zhou, Mengfan Li, Haozhi Wang, Han Xu, Yuwei Fan, Weizheng Ma, and Di Zhu

Applying Working Memory Theory to Redesign a Mobile Application User Interface: Take a Handicraft Self-learning Page as an Example 324
Jun Xu, Sicong Liu, and Xiaozhen Fu

Designing the Playing Experience

A Systematic Review of Geolocated Pervasive Games: A Perspective from Game Development Methodologies, Software Metrics and Linked Open Data. 335
Jeferson Arango-López, Cesar A. Collazos, Francisco Luis Gutiérrez Vela, and Luis F. Castillo

A Conceptual Model for Educational Game Authoring: A Showcase in Math Games. 347
Johan Baldeón, Anna Puig, Inmaculada Rodríguez, Cristian Muriel, and Leandro Zardain

The Shape of Challenge: Using Affordance Design to Create Challenge Within Games 362
Michael Brandse

Co-designing a Civic Educational Online Game with Children 377
Ana Claudia da Costa, Francisco Rebelo, and António Rodrigues

Improving the Usability in a Video Game Through Continuous Usability Evaluations. 387
Corrado Daly, Claudia Zapata, and Freddy Paz

Connecting Through Kinect: Designing and Evaluating a Collaborative Game with and for Autistic Individuals 398
Kristen Gillespie, Gabriel Goldstein, David Shane Smith, Ariana Riccio, Michael Kholodovsky, Cali Merendino, Stanislav Leskov, Rayan Arab, Hassan Elsherbini, Pavel Asanov, and Deborah Sturm

Engagement in a Virtual Reality Game with Gesture Hand Interface. An Empirical Evaluation of User Engagement Scale (UES) 414
Irma C. Landa-Avila and Maria-Luisa Cruz

Effect of Playing Factors and Playing History on Game Flow and Companionship Levels for Online Pets	428
<i>Elena Carolina Li and Ding-Bang Luh</i>	
Game Worlds and Creativity: The Challenges of Procedural Content Generation	443
<i>Rafael Pereira de Araujo and Virginia Tiradentes Souto</i>	
Designing Game Controllers in a Mobile Device.	456
<i>Leonardo Torok, Mateus Pelegrino, Daniela Trevisan, Anselmo Montenegro, and Esteban Clua</i>	
Designing the Virtual, Augmented and Tangible Experience	
The Importance of Specific Usability Guidelines for Robot User Interfaces.	471
<i>Julia Ramos Campana and Manuela Quaresma</i>	
Discounted Prototyping of Virtual Reality Solutions for Science Education.	484
<i>Ghislain Maurice Norbert Isabwe, Margrethe Synnøve Moxnes, and Marie Ristesund</i>	
A Natural Interaction VR Environment for Surgical Instrumentation Training	499
<i>Adalberto Lopes, Antônio Harger, Felipe Breyer, and Judith Kelner</i>	
Visual and Interactive Concerns for VR Applications: A Case Study.	510
<i>Francimar Maciel, Alvaro Lourenço, Paulo Carvalho, and Paulo Melo</i>	
Algorithm Experimental Evaluation for an Occluded Liver with/without Shadow-Less Lamps and Invisible Light Filter in a Surgical Room	524
<i>Hiroshi Noborio, Kaoru Watanabe, Masahiro Yagi, Shunsuke Ohira, and Katsunori Tachibana</i>	
Capturing a Surgical Area Using Multiple Depth Cameras Mounted on a Robotic Mechanical System	540
<i>Masahiro Nonaka, Kaoru Watanabe, Hiroshi Noborio, Masatoshi Kayaki, and Kiminori Mizushino</i>	
A Study of Guidance Method for AR Laparoscopic Surgery Navigation System	556
<i>Katsuhiko Onishi, Yohei Miki, Keishi Okuda, Masanao Koeda, and Hiroshi Noborio</i>	
A Comparative Usability Analysis of Virtual Reality Goggles.	565
<i>Ana Carol Pontes de França, Danilo Fernandes Vitorino, Aline de Oliveira Neves, Cristiane Nunes de Lima, and Marcelo Márcio Soares</i>	

Augmented Reality Navigation System for Robot-Assisted Laparoscopic
 Partial Nephrectomy 575
*Atsushi Sengiku, Masanao Koeda, Atsuro Sawada, Jin Kono,
 Naoki Terada, Toshinari Yamasaki, Kiminori Mizushino,
 Takahiro Kunii, Katsuhiko Onishi, Hiroshi Noborio, and Osamu Ogawa*

Laser Intensity Data Visualization for Laser Physics 585
Jee Ho Song, Han Sol Shin, Tae Jun Yu, and Kun Lee

A New Organ-Following Algorithm Based on Depth-Depth Matching
 and Simulated Annealing, and Its Experimental Evaluation. 594
*Kaoru Watanabe, Shogo Yoshida, Daiki Yano, Masanao Koeda,
 and Hiroshi Noborio*

Development of a Surgical Knife Attachment with Proximity Indicators. 608
Daiki Yano, Masanao Koeda, Katsuhiko Onishi, and Hiroshi Noborio

Wearables and Fashion Technology

TEA Band: An Interactive System to Aid Students with Autism Improve
 Their Social Interactions 621
Fernanda Bonnin and Victor M. Gonzalez

User Oriented Design Speculation and Implications for an Arm-Worn
 Wearable Device for Table-Top Role-Playing Games. 636
Oğuz Turan Buruk and Oğuzhan Özcan

Critical and Speculative Wearables: Boundary Objects. 656
Patricia Flanagan

Melissa’s Concept Store: Physical Environment for Experience. 673
Stella Hermida and Adriano Bernardo Renzi

Wearables Design: Epistemic Cultures and Laboratory Performances. 683
Valérie Lamontagne

The Grayman Project. 704
Darien H. Lovell

Digital Humanities and Techno-Animism in Wearables:
 A Case-Study-Based Collaborative Design Framework
 for Digitally-Ensouled Jewellery 719
Doros Polydorou, Kening Zhu, and Alexis Karkotis

Wearable Rhythms: Materials in Play 737
Amy Winters

Author Index 747