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Norbert Streitz · Shin'ichi Konomi (Eds.)

Distributed, Ambient and Pervasive Interactions

8th International Conference, DAPI 2020
Held as Part of the 22nd HCI International Conference, HCII 2020
Copenhagen, Denmark, July 19–24, 2020
Proceedings

Springer

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ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Computer Science
ISBN 978-3-030-50343-7 ISBN 978-3-030-50344-4 (eBook)
https://doi.org/10.1007/978-3-030-50344-4

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

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

Foreword

The 22nd International Conference on Human-Computer Interaction, HCI International 2020 (HCII 2020), was planned to be held at the AC Bella Sky Hotel and Bella Center, Copenhagen, Denmark, during July 19–24, 2020. Due to the COVID-19 coronavirus pandemic and the resolution of the Danish government not to allow events larger than 500 people to be hosted until September 1, 2020, HCII 2020 had to be held virtually. It incorporated the 21 thematic areas and affiliated conferences listed on the following page.

A total of 6,326 individuals from academia, research institutes, industry, and governmental agencies from 97 countries submitted contributions, and 1,439 papers and 238 posters were included in the conference proceedings. These contributions address the latest research and development efforts and highlight the human aspects of design and use of computing systems. The contributions 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 in the following pages.

The HCI International (HCII) conference also offers the option of "late-breaking work" which applies both for papers and posters and the corresponding volume(s) of the proceedings will be published just after the conference. Full papers will be included in the "HCII 2020 - Late Breaking Papers" volume of the proceedings to be published in the Springer LNCS series, while poster extended abstracts will be included as short papers in the "HCII 2020 - Late Breaking Posters" volume to be published in the Springer CCIS series.

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 2020 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.

July 2020 Constantine Stephanidis

HCI International 2020 Thematic Areas and Affiliated Conferences

Thematic areas:

- HCI 2020: Human-Computer Interaction
- HIMI 2020: Human Interface and the Management of Information

Affiliated conferences:

- EPCE: 17th International Conference on Engineering Psychology and Cognitive Ergonomics
- UAHCI: 14th International Conference on Universal Access in Human-Computer Interaction
- VAMR: 12th International Conference on Virtual, Augmented and Mixed Reality
- CCD: 12th International Conference on Cross-Cultural Design
- SCSM: 12th International Conference on Social Computing and Social Media
- AC: 14th International Conference on Augmented Cognition
- DHM: 11th International Conference on Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management
- DUXU: 9th International Conference on Design, User Experience and Usability
- DAPI: 8th International Conference on Distributed, Ambient and Pervasive Interactions
- HCIBGO: 7th International Conference on HCI in Business, Government and Organizations
- LCT: 7th International Conference on Learning and Collaboration Technologies
- ITAP: 6th International Conference on Human Aspects of IT for the Aged Population
- HCI-CPT: Second International Conference on HCI for Cybersecurity, Privacy and Trust
- HCI-Games: Second International Conference on HCI in Games
- MobiTAS: Second International Conference on HCI in Mobility, Transport and Automotive Systems
- AIS: Second International Conference on Adaptive Instructional Systems
- C&C: 8th International Conference on Culture and Computing
- MOBILE: First International Conference on Design, Operation and Evaluation of Mobile Communications
- AI-HCI: First International Conference on Artificial Intelligence in HCI

Conference Proceedings Volumes Full List

1. LNCS 12181, Human-Computer Interaction: Design and User Experience (Part I), edited by Masaaki Kurosu
2. LNCS 12182, Human-Computer Interaction: Multimodal and Natural Interaction (Part II), edited by Masaaki Kurosu
3. LNCS 12183, Human-Computer Interaction: Human Values and Quality of Life (Part III), edited by Masaaki Kurosu
4. LNCS 12184, Human Interface and the Management of Information: Designing Information (Part I), edited by Sakae Yamamoto and Hirohiko Mori
5. LNCS 12185, Human Interface and the Management of Information: Interacting with Information (Part II), edited by Sakae Yamamoto and Hirohiko Mori
6. LNAI 12186, Engineering Psychology and Cognitive Ergonomics: Mental Workload, Human Physiology, and Human Energy (Part I), edited by Don Harris and Wen-Chin Li
7. LNAI 12187, Engineering Psychology and Cognitive Ergonomics: Cognition and Design (Part II), edited by Don Harris and Wen-Chin Li
8. LNCS 12188, Universal Access in Human-Computer Interaction: Design Approaches and Supporting Technologies (Part I), edited by Margherita Antona and Constantine Stephanidis
9. LNCS 12189, Universal Access in Human-Computer Interaction: Applications and Practice (Part II), edited by Margherita Antona and Constantine Stephanidis
10. LNCS 12190, Virtual, Augmented and Mixed Reality: Design and Interaction (Part I), edited by Jessie Y. C. Chen and Gino Fragomeni
11. LNCS 12191, Virtual, Augmented and Mixed Reality: Industrial and Everyday Life Applications (Part II), edited by Jessie Y. C. Chen and Gino Fragomeni
12. LNCS 12192, Cross-Cultural Design: User Experience of Products, Services, and Intelligent Environments (Part I), edited by P. L. Patrick Rau
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16. LNAI 12196, Augmented Cognition: Theoretical and Technological Approaches (Part I), edited by Dylan D. Schmorrow and Cali M. Fidopiastis
17. LNAI 12197, Augmented Cognition: Human Cognition and Behaviour (Part II), edited by Dylan D. Schmorrow and Cali M. Fidopiastis

18. LNCS 12198, Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management: Posture, Motion and Health (Part I), edited by Vincent G. Duffy
19. LNCS 12199, Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management: Human Communication, Organization and Work (Part II), edited by Vincent G. Duffy
20. LNCS 12200, Design, User Experience, and Usability: Interaction Design (Part I), edited by Aaron Marcus and Elizabeth Rosenzweig
21. LNCS 12201, Design, User Experience, and Usability: Design for Contemporary Interactive Environments (Part II), edited by Aaron Marcus and Elizabeth Rosenzweig
22. LNCS 12202, Design, User Experience, and Usability: Case Studies in Public and Personal Interactive Systems (Part III), edited by Aaron Marcus and Elizabeth Rosenzweig
23. LNCS 12203, Distributed, Ambient and Pervasive Interactions, edited by Norbert Streitz and Shin'ichi Konomi
24. LNCS 12204, HCI in Business, Government and Organizations, edited by Fiona Fui-Hoon Nah and Keng Siau
25. LNCS 12205, Learning and Collaboration Technologies: Designing, Developing and Deploying Learning Experiences (Part I), edited by Panayiotis Zaphiris and Andri Ioannou
26. LNCS 12206, Learning and Collaboration Technologies: Human and Technology Ecosystems (Part II), edited by Panayiotis Zaphiris and Andri Ioannou
27. LNCS 12207, Human Aspects of IT for the Aged Population: Technologies, Design and User Experience (Part I), edited by Qin Gao and Jia Zhou
28. LNCS 12208, Human Aspects of IT for the Aged Population: Healthy and Active Aging (Part II), edited by Qin Gao and Jia Zhou
29. LNCS 12209, Human Aspects of IT for the Aged Population: Technology and Society (Part III), edited by Qin Gao and Jia Zhou
30. LNCS 12210, HCI for Cybersecurity, Privacy and Trust, edited by Abbas Moallem
31. LNCS 12211, HCI in Games, edited by Xiaowen Fang
32. LNCS 12212, HCI in Mobility, Transport and Automotive Systems: Automated Driving and In-Vehicle Experience Design (Part I), edited by Heidi Krömker
33. LNCS 12213, HCI in Mobility, Transport and Automotive Systems: Driving Behavior, Urban and Smart Mobility (Part II), edited by Heidi Krömker
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36. LNCS 12216, Design, Operation and Evaluation of Mobile Communications, edited by Gavriel Salvendy and June Wei
37. LNCS 12217, Artificial Intelligence in HCI, edited by Helmut Degen and Lauren Reinerman-Jones

38. CCIS 1224, HCI International 2020 Posters - Part I, edited by Constantine Stephanidis and Margherita Antona
39. CCIS 1225, HCI International 2020 Posters - Part II, edited by Constantine Stephanidis and Margherita Antona
40. CCIS 1226, HCI International 2020 Posters - Part III, edited by Constantine Stephanidis and Margherita Antona

http://2020.hci.international/proceedings

8th International Conference on Distributed, Ambient and Pervasive Interactions (DAPI 2020)

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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-2020.php

HCI International 2021

The 23rd International Conference on Human-Computer Interaction, HCI International 2021 (HCII 2021), will be held jointly with the affiliated conferences in Washington DC, USA, at the Washington Hilton Hotel, July 24–29, 2021. It will cover a broad spectrum of themes related to Human-Computer Interaction (HCI), 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 will be available on the conference website: http://2021.hci.international/.

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http://2021.hci.international/

Contents

Design Approaches, Methods and Tools

Responsive Origami: A Modular Approach to Fabricate Dynamic Surfaces Reactive to Socio-environmental Conditions 3
Mostafa Alani, Michael C. Kleiss, and Arash Soleimani

A Testbed for Rapid Design and Evaluation of VR Navigation Techniques for Industrial Applications 13
Jendrik Bulk and Volker Paelke

Accessibility in Pervasive Systems: An Exploratory Study 25
Diego Addan Gonçalves, Maria Cecilia Calani Baranauskas, and Julio Cesar dos Reis

Rethinking User Interaction with Smart Environments—A Comparative Study of Four Interaction Modalities 39
Mohamed Handosa, Archi Dasgupta, Mark Manuel, and Denis Gračanin

Ambient Interaction Design in a Primitive Society. 58
Kei Hoshi and John A. Waterworth

Smells as an Interactive Material for Spatial Designing 69
Jyoti Kapur

Detecting IoT Applications Opportunities and Requirements Elicitation: A Design Thinking Based Approach 85
Douglas Lima Dantas, Lucia Vilela Leite Filgueiras, Anarosa Alves Franco Brandão, Maria Cristina Machado Domingues, and Maria Rosilene Ferreira

Aspects of Ambient UX Design Within Design-to-Robotic-Production and -Operation Processes 101
Milica Pavlovic, Henriette Bier, and Margherita Pillan

Textile Designer Perspective on Haptic Interface Design: A Sensorial Platform for Conversation Between Discipline. 110
Riikka Townsend, Anne Louise Bang, and Jussi Mikkonen

Designing for Implicit and Positive Interactions - Artificial Intelligence and the Internet of Things in Support of Car Drivers 128
Mikael Wiberg

Mood Board Tool - An Innovation Method in Vehicle HMI Design 138
Qingshu Zeng and Mingyue Hu

Developing Intelligent Interactions

Teaching by Demonstrating – How Smart Assistive Systems Can Learn from Users 153
Sebastian Büttner, Andreas Peda, Mario Heinz, and Carsten Röcker

Towards an Ambient Intelligent Environment for Multimodal Human Computer Interactions 164
Jeffrey Bennett, Phuong Nguyen, Crisrael Lucero, and Douglas Lange

Making Object Detection Available to Everyone—A Hardware Prototype for Semi-automatic Synthetic Data Generation 178
Andreas Besginow, Sebastian Büttner, and Carsten Röcker

On the Integration of Multiple Modeling Methodologies into a Single User Interface. 193
Lawrence Henschen and Julia Lee

VLC-Enabled Human-Aware Building Management System. 207
Yehuda E. Kalay, Haripriya Sathyanarayanan, Davide Schaumann, Albert Wang, Gang Chen, and Ramdas G. Pai

IOS Crowd–Sensing Won't Hurt a Bit!: AWARE Framework and Sustainable Study Guideline for iOS Platform. 223
Yuuki Nishiyama, Denzil Ferreira, Yusaku Eigen, Wataru Sasaki, Tadashi Okoshi, Jin Nakazawa, Anind K. Dey, and Kaoru Sezaki

Driving Innovation with the Application of Industrial AI in the R&D Domain 244
Fei Xing, Guochao (Alex) Peng, Bingqian Zhang, Simin Zuo, Jiangfeng Tang, and Shuyang Li

User Experience in Intelligent Environments

Exploring Users' Eye Movements When Using Projection-Based Assembly Assistive Systems 259
Mario Heinz, Sebastian Büttner, and Carsten Röcker

Artificial Intelligence and Concerns About the Future: A Case Study in Norway 273
Kyriaki Kalimeri and Ingvar Tjostheim

Extended User Interface: NFC-Enabled Product Packaging for Enhanced User Experience 285
Justina Lydekaityte

Ambient UX Research: User Experience Investigation Through Multimodal Quadrangulation 305
Marco Mandolfo, Milica Pavlovic, Margherita Pillan, and Lucio Lamberti

Dynamic Consent: Physical Switches and Feedback to Adjust Consent to IoT Data Collection. 322
Henrich C. Pöhls and Noëlle Rakotondravony

Towards a UX Assessment Method for AI-Enabled Domestic Devices. 336
Davide Spallazzo, Martina Sciannamé, and Mauro Ceconello

Inverting the Panopticon to Safeguard Privacy in Ambient Environments: An Exploratory Study 348
Ingvar Tjostheim and John A. Waterworth

Designing Unconscious and Enactive Interaction for Interactive Movie Experience 362
Laura Varisco and Giulio Interlandi

Smart Cities and Landscapes

Development of One-Stop Smart City Application by Interdisciplinary Data Linkage 379
Kenro Aihara and Atsuhiro Takasu

Evaluation of the Tourists' Satisfaction of Smart Tourist Attractions Using Importance-Performance Analysis: — Taking Jiuzhaigou as an Example 391
Chufan Jin, Dian Zhu, Xi Chen, and Jingran He

Digitally Enhancing Society Through Structuralism: Virtualizing Collective Human Eyesight and Hearing Capabilities as a Case Study 400
Risa Kimura and Tatsuo Nakajima

Investigating Users Attitudes and Perceptions Towards the Usage of Smart City Apps 415
Sirong Lin, Xinting Liang, Bingqian Zhang, Fei Xing, and Guochao (Alex) Peng

Adaptability and Attuning in Smart Cities: Exploring the HCI Grand Challenge of Learning and Creativity 431
H. Patricia McKenna

Participatory Governance in Smart Cities: Future Scenarios and Opportunities 443
Nicole Shadowen, Thomas Lodato, and Daria Loi

Civic Crowdsensing Through Location-Aware Virtual Monsters 464
Takuro Yonezawa, Mina Sakamura, Nobuo Kawaguchi, and Jin Nakazawa

Factors Influencing the Acceptance and Usage of Smart City Services: A Systematic Review and Meta-analysis 477
Bingqian Zhang, Guochao (Alex) Peng, Xinting Liang, Qi Gao, and Fei Xing

Well-Being, Learning and Culture in Intelligent Environments

Computer Vision on Wheelchairs: Detecting Sleeping Behavior of People with Intellectual Disabilities 493
Lang Bai and Jun Hu

Motivating Physical Exercise in the Elderly with Mixed Reality Experiences 505
Mark Chignell, Henrique Matulis, and Brian Nejati

Tele Echo Tube for Historic House Tojo-Tei in Matsudo International Science Art Festival 2018 520
Hill Hiroki Kobayashi and Daisuké Shimotoku

Smart Learning in the Community: Supporting Citizen Digital Skills and Literacies 533
Pen Lister

Learning Analytics Data Flow and Visualizing for Ubiquitous Learning Logs in LMS and Learning Analytics Dashboard 548
Songran Liu, Kousuke Mouri, and Hiroaki Ogata

Applying Deep Learning in Creative Re-creation of Changsha Kiln Cultural Relics. 558
Wen Lu

Visualizing Studying Activities for a Learning Dashboard Supporting Meta-cognition for Students 569
Min Lu, Li Chen, Yoshiko Goda, Atsushi Shimada, and Masanori Yamada

Visualization and Analysis for Supporting Teachers Using Clickstream Data and Eye Movement Data 581
Tsubasa Minematsu, Atsushi Shimada, and Rin-ichiro Taniguchi

Returning to Nature: VR Mediated States of Enhanced Wellness. 593
Henry J. Moller, John A. Waterworth, and Mark Chignell

Going Beyond Computer-Assisted Vocabulary Learning: Research Synthesis and Frameworks 610
Mohammad Nehal Hasnine, Masatoshi Ishikawa, Kousuke Mouri, and Keiichi Kaneko

Circuit Game: A Craft-Based Electronic Building Practice 624
Farzaneh Oghazian and Felecia Davis

Designing an Interactive Platform for Intangible Cultural Heritage Knowledge of Taoyuan Woodcarving Craft 636
Mingxiang Shi and Qingshu Zeng

Learning Support for Career Related Terms with SCROLL and InCircle 648
Noriko Uosaki, Kousuke Mouri, Takahiro Yonekawa, Chengjiu Yin, Akihiko Ieshima, and Hiroaki Ogata

Non-invasive Sleep Assistance System Design Based on IoT 663
Dong Wang, Shiyao Qin, and Zhenyu Gu

PuzMap: Designing a Multi-sensory Puzzle Map for Children to Learn Geography. 677
Junwu Wang, Lijuan Liu, Muling Huang, Weilin Jiang, Cheng Yao, and Fangtian Ying

Internet of Toys for Measuring Development of Ball Handling Skills in Support of Childcare Workers. 689
Keiko Yamamoto, Koshiro Matsumoto, Tomonori Usui, Ichi Kanaya, and Yoshihiro Tsujino

Author Index 699