

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board Members

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, Chennai, 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

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

Jia Zhou · Gavriel Salvendy (Eds.)

Human Aspects of IT for the Aged Population

Design for the Elderly and Technology Acceptance

5th International Conference, ITAP 2019

Held as Part of the 21st HCI International Conference, HCII 2019

Orlando, FL, USA, July 26–31, 2019

Proceedings, Part I



Springer

Editors
Jia Zhou
Chongqing University
Chongqing, China

Gavriel Salvendy
University of Central Florida
Orlando, USA

ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Computer Science
ISBN 978-3-030-22011-2 ISBN 978-3-030-22012-9 (eBook)
<https://doi.org/10.1007/978-3-030-22012-9>

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

© Springer Nature Switzerland AG 2019

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, expressed 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.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Foreword

The 21st International Conference on Human-Computer Interaction, HCI International 2019, was held in Orlando, FL, USA, during July 26–31, 2019. The event incorporated the 18 thematic areas and affiliated conferences listed on the following page.

A total of 5,029 individuals from academia, research institutes, industry, and governmental agencies from 73 countries submitted contributions, and 1,274 papers and 209 posters were included in the pre-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 pre-conference proceedings are listed in the following pages.

This year the HCI International (HCII) conference introduced the new option of “late-breaking work.” This 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 2019 Late-Breaking Work Papers Proceedings* 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 2019 Late-Breaking Work Poster Extended Abstracts* 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 2019 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 2019

Constantine Stephanidis

HCI International 2019 Thematic Areas and Affiliated Conferences

Thematic areas:

- HCI 2019: Human-Computer Interaction
- HIMI 2019: Human Interface and the Management of Information

Affiliated conferences:

- EPCE 2019: 16th International Conference on Engineering Psychology and Cognitive Ergonomics
- UAHCI 2019: 13th International Conference on Universal Access in Human-Computer Interaction
- VAMR 2019: 11th International Conference on Virtual, Augmented and Mixed Reality
- CCD 2019: 11th International Conference on Cross-Cultural Design
- SCSM 2019: 11th International Conference on Social Computing and Social Media
- AC 2019: 13th International Conference on Augmented Cognition
- DHM 2019: 10th International Conference on Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management
- DUXU 2019: 8th International Conference on Design, User Experience, and Usability
- DAPI 2019: 7th International Conference on Distributed, Ambient and Pervasive Interactions
- HCIBGO 2019: 6th International Conference on HCI in Business, Government and Organizations
- LCT 2019: 6th International Conference on Learning and Collaboration Technologies
- ITAP 2019: 5th International Conference on Human Aspects of IT for the Aged Population
- HCI-CPT 2019: First International Conference on HCI for Cybersecurity, Privacy and Trust
- HCI-Games 2019: First International Conference on HCI in Games
- MobiTAS 2019: First International Conference on HCI in Mobility, Transport, and Automotive Systems
- AIS 2019: First International Conference on Adaptive Instructional Systems

Pre-conference Proceedings Volumes Full List

1. LNCS 11566, Human-Computer Interaction: Perspectives on Design (Part I), edited by Masaaki Kurosu
2. LNCS 11567, Human-Computer Interaction: Recognition and Interaction Technologies (Part II), edited by Masaaki Kurosu
3. LNCS 11568, Human-Computer Interaction: Design Practice in Contemporary Societies (Part III), edited by Masaaki Kurosu
4. LNCS 11569, Human Interface and the Management of Information: Visual Information and Knowledge Management (Part I), edited by Sakae Yamamoto and Hirohiko Mori
5. LNCS 11570, Human Interface and the Management of Information: Information in Intelligent Systems (Part II), edited by Sakae Yamamoto and Hirohiko Mori
6. LNAI 11571, Engineering Psychology and Cognitive Ergonomics, edited by Don Harris
7. LNCS 11572, Universal Access in Human-Computer Interaction: Theory, Methods and Tools (Part I), edited by Margherita Antona and Constantine Stephanidis
8. LNCS 11573, Universal Access in Human-Computer Interaction: Multimodality and Assistive Environments (Part II), edited by Margherita Antona and Constantine Stephanidis
9. LNCS 11574, Virtual, Augmented and Mixed Reality: Multimodal Interaction (Part I), edited by Jessie Y. C. Chen and Gino Fragomeni
10. LNCS 11575, Virtual, Augmented and Mixed Reality: Applications and Case Studies (Part II), edited by Jessie Y. C. Chen and Gino Fragomeni
11. LNCS 11576, Cross-Cultural Design: Methods, Tools and User Experience (Part I), edited by P. L. Patrick Rau
12. LNCS 11577, Cross-Cultural Design: Culture and Society (Part II), edited by P. L. Patrick Rau
13. LNCS 11578, Social Computing and Social Media: Design, Human Behavior and Analytics (Part I), edited by Gabriele Meiselwitz
14. LNCS 11579, Social Computing and Social Media: Communication and Social Communities (Part II), edited by Gabriele Meiselwitz
15. LNAI 11580, Augmented Cognition, edited by Dylan D. Schmorrow and Cali M. Fidopiastis
16. LNCS 11581, Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management: Human Body and Motion (Part I), edited by Vincent G. Duffy

17. LNCS 11582, Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management: Healthcare Applications (Part II), edited by Vincent G. Duffy
18. LNCS 11583, Design, User Experience, and Usability: Design Philosophy and Theory (Part I), edited by Aaron Marcus and Wentao Wang
19. LNCS 11584, Design, User Experience, and Usability: User Experience in Advanced Technological Environments (Part II), edited by Aaron Marcus and Wentao Wang
20. LNCS 11585, Design, User Experience, and Usability: Application Domains (Part III), edited by Aaron Marcus and Wentao Wang
21. LNCS 11586, Design, User Experience, and Usability: Practice and Case Studies (Part IV), edited by Aaron Marcus and Wentao Wang
22. LNCS 11587, Distributed, Ambient and Pervasive Interactions, edited by Norbert Streitz and Shin'ichi Konomi
23. LNCS 11588, HCI in Business, Government and Organizations: eCommerce and Consumer Behavior (Part I), edited by Fiona Fui-Hoon Nah and Keng Siau
24. LNCS 11589, HCI in Business, Government and Organizations: Information Systems and Analytics (Part II), edited by Fiona Fui-Hoon Nah and Keng Siau
25. LNCS 11590, Learning and Collaboration Technologies: Designing Learning Experiences (Part I), edited by Panayiotis Zaphiris and Andri Ioannou
26. LNCS 11591, Learning and Collaboration Technologies: Ubiquitous and Virtual Environments for Learning and Collaboration (Part II), edited by Panayiotis Zaphiris and Andri Ioannou
27. LNCS 11592, Human Aspects of IT for the Aged Population: Design for the Elderly and Technology Acceptance (Part I), edited by Jia Zhou and Gavriel Salvendy
28. LNCS 11593, Human Aspects of IT for the Aged Population: Social Media, Games and Assistive Environments (Part II), edited by Jia Zhou and Gavriel Salvendy
29. LNCS 11594, HCI for Cybersecurity, Privacy and Trust, edited by Abbas Moallem
30. LNCS 11595, HCI in Games, edited by Xiaowen Fang
31. LNCS 11596, HCI in Mobility, Transport, and Automotive Systems, edited by Heidi Krömker
32. LNCS 11597, Adaptive Instructional Systems, edited by Robert Sottilare and Jessica Schwarz
33. CCIS 1032, HCI International 2019 - Posters (Part I), edited by Constantine Stephanidis

34. CCIS 1033, HCI International 2019 - Posters (Part II), edited by Constantine Stephanidis
35. CCIS 1034, HCI International 2019 - Posters (Part III), edited by Constantine Stephanidis

<http://2019.hci.international/proceedings>



5th International Conference on Human Aspects of IT for the Aged Population (ITAP 2019)

**Program Board Chair(s): Jia Zhou, *P.R. China*
and Gavriel Salvendy, *USA***

- Julie A. Brown, USA
- Bessam Abdulrazak, Canada
- Ning An, P.R. China
- Marc-Eric Bobillier Chaumon, France
- Jessie Chin, USA
- Francesca Comunello, Italy
- Hua Dong, UK
- Hirokazu Kato, Japan
- Shehroz Khan, Canada
- Masatomo Kobayashi, Japan
- Chaiwoo Lee, USA
- Jiunn-Woei Lian, Taiwan
- Eugene Loos, The Netherlands
- Yan Luximon, Hong Kong, SAR China
- Andraž Petrovčič, Slovenia
- Marie Sjölander, Sweden
- Hwee-Pink Tan, Singapore
- António Teixeira, Portugal
- Wang-Chin Tsai, Taiwan
- Ana Isabel Veloso, Portugal
- Terhi-Anna Wilska, Finland
- Fan Zhang, Canada
- Yuxiang Zhao, P.R. China
- Martina Ziefle, Germany

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-2019.php>



HCI International 2020

The 22nd International Conference on Human-Computer Interaction, HCI International 2020, will be held jointly with the affiliated conferences in Copenhagen, Denmark, at the Bella Center Copenhagen, July 19–24, 2020. It will cover a broad spectrum of themes related to 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://2020.hci.international/>.

General Chair

Prof. Constantine Stephanidis

University of Crete and ICS-FORTH

Heraklion, Crete, Greece

E-mail: general_chair@hcii2020.org

<http://2020.hci.international/>



Contents – Part I

Design with and for the Elderly

Employing Interdisciplinary Approaches in Designing with Fragile Older Adults; Advancing ABLE for Arts-Based Rehabilitative Play and Complex Learning.	3
<i>Paula Gardner, Caitlin McArthur, Adekunle Akinyemi, Stephen Surlin, Rong Zheng, Alexandra Papaioannou, Yujiao Hao, and Jason Xu</i>	
Study on the Persuasive Design Method of Health Education for the Elderly Adults	22
<i>Yongyan Guo and Wei Ding</i>	
Ontology Construction for Eldercare Services with an Agglomerative Hierarchical Clustering Method.	34
<i>Peng Han, Yulong Li, Yue Yin, and Ning An</i>	
Mobile Experience Sampling Method: Capturing the Daily Life of Elders . . .	46
<i>Rong Hu, Xiaozhao Deng, Xiaoning Sun, Yuxiang (Chris) Zhao, and Qinghua Zhu</i>	
Setting Up and Conducting the Co-design of an Intergenerational Digital Game: A State-of-the-Art Literature Review	56
<i>Eugène Loos, Teresa de la Hera, Monique Simons, and Dorus Gevers</i>	
The <i>Digital Drawer</i> : A Crowd-Sourced, Curated, Digital Archive Preserving History and Memory	70
<i>Scott L. Robertson, Laura Levy, Amelia Lambeth, and Jesse P. Karlsberg</i>	
Development of an Age-Appropriate Style Guide Within the Historytelling Project	84
<i>Torben Volkmann, Amelie Unger, Michael Sengpiel, and Nicole Jochems</i>	
The Effect of Product Aesthetics on Older Consumers.	98
<i>Tyan-Yu Wu</i>	

Aging and Technology Acceptance

Capturing the Adoption Intention and Interest in InOvUS an Intelligent Oven: Segmenting Senior Users to Evaluate the Technology	109
<i>Bessam Abdulrazak, Susan E. Reid, and Monica Alas</i>	

Older Users' Benefit and Barrier Perception of Using Ultrasonic Whistles in Home Care	121
<i>Hannah Biermann, Julia Offermann-van Heek, and Martina Ziefle</i>	
An App for Who? An Exploration of the Use and Adoption of Mobile Ordering Applications Among Aging Populations	140
<i>Christopher Chagnon, Ryan LaMarche, and Soussan Djamasbi</i>	
Work in Progress: Barriers and Concerns of Elderly Workers Towards the Digital Transformation of Work.	158
<i>Julian Hildebrandt, Johanna Kluge, and Martina Ziefle</i>	
Senior's Acceptance of Head-Mounted Display Using Consumer Based Virtual Reality Contents.	170
<i>Kenichiro Ito, Ryogo Ogino, Atsushi Hiyama, and Michitaka Hirose</i>	
Older Adults' Perceptions About Commercially Available Xbox Kinect Exergames	181
<i>Julija Jeremic, Fan Zhang, and David Kaufman</i>	
A Study of the Needs and Attitudes of Elderly People and Their Caregivers with Regards to Assistive Technologies	200
<i>Rong Jiang, Zhinan Zhang, and Xiaoxuan Xi</i>	
Improved Knowledge Changes the Mindset: Older Adults' Perceptions of Care Robots	212
<i>Rose-Marie Johansson-Pajala, Kirsten Thommes, Julia A. Hoppe, Outi Tuisku, Lea Hennala, Satu Pekkarinen, Helinä Melkas, and Christine Gustafsson</i>	
Investigating Users' Intention to Use Personal Health Management Services: An Empirical Study in Taiwan	228
<i>Wen-Tsung Ku and Pi-Jung Hsieh</i>	
Understanding Long-Term Adoption and Usability of Wearable Activity Trackers Among Active Older Adults	238
<i>Byung Cheol Lee, Toyin D. Ajisafe, Tri Van Thanh Vo, and Junfei Xie</i>	
Influence of Age on Trade-Offs Between Benefits and Barriers of AAL Technology Usage	250
<i>Julia Offermann-van Heek, Susanne Gohr, Simon Himmel, and Martina Ziefle</i>	
Mapping the Future of Hearables: Lessons from Online and the "Oldest Old" Consumers.	267
<i>Taylor R. Patskanick, Julie Miller, Lisa A. D'Ambrosio, Chaiwoo Lee, and Joseph F. Coughlin</i>	

Study on Usefulness of Smartphone Applications for the People with Parkinson's	281
<i>Mujahid Rafiq, Ibrar Hussain, C. M. Nadeem Faisal, and Hamid Turab Mirza</i>	
Reappraising the Intellectual Debate on Ageing in a Digital Environment. . . .	300
<i>Lilia Raycheva and Nelly Velinova</i>	
Privacy Concerns and the Acceptance of Technologies for Aging in Place . . .	313
<i>Eva-Maria Schomakers and Martina Ziefle</i>	
Factors Influencing Proxy Internet Health Information Seeking Among the Elderly in Rural China: A Grounded Theory Study	332
<i>Xiaokang Song, Shijie Song, Si Chen, Yuxiang (Chris) Zhao, and Qinghua Zhu</i>	
Usage of a Technical Communication and Documentation System by Older Adults and Professionals in Multidisciplinary Home Rehabilitation	344
<i>A. Steinert, J. Kiselev, R. Klebbe, M. Schröder, A. Russ, K. Schumacher, N. Reithinger, and U. Müller-Werdan</i>	
Aging and the User Experience	
Are Mobile Apps Usable and Accessible for Senior Citizens in Smart Cities?	357
<i>Elenia Carrasco Almaso and Fatemeh Golpayegani</i>	
Older Adults in ICT Contexts: Recommendations for Developing Tutorials	376
<i>Sónia Ferreira and Ana Isabel Veloso</i>	
Motivational Affordances for Older Adults' Physical Activity Technology: An Expert Evaluation	388
<i>Dennis L. Kappen, Pejman Mirza-Babaei, and Lennart E. Nacke</i>	
Durkheim's Legacy in the Digital Age: The "Elementary Forms" of Digital Communication of Portuguese Senior Users of Social Network Sites.	407
<i>Tiago Lapa</i>	
Usability Study of Electronic Sphygmomanometers Based on Perceived Ease of Use and Affordance.	421
<i>Chao Li, Mei-yu Zhou, Xiang-yu Liu, and Tian-xiong Wang</i>	
From "Cane" to "Sugar": Empowering Taisugar History of Digital Design with "Interactive Visual Storytelling".	431
<i>Yang-Chin Lin, Jui-Yang Kao, and Wang-Chin Tsai</i>	

A Study of Performance on Multi-touch Gesture for Multi-haptic Feedback	441
<i>Shuo-Fang Liu, Yu-Shan Chueh, Ching-Fen Chang, Po-Yen Lin, and Hsiang-Sheng Cheng</i>	
Sustainable Development and ICT Use Among Elderly: A Comparison Between the Netherlands and Italy	450
<i>Paola Monachesi</i>	
Optimal Designs of Text Input Fields in Mobile Web Surveys for Older Adults	463
<i>Elizabeth Nichols, Erica Olmsted-Hawala, and Lin Wang</i>	
Atmosphere Sharing with TV Chat Agents for Increase of User's Motivation for Conversation	482
<i>Shogo Nishimura, Masayuki Kanbara, and Norihiro Hagita</i>	
Interfaces of Medication Reminder Applications: An Analysis Aimed at the Elder Age	493
<i>Jaqueline Donin Noieto, Vítor José Costa Rodrigues, Rhenan Castelo Branco Cirilo Carvalho, and Francisco Ribeiro dos Santos Júnior</i>	
Design and Deploying Tools to 'Actively Engaging Nature': The My Naturewatch Project as an Agent for Engagement	513
<i>Robert Phillips, Amina Abbas-Nazari, James Tooze, Bill Gaver, Andy Boucher, Liliana Ovalle, Andy Sheen, Dean Brown, Naho Matsuda, and Mike Vanis</i>	
Digital Memorialization in Death-Ridden Societies: How HCI Could Contribute to Death Rituals in Taiwan and Japan	532
<i>Daisuke Uriu, Ju-Chun Ko, Bing-Yu Chen, Atsushi Hiyama, and Masahiko Inami</i>	
Requirements for Gesture-Controlled Remote Operation to Facilitate Human-Technology Interaction in the Living Environment of Elderly People	551
<i>Susan Vorwerk, Cornelia Eicher, Heinrich Ruser, Felix Piela, Felix Obée, André Kaltenbach, and Lars Mechold</i>	
Author Index	571

Contents – Part II

Elderly-Specific Web Design, Aging and Social Media

Methods and Strategies for Involving Older Adults in Branding an Online Community: The miOne Case Study	3
<i>Pedro Amado, Liliana Vale Costa, and Ana Isabel Veloso</i>	
(In)visibilities of Men and Aging in the Media: Discourses from Germany and Portugal	20
<i>Inês Amaral, Sofia José Santos, Fernanda Daniel, and Filipa Filipe</i>	
Older People Are the Future of Consumption: Great Expectations and Small Starts for Brands and New Media: The French Example	33
<i>Karine Berthelot-Guiet</i>	
Methodological Strategies to Understand Smartphone Practices for Social Connectedness in Later Life.	46
<i>Mireia Fernández-Ardèvol, Andrea Rosales, Eugène Loos, Alexander Peine, Roser Beneito-Montagut, Daniel Blanche, Björn Fischer, Stephen Katz, and Britt Östlund</i>	
Exploring the Blocking Behavior Between Young Adults and Parents on WeChat Moments.	65
<i>Wenting Han, Yuxiang (Chris) Zhao, and Qinghua Zhu</i>	
Research on Interaction of Shopping Websites for Elderly People Based on User Experience	77
<i>Mingyi Wang and Delai Men</i>	
What Do Your Eyes Say about Your Conformity? An Observation on the Number of Sales during Online Shopping.	87
<i>Weibin Wang, Jia Zhou, and Guangji Liao</i>	
Health Information Literacy of the Older Adults and Their Intention to Share Health Rumors: An Analysis from the Perspective of Socioemotional Selectivity Theory.	97
<i>Mengqing Yang</i>	
A Qualitative Investigation on Miscommunication of Everyday Health Information Between Older Parents and Adult Children	109
<i>Xinlin Yao, Xiaolun Wang, Jie Gu, and Yuxiang (Chris) Zhao</i>	

Games and Exergames for the Elderly

Older Adults' Perceptions of Video Game Training in the <i>Intervention Comparative Effectiveness for Adult Cognitive Training (ICE-ACT)</i> Clinical Trial: An Exploratory Analysis	125
<i>Ronald Andringa, Erin R. Harell, Michael Dieciuc, and Walter R. Boot</i>	
The Innovative Reminder in Senior-Focused Technology (THIRST)—Evaluation of Serious Games and Gadgets for Alzheimer Patients	135
<i>Christian Eichhorn, David A. Plecher, Martin Lurz, Nadja Leipold, Markus Böhm, Helmut Krcmar, Angela Ott, Dorothee Volkert, Atsushi Hiyama, and Gudrun Klinker</i>	
Study on Baby Toy Design—From the Perspective of Audio-Visual Human Factors	155
<i>Kuo-Liang Huang, Wei Lin, Chia-Chen Lu, and Yong-Sheng Pi</i>	
Digital Gaming by Older Adults: Can It Enhance Social Connectedness?	167
<i>David Kaufman and Louise Sauve</i>	
The Gamer Types of Seniors and Gamification Strategies Toward Physical Activity	177
<i>Chia-Ming Kuo and Hsi-Jen Chen</i>	
Playing with Words: The Experience of Self-disclosure in Intergenerational Gaming	189
<i>Sanela Osmanovic and Loretta L. Pecchioni</i>	
Design Elements of Pervasive Games for Elderly Players: A Social Interaction Study Case	204
<i>Luciano H. O. Santos, Kazuya Okamoto, Shusuke Hiragi, Goshiro Yamamoto, Osamu Sugiyama, Tomoki Aoyama, and Tomohiro Kuroda</i>	
Are We Ready to Dance at Home?: A Review and Reflection of Available Technologies	216
<i>Paula Alexandra Silva</i>	
Exergames in Augmented Reality for Older Adults with Hypertension: A Qualitative Study Exploring User Requirements	232
<i>Oskar Stamm, Susan Vorwerk, and Ursula Müller-Werdan</i>	
Age Stereotyping in the Game Context: Introducing the Game-Ageism and Age-Gameism Phenomena	245
<i>Liliana Vale Costa, Ana Isabel Veloso, and Eugène Loos</i>	

Attraction and Addiction Factors of Online Games on Older Adults: A Qualitative Study.	256
<i>Xiaolun Wang, Xinlin Yao, and Jie Gu</i>	
Impact of Intergenerational Play on Young People's Perceptions Towards Old Adults	267
<i>Fan Zhang</i>	
The Effect of Familiarity on Older Adults' Engagement in Exergames.	277
<i>Hao Zhang, Chunyan Miao, Qiong Wu, Xuehong Tao, and Zhiqi Shen</i>	
Ambient Assisted Living	
Combining Mixed Reality and Internet of Things: An Interaction Design Research on Developing Assistive Technologies for Elderly People.	291
<i>Ryan Anthony J. de Belen, Dennis Del Favero, and Tomasz Bednarz</i>	
Smarter Homes for Older Adults: Building a Framework Around Types and Levels of Autonomy	305
<i>Maryam FakhrHosseini, Chaiwoo Lee, and Joseph F. Coughlin</i>	
Visualizing Organizational Culture in Old People's Homes and Hospitals in Japan: Human Interaction in the IoT Era	314
<i>Koji Hara, Takayo Nakabe, Toshiya Naka, Masayuki Tanaka, and Yuichi Imanaka</i>	
A Fingerprinting Trilateration Method FTM for Indoor Positioning and Its Performance.	326
<i>Makio Ishihara and Ryo Kawashima</i>	
Gifts and Parasites: Paro the Healthcare Robot and the Logics of Care	336
<i>Joni Jaakola and Jukka Vuorinen</i>	
Design and Implementation of Age-Friendly Activity for Supporting Elderly's Daily Life by IoT	353
<i>Soo In Kang, Reina Yoshizaki, Koki Nakano, Taiyu Okatani, Akihiko Kamesawa, Daisuke Yoshioka, Jiang Wu, Yuriki Sakurai, Kenichiro Ito, Mahiro Fujisaki-Sueda-Sakai, Ikuko Sugawara, Misato Nihei, Takahiro Miura, Ken-ichiro Yabu, Taketoshi Mori, Tohru Ifukube, and Junichiro Okata</i>	
A Cooking Support System for Seasoning with Smart Cruet.	369
<i>Yuta Kido, Teruhiro Mizumoto, Hirohiko Suwa, Yutaka Arakawa, and Keiichi Yasumoto</i>	
Assistive Technology for Active and Independent Aging	383
<i>Blanka Klimova</i>	

Digital Home: Life Transitions and Digital Domestic Practices in Later Life.	393
<i>Sanna Kuoppamäki</i>	
The Oldest Olds' Perceptions of Social Robots.	405
<i>Chaiwoo Lee, Maryam FakhrHosseini, Julie Miller, Taylor R. Patskanick, and Joseph F. Coughlin</i>	
Objective Approaches on Urban Soundscape Perception in Night Market Pedestrian Street	416
<i>Wei Lin, Yi-Ming Wu, Hsuan Lin, and Kuo-Liang Huang</i>	
The Penguin – On the Boundary Between Pet and Machine. An Ecological Perspective on the Design of Assistive Robots for Elderly Care	425
<i>Emanuela Marchetti, William Kristian Juel, Rosalyn Melissa Langedijk, Leon Bodenhausen, and Norbert Krüger</i>	
Interactive Drinking Gadget for the Elderly and Alzheimer Patients.	444
<i>David A. Plecher, Christian Eichhorn, Martin Lurz, Nadja Leipold, Markus Böhm, Helmut Krcmar, Angela Ott, Dorothee Volkert, and Gudrun Klinker</i>	
Development and Comparison of Customized Voice-Assistant Systems for Independent Living Older Adults.	464
<i>Shradha Shalini, Trevor Levins, Erin L. Robinson, Kari Lane, Geunhye Park, and Marjorie Skubic</i>	
Interaction Design in the Active and Assistive Living Field of Practice	480
<i>Miroslav Sili, Johannes Kropf, and Sten Hanke</i>	
Aging, Motion, Cognition, Emotion and Learning	
Trends in the Decline in Gait and Motor Ability of Older Adults: A Case Study Based on SHARE Data	495
<i>Ruoyu Chen and Jia Zhou</i>	
The Use of Interactive Tables in Promoting Wellbeing in Specific User Groups.	506
<i>Alice Good, Omobolanle Omisade, Claire Ancient, and Elisavet Andrikopoulou</i>	
The Golden Age of Silver Workers? The Role of Age in the Perception of Increasing Digital Work Environments.	520
<i>Johanna Kluge, Julian Hildebrandt, and Martina Ziefle</i>	
Effect of Gamification of Exercise Therapy on Elderly's Anxiety Emotion.	533
<i>Xiaozhou Li, Ruoyu Li, and Ting Han</i>	

Analyzing Cognitive Flexibility in Older Adults Through Playing with Robotic Cubes.	545
<i>Margarida Romero</i>	
Is the Eye Movement Pattern the Same? The Difference Between Automated Driving and Manual Driving	554
<i>Qiuyang Tang and Gang Guo</i>	
Augmented Walking Suit for Elderly Farmers in Agricultural Environment	564
<i>Chetan Thakur and Yuichi Kurita</i>	
Integration of Augmented Reality with Pressing Evaluation and Training System for Finger Force Training.	575
<i>Jayzon Ty, Naoki Inoue, Alexander Plopski, Sayaka Okahashi, Christian Sandor, Hsiu-Yun Hsu, Li-Chieh Kuo, Fong-Chin Su, and Hirokazu Kato</i>	
Strategies to Enhance Technology-Based Learning Experiences in Older Adults: A Field Study.	588
<i>Ana Isabel Veloso, Liliana Vale Costa, Célia Soares, and Sónia Ferreira</i>	
Predicting Daily Physical Activity Level for Older Adults Using Wearable Activity Trackers	602
<i>Yaqian Zheng, Junfei Xie, Tri Van Thanh Vo, Byung Cheol Lee, and Toyin Ajisafe</i>	
Author Index	615