## Contents – Part I

### Designing for and with the Elderly

**Technologically Mature but with Limited Capabilities**  
_Yvonne Eriksson_  
3

**Designing Poker Time: Older People as Fixpartners in a Co-design Process**  
_Linna Hu and Hua Dong_  
13

**A Preliminary Exploration of Technology Necessities Among Elderly Living Alone**  
_Lin-Ya Huang and Chang-Franw Lee_  
23

**Understanding the Critical Needs of Older People: An Aging Perspective**  
_Ying Jiang, Timothy Joseph Jachna, and Hua Dong_  
32

**Designing Tablet Computers for the Elderly A User-Centered Design Approach**  
_Nicole Jochems_  
42

**Lowering the Threshold: Reconnecting Elderly Users with Assistive Technology Through Tangible Interfaces**  
_Suhas Govind Joshi and Heidi Bråthen_  
52

**Development of the Accessibility Evaluation Platform Beyond Digital Divide.**  
_Junji Ohyama_  
64

**Scaffolding Digital Game Design Activities Grouping Older Adults, Younger Adults and Teens**  
_Margarida Romero and Hubert Ouellet_  
74

**RERC TechSAge: Making a Difference to the Lives of Older Adults with Disability Through Design and Technology.**  
_Jon A. Sanford and Elena T. Gonzalez_  
82

**To Meet the Needs of Aging Users and the Prerequisites of Innovators in the Design Process: Lessons Learned from Three Pilot Projects.**  
_Marie Sjölinder, Isabella Scandurra, Anneli Avatare Nöü, and Ella Kolkowska_  
92

**HCI Challenges for Consumer-Based Aging in Place Technologies**  
_Marjorie Skubic, Anup Mishra, Bradford Harris, Carmen Abbott, Andrew Craver, Katy Musterman, and Marilyn Rantz_  
105
Towards Characteristics of Accessibility and Usability Issues for Older People - A Brazilian Case Study .......................... 117
*Sandra Souza Rodrigues, Renata Pontin de Mattos Fortes, and André Pimenta Freire*

Board Games and Regulars’ Tables — Extending User Centred Design in the Mobia Project ............................................. 129
*Johannes Tröger, Jan Alexandersson, Jochen Britz, Maurice Rekrut, Daniel Bieber, and Kathleen Schwarz*

User Involvement in Design: The Four Models .......................... 141
*Bin Zhang and Hua Dong*

**Technology Use and Acceptance by Older Users**

Risk and Benefit Perceptions: Resistance, Adoption and Uses of ICT Among the Italian Elderly .................................................. 155
*Simone Carlo and Matteo Vergani*

A Tale of Two Divides: Technology Experiences Among Racially and Socioeconomically Diverse Older Adults ........................ 167
*Shelia R. Cotten, Jessica Francis, Travis Kadylak, R.V. Rikard, Tim Huang, Christopher Ball, and Julia DeCook*

The Role of Technology in Supporting Family Caregivers ............. 178
*Sara J. Czaja, Dolores Perdomo, and Chin Chin Lee*

Acceptance of Cloud-Based Healthcare Services by Elderly Taiwanese People ............................................................ 186
*Wen-Tsung Ku and Pi-Jung Hsieh*

Over 60 and ICT: Exploring Factors that Affect Older Adults’ ICTs Usage ................................................................. 196
*Qi Ma, Alan Hoi Shou Chan, Pei-Lee Teh, and Shun-Nam Poon*

The Role of Technology Self-efficiency on Technology Product Acceptance and Usage: A Study on Chinese Older People ............ 209
*Jing Pan, Hua Dong, and Weining Ning*

The Transformation of Reading Among the Ageing Population in the Digital Age ................................................................. 216
*Dobrinka Peicheva and Lilia Raycheva*

Changing Patterns of ICT Use in Finland – The Senior Citizens’ Perspective ................................................................. 226
*Pekka Räsänen and Ilkka Koiranen*

Elders’ Perceptions on the Role of ICTs on Their Lives .................. 238
*Charo Sádaba*
A Usability Research for Developing and Deploying Chronic Pain Relief Treatment Applications for Older Adults .................................................. 245
  Wang-Chin Tsai, Chia-Ling Chang, and Cheng-Min Tsai

Understanding Age-Related Differences in Privacy-Safety Decisions: Acceptance of Crime Surveillance Technologies in Urban Environments ........ 253
  Julia van Heek, Katrin Arning, and Martina Ziefle

Intentions to Use Smart Textiles in AAL Home Environments: Comparing Younger and Older Adults ................................................................. 266
  Martina Ziefle, Philipp Brauner, and Julia van Heek

Psychological and Cognitive Aspects of Interaction and Aging

Interactive, Multi-device Visualization Supported by a Multimodal Interaction Framework: Proof of Concept ................................................................. 279
  Nuno Almeida, Samuel Silva, Beatriz Sousa Santos, and António Teixeira

The Gamification of Cognitive Training: Older Adults’ Perceptions of and Attitudes Toward Digital Game-Based Interventions .................................. 290
  Walter R. Boot, Dustin Souders, Neil Charness, Kenneth Blocker, Nelson Roque, and Thomas Vitale

Age-Differentiated Analysis of the Hand Proximity Effect by Means of Eye-Tracking ................................................................. 301
  Christina Bröhl, Sabine Theis, Matthias Wille, Peter Rasche, Alexander Mertens, and Christopher M. Schlick

Combinations of Modalities for the Words Learning Memory Test Implemented on Tablets for Seniors ............................................................... 309
  Erika Hernández-Rubio, Amilcar Meneses-Viveros, Erick Mancera-Serralde, and Javier Flores-Ortiz

Exploring the Antecedents of Technostress and Compulsive Mobile Application Usage: Personality Perspectives .......................... 320
  Kuo-Lun Hsiao, Chun-Hsiung Lee, Hsiu-Sen Chiang, and Ju-Yun Wang

Impact of Website Complexity and Task Complexity on Older Adult’s Cognitive Workload on Mobile Devices ............................ 329
  Jincheng Huang and Jia Zhou

Experiencing Computer Anxiety Later in Life: The Role of Stereotype Threat ............................................................. 339
  Loredana Ivan and Ioana Schiau

Control with Hand Gestures by Older Users: A Review ......................... 350
  Sheau-Farn Max Liang and Yun-Ju Becker Lee
A Preliminary Study on How the Icon Composition and Background of Graphical Icons Affect Users’ Preference Levels

Hsuan Lin, Yu-Chen Hsieh, and Wei Lin

Tests of Cognitive Training as Archetypes in Elderly People: Identifying Design Categories for Cognitive and Communicative Interaction

Claudia Isabel Rojas R. and Juan Alberto Castillo M.

Eye Movements on Assessing Perceptual Image Quality

Cheng-Min Tsai, Shing-Sheng Guan, and Wang-Chin Tsai

A Study of Human Behavior and Mental Workload Based on Neural Network

Lan Xiao, Jing Qiu, and Jun Lu

Mobile and Wearable Technologies for the Elderly

Designing a Smart Watch Interface for a Notification and Communication System for Nursing Homes

Haneen Ali and Huiyang Li

Tactile Interaction for Novice User: Uncolocated Gestures

Denis Chêne, Vincent Pillot, and Marc-Éric Bobillier Chaumon

Mobile Technology for Older Adults: Protector, Motivator or Threat?

Lynne Coventry and Pam Briggs

The Effect of Screen Size of Mobile Devices on Reading Efficiency

Yu-Chen Hsieh, Chien-Ting Kuo, and Hsuan Lin

Design of Smart Watch for Old People Based on the Benchmark of Consumers’ Kansai Intention

He Huang, Yixiang Wu, Jianxin Cheng, and Minggang Yang

A Study of the Factors Affecting the Usability of Smart Phone Screen Protectors for the Elderly

Shuo-Fang Liu, Ching-Fen Chang, Ming-Hong Wang, and Hsin-Hsi Lai

Effect of Icon Amount and Visual Density on Usability of Smartwatches

Fan Mo, Shuping Yi, and Jia Zhou

Generational Comparison of Simultaneous Internet Activities Using Smartphones and Computers

Andrea Rosales and Mireia Fernández-Ardèvol
Using the Smartphone to Support Successful Aging: Technology Acceptance with Selective Optimization and Compensation
Among Older Adults .......................................................... 490

Yao Sun, Margaret L. McLaughlin, and Michael J. Cody

Author Index ................................................................. 501
Contents – Part II

Smart and Assistive Environments

Design Research on Self-service Medical Apparatus and Instruments Aiming at Elderly Users. .......................................................... 3
Jieqiong Huang

Gamification and Information Fusion for Rehabilitation: An Ambient Assisted Living Case Study ............................................. 16
Javier Jiménez Alemán, Nayat Sanchez-Pi, Luis Martí, José Manuel Molina, and Ana Cristina Bicharra García

Dynamic Characteristics of the Transformation of Interpersonal Distance in Cooperation .......................................................... 26
Yosuke Kinoe and Nami Mizuno

Analysis of Elderly Users’ Preferences and Expectations on Service Robot’s Personality, Appearance and Interaction .......................................................... 35
Styliani Kleanthous, Christophoros Christophorou, Christiana Tsiourti, Carina Dantas, Rachelle Wintjens, George Samaras, and Eleni Christodoulou

Socio-Technical Challenges in Implementation of Monitoring Technologies in Elderly Care .......................................................... 45
Ella Kolkowska, Anneli Avatare Nö, Marie Sjölander, and Isabella Scandurra

Developing BIM-Enabled Facility Management Information System in Interior Design .......................................................... 57
Ju-Hung Lan

A Study on Re-usage of Historical Building - from the Aspect of Room Acoustic for Live House ......................................................... 70
Wei Lin, Hsuan Lin, Kung-Huang Huang, and Tin-Hang Lin

Identification of an Individual’s Frustration in the Work Environment Through a Multi-sensor Computer Mouse ............................................. 79
David Portugal, Marios Belk, João Quintas, Eleni Christodoulou, and George Samaras

Multi-sensory Cyber-Physical Therapy System for Elderly Monitoring. .... 89
Md. Abdur Rahman
Contents – Part II

Concepts, Terms, and Mental Models: Everyday Challenges to Older Adult Social Media Adoption ................................................. 227
   Kelly Quinn, Renae Smith-Ray, and Kristin Boulter

Older People’s Use and Learning of New Media: A Case Study on Remote Rural Villages in Finnish Lapland ........................................ 239
   Päivi Rasi and Arja Kilpeläinen

Improving User Experience and Engagement for Older Adults:
A Case Study ........................................................................... 248
   Krysta Hedia Salera, Pejman Salehi, Neel Desai, Lia E. Tsotsos, and Kathryn Warren-Norton

Understanding Mobile SNS Usage for Aging People in China:
A Perspective from Motivations, Trust and Attitude ......................... 256
   Zhongping Zeng, Liu Liu, Ye Han, and Zhaoyin Liu

Aging, Learning, Training and Games

Operational Assistance for Elderly People Using a Rhythm System .......... 269
   Hiroko Akatsu and Akinori Komatsubara

You Can’t) Teach an Old Dog New Tricks: Analyzing the Learnability of Manufacturing Software Systems in Older Users ......................... 277
   Katrin Arning, Simon Himmel, and Martina Ziefle

Designing a Web-Based Application to Train Aging Adults to Successfully Use Technologies Important to Independent Living .................. 289
   Ronald W. Berkowsky, Sara J. Czaja, and Philip D. Harvey

Exploring the Relationship Between Computer Proficiency and Computer Use Over Time in the PRISM Trial ........................................ 300
   Walter R. Boot, Joseph Sharit, Sara J. Czaja, Neil Charness, and Wendy A. Rogers

Exploring the Next Generation of Older Gamers: Middle-Aged Gamers ... 308
   Julie A. Brown

Mobile Learning Concepts for Older Adults: Results of a Pilot Study with Tablet Computers in France and Germany ............................ 319
   Eline Leen-Thomele, Sonia Hetzner, and Paul Held

Silver Gaming: Serious Fun for Seniors? ................................... 330
   Eugène Loos and Annemiek Zonneveld

Teaching Older Adults with Multiple Chronic Conditions to Use a Tablet and Patient Application for Health Management .................... 342
   Rony Oosterom-Caló and Benjamin López
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Matters: The Role of Intergenerational Gameplay in Successful Aging.</td>
<td>352</td>
</tr>
<tr>
<td><em>Sanela Osmanovic and Loretta Pecchioni</em></td>
<td></td>
</tr>
<tr>
<td>Coping with Ageing Issues: Adoption and Appropriation of Technology by Older Adults in Singapore</td>
<td>364</td>
</tr>
<tr>
<td><em>Natalie Pang, Xue Zhang, Pei Wen Law, and Schubert Foo</em></td>
<td></td>
</tr>
<tr>
<td><strong>Aging, Mobility and Driving</strong></td>
<td></td>
</tr>
<tr>
<td>Immersive Virtual Reality Simulation as a Tool for Aging and Driving Research</td>
<td>377</td>
</tr>
<tr>
<td><em>Christopher R. Bennett, Richard R. Corey, Uro Giudice, and Nicholas A. Giudice</em></td>
<td></td>
</tr>
<tr>
<td>Ensuring the Safety and Accessibility of Transportation for an Aging Population</td>
<td>386</td>
</tr>
<tr>
<td><em>Walter R. Boot, Kimberly Barajas, Ainsley Mitchum, Cary Stothart, and Neil Charness</em></td>
<td></td>
</tr>
<tr>
<td>Rethinking Public Transport Services for the Elderly Through a Transgenerational Design Approach</td>
<td>395</td>
</tr>
<tr>
<td><em>Roberta Grimaldi, Antonio Opromolla, Giovanni Andrea Parente, Eliseo Sciarretta, and Valentina Volpi</em></td>
<td></td>
</tr>
<tr>
<td><em>Ayberk Kocatepe, Eren Erman Ozguven, Hidayet Ozel, Mark W. Horner, and Ren Moses</em></td>
<td></td>
</tr>
<tr>
<td>The Flashing Right Turn Signal with Pedestrian Indication: A Human Factors Study to Assess Driver Comprehension</td>
<td>417</td>
</tr>
<tr>
<td><em>Nelson A. Roque, Walter R. Boot, Neil Charness, Kimberly Barajas, Jared Dirghalli, and Ainsley Mitchum</em></td>
<td></td>
</tr>
<tr>
<td>Challenges of Older Drivers’ Adoption of Advanced Driver Assistance Systems and Autonomous Vehicles</td>
<td>428</td>
</tr>
<tr>
<td><em>Dustin Souders and Neil Charness</em></td>
<td></td>
</tr>
<tr>
<td>Age Effects on Inattentional Blindness: Implications for Driving</td>
<td>441</td>
</tr>
<tr>
<td><em>Cary Stothart, Walter Boot, Daniel Simons, Neil Charness, and Timothy Wright</em></td>
<td></td>
</tr>
<tr>
<td><strong>Author Index</strong></td>
<td>449</td>
</tr>
</tbody>
</table>
Human Aspects of IT for the Aged Population. Design for Aging
Zhou, J.; Salvendy, G. (Eds.)
2016, XXII, 503 p. 152 illus., Softcover
ISBN: 978-3-319-39942-3