## Contents – Part I

**Designing for and with the Elderly**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technologically Mature but with Limited Capabilities</td>
<td>3</td>
</tr>
<tr>
<td><em>Yvonne Eriksson</em></td>
<td></td>
</tr>
<tr>
<td>Designing Poker Time: Older People as Fixpartners in a Co-design Process</td>
<td>13</td>
</tr>
<tr>
<td><em>Linna Hu and Hua Dong</em></td>
<td></td>
</tr>
<tr>
<td>A Preliminary Exploration of Technology Necessities Among Elderly</td>
<td>23</td>
</tr>
<tr>
<td>Living Alone</td>
<td></td>
</tr>
<tr>
<td><em>Lin-Ya Huang and Chang-Franw Lee</em></td>
<td></td>
</tr>
<tr>
<td>Understanding the Critical Needs of Older People: An Aging Perspective</td>
<td>32</td>
</tr>
<tr>
<td><em>Ying Jiang, Timothy Joseph Jachna, and Hua Dong</em></td>
<td></td>
</tr>
<tr>
<td>Designing Tablet Computers for the Elderly A User-Centered Design</td>
<td>42</td>
</tr>
<tr>
<td>Approach</td>
<td></td>
</tr>
<tr>
<td><em>Nicole Jochems</em></td>
<td></td>
</tr>
<tr>
<td>Lowering the Threshold: Reconnecting Elderly Users with Assistive</td>
<td>52</td>
</tr>
<tr>
<td>Technology Through Tangible Interfaces</td>
<td></td>
</tr>
<tr>
<td><em>Suhas Govind Joshi and Heidi Bråthen</em></td>
<td></td>
</tr>
<tr>
<td>Development of the Accessibility Evaluation Platform Beyond Digital Divide</td>
<td>64</td>
</tr>
<tr>
<td><em>Junji Ohyama</em></td>
<td></td>
</tr>
<tr>
<td>Scaffolding Digital Game Design Activities Grouping Older Adults,</td>
<td>74</td>
</tr>
<tr>
<td>Younger Adults and Teens</td>
<td></td>
</tr>
<tr>
<td><em>Margarida Romero and Hubert Ouellet</em></td>
<td></td>
</tr>
<tr>
<td>RERC TechSAge: Making a Difference to the Lives of Older Adults with Disability Through Design and Technology</td>
<td>82</td>
</tr>
<tr>
<td><em>Jon A. Sanford and Elena T. Gonzalez</em></td>
<td></td>
</tr>
<tr>
<td>To Meet the Needs of Aging Users and the Prerequisites of Innovators in the Design Process: Lessons Learned from Three Pilot Projects</td>
<td>92</td>
</tr>
<tr>
<td><em>Marie Sjölinder, Isabella Scandurra, Anneli Avatere Nöü, and Ella Kolkowska</em></td>
<td></td>
</tr>
<tr>
<td>HCI Challenges for Consumer-Based Aging in Place Technologies</td>
<td>105</td>
</tr>
<tr>
<td><em>Marjorie Skubic, Anup Mishra, Bradford Harris, Carmen Abbott, Andrew Craver, Katy Musterman, and Marilyn Rantz</em></td>
<td></td>
</tr>
</tbody>
</table>
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 Nöu, Marie Sjölinder,
  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
A Virtual Testbed for Studying Trust in Ambient Intelligence Environments . . . 101
Azin Semsar, Morteza Malek Makan, Ali Asghar Nazari Shirehjini, and Zahra Malek Mohammadi

Smart Living for Elderly: Design and Human-Computer Interaction Considerations ................................................................. 112
Ranjana Sharma, Fiona Fui-Hoon Nah, Kavya Sharma, Teja Satya Sai Santosh Katta, Natalie Pang, and Alvin Yong

Usability Assessment of a Virtual Fitness Platform on Smart TV for Elderly Health Promotion ......................................................... 123
Chao-Hua Wang

Introduction of Telecare Mediated Home Care Services Pushes Forward a Re-Delegation of the Cooperative Care Work. .......................... 133
Anita Woll

Interaction Design of Products for the Elderly in Smart Home Under the Mode of Medical Care and Pension. ........................................ 145
Minggang Yang, He Huang, Haozhou Yuan, and Qichao Sun

**Aging and Social Media**

Ageism and IT: Social Representations, Exclusion and Citizenship in the Digital Age ................................................................. 159
Ines Amaral and Fernanda Daniel

Elder Adults Utilizing Social Networking Sites on Mobile Platforms . . . . 167
Jessica Arfaa and Yuanqiong (Kathy) Wang

The Elderly, IT and the Public Discourse. Representations of Exclusion and Inclusion ................................................................. 176
Piermarco Aroldi and Fausto Colombo

Elderly and IT: Brand Discourses on the Go ........................................ 186
Karine Berthelot-Guiet

Using Information and Communication Technologies to Promote Healthy Aging in Costa Rica: Challenges and Opportunities. ............ 194
María Dolores Castro Rojas, Ann Bygholm, and Tia G.B. Hansen

The Mediations of the Identity of Seniors on IT. The Case of Grand Parenthood ................................................................. 207
Élodie Llobet-Vachias and Yves Jeanneret

Senior Citizens, Digital Information Seeking and Use of Social Media for Healthy Lifestyle ......................................................... 217
Ágústa Pálsdóttir
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
Family Matters: The Role of Intergenerational Gameplay in Successful Aging. ......................................................... 352
   Sanela Osmanovic and Loretta Pecchioni

Coping with Ageing Issues: Adoption and Appropriation of Technology by Older Adults in Singapore ........................................ 364
   Natalie Pang, Xue Zhang, Pei Wen Law, and Schubert Foo

Aging, Mobility and Driving

Immersive Virtual Reality Simulation as a Tool for Aging and Driving Research ........................................................ 377
   Christopher R. Bennett, Richard R. Corey, Uro Giudice, and Nicholas A. Giudice

Ensuring the Safety and Accessibility of Transportation for an Aging Population ......................................................... 386
   Walter R. Boot, Kimberly Barajas, Ainsley Mitchum, Cary Stothart, and Neil Charness

Rethinking Public Transport Services for the Elderly Through a Transgenerational Design Approach ......................................................... 395
   Roberta Grimaldi, Antonio Opromolla, Giovanni Andrea Parente, Eliseo Sciarretta, and Valentina Volpi

   Ayberk Kocatepe, Eren Erman Ozguven, Hidayet Ozel, Mark W. Horner, and Ren Moses

The Flashing Right Turn Signal with Pedestrian Indication: A Human Factors Study to Assess Driver Comprehension. ................................. 417
   Nelson A. Roque, Walter R. Boot, Neil Charness, Kimberly Barajas, Jared Dirghalli, and Ainsley Mitchum

Challenges of Older Drivers’ Adoption of Advanced Driver Assistance Systems and Autonomous Vehicles ........................................ 428
   Dustin Souders and Neil Charness

Age Effects on Inattentional Blindness: Implications for Driving ................................................................. 441
   Cary Stothart, Walter Boot, Daniel Simons, Neil Charness, and Timothy Wright

Author Index ................................................................. 449
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