Contents

Foreword  vii
Stephen Intille

Ambient Assisted Living in the Health Space  

AAL in the Health Space – A Reflection  3
Jean Roberts

Electronic-Early Warning Scorecard: An Intelligent Context Aware Decision Making Approach for Patient Monitoring  9
Tom O’Kane, John O’Donoghue, Joe Gallagher, A. Aftab, Aveline Casey and Garry Courtney

Using Human Factors to Guide the Design and Implementation of Consumer Health Informatics Interventions  22
Teresa Zayas-Cabán and Jenna L. Marquard

The National Health Service in England – Moving to Mainstream Use of Ambient Assisted Living Technology  37
George MacGinnis

Telehealthcare Development & Effectiveness in Taiwan  67
Tsai-Ya Lai and Jenn-Hwan Tarng

Study on Future Trend of the Elderly Care from the Aspect of Assistive Technology Rental System in Japan  82
Shao-Huai Lee and Jui-Chen Huang

In-Home Monitoring Technologies: Perspectives and Priorities of Older Adults  94
Katherine Wild and Linda Boise

Devices and Infrastructure to Facilitate Ambient Assisted Living  

Devices and Infrastructure to Facilitate AAL  115
Paul McCullagh

Biometrics in Healthcare – A Research Overview  118
Shimon K. Modi

Face Recognition in Ambient Intelligence Applications  133
Annalisa Franco, Dario Maio and Davide Maltoni

Biometric Monitoring of Behaviour  155
Anastasios Drosou and Dimitrios Tzovaras

Medical Information Management with ECG Biometrics: A Secure and Effective Framework  178
Foteini Agrafioti, Francis M. Bui and Dimitrios Hatzinakos
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy Healthy Home</td>
<td>195</td>
</tr>
<tr>
<td><em>Ellen Yi-Luen Do and Brian D. Jones</em></td>
<td></td>
</tr>
<tr>
<td>Adaptive Neck Support for Wellbeing During Air Travel</td>
<td>211</td>
</tr>
<tr>
<td><em>CheeFai Tan, Wei Chen and Matthias Rauterberg</em></td>
<td></td>
</tr>
<tr>
<td>Gait Profile – A Biometric that Defines Our Mobility</td>
<td>229</td>
</tr>
<tr>
<td><em>Diana Hodgins</em></td>
<td></td>
</tr>
<tr>
<td><strong>Ambient Assisted Living in Gerontology</strong></td>
<td></td>
</tr>
<tr>
<td>Gerontological Perspectives on Ambient Assisted Living</td>
<td>253</td>
</tr>
<tr>
<td><em>Andrew Sixsmith</em></td>
<td></td>
</tr>
<tr>
<td>Monitoring Patterns of Inactivity in the Home with Domotics Networks</td>
<td>258</td>
</tr>
<tr>
<td><em>Martin Floeck, Lothar Litz and Annette Spellerberg</em></td>
<td></td>
</tr>
<tr>
<td>The Role of Assistive Technology in Supporting Formal Carers</td>
<td>283</td>
</tr>
<tr>
<td><em>Amritpal S. Bhachu, Nicholas Hine and Ryan Woolrych</em></td>
<td></td>
</tr>
<tr>
<td>Ambient Assisted Living Technology to Support Older Adults with Dementia with Activities of Daily Living: Key Concepts and the State of the Art</td>
<td>304</td>
</tr>
<tr>
<td><em>Alex Mihailidis, Jennifer Boger, Stephen Czarnuch, Tizneem Jiancaro and Jesse Hoey</em></td>
<td></td>
</tr>
<tr>
<td>Tracking Natural Human Movements Identifies Differences in Cognition and Health</td>
<td>331</td>
</tr>
<tr>
<td><em>William Kearns and James L. Fozard</em></td>
<td></td>
</tr>
<tr>
<td>AAL Markets – Knowing Them, Reaching Them. Evidence from European Research</td>
<td>346</td>
</tr>
<tr>
<td><em>Ingo Meyer, Sonja Müller and Lutz Kubitschke</em></td>
<td></td>
</tr>
<tr>
<td>Delivering Technology Enriched Health and Social Care: Policy Context for User Focused Research</td>
<td>369</td>
</tr>
<tr>
<td><em>Suzanne Martin and Maurice Mulvenna</em></td>
<td></td>
</tr>
<tr>
<td><strong>Smart Homes as a Vehicle for Ambient Assisted Living</strong></td>
<td></td>
</tr>
<tr>
<td>Smart Homes as a Vehicle for AAL</td>
<td>387</td>
</tr>
<tr>
<td><em>Juan Carlos Augusto</em></td>
<td></td>
</tr>
<tr>
<td>Designing Ambient and Personalised Displays to Encourage Healthier Lifestyles</td>
<td>389</td>
</tr>
<tr>
<td><em>Tatsuo Nakajima and Fahim Kawser</em></td>
<td></td>
</tr>
<tr>
<td>Supporting Wellbeing Through Improving Interactions and Understanding in Self-Monitoring Systems</td>
<td>408</td>
</tr>
<tr>
<td><em>Dana Pavel, Vic Callaghan and Anind K. Dey</em></td>
<td></td>
</tr>
<tr>
<td>Sensor Selection to Support Practical Use of Health-Monitoring Smart Environments</td>
<td>434</td>
</tr>
<tr>
<td><em>Diane J. Cook and Lawrence B. Holder</em></td>
<td></td>
</tr>
</tbody>
</table>
Utilization of Cloud Infrastructures for Pervasive Healthcare Applications
Charalampos Doukas, Thomas Pliakas and Ilias Maglogiannis

Smart Living Environment: Ubiquitous Computing Approach Based on TRON Architecture
Ken Sakamura

Applications of Ambient Assisted Living in Rehabilitation

Introduction to Section on AAL for Rehabilitation
Reiner Wichert

ICT Infrastructures for Telerehabilitation
Wolfgang Deiters, Oliver Koch, Thomas Königsmann and Sven Meister

AAL in Cardiac Rehabilitation
Freerk Müller, Myriam Lipprandt, Marco Eichelberg, Axel Helmer, Clemens Busch, Detlev Willemsen and Andreas Hein

Smart Home Technologies for People with Cognitive Impairment: An Affordable, Rehabilitative Approach
Tony Gentry

AAL Technologies in Rehabilitation – Lessons Learned from a COPD Case Study
Babak A. Farshchian, Kristine Holbo, Marius Mikalsen and Jarl Reitan

Assisted Ambient Living Applied to Remote Motor Rehabilitation
Eric R. Wade and Avinash Parnandi

Home-Based Computer Vision Access Technologies for Individuals with Severe Motor Impairments
Tom Chau, Negar Memarian, Brian Leung, Deborah Treherne, David Hobbs, Breanna Worthington-Eyre, Andrea Lamont and Michele Pla-Mobarak

Ambient Assisted Living Initiatives

Preparation and Start-Up Phase of the European AAL Joint Programme
Michael Huch

The universAAL Reference Model for AAL
Mohammad-Reza Tazari, Francesco Furfari, Álvaro Fides Valero, Sten Hanke, Oliver Höftberger, Dionisis Kehagias, Miran Masmondob, Reiner Wichert and Peter Wolf

Managing Chronic Conditions Using Wireless Sensor Networks
Raluca Marin-Perianu, Juan Jimenez Garcia, Stephan Bosch, Mihai Marin-Perianu and Paul Havinga

LiKeIT – RFID-Based KeepInTouch Lifestyle Monitoring
Mario Drobics, Angelika Dohr, Susanne Giesecke and Günter Schreier
SmartSenior – Intelligent Services for Senior Citizens

Michael C. Balasch, Martin Schultz, Christine Carius-Duessel, Michael John, Joachim Hänsel, Norbert Pieth, Thilo Ernst, Jörn Kiselev, Gerd Kock, Ben Hennig, Klaus F. Wagner, Marten Haesner, Elisabeth Steinhagen-Thiessen, Mehmet Gövercin, Jan-Peter Jansen, Markus Schröder, Matthias Masur, Tobias Leipold, Irina Busch, Stefan Zeidler, Sibylle Meyer, Uta Böhm, Christa Fricke, Claudia Spindler, Harald Klaus, Fabienne Waidelich, Jens-Uwe Busser, Wolfgang Klasen and Katrin Möller

R&D Projects Related to AAL in TECNALIA’s Health Technologies Unit

Michael Obach, Pierre Barralon, Enrique León, Leire Martinez, Javier Arcas, Igone Idigoras, Alberto Martínez, Arantxa Rentería and Carmen Pastor

Novel Developments and Visions for the Area

Introduction to Section on Future Developments and Visions for the AAL Area

Juan Carlos Angusto and Julie Maitland

Social Spaces for Research and Innovation (SSRI): Users Leading Research and Innovation in Ambient Assisted Living

Ana García Robles, Javier García Guzman, Lorena Bourg, J. Manuel Ojel and R. Ignacio Madrid

New Ambient Assistive Technologies: The Users’ Perspectives

Elizabeth Mestheneos

Beyond System Integration: Who, What, How, and When

Lenka Lhotská, Jaromír Doležal, Václav Chudáček, Michal Huptych, Miroslav Burša and Jan Havlík

Housing, Gerontology and AAL: New Services Development

Javier Yanguas and Elena Urdaneta

Connecting Communities: The Role of Design Ethnography in Developing Social Care Technologies for Isolated Older Adults

David Prendergast, Claire Somerville and Joe Wherton

Innovative Rehabilitation Technologies for Home Environments – An Overview

Michael John, Stefan Klose and Beate Seewald

Growing Older Together: When a Robot Becomes the Best Ally for Ageing Well

Francesca Irene Cavallaro, Fabrice O. Morin, Aïnara Garzo, Anthony Remazeilles, Arantxa Rentería and Gabriel Gaminde

Indexes

Subject Index

Contributing Authors and Affiliations

Author Index