

# Contents

## Part I Sensor Technologies in AAL

<b>A Low-Cost Sensor for Real-Time Monitoring of Indoor Thermal Comfort for Ambient Assisted Living</b> . . . . .	3
Gian Marco Revel, Marco Arnesano and Filippo Pietroni	

<b>A Novel Device for Contactless Detection of Small Body Movements Dedicated to People with Severe Mobility Impairments</b> . . . . .	13
L. Fanucci, M. Malavasi, F. Iacopetti, M. Turturici, F. Sciarra and F. Lupi	

<b>Improved UWB Radar Signal Processing for the Extraction of Vital Parameters</b> . . . . .	23
Giovanni Pelliccioni, Susanna Spinsante and Ennio Gambi	

<b>Near Field Communication Technology for AAL</b> . . . . .	33
Valeria di Credico, Simone Orcioni and Massimo Conti	

<b>Remote Measurement of the Respiration by Electromagnetic Sensing</b> . . . . .	43
Lorenzo Scalise, Valerio Petrini, Paola Russo, Alfredo De Leo, Valter Mariani Primiani, Valentina Di Mattia and Graziano Cerri	

## Part II Robotic Assistance for the Elderly

<b>Robot Interface Design of Domestic and Condominium Robot for Ageing Population</b> . . . . .	53
Niccolò Casiddu, Filippo Cavallo, Alessandro Divano, Irene Mannari, Emanuele Micheli, Claudia Porfirione, Matteo Zallio, Michela Aquilano and Paolo Dario	

<b>Autonomous Assistive Robot for Respiratory Rate Detection and Tracking</b> . . . . .	61
Flavia Benetazzo, Alessandro Freddi, Andrea Monteriú, Panu Harmo, Ville Kyrki and Sauro Longhi	
<b>Telepresence Robot at Home: A Long-Term Case Study</b> . . . . .	73
Roberta Bevilacqua, Amedeo Cesta, Gabriella Cortellesa, Alessandro Macchione, Andrea Orlandini and Lorenza Tiberio	
<b>A Multi-Agent Expert System Simulation for Ambient Assisted Living: The Virtual Carer Experience</b> . . . . .	87
Paolo Sernani, Andrea Claudi and Aldo Franco Dragoni	
 <b>Part III Elderly People Monitoring</b>	
<b>Expert System for Wearable Fall Detector</b> . . . . .	99
Gabriele Rescio, Alessandro Leone and Pietro Siciliano	
<b>Quality of Kinect Depth Information for Passive Posture Monitoring</b> . . . . .	107
Enea Cippitelli, Samuele Gasparrini, Ennio Gambi and Susanna Spinsante	
<b>A Wearable Multi-sensors Device for AAL Environment</b> . . . . .	117
Francesco Montalto, Valentina Bianchi, Ilaria De Munari and Paolo Ciampolini	
<b>RGBD Sensors for Human Activity Detection in AAL Environments</b> . . . . .	127
Emanuele Frontoni, Adriano Mancini and Primo Zingaretti	
<b>MyCmon: Cloud-Based Smart Home Monitoring for Elderly People and People with Disabilities</b> . . . . .	137
Paolo Mongiovì, Ferdinando Grossi, Valentina Bianchi, Agostino Losard, Guido Matrella, Ilaria De Munari and Paolo Ciampolini	
 <b>Part IV Living with Chronic Conditions</b>	
<b>Cognitive Home Rehabilitation in Alzheimer's Disease Patients by a Virtual Personal Trainer</b> . . . . .	147
Andrea Caroppo, Alessandro Leone, Pietro Siciliano, Daniele Sancarolo, Grazia D'Onofrio, Francesco Giuliani, Antonio Greco, Riccardo Valzania and Massimo Pistoia	

**Experimentation of an Integrated System of Services and AAL Solutions for Alzheimer’s Disease Patients and Their Caregivers in Marche: The UP-TECH Project . . . . .** 157  
 F. Barbabella, C. Chiatti, F. Masera, F. Bonfranceschi, J. M. Rimland, K. Bartulewicz, L. Rossi and F. Lattanzio

**Virtual Reality: A New Rehabilitative Approach in Neurological Disorders . . . . .** 167  
 Laura Di Biagio, Matteo Ferretti, Daniele Cingolani, Luca Buzzatti, Marianna Capecci and Maria Gabriella Ceravolo

**Can the Current Mobile Technology Help for Medical Assistance? The Case of Freezing of Gait in Parkinson Disease. . . . .** 177  
 Lucia Pepa, Federica Verdini, Marianna Capecci, Maria Gabriella Ceravolo and Tommaso Leo

**Electromagnetic Sensing of Obstacles for Visually Impaired Users . . .** 187  
 Lorenzo Scalise, Valentina Di Mattia, Paola Russo, Alfredo De Leo, Valter Mariani Primiani and Graziano Cerri

**Part V Assistive Devices**

**Multi-Agent Simulation Model for Evacuation of Care Homes and Hospitals for Elderly and People with Disabilities in Motion . . . .** 197  
 Niccolò Mora, V. Bianchi, I. De Munari and P. Ciampolini

**An Inertial and QR Code Landmarks-Based Navigation System for Impaired Wheelchair Users . . . . .** 205  
 Cimini Gionata, Ferracuti Francesco, Freddi Alessandro, Iarlori Sabrina and Monteriù Andrea

**Towards an Impact Assessment Framework for ICT-Based Systems Supporting Older People: Making Evaluation Comprehensive Through Appropriate Concepts and Metrics . . . . .** 215  
 Roberta Bevilacqua, M. Di Rosa, E. Felici, V. Stara, F. Barbabella and L. Rossi

**Brain.me: A Low-Cost Brain Computer Interface for AAL Applications . . . . .** 223  
 Niccolò Mora, V. Bianchi, I. De Munari and P. Ciampolini

**A Speech Interaction System for an Ambient Assisted Living Scenario . . . . .** 233  
 Michele Alessandrini, Giorgio Biagetti, Alessandro Curzi and Claudio Turchetti

## Part VI ICT Tools in AAL

<b>A Novel Tracking System for AAL Based on Smartphone Technology</b> . . . . .	243
Bruno Andò, Salvatore Baglio, Sebastiano Campisi, Cristian O. Lombardo, Vincenzo Marletta and Elisa Pergolizzi	
<b>BAR LIS: A Web Tool for Italian Sign Language Synthesis and Interaction</b> . . . . .	251
Luca Nardi, Matteo Rubini, Stefano Squartini, Emanuele Principi and Francesco Piazza	
<b>OMNIACARE: A Comprehensive Technological Platform for AAL</b> . . . . .	263
Paolo Casacci and Massimo Pistoia	
<b>From Sensor Data to User Services in GIRAFFPLUS</b> . . . . .	269
Amedeo Cesta, Luca Coraci, Gabriella Cortellessa, Riccardo De Benedictis, Francesco Furfari, Andrea Orlandini, Filippo Palumbo and Aleš Štítec	
<b>A WSN Integrated Solution System for Technological Support to the Self-Sufficient Elderly</b> . . . . .	281
Paola Pierleoni, Alberto Belli, Lorenzo Palma, Michele Palmieri and Luca Pernini	

## Part VII Smart Housing

<b>RITA Project: An Ambient Assisted Living Solution for Independent and Safely Living of Aging Population</b> . . . . .	293
Raffaele Esposito, Manuele Bonaccorsi, Dario Esposito, Massimo Filippi, Erika Rovini, Michela Aquilano, Filippo Cavallo and Paolo Dario	
<b>Smart Technologies in Social Housing: Methodology and First Results of the HOST Project Experimentation Activities.</b> . . . . .	303
Luigi Biocca, Paolo Casacci, Assunta D’Innocenzo, Davide Di Pasquale, Filippo Fabbri, Marialisa Manuzzi, Marco Padula, Nicolò Paraciani, Massimo Pistoia and Paolo L. Scala	
<b>Smart Object for AAL: A Review</b> . . . . .	313
R. Bevilacqua, Silvia Ceccacci, M. Germani, M. Iualè, M. Mengoni and A. Papetti	

**Living in the Living Lab! Adapting Two Model Domestic Apartments for Experimentation in Autonomous Living in a Context of Residential Use . . . . . 325**

Massimiliano Malavasi, Roberta Augusto, F. Marcella Ioele, Stefano Martinuzzi, Maria Rosaria Motolese and Matteo Rimondini

**Preliminary Findings of the AALIANCE2 Ambient Assisted Living Roadmap . . . . . 335**

Alessandra Moschetti, Laura Fiorini, Michela Aquilano, Filippo Cavallo and Paolo Dario

**Part VIII Social Implications and Age-Friendly Smart Cities**

**The Third Age in the National Health System: A Proposal for Increasing the Spending Effectiveness in Health Care for the Elderly . . . . . 345**

Maurizio Ciaschini, Monica De Angelis, Rosita Pretaroli, Francesca Severini and Claudio Socci

**Active Ageing and Public Space: The Creative City 3.0 . . . . . 361**

F. Bronzini, N. Barbini, G. Marinelli, M. Pantaloni and E. Giordano

**“Smart” Social Housing Design: Methods, Tools and Innovation in the Assisted Living Architectural Project . . . . . 373**

Fausto Pugnaroni and Davide Di Fabio

**On the Design of Intelligent Buildings for Ambient Assisted Living . . . . . 381**

Berardo Naticchia and Alberto Giretti

**Architectures for Alternative Mobility and Relational Fields: Innovative People-Oriented Approaches . . . . . 389**

Fausto Pugnaroni and Cecilia Carlorosi



<http://www.springer.com/978-3-319-01118-9>

Ambient Assisted Living

Italian Forum 2013

Longhi, S.; Siciliano, P.; Germani, M.; Monteriu, A. (Eds.)

2014, XIII, 397 p. 140 illus., Hardcover

ISBN: 978-3-319-01118-9