

Contents

Contributing Authors	ix
Introduction	xvii
<i>Wolfgang Minker, Michael Weber</i>	
References	xxi
1	
Assistive Environments for Successful Aging	1
<i>Abdelsalam (Sumi) Helal, Jeffrey King, Raja Bose, Hicham EL-Zabadani, Youssef Kaddourah</i>	
1. Introduction	1
2. Assistive Services in the Gator Tech Smart House	3
3. Technological Enablers for the Gator Tech Smart House	12
4. Status of the Gator Tech Smart House	24
5. Conclusion	24
References	25
2	
Do Digital Homes Dream of Electric Families?	27
<i>Brian David Johnson</i>	
1. Introduction	27
2. User Experience Group Overview: Understanding People to Build Better Technology	29
3. Guiding Principles for Global Research and Product Investigation	30
4. Houses are Hairy: The Need for Experience Design	30
5. Consumer Experience Architecture in Industry	32
6. Technology for Humans: A Design Framework	33
7. Conclusion: How I Learned to Stop Worrying About the Future and Love Science Fiction: A Challenge	38
References	39

3

An Architecture that Supports Task-Centered Adaptation	41
<i>Achilles D. Kameas, Christos Goumopoulos, Hani Hagrais, Victor Callaghan, Tobias Heinroth, Michael Weber</i>	
1. Introduction	42
2. Ambient Ecologies and Activity Spheres	46
3. System Architecture	48
4. Using Ontologies to Support Adaptation	53
5. Realizing Adaptation Over Long Time Intervals with the Help of a Fuzzy Agent	54
6. Adaptive User Interaction	59
7. Conclusion	63
References	64

4

Multimodal Presentation of Information in a Mobile Context	67
<i>Christophe Jacquet, Yolaine Bourda, Yacine Bellik</i>	
1. Introduction	67
2. Related Work and Objectives	68
3. The KUP Model	70
4. Software Architecture	75
5. Algorithms for Choosing and Instantiating a Modality	76
6. Implementation and Evaluation	85
7. Conclusion and Perspectives	91
Notes	92
References	92

5

Classifier Fusion for Emotion Recognition from Speech	95
<i>Stefan Scherer, Friedhelm Schwenker, Günther Palm</i>	
1. Introduction	95
2. Database Overview	97
3. Approach	99
4. Experiments and Results	109
5. Conclusion	114
Notes	115
References	115

6

Understanding Mobile Spatial Interaction in Urban Environments	119
<i>Katharine S. Willis, Christoph Hölscher, Gregor Wilbertz</i>	
1. Introduction	119
2. Approach and Hypothesis	120
3. Learning from Field Studies	122
4. Result	126
5. Discussion	132

6.	Interacting and Learning with Mobile Devices in Urban Environments	135
7.	Conclusion and Future Work	136
	References	137
7		
	Genetic Algorithm for Energy-Efficient Trees in Wireless Sensor Networks	139
	<i>Dr. Sajid Hussain, Obidul Islam</i>	
1.	Introduction	139
2.	Related Work	140
3.	Problem Statement	143
4.	Genetic Algorithm (GA)	143
5.	Simulation	152
6.	Conclusion	171
	Notes	172
	References	172
8		
	Enhancing Anomaly Detection Using Temporal Pattern Discovery	175
	<i>Vikramaditya R. Jakkula, Aaron S. Crandall, Diane J. Cook</i>	
1.	Introduction	175
2.	Temporal Reasoning	177
3.	The MavHome Smart Home	179
4.	TempAl	185
5.	Experimental Findings	190
6.	Conclusion and Future Work	192
	References	193
9		
	Fault-Resilient Pervasive Service Composition	195
	<i>Hen-I Yang, Raja Bose, Abdelsalam (Sumi) Helal, Jinchun Xia, Carl K. Chang</i>	
1.	Introduction	195
2.	A Brief Primer on Pervasive Services	197
3.	Virtual Sensors	199
4.	Efficient Pervasive Service Composition	203
5.	Performance Evaluation	208
6.	Putting It All Together: A Comprehensive Solution for Fault Resiliency	215
7.	Related Work	217
8.	Conclusion	220
	References	221

10

Intravein – Parametric Urbanism	225
<i>Brian Dale, Ioannis Orfanos, Pavlos Xanthopoulos, Gerard Joson</i>	
1. Introduction	225
2. Description of Thesis Project	226
3. Networked Behaviors	227
4. Informational Experiments	229
5. Space (in) Formation	235
6. Distributed Responsive Leisure	241
7. Conclusion	248
Notes	249
References	249

11

The Totality of Space	251
<i>Olga Pantelidou</i>	
1. Introduction	251
2. A Discontinuity	252
3. The Course of Architectural Thought in Banking	254
4. The Course of Banking Spatial Thought	257
5. Technology's Effect on Banking Spatial Thought	261
6. The Contemporary Reality of a Bank's Space	267
7. Space of a Complex System: The Totality of Space	270
8. Three Factors in the Formation of the Totality of Space	277
9. Conclusions – A Possible Architectural Response	280
Notes	282
References	285

Index	289
-------	-----