



Contents

1	Introduction	3
I	Generic Algorithm Development	7
2	Software Design Techniques for Heterogeneous Embedded Systems	9
2.1	Problem Statement	9
2.2	Problem Space	13
2.3	Related Work	16
2.4	C++ in Embedded Systems	19
2.5	Successful Design Paradigms	23
3	Wiselib: A Generic Algorithms Library	27
3.1	Design Issues	27
3.2	Architecture	30
3.3	Case Study: Routing Algorithms	47
3.4	Experimental Results	49
3.5	Conclusion and Future Work	55
II	Heterogenous Testbed Design	57
4	The Sensor Floor	59
4.1	Problem Statement	59
4.2	Related Work	63
4.3	Load Sensor Design	66
4.4	Hallway Construction	70
4.5	Experimental Studies	76
4.6	Conclusion and Future Work	92
5	Example Applications	95
5.1	Identification of Passers-by in Hallway Segments	95
5.2	Timed Up & Go Test	98

5.3 Outlook: Advanced Applications	100
III Heterogeneity in Communication	103
6 Virtual Communication	105
6.1 Problem Statement	105
6.2 Related Work	107
6.3 Virtualized Communication Links	110
6.4 Evaluation	119
6.5 Conclusion and Future Work	122
IV Ending	125
7 Conclusion	127
List of Figures	129
List of Tables	131
Listings	133
Glossary	135
Bibliography	137
Index	153