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Probabilistic Models in Building Automation

Recognizing Scenarios with Statistical Methods

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The ongoing technological development in the fields of sensors, actuators as well as embedded systems leads to more and more complex and larger building automation systems. These systems allow ever-better observations of activities in buildings with a rapid growing number of possible applications. This work investigates how statistical methods can be applied to (future) building automation systems to recognize erroneous behavior and to extract semantic and context information from sensor data. A hierarchical model structure based on hidden Markov models is proposed to establish a framework for learning about daily routines. The lower levels of the model structure are used to observe the sensor values themselves whereas the higher levels provide a basis for the semantic interpretation of what is happening in the building.

This book is of interest for researchers active in science and development of future context aware system for surveillance, observation, or ambient assistance as well as for all individuals interested in trends in building automation.

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is with the Institute of Computer Technology, Vienna University of Technology in the field of building automation. His major research interest is to exploit new models for complex systems from artificial intelligence, bionic models, and cognitive science for use in building automation to create ambient assistent living environments.



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Contents

1	Introduction and State of the Art	1
1.1	Putting this work into context	1
1.2	History	4
1.3	Problem Description	5
1.4	Motivation	5
1.5	Possible Implications	6
2	Probability Density Estimation	9
2.1	Parametric Methods	11
2.1.1	Maximum Likelihood	13
2.1.2	Bayesian Inference	15
2.2	Mixture Models	16
2.2.1	Maximum Likelihood	18
2.2.2	Expectation-Maximization	19
2.3	Statistical Models for Error Detection in Automation Systems	19
2.4	Statistical models for a diagnostic system	20
2.4.1	Error Detection	22
2.4.2	Statistical Generative Models	22
2.4.3	On-line Parameter Updates	23
3	Hidden Markov Models	25
3.1	Markov Property	25
3.2	Markov Process	26
3.3	Markov Model	26
3.4	Hidden Markov Model	27
3.4.1	Forward Algorithm	29
3.4.2	Viterbi Algorithm	30
3.4.3	Forward Backward and Baum-Welch Algorithm	31
3.5	Hidden Semi Markov Model	33
4	Ubiquitous Computing Case Studies	35
4.1	Case study 1: Security in public spaces	36
4.1.1	SENSE high level objective	36
4.1.2	Specific scientific and technological objectives and state of the art	38
4.2	Case study 2: Security, care and comfort for the elderly	40
4.2.1	SEAL high-level objective	41
4.2.2	Specific scientific and technological objectives and state of the art	43

5	Model Structure	49
5.1	Terminology	50
5.2	Time slice models	53
5.3	Scenarios	58
5.4	Model structure	62
5.4.1	Pre-defined model structure	62
5.4.2	Partially pre-defined and learned	68
5.4.3	Fully learned and interpreted	69
6	System Structure Learning	71
6.1	Time frame	71
6.2	System Structure Learning Principles	73
6.3	System Structure Learning Example	74
6.3.1	Comparison of Chain's Borders	76
6.3.2	Merging of Identical States	76
6.3.3	Merging of Consecutive States	77
6.3.4	Software Implementation	85
6.4	System Structure Interpretation	85
6.4.1	Visualization	85
6.4.2	Model Interpretation	90
7	Case Study: Statistical detection of Alarm Conditions in BAS	95
7.1	Why automatic systems?	95
7.2	Parameter Optimization	95
7.3	Comparison to Standard System	95
7.4	User Comfort	95
7.5	System Adaptation	100
8	Case Study: HMMs for Traffic Observation	100
8.1	Surveillance Systems for Tunnels	100
8.2	System Structure	100
8.3	System Adaptation	100
9	Discussion and Outlook	100