

Contents

1	System Modelling in Strategic Planning	7
1.1	Basic Features of Strategic Planning	7
1.2	System Modelling of Strategy	9
1.2.1	Orientation of Strategy	9
1.2.2	Subject of Strategy	10
1.3	Problem levels of modelling	11
1.4	Examples of Application Problems in Building Industry	13
1.5	Conclusions	14
2	Fuzzy approach to the evaluation of measured values	15
2.1	Inaccuracy of datasets	15
2.1.1	Data Measuring	16
2.1.2	Averaging of measured values	17
2.1.3	Expressing the level of consensus among the measurements	18
2.1.4	Optimization of the consensus	19
2.2	Case Study	21
2.2.1	Conclusion	21
3	Data Preparation for Association Rules Extraction	25
3.1	Introduction	25
3.2	Association Rules	26

3.3	Implementation of association rules extraction in SPMF data mining library	26
3.4	Mapping attributes and values to items	28
3.5	Summary	32
3.6	Acknowledgement	33
4	Preparation of data for a numerical model and verification of the numerical model in an experiment	35
4.1	System identification	36
4.2	Modelling methods in civil engineering	38
4.2.1	FEM example with steel beam	39
4.3	Statistic in civil engineering	43
4.3.1	Series dynamics	46
4.3.2	Elimination according to the inner fence	46
4.3.3	Grubbs' test	47
4.3.4	Graph of functional dependency of measured quantities	47
4.4	Field of data mining	49
5	New trends in Databases and their possible use in civil engineering	51
5.1	NOSQL	52
5.1.1	Distribution of NoSQL databases	52
5.2	Application for construction data and datamining	56
5.2.1	Project TIMODAZ	57
5.2.2	Origin of Data	57
5.2.3	Aim of the project	57
5.2.4	Physical model	57
5.2.5	Data Analysis	58
5.3	Conclusion	60