

1. Record Nr.	UNINA9910139802403321
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Titolo	Graphical models : methods for data analysis and mining // Christian Borgelt, Matthias Steinbrecher & Rudolf Kruse
Pubbl/distr/stampa	Hoboken, NJ, : John Wiley, c2009
ISBN	1-282-27888-6 9786612278884 0-470-74955-5 0-470-74956-3
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (405 p.)
Collana	Wiley series in computational statistics
Altri autori (Persone)	SteinbrecherMatthias KruseRudolf
Disciplina	006.3/12
Soggetti	Data mining Mathematical statistics - Graphic methods
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Graphical Models; Contents; Preface; 1 Introduction; 1.1 Data and Knowledge; 1.2 Knowledge Discovery and Data Mining; 1.2.1 The KDD Process; 1.2.2 Data Mining Tasks; 1.2.3 Data Mining Methods; 1.3 Graphical Models; 1.4 Outline of this Book; 2 Imprecision and Uncertainty; 2.1 Modeling Inferences; 2.2 Imprecision and Relational Algebra; 2.3 Uncertainty and Probability Theory; 2.4 Possibility Theory and the Context Model; 2.4.1 Experiments with Dice; 2.4.2 The Context Model; 2.4.3 The Insufficient Reason Principle; 2.4.4 Overlapping Contexts; 2.4.5 Mathematical Formalization 2.4.6 Normalization and Consistency2.4.7 Possibility Measures; 2.4.8 Mass Assignment Theory; 2.4.9 Degrees of Possibility for Decision Making; 2.4.10 Conditional Degrees of Possibility; 2.4.11 Imprecision and Uncertainty; 2.4.12 Open Problems; 3 Decomposition; 3.1 Decomposition and Reasoning; 3.2 Relational Decomposition; 3.2.1 A Simple Example; 3.2.2 Reasoning in the Simple Example; 3.2.3 Decomposability of Relations; 3.2.4 Tuple-Based Formalization; 3.2.5 Possibility-Based Formalization; 3.2.6 Conditional Possibility and Independence; 3.3 Probabilistic Decomposition; 3.3.1 A Simple

Example

3.3.2 Reasoning in the Simple Example 3.3.3 Factorization of Probability Distributions; 3.3.4 Conditional Probability and Independence; 3.4 Possibilistic Decomposition; 3.4.1 Transfer from Relational Decomposition; 3.4.2 A Simple Example; 3.4.3 Reasoning in the Simple Example; 3.4.4 Conditional Degrees of Possibility and Independence; 3.5 Possibility versus Probability; 4 Graphical Representation; 4.1 Conditional Independence Graphs; 4.1.1 Axioms of Conditional Independence; 4.1.2 Graph Terminology; 4.1.3 Separation in Graphs; 4.1.4 Dependence and Independence Maps; 4.1.5 Markov Properties of Graphs; 4.1.6 Markov Equivalence of Graphs; 4.1.7 Graphs and Decompositions; 4.1.8 Markov Networks and Bayesian Networks; 4.2 Evidence Propagation in Graphs; 4.2.1 Propagation in Undirected Trees; 4.2.2 Join Tree Propagation; 4.2.3 Other Evidence Propagation Methods; 5 Computing Projections; 5.1 Databases of Sample Cases; 5.2 Relational and Sum Projections; 5.3 Expectation Maximization; 5.4 Maximum Projections; 5.4.1 A Simple Example; 5.4.2 Computation via the Support; 5.4.3 Computation via the Closure; 5.4.4 Experimental Evaluation; 5.4.5 Limitations; 6 Naive Classifiers; 6.1 Naive Bayes Classifiers; 6.1.1 The Basic Formula; 6.1.2 Relation to Bayesian Networks; 6.1.3 A Simple Example; 6.2 A Naive Possibilistic Classifier; 6.3 Classifier Simplification; 6.4 Experimental Evaluation; 7 Learning Global Structure; 7.1 Principles of Learning Global Structure; 7.1.1 Learning Relational Networks; 7.1.2 Learning Probabilistic Networks; 7.1.3 Learning Possibilistic Networks; 7.1.4 Components of a Learning Algorithm; 7.2 Evaluation Measures; 7.2.1 General Considerations; 7.2.2 Notation and Presuppositions; 7.2.3 Relational Evaluation Measures; 7.2.4 Probabilistic Evaluation Measures

Sommario/riassunto

Graphical models are of increasing importance in applied statistics, and in particular in data mining. Providing a self-contained introduction and overview to learning relational, probabilistic, and possibilistic networks from data, this second edition of Graphical Models is thoroughly updated to include the latest research in this burgeoning field, including a new chapter on visualization. The text provides graduate students, and researchers with all the necessary background material, including modelling under uncertainty, decomposition of distributions, graphical representation of dis
