Bayesian Networks. A Practical Guide to Applications. Statistics in Practice

Description:
Bayesian Networks, the result of the convergence of artificial intelligence with statistics, are growing in popularity. Their versatility and modelling power is now employed across a variety of fields for the purposes of analysis, simulation, prediction and diagnosis.

This book provides a general introduction to Bayesian networks, defining and illustrating the basic concepts with pedagogical examples and twenty real-life case studies drawn from a range of fields including medicine, computing, natural sciences and engineering.

Designed to help analysts, engineers, scientists and professionals taking part in complex decision processes to successfully implement Bayesian networks, this book equips readers with proven methods to generate, calibrate, evaluate and validate Bayesian networks.

The book:
- Provides the tools to overcome common practical challenges such as the treatment of missing input data, interaction with experts and decision makers, determination of the optimal granularity and size of the model.
- Highlights the strengths of Bayesian networks whilst also presenting a discussion of their limitations.
- Compares Bayesian networks with other modelling techniques such as neural networks, fuzzy logic and fault trees.
- Describes, for ease of comparison, the main features of the major Bayesian network software packages: Netica, Hugin, Elvira and Discoverer, from the point of view of the user.
- Offers a historical perspective on the subject and analyses future directions for research.

Written by leading experts with practical experience of applying Bayesian networks in finance, banking, medicine, robotics, civil engineering, geology, geography, genetics, forensic science, ecology, and industry, the book has much to offer both practitioners and researchers involved in statistical analysis or modelling in any of these fields.

Contents:
Foreword.
Preface.
1 Introduction to Bayesian networks.
1.1 Models.
1.2 Probabilistic vs. deterministic models.
1.3 Unconditional and conditional independence.
1.4 Bayesian networks.
2 Medical diagnosis.
2.1 Bayesian networks in medicine.
2.2 Context and history.
2.3 Model construction.
2.4 Inference.
2.5 Model validation.
2.6 Model use.
2.7 Comparison to other approaches.
2.8 Conclusions and perspectives.
3 Clinical decision support.
3.1 Introduction.
3.2 Models and methodology.
3.3 The Busselton network.
3.4 The PROCAM network.
3.5 The PROCAM-Busselton network.
3.6 Evaluation.
3.7 The clinical support tool: TakeHeartII.
3.8 Conclusion.
4 Complex genetic models.
4.1 Introduction.
4.2 Historical perspectives.
4.3 Complex traits.
4.4 Bayesian networks to dissect complex traits.
4.5 Applications.
4.6 Future challenges.
5 Crime risk factors analysis.
5.1 Introduction.
5.2 Analysis of the factors affecting crime risk.
5.3 Expert probabilities elicitation.
5.4 Data preprocessing.
5.5 A Bayesian network model.
5.6 Results.
5.7 Accuracy assessment.
5.8 Conclusions.
6 Spatial dynamics in the coastal region.
6.1 Introduction.
6.2 An indicator-based analysis.
6.3 The Bayesian network model.
6.4 Conclusions.

7. Inference problems in forensic science.
7.1 Introduction.
7.2 Building Bayesian networks for inference.
7.3 Applications of Bayesian networks in forensic science.
7.4 Conclusions.

8.1 Context/history.
8.2 Model construction.
8.3 Model calibration, validation and use.
8.4 Conclusions/perspectives.

9.1 Mineral potential mapping.
9.2 Classifiers for mineral potential mapping.
9.3 Bayesian network mapping of base metal deposit.
9.4 Discussion.
9.5 Conclusions.

10. Student modeling.
10.1 Introduction.
10.2 Probabilistic relational models.
10.3 Probabilistic relational student model.
10.4 Case study.
10.5 Experimental evaluation.
10.6 Conclusions and future directions.

11. Sensor validation.
11.1 Introduction.
11.2 The problem of sensor validation.
11.3 Sensor validation algorithm.
11.4 Gas turbines.
16.2 Experimental setup.
16.3 Feature extraction methods.
16.4 Classification results.
16.5 Conclusions.
17 Pavement and bridge management.
17.1 Introduction.
17.2 Pavement management decisions.
17.3 Bridge management.
17.4 Bridge approach embankment - case study.
17.5 Conclusion.
18 Complex industrial process operation.
18.1 Introduction.
18.2 A methodology for Root Cause Analysis.
18.3 Pulp and paper application.
18.4 The ABB Industrial IT platform.
18.5 Conclusion.
19 Probability of default for large corporates.
19.1 Introduction.
19.2 Model construction.
19.3 BayesCredit.
19.4 Model benchmarking.
19.5 Benefits from technology and software.
19.6 Conclusion.
20 Risk management in robotics.
20.1 Introduction.
20.2 DeepC.
20.3 The ADVOCATE II architecture.
20.4 Model development.
20.5 Model usage and examples.
20.6 Benefits from using probabilistic graphical models.
20.7 Conclusion.
21 Enhancing Human Cognition.
21.1 Introduction.
21.2 Human foreknowledge in everyday settings.
21.3 Machine foreknowledge.
21.4 Current application and future research needs.
21.5 Conclusion.

22 Conclusion.
22.1 An artificial intelligence perspective.
22.2 A rational approach of knowledge.
22.3 Future challenges.

Bibliography.
Index.

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