1. Record Nr. UNISA996490357703316

Titolo	Belief functions, theory and applications : 7th international conference, BELIEF 2022, Paris, France, October 26-28, 2022, proceedings / / edited by Sylvie Le Hegarat-Mascle, Isabelle Bloch, and Emanuel Aldea
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2022] ©2022
ISBN	3-031-17801-7
Descrizione fisica	1 online resource (318 pages)
Collana	Lecture Notes in Computer Science ; ; v.13506
Disciplina	658.403
Soggetti	Decision making - Mathematical models Decision making - Data processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- Preface -- Organization -- Contents -- Evidential Clustering -- A Distributional Approach for Soft Clustering Comparison and Evaluation -- 1 Introduction -- 2 Background and Related Work -- 2.1 Background on Clustering -- 2.2 Clustering Comparison Measures -- 3 A General Framework for Soft Clustering Evaluation Measures -- 3.1 Distribution-Based Representation of Soft Clustering -- 3.2 Distributional Measures -- 3.3 Approximation Methods -- 4 Illustrative Experiment -- 5 Conclusion -- References -- Causal Transfer Evidential Clustering -- 1 Introduction -- 2 Related Work -- 2.1 Transfer Evidential Clustering -- 2.2 Causal Feature Selection -- 3 Causal Transfer Evidential Clustering -- 4 Experiments -- 4.1 Synthetic Datasets -- 4.2 ALARM Network Dataset -- 5 Conclusion -- References -- A Variational Bayesian Clustering Approach to Acoustic Emission Interpretation Including Soft Labels -- 1 Introduction -- 2 Use of Soft Labels in a Variational Bayesian GMM -- 2.1 Directed Acyclic Graph -- 2.2 Learning Problem Under pl -- 2.3 Algorithm and Automatic Relevance Determination -- 3 First Results and First Conclusion -- 3.1 Data Set Description -- 3.2 The Priors -- 3.3 Sorting the Partitions -- 3.4 Results -- 4 Conclusion -- References -- Evidential Clustering by Competitive Agglomeration -- 1 Introduction -- 2 Background -- 2.1 Competitive Agglomeration (CA) -- 2.2 Basic Concepts of Belief

Functions -- 3 Main Results -- 3.1 Basic Idea and Motivations -- 3.2 The Proposed Method -- 4 Experimental Evaluation -- 4.1 An Numerical Example: Four-Class Dataset -- 4.2 Compared with Other Clustering Methods -- 5 Conclusion -- References -- Imperfect Labels with Belief Functions for Active Learning -- 1 Introduction -- 2 Background -- 2.1 Reminder on Belief Functions -- 2.2 K-Nearest Neighbors -- 2.3 EK-NN -- 2.4 Active Learning.
3 Classification of Imperfectly Labeled Data with EK-NN and Active Learning -- 3.1 EK-NN for Imperfectly Labeled Data -- 3.2 Parameters Optimization and i-EKNN -- 3.3 Labeling with Uncertainty and Imprecision -- 4 Experiments -- 4.1 Different Approaches for Parameter -- 4.2 Experiment on Noised Real World Datasets -- 4.3 Experiment on Imperfectly Labeled Datasets -- 5 Conclusion -- References -- Machine Learning and Pattern Recognition -- An Evidential Neural Network Model for Regression Based on Random Fuzzy Numbers -- 1 Introduction -- 2 Epistemic Random Fuzzy Sets -- 2.1 General Framework -- 2.2 Gaussian Random Fuzzy Numbers -- 3 Neural Network Model -- 3.1 Propagation Equations -- 3.2 Loss Function -- 4 Experimental Results -- 4.1 Illustrative Example -- 4.2 Comparative Experiment -- 5 Conclusions -- References -- Ordinal Classification Using Single-Model Evidential Extreme Learning Machine -- 1 Introduction -- 2 Background -- 2.1 Dempster-Shafer Theory -- 2.2 Ordinal Extreme Learning Machine -- 3 Single-Model Multi-output Evidential Ordinal Extreme Learning Machine -- 3.1 Evidential Encoding Schemes -- 3.2 Construction of Evidential Ordinal ELM Model -- 4 Experiments -- 4.1 Artificial Dataset -- 4.2 UCI Datasets -- 5 Conclusion -- References -- Reliability-Based Imbalanced Data Classification with Dempster-Shafer Theory -- 1 Introduction -- 2 Reliability-Based Imbalanced Data Classification -- 2.1 Multiple Under-Sampling for Majority Class -- 2.2 Evaluate the Local Reliability for Classifiers Fusion -- 2.3 Employ Neighbors for Final Decision -- 3 Experiment Applications -- 3.1 Benchmark Datasets -- 3.2 Performance Evaluation -- 3.3 Influence of K and -- 3.4 Execution Time -- 4 Conclusion -- References -- Evidential Regression by Synthesizing Feature Selection and Parameters Learning -- 1 Introduction -- 2 Preliminaries.
2.1 Dempster-Shafer Theory -- 2.2 EVREG: Evidential Regression -- 3 Proposed Method -- 3.1 Construction of Evaluation Function -- 3.2 Feature Selection and Parameters Learning -- 4 Numerical Experiment -- 5 Conclusion -- References -- Algorithms and Evidential Operators -- Distributed EK-NN Classification -- 1 Introduction -- 2 Preliminaries -- 2.1 EK-NN: Evidential K-NN Classifier -- 2.2 Apache Spark -- 3 GE2K-NN: Global Exact EK-NN -- 4 Experiments -- 4.1 Performance Evaluation -- 4.2 Multi-node Experiments on TACC Frontera -- 5 Conclusions -- References -- On Improving a Group of Evidential Sources with Different Contextual Corrections -- 1 Introduction -- 2 Belief Functions: Notations and Concepts Used -- 2.1 Basic Concepts -- 2.2 Corrections -- 3 Learning a Group of Evidential Sources -- 4 Experiments -- 5 Conclusion -- References -- Measure of Information Content of Basic Belief Assignments -- 1 Introduction -- 2 Belief Functions -- 3 Generalized Entropy of a BBA -- 4 Information Content of a BBA -- 5 Information Gain and Information Loss -- 6 Conclusions -- References -- Belief Functions on Ordered Frames of Discernment -- 1 Introduction -- 2 Power Set of Ordered Elements -- 3 Combination of Belief Functions on Ordered Power Set -- 4 Distances on Belief Functions on Ordered Power Set -- 4.1 Distance Between Ordered Elements -- 4.2 Distance Between Belief Functions -- 5 Decision and Conflict on Ordered Elements -- 6 Belief Functions on

Ordered Fuzzy Elements -- 7 Conclusion -- References -- On Modelling and Solving the Shortest Path Problem with Evidential Weights -- 1 Introduction -- 2 Preliminaries -- 2.1 Deterministic Shortest Path Problem -- 2.2 Belief Function Theory -- 3 Shortest Path Problem with Evidential Weights -- 3.1 Modelling -- 3.2 Solving -- 3.3 Sizes of Optweak and Optstr -- 4 Conclusion -- References.
Data and Information Fusion -- Heterogeneous Image Fusion for Target Recognition Based on Evidence Reasoning -- 1 Introduction -- 2 Brief Recall of Evidence Reasoning -- 3 Heterogeneous Image Fusion for Target Recognition -- 3.1 Mutual Learning of the Networks for Heterogeneous Images -- 3.2 Weighted Fusion of Multiple Classification Results -- 4 Experiment -- 4.1 Datasets and Preprocessing -- 4.2 Experimental Environment and Parameter Settings -- 4.3 Effectiveness of the Mutual Learning of Heterogeneous Images -- 4.4 Results and Analysis -- 5 Conclusion -- References -- Cluster Decomposition of the Body of Evidence -- 1 Introduction -- 2 Basic Concepts of the Evidence Theory -- 3 Evidence Clustering -- 3.1 Restriction and Extension of the Mass Function -- 3.2 Statement of the Problem of Clustering the Body of Evidence Based on Conflict Optimization -- 3.3 Cluster Decomposition of Evidence Based on the Conflict Density Function -- 3.4 The k-Means Algorithm for the Body of Evidence -- 4 Evaluation of the Internal Conflict of the Body of Evidence Based on Its Clustering -- 5 Conclusion -- References -- Evidential Trustworthiness Estimation for Cooperative Perception -- 1 Introduction -- 2 Related Works -- 3 Problem Statement with Object Detectability -- 4 Evidential Trustworthiness Estimation -- 4.1 Coherency -- 4.2 Consistency -- 4.3 Confirmation Through Free Space and Objects -- 5 Results -- 5.1 Simulation Study -- 5.2 Experimental Results -- 6 Conclusion -- References -- An Intelligent System for Managing Uncertain Temporal Flood Events -- 1 Introduction -- 2 Preliminaries -- 2.1 Theory of Belief Functions -- 2.2 Allen's Interval Algebra -- 3 Temporal Representation and Reasoning Under Uncertainty -- 3.1 Modeling Uncertain Temporal Flood Events -- 3.2 Temporal Reasoning Under Uncertainty -- 4 Intelligent Query-Answering System.
4.1 System Architecture -- 4.2 Illustrative Examples -- 5 Conclusions and Future Work -- References -- Statistical Inference - Graphical Models -- A Practical Strategy for Valid Partial Prior-Dependent Possibilistic Inference -- 1 Introduction -- 2 Background -- 3 Valid Inference Under Partial Priors -- 3.1 Partial Priors -- 3.2 Validity and Its Consequences -- 3.3 How to Achieve (Strong) Validity -- 4 Practical IM Construction -- 4.1 Likelihood-Based Contour -- 4.2 Computation -- 5 Illustration -- 6 Conclusion -- References -- On Conditional Belief Functions in the Dempster-Shafer Theory -- 1 Introduction -- 2 Basics of D-S Theory of Belief Functions -- 3 Conditional Belief Functions -- 4 Summary and Conclusions -- References -- Valid Inferential Models Offer Performance and Probativeness Assurances -- 1 Introduction -- 2 Background -- 2.1 Two-Theory Problem -- 2.2 Inferential Models Overview -- 3 Two P's in the Same Pod -- 3.1 Performance -- 3.2 Probativeness -- 4 Illustrations -- 4.1 Normal Mean -- 4.2 Bivariate Normal Correlation -- 5 Conclusion -- References -- Links with Other Uncertainty Theories -- A Qualitative Counterpart of Belief Functions with Application to Uncertainty Propagation in Safety Cases -- 1 Introduction -- 2 From Belief Functions to Qualitative Capacities -- 3 Expert Elicitation Approach -- 4 Logical Inference for Qualitative Capacities -- 5 Application to Safety Cases -- 6 Application Example -- 7 Conclusion -- References -- The Extension of Dempster's Combination Rule Based on Generalized Credal Sets -- 1 Introduction