1. Record Nr. UNINA9910780894103321

Autore	Rokach Lior
Titolo	Pattern classification using ensemble methods [[electronic resource] /] / Lior Rokach
Pubbl/distr/stampa	Singapore ; ; Hackensack, NJ, : World Scientific, c2010
ISBN	1-282-75785-7 9786612757853 981-4271-07-1
Descrizione fisica	1 online resource (242 p.)
Collana	Series in machine perception and artificial intelligence ; ; v. 75
Disciplina	621.389/28
Soggetti	Pattern recognition systems Algorithms Machine learning
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 (p. 185-222) and index.
Nota di contenuto	Contents; Preface; 1. Introduction to Pattern Classification; 1.1 Pattern Classification; 1.2 Induction Algorithms; 1.3 Rule Induction; 1.4 Decision Trees; 1.5 Bayesian Methods; 1.5.1 Overview.; 1.5.2 Nave Bayes; 1.5.2.1 The Basic Nave Bayes Classifier; 1.5.2.2 Nave Bayes Induction for Numeric Attributes; 1.5.2.3 Correction to the Probability Estimation; 1.5.2.4 Laplace Correction; 1.5.2.5 No Match; 1.5.3 Other Bayesian Methods; 1.6 Other Induction Methods; 1.6.1 Neural Networks; 1.6.2 Genetic Algorithms; 1.6.3 Instance-based Learning; 1.6.4 Support Vector Machines 2. Introduction to Ensemble Learning 2.1 Back to the Roots; 2.2 The Wisdom of Crowds; 2.3 The Bagging Algorithm; 2.4 The Boosting Algorithm; 2.5 The Ada Boost Algorithm; 2.6 No Free Lunch Theorem and Ensemble Learning; 2.7 Bias-Variance Decomposition and Ensemble Learning; 2.8 Occam's Razor and Ensemble Learning; 2.9 Classifier Dependency; 2.9.1 Dependent Methods; 2.9.1.1 Model-guided Instance Selection; 2.9.1.2 Basic Boosting Algorithms; 2.9.1.3 Advanced Boosting Algorithms; 2.9.1.4 Incremental Batch Learning; 2.9.2 Independent Methods; 2.9.2.1 Bagging; 2.9.2.2 Wagging 2.9.2.3 Random Forest and Random Subspace Projection 2.9.2.4 Non-

Linear Boosting Projection (NLBP); 2.9.2.5 Cross-validated Committees; 2.9.2.6 Robust Boosting; 2.10 Ensemble Methods for Advanced Classification Tasks; 2.10.1 Cost-Sensitive Classification; 2.10.2 Ensemble for Learning Concept Drift; 2.10.3 Reject Driven Classification; 3. Ensemble Classification; 3.1 Fusions Methods; 3.1.1 Weighting Methods; 3.1.2 Majority Voting; 3.1.3 Performance Weighting; 3.1.4 Distribution Summation; 3.1.5 Bayesian Combination; 3.1.6 Dempster-Shafer; 3.1.7 Vogging; 3.1.8 Nave Bayes
3.1.9 Entropy Weighting 3.1.10 Density-based Weighting; 3.1.11 DEA Weighting Method; 3.1.12 Logarithmic Opinion Pool; 3.1.13 Order Statistics; 3.2 Selecting Classification; 3.2.1 Partitioning the Instance Space; 3.2.1.1 The K-Means Algorithm as a Decomposition Tool; 3.2.1.2 Determining the Number of Subsets; 3.2.1.3 The Basic K-Classifier Algorithm; 3.2.1.4 The Heterogeneity Detecting K-Classifier (HDK-Classifier); 3.2.1.5 Running-Time Complexity; 3.3 Mixture of Experts and Meta Learning; 3.3.1 Stacking; 3.3.2 Arbiter Trees; 3.3.3 Combiner Trees; 3.3.4 Grading; 3.3.5 Gating Network
4. Ensemble Diversity 4.1 Overview; 4.2 Manipulating the Inducer; 4.2.1 Manipulation of the Inducer's Parameters; 4.2.2 Starting Point in Hypothesis Space; 4.2.3 Hypothesis Space Traversal; 4.3 Manipulating the Training Samples; 4.3.1 Resampling; 4.3.2 Creation; 4.3.3 Partitioning; 4.4 Manipulating the Target Attribute Representation; 4.4.1 Label Switching; 4.5 Partitioning the Search Space; 4.5.1 Divide and Conquer; 4.5.2 Feature Subset-based Ensemble Methods; 4.5.2.1 Random-based Strategy; 4.5.2.2 Reduct-based Strategy; 4.5.2.3 Collective-Performance-based Strategy
4.5.2.4 Feature Set Partitioning

Sommario/riassunto

Researchers from various disciplines such as pattern recognition, statistics, and machine learning have explored the use of ensemble methodology since the late seventies. Thus, they are faced with a wide variety of methods, given the growing interest in the field. This book aims to impose a degree of order upon this diversity by presenting a coherent and unified repository of ensemble methods, theories, trends, challenges and applications. The book describes in detail the classical methods, as well as the extensions and novel approaches developed recently. Along with algorithmic descriptions