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Nota di contenuto	Invited Papers -- Classifier Ensembles for Changing Environments -- A Generic Sensor Fusion Problem: Classification and Function Estimation -- Bagging and Boosting -- AveBoost2: Boosting for Noisy Data -- Bagging Decision Multi-trees -- Learn++.MT: A New Approach to Incremental Learning -- Beyond Boosting: Recursive ECOC Learning Machines -- Exact Bagging with k-Nearest Neighbour Classifiers -- Combination Methods -- Yet Another Method for Combining Classifiers Outputs: A Maximum Entropy Approach -- Combining One-Class Classifiers to Classify Missing Data -- Combining Kernel Information for Support Vector Classification -- Combining Classifiers Using Dependency-Based Product Approximation with Bayes Error Rate --

Combining Dissimilarity-Based One-Class Classifiers -- A Modular System for the Classification of Time Series Data -- A Probabilistic Model Using Information Theoretic Measures for Cluster Ensembles -- Classifier Fusion Using Triangular Norms -- Dynamic Integration of Regression Models -- Dynamic Classifier Selection by Adaptive k-Nearest-Neighbourhood Rule -- Design Methods -- Spectral Measure for Multi-class Problems -- The Relationship between Classifier Factorisation and Performance in Stochastic Vector Quantisation -- A Method for Designing Cost-Sensitive ECOC -- Building Graph-Based Classifier Ensembles by Random Node Selection -- A Comparison of Ensemble Creation Techniques -- Multiple Classifiers System for Reducing Influences of Atypical Observations -- Sharing Training Patterns among Multiple Classifiers -- Performance Analysis -- First Experiments on Ensembles of Radial Basis Functions -- Random Aggregated and Bagged Ensembles of SVMs: An Empirical Bias-Variance Analysis -- Building Diverse Classifier Outputs to Evaluate the Behavior of Combination Methods: The Case of Two Classifiers -- An Empirical Comparison of Hierarchical vs. Two-Level Approaches to Multiclass Problems -- Experiments on Ensembles with Missing and Noisy Data -- Applications -- Induced Decision Fusion in Automated Sign Language Interpretation: Using ICA to Isolate the Underlying Components of Sign -- Ensembles of Classifiers Derived from Multiple Prototypes and Their Application to Handwriting Recognition -- Network Intrusion Detection by a Multi-stage Classification System -- Application of Breiman's Random Forest to Modeling Structure-Activity Relationships of Pharmaceutical Molecules -- Experimental Study on Multiple LDA Classifier Combination for High Dimensional Data Classification -- Physics-Based Decorrelation of Image Data for Decision Level Fusion in Face Verification -- High Security Fingerprint Verification by Perceptron-Based Fusion of Multiple Matchers -- Second Guessing a Commercial 'Black Box' Classifier by an 'In House' Classifier: Serial Classifier Combination in a Speech Recognition Application.

Sommario/riassunto

The fusion of different information sources is a persistent and intriguing issue. It has been addressed for centuries in various disciplines, including political science, probability and statistics, system reliability assessment, computer science, and distributed detection in communications. Early seminal work on fusion was carried out by pioneers such as Laplace and von Neumann. More recently, research activities in information fusion have focused on pattern recognition. During the 1990s, classification fusion schemes, especially at the so-called decision-level, emerged under a plethora of different names in various scientific communities, including machine learning, neural networks, pattern recognition, and statistics. The different nomenclatures introduced by these communities reflected their different perspectives and cultural backgrounds as well as the absence of common forums and the poor dissemination of the most important results. In 1999, the first workshop on multiple classifier systems was organized with the main goal of creating a common international forum to promote the dissemination of the results achieved in the diverse communities and the adoption of a common terminology, thus giving the different perspectives and cultural backgrounds some concrete added value. After five meetings of this workshop, there is strong evidence that significant steps have been made towards this goal. Researchers from these diverse communities successfully participated in the workshops, and world experts presented surveys of the state of the art from the perspectives of their communities to aid cross-fertilization.
