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Nota di contenuto	Statistical Pattern Recognition; Contents; Preface; Notation; 1 Introduction to statistical pattern recognition; 1.1 Statistical pattern recognition; 1.1.1 Introduction; 1.1.2 The basic model; 1.2 Stages in a pattern recognition problem; 1.3 Issues; 1.4 Supervised versus unsupervised; 1.5 Approaches to statistical pattern recognition; 1.5.1 Elementary decision theory; 1.5.2 Discriminant functions; 1.6 Multiple regression; 1.7 Outline of book; 1.8 Notes and references; Exercises; 2 Density estimation - parametric; 2.1 Introduction; 2.2 Normal-based models 2.2.1 Linear and quadratic discriminant functions 2.2.2 Regularised discriminant analysis; 2.2.3 Example application study; 2.2.4 Further developments; 2.2.5 Summary; 2.3 Normal mixture models; 2.3.1 Maximum likelihood estimation via EM; 2.3.2 Mixture models for discrimination; 2.3.3 How many components?; 2.3.4 Example application study; 2.3.5 Further developments; 2.3.6 Summary; 2.4 Bayesian estimates; 2.4.1 Bayesian learning methods; 2.4.2 Markov chain Monte Carlo; 2.4.3 Bayesian approaches to discrimination; 2.4.4 Example application study; 2.4.5 Further developments; 2.4.6 Summary

2.5 Application studies; 2.6 Summary and discussion; 2.7 Recommendations; 2.8 Notes and references; Exercises; 3 Density estimation - nonparametric; 3.1 Introduction; 3.2 Histogram method; 3.2.1 Data-adaptive histograms; 3.2.2 Independence assumption; 3.2.3 Lancaster models; 3.2.4 Maximum weight dependence trees; 3.2.5 Bayesian networks; 3.2.6 Example application study; 3.2.7 Further developments; 3.2.8 Summary; 3.3 k-nearest-neighbour method; 3.3.1 k-nearest-neighbour decision rule; 3.3.2 Properties of the nearest-neighbour rule; 3.3.3 Algorithms; 3.3.4 Editing techniques; 3.3.5 Choice of distance metric; 3.3.6 Example application study; 3.3.7 Further developments; 3.3.8 Summary; 3.4 Expansion by basis functions; 3.5 Kernel methods; 3.5.1 Choice of smoothing parameter; 3.5.2 Choice of kernel; 3.5.3 Example application study; 3.5.4 Further developments; 3.5.5 Summary; 3.6 Application studies; 3.7 Summary and discussion; 3.8 Recommendations; 3.9 Notes and references; Exercises; 4 Linear discriminant analysis; 4.1 Introduction; 4.2 Two-class algorithms; 4.2.1 General ideas; 4.2.2 Perceptron criterion; 4.2.3 Fisher's criterion; 4.2.4 Least mean squared error procedures; 4.2.5 Support vector machines; 4.2.6 Example application study; 4.2.7 Further developments; 4.2.8 Summary; 4.3 Multiclass algorithms; 4.3.1 General ideas; 4.3.2 Error-correction procedure; 4.3.3 Fisher's criterion - linear discriminant analysis; 4.3.4 Least mean squared error procedures; 4.3.5 Optimal scaling; 4.3.6 Regularisation; 4.3.7 Multiclass support vector machines; 4.3.8 Example application study; 4.3.9 Further developments; 4.3.10 Summary; 4.4 Logistic discrimination; 4.4.1 Two-group case; 4.4.2 Maximum likelihood estimation; 4.4.3 Multiclass logistic discrimination

Sommario/riassunto

Statistical pattern recognition is a very active area of study and research, which has seen many advances in recent years. New and emerging applications - such as data mining, web searching, multimedia data retrieval, face recognition, and cursive handwriting recognition - require robust and efficient pattern recognition techniques. Statistical decision making and estimation are regarded as fundamental to the study of pattern recognition. Statistical Pattern Recognition, Second Edition has been fully updated with new methods, applications and references. It provides a comprehensive intro
