

Dimension Reduction with Linear Discriminant Functions Based on an Odds Ratio Parameterization

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Summary

The association of two random elements with positive joint probability density function is given by an odds ratio function. The covariance is an adequate description only in the case of two jointly Gaussian variables. The impact of the association structure on the set-up and solution of problems of linear discrimination is investigated, and the results are related to standard techniques of multivariate analysis, particularly to canonical correlation analysis, analysis of contingency tables, discriminant analysis and multidimensional scaling.

Key words: Association; Odds ratios; Kullback–Leibler distance; Mutual information; Canonical correlation analysis; Contingency tables; Discriminant analysis; Multidimensional scaling; Correspondence analysis; Logistic regression.