Predictor selection for model averaging

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Abstract

When a number of distinct models is available for prediction, choice of a single model can offer unstable results. In regression, stochastic search variable selection with Bayesian model averaging is a solution for this robustness issue but requires very many predictors. Here we look at Bayesian model averaging that incorporates variable selection for prediction and use decision theory in the context of the multivariate general linear model. We obtain similar mean square errors of prediction but with a greatly reduced predictor space that helps model interpretation. The paper summarises some results from Brown *et al.* (2000). Here we provide a new example by applying the results to the selection of wavelet coefficients when regressing constituents of biscuit doughs on near-infrared spectra. In the example the number of predictors greatly exceeds the number of observations.

Some Keywords: MULTIVARIATE GENERAL LINEAR MODEL; BAYESIAN MODEL AVERAGING; DECISION THEORY; VARIABLE SELECTION; WAVELETS.

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