Abstract

To deal with the classification of functional data, most fundamental method could be Linear Discriminant Analysis. It is easy to implement and yields nice results. However, when there is large correlation between predictors or our sample size is not large enough compared to the number of factors, problems related to covariance matrix occur. Besides, nonlinear class boundaries also lead to inefficiency of linear decision boundaries. Hastie managed to overcome these two problems separately with newly proposed Penalized Discriminant Analysis (1995) and Flexible Discriminant Analysis (1994). This paper illustrated a nonparametric discrimination tool based on kernel estimation proposed by Ferraty and Vieu in 2003 taking into account the two issues at the same time. This paper also included classification analysis on three data sets, namely Phoneme data, Spectrometric data and Radar Waveform data, to discuss the choice of semi-metrics used in kernel estimation, as well as to compare the performance of this new method with the traditional ones.'