中央研究院統計科學研究所
學 術 演 講

講　題：Classification for elliptically symmetric distributions

演講人：Prof. Smarajit Bose

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時　間：2019年1月15日（星期二）下午15:30-17:00

地　點：中央研究院統計科學研究所6005會議室(環境變遷研究大樓A棟)

※茶　會：下午 15：10 開始

Abstract

In linear discriminant analysis, the assumption of equality of the dispersion matrices of different classes leads to a classification rule based on minimum Mahalanobis distance from the class centers. However, without this assumption, the resulting quadratic discriminant classifier involves, in addition to the Mahalanobis distances, the ratio of the determinants of the dispersion matrices as a factor. In fact, it has been observed that, for discriminating between populations with underlying elliptically symmetric distributions, such classifiers also incorporate similar factors, apart from the Mahalanobis distances.

In this talk, a nonparametric classification technique which generalizes discriminant analysis has been proposed. The method of cross-validation is used to make the technique adaptive to a given dataset. An extensive simulation study is presented to illustrate the potential of the method. Finally, through implementation on a number of real-life data sets, it has been demonstrated that the proposed Generalized Quadratic Discriminant Analysis (GQDA) compares very favourably with other nonparametric methods, and is computationally cost-effective.

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