

國立東華大學應用數學系
專題演講

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講 題：Matrix Variate Logistic Regression Model with
Application to EEG Data

時 間：100年10月21日(星期五) 15:10-16:50

地 點：理學院A324會議室

摘 要

Logistic regression has been widely applied in the field of biomedical research for a long time. It aims to model the conditional probability of an event as the logit function of a linear combination of covariates. In some applications, covariates of interest have a natural structure, such as being a matrix, at the time of being collected. The rows and columns of the covariate matrix then have certain physical meanings, and they must contain useful information regarding the response. If we simply stack the covariate matrix as a vector and fit the conventional logistic regression model, relevant information may be discarded and the problem of inefficiency will arise. Motivated from this reason, we propose in this paper the matrix variate logistic (MV-logistic) regression model. The most important feature of MV-logistic regression model is that it retains the inherent structure of the covariate matrix. Another advantage is the parsimony of parameters needed. These features lead to a good performance of MV-logistic regression in many applications. Besides two simulation studies, the EEG Database Data Set is analyzed to demonstrate the usefulness of the proposed method, where the structure effects of covariate matrix are extracted, and a high classification accuracy is achieved.

