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Minimum Hellinger distance estimation for Poisson mixtures

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Abstract

Minimum Hellinger distance (MHD) Estimation is an appealing method of estimation for discrete data as it works well in cases where the assumed model provides a poor fit to observed data and the maximum-likelihood (ML) method fails. Often, spurious observations that may cause problems to the ML method do not seem to affect the MHD method which in general performs better with such data. In this paper we derive MHD estimates for finite Poisson mixtures. The properties of these estimators are examined and a comparison is made of their performance relative to that of the ML estimators. MHD estimators are both efficient and robust. A numerical example involving data sets on environmental complaints is presented. An iterative algorithm that facilitates computation is provided. The algorithm always converges to a minimum, but several initial values are needed to ensure that the global minimum is obtained. © 1998 Elsevier Science B.V. All rights reserved.

Keywords: Algorithm; Efficiency; Environmental data; Minimum distance; Robustness
