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Choosing initial values for the EM algorithm for finite mixtures

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Abstract

The EM algorithm is the standard tool for maximum likelihood estimation in finite mixture models. The main drawbacks of the EM algorithm are its slow convergence and the dependence of the solution on both the stopping criterion and the initial values used. The problems referring to slow convergence and the choice of a stopping criterion have been dealt with in literature and the present paper deals with the initial value problem for the EM algorithm. The aim of this paper is to compare several methods for choosing initial values for the EM algorithm in the case of finite mixtures as well as to propose some new methods based on modifications of existing ones. The cases of finite normal mixtures with common variance and finite Poisson mixtures are examined through a simulation study.

Keywords: Moment estimates; Bootstrap root search; Finite mixtures; Aitken acceleration