

A Unified Tool for the Root Selection and the Hypothesis Testing for Mixture Models

WEIXIN YAO, *University of California, Riverside, weixin.yao@ucr.edu*

Abstract:

In this talk, we will introduce how to apply goodness of fit (GOF) statistics to choose a consistent root for finite mixture models. Our new method inherits both the consistency properties of distance estimators and the efficiency of the MLE. The new method is simple to use and its computation can be easily done using existing R packages for mixture models. In addition, we will also introduce how to apply the GOF test statistics to perform the hypothesis testing and model selection for finite mixture models. The limiting distribution of test statistics is simulated based on a bootstrap method. It is demonstrated through extensive empirical studies that a simple application of GOF test statistics to finite mixture models can provide comparable or even superior hypothesis testing performance compared to some existing cutting-edge testing methods.

Keyword:

Mixture models; Hypothesis testing; Order selection, Root selection; Goodness of fit