

Mixtures of factor analysis models with covariates for multiply censored dependent data

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Abstract: Censored data arise frequently in diverse applications in which observations to be measured may be subject to some upper and lower detection limits due to the restriction of experimental apparatus such that they are not exactly quantifiable. Mixtures of factor analyzers with censored data (MFAC) have been recently proposed for model-based density estimation and clustering of high-dimensional data under the presence of censored observations. We consider an extended version of MFAC with covariates to accommodate multiply censored dependent variables and develop two analytically feasible EM-type algorithm for computing maximum likelihood estimates of the parameters with closed-form expressions. Moreover, we provide an information-based method to compute asymptotic standard errors of mixing proportions and regression coefficients. The utility and performance of our proposed methodologies are illustrated through two real data examples.