Point estimation of birnbuam-saunders distribution using EM-algorithm / Wikanda Phaphan

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Abstrak

The Birnbaum-Sanders (BS) distribution was first introduced in 1969 by Birnbaum and Saunders as a combination of inverse Gaussian distributions with a length-biased inverse Gaussian distribution. Later, in 2008, Ahmed et al. introduced a new parametrization of the BS distribution based on Birnbaum-Sanders, and they also proposed a parameter estimation using the method of moments and regression-quantile estimation. In this paper, we emphasize the Birnbaum-Sanders distribution presented by Ahmed et al., and we develop an EM-algorithm to estimate two unknown parameters of this distribution. The EM-algorithm is a general method used to estimate the parameters when the probability density function is complicated and it is the best alternative for the estimation of a mixture distribution. We assumed that this problem has a missing value, and maximized complete data log-likelihood function instead log-likelihood function because it is analytically easier. Moreover, some simulation experiments were conducted in order to examine the performance of the proposed parameter estimation, and it was observed that the performances were quite satisfactory. Specifically, the MSE, variance and bias tend to decrease as n increases.