论文

OPTIMAL AND ROBUST DETECTION OF MULTIVARIATE OUTLIERS FOR ELLIPTICALLY CONTOURED DISTRIBUTION

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摘要   The outlier problem for a multivariate elliptically contoured distribution's random sample with mean slippage is defined and the likelihood ratio test ofthe null hypothesis, in which there are no outliers, versus the alternative hypothesis, in which some outliers are present, is derived. We show that the testing problem is invariant under a group of affine transformations and obtain the maximal invariance which is equivalent to the likelihood ratio testing statistic. Furthermore, the non-null and null density distribution functions of the likelihood ratio testing statistic are derived. We find that the null density distribution function of the testing statistic is robust and the density distribution function is a monotonical likelihood ratio function of the maximal invariance. Therefore, the likelihood ratiotest is a uniformly most powerful invariant test among the group of affine transfor-mations. In the last section, we give an example of detecting multivariate outliers in elliptically contoured distribution.

关键词   Outliers,elliptically contoured distribu

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