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Multivariate Outlier Detection and Cluster Identification

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Multivariate Outlier Detection and Cluster Identification

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Abstract

We examine relationships between the problem of robust estimation of multivariate location and shape and the problem of maximum likelihood assignment of multivariate data to clusters. Recognition of the connections between estimators for clusters and outliers immediately yields one important result that we demonstrate in this paper; namely, outlier detection procedures can be improved by combining them with cluster identification techniques. Using this combined approach, one can achieve practical breakdown values that approach the theoretical limits. We report computational results that demonstrate the effectiveness of this approach. In addition, we provide a new robust clustering method.

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