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Título: How shrinkage can be used for robust methods.

Abstract: Robust methods based on the notion of shrinkage are proposed for outlier detection and robust regression. A collection of robust Mahalanobis distances is proposed for multivariate outlier detection. The robust intensity and scaling factors, needed to define the shrinkage of the robust estimators used in the distances, are optimally estimated. Some properties are investigated, such as the affine equivariance and the breakdown value. The performance of the proposal is illustrated through the comparison to other robust techniques from the literature, in a simulation study and with a real example of breast cancer data. On the other hand, a robust estimator is proposed for the parameters that characterize the linear regression problem. It is also based on the notion of shrinkage. A thorough simulation study is conducted to investigate the efficiency with Normal and heavy-tailed errors, the robustness under contamination, the computational times, the affine equivariance and breakdown value of the regression estimator. The real dataset example about the Living Environment Deprivation (LED) index of areas in Liverpool (UK) is studied.