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Robust Efficient Generalized M-Estimation in Regression Models

A new class of robust estimators for the linear regression model and logistic regression model were introduced. They are generalized M-estimators by absorbing a goodness of fit measure into a continuous weight function. Goodness-of-fit measure was computed using the empirical distribution of the residuals of an initial robust estimator in linear regression models, and squared Mahalanobis distances in logistic regression models. A Monte Carlo study showed that the proposed estimators operated at almost full efficiency while maintaining good robustness properties. The asymptotic consistency was proved using empirical process methods.