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ADAPTIVE TRIMMED LIKELIHOOD ESTIMATION IN REGRESSION

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Summary

In this paper we derive an asymptotic normality result for an adaptive trimmed likelihood estimator of regression starting from initial high breakdownpoint robust regression estimates. The approach leads to quickly and easily computed robust and efficient estimates for regression. A highlight of the method is that it tends automatically in one algorithm to expose the outliers and give least squares estimates with the outliers removed. The idea is to begin with a rapidly computed consistent robust estimator such as the least median of squares (LMS) or least trimmed squares (LTS) or for example the more recent MM estimators of Yohai. Such estimators are now standard in statistics computing packages, for example as in SPLUS or R. In addition to the asymptotics we provide data analyses supporting the new adaptive approach. This approach appears to work well on a number of data sets and is quicker than the related brute force adaptive regression approach described in Clarke (2000). This current approach builds on the work of Bednarski and Clarke (2002) which considered the asymptotics for the location estimator only.

Key Words: trimmed likelihood estimator, adaptive estimation, regression.

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