# Fast Algorithms for Robust Regression

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**Abstract.** It is well-known that outliers cause severe problems when using classical statistical approaches like ordinary least squares regression. Robust methods are to be preferred, but their application is hampered because of the high computational demands. In intensive care e.g., robust regression techniques applied to a moving time window have been suggested for the robust extraction of a signal from noisy time series representing the human vital parameters. To use robust regression methods on-line, fast algorithms are necessary. We present general techniques and specific algorithms for the computation of robust methods, e.g. for the repeated median, least median of squares regression, the least quartile difference estimator, and the median absolute deviation. The algorithms allow the application of robust regression methods in real time and therefore increase the applicability of robust regression methods for signal extraction. The general techniques presented are also applicable to other estimators and regression methods.

## References

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