# A MULTIVARIATE ADAPTIVE TRIMMED LIKELIHOOD ALGORITHM

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I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary education institution.

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**Abstract**

The research reported in this thesis describes a new algorithm which can be used to robustify statistical estimates *adaptively*. The algorithm does not require any pre-specified cut-off value between inlying and outlying regions and there is no presumption of any cluster configuration. This new algorithm adapts to any particular sample and may advise the *trimming* of a certain proportion of data considered extraneous or may divulge the structure of a multi-modal data set. Its adaptive quality also allows for the confirmation that uni-modal, multivariate normal data sets are outlier free. It is also shown to behave independently of the *type* of outlier, for example, whether applied to a data set with a solitary observation located in some extreme region or to a data set composed of clusters of outlying data, this algorithm performs with a high probability of success.

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