Is the skew t distribution truly robust?

Tsung-Shan Tsou[1,2] and **Wei-Cheng Hsiao**[1]

[1] *National Central University, Jhongli, Taiwan*
[2] *Cathay Medical Research Institute, Taipei, Taiwan*

Abstract

The skew t distribution is considered by many a flexible model for modeling general asymmetric data. The model parameters are believed to be able to properly capture the skewness and kurtosis possessed in data.

The alleged robustness property of the skew t distribution is inspected in details in the independent and identically distributed and regression situations. It is found that the skew t distribution is robust only when the extent of asymmetry is mild and the magnitude of kurtosis is small.

We recommend using an existing parametric robust likelihood approach to analyze data when one is uncertain about the distribution underlying the data.