

# Multivariate skewness and kurtosis measures

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## Abstract

Classical measures of skewness and kurtosis were introduced by Mardia (1970). Unfortunately these scalar characteristics may have the same numerical values for multivariate distributions with different shape. There have been suggestions to solve this problem by defining multivariate characteristics of skewness and kurtosis (see Móri, Rohatgi & Székely, 1993, and Koziol, 1989, for example). But these characteristics do not take into account all mixed cumulants of the third and fourth order. In recent years multivariate kurtosis has become a topic of special interest in independent component analysis. In this paper we suggest a multivariate skewness measure as a  $p$ -vector and a kurtosis characteristic in the form of an  $p \times p$ -matrix which are defined with help of the star-product of matrices. An application to the independent component analysis will also be discussed.

## Keywords

Multivariate skewness, Multivariate kurtosis, Independent component analysis

## References:

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