

Robust trimmed mean direction to estimate circular location parameter in the presence of outliers

ABSTRACT

Mean direction is a good measure to estimate circular location parameter in univariate circular data. However, it is bias and cause misleading when the circular data has some outliers, especially with increasing ratio of outliers. Trimmed mean is one of robust method to estimate location parameter. Therefore in this study, it is focused to find a robust formula for trimming the circular data. This proposed method is compared with mean direction, median direction and M estimator for clean and contaminated data. Results of simulation study and real data prove that trimmed mean direction is very successful and the best among them.

Keyword: Trimmed mean direction; Mean direction; Median direction; Circular distance; M estimator