Data segmentation methodology based on moving sum statistics

Claudia Kirch

Otto-von-Guericke University Magdeburg

Abstract:

Using the example of changes in the mean we introduce change point estimators for multiple changes based on moving sum statistics. In the presence of multiscale change points with both large jumps over short intervals and small changes over long stationary intervals, multiscale methods achieve good adaptivity in their localisation but at the same time, require the removal of false positives and duplicate estimators via a model selection step. We propose a localised application of Schwarz information criterion and establish its theoretical consistency in estimating the number and locations of multiple change points under general assumptions permitting heavy tails and dependence. Furthermore, we propose some bootstrap methods to quantify the uncertainty associated with the estimators of the location estimators. We show that the bootstrap automatically adapts to the different asymptotic regimes associated with local and fixed changes respectively.