



Sequential detection of structural changes in irregularly observed data

Tobias Kley
(HU Berlin)

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Online surveillance of time series is traditionally done with the aim to identify changes in the marginal distribution under the assumption that the data between change-points is stationary and that new data is observed at constant frequency. In many situations of interest to data analysts, the classical approach is too restrictive to be used unmodified. We propose a unified system for the monitoring of structural changes in streams of data where we use generalised likelihood ratio-type statistics in the sequential testing problem, obtaining the flexibility to account for the various types of changes that are practically relevant (such as, for example, changes in the trend of the mean). The method is applicable to sequences where new observations are allowed to arrive irregularly. Early identification of changes in the trend of financial data can assist to make trading more profitably. In an empirical illustration we apply the procedure to intra-day prices of components of the NASDAQ-100 stock market index. This project is joint work with Piotr Fryzlewicz.