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CUSUM control charts for monitoring BINARCH(1) processes

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In this work, we develop and study upper and lower one-sided CUSUM control charts for monitoring correlated counts with finite range. Often in practice, data of that kind can be adequately described by a first-order binomial integer-valued ARCH model (or BINARCH(1)). The proposed charts are based on the likelihood ratio and can be used for detecting upward or downward shifts in process mean level. The general framework for the development and the practical implementation of the proposed charts is given. Using Monte Carlo simulation, we compare the performance of the proposed CUSUM charts with the corresponding one-sided Shewhart and EWMA charts for BINARCH(1) processes. A real-data application of the proposed charts in epidemiology is also discussed.

Keywords

Average run length, BINARCH(1) model, CUSUM

Special/invited session

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