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CUSUM Charts based on Individual Observations for Monitoring a Shifted Exponential Process

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The shifted (or two-parameter) exponential distribution is a well-known model for lifetime data with a warranty period. Apart from that, it is useful in modelling survival data with some flexibility due to its two-parameter representation. Control charts for monitoring a process that it is modeled as a shifted exponential distribution have been studied quite extensively in the recent literature. However, all the available charts require the use of rational subgroups of size $n \geq 2$. In this work we focus on the case of individual observations (i.e., $n = 1$) and propose the use of two CUSUM charts for monitoring this type of processes. The preliminary results show that the proposed charts have increased sensitive and thus, they are effective, in the detection of various out-of-control situations. Also, a follow-up procedure is discussed in order to identify which of the process parameters has changed due to the presence of assignable causes. Finally, the implementation of the proposed charts in practice is discussed via an illustrative example.

Type of presentation

Talk

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Mainly methodology

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