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Cost-optimal control charts for mixture shift-size distributions

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The Markovchart R package is able to minimise the cost of a process, using Markov-chain based x -charts under general assumptions (partial repair, random shift-size, missing samples). In this talk a further generalisation will be presented. Quite often the degradation can take different forms (e.g. if there is a chance for abrupt changes besides the „normal” wear), which might be modelled by a mixture distribution. This approach was originally developed for the healthcare setting, but it can be applied to engineering or even financial processes. In this talk we present a general formula that leads to explicit cost-calculations and apply the methods to simulated data, investigating the sensitivity of the proposed approach to misspecification of the parameters – an error that is often encountered in real life applications.

Keywords

control charts, mixture distributions

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