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Modelling and Forecasting Correlated Failure Counts

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We present a state-space model in which failure counts of items produced from the same batch are correlated, so as to be able to characterize the pattern of occurrence of failures of new batches at an early stage, based on those of older batches. The baseline failure rates of consecutive batches are related by a random-walk-type equation, and failures follow a Poisson distribution. The failure process determined by this model rests on few assumptions, so that it can be adapted to different situations. Bayesian inference and computation are carried out by particle filtering.

Keywords

Poisson-lognormal model; state-space model; Bayesian inference

Classification

Mainly methodology

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