Control charts for integer-valued time series models with overdispersion

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Abstract

In this study we consider the integer-valued autoregressive (INAR) model with general innovations which leads to overdispersion property. Freeland and McCabe (2004) derived the score function, the information matrix and new types of residuals for the INAR(1) model with Poisson innovations. In this study, we extend their results to INAR model with general innovations. Residual based controls for monitoring the INAR model with general innovations are proposed. The techniques are applied to construct integer-valued time series model and control charts for empirical count data.

Keywords: control chart, INAR(1), overdispersion, Poisson, residuals