IT MIGHT BE A PRECURSOR TO SOME RANDOM ENVIRONMENT INAR MODELS

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ABSTRACT

The subject of this paper is a combined integer-valued autoregressive time series model with both positive and negative values, constructed by means of a new thinning operator. The proposed model can be regarded as a precursor of random environment integer-valued INAR models with state space on the entire set $\mathbb{Z}$, providing a flexible framework for modeling count processes with changing dynamics and signed observations. Important probabilistic properties of the model are derived. Estimators of the unknown parameters are presented, and their asymptotic properties are established. Applicability of the model is illustrated using a real-data example. In the end, flows that involved into Finally, the limitations of the model are discussed, and the ways in which overcoming them led to the development of random environment INAR models are presented.

Keywords: INAR, Thinning, Discrete Laplace distribution.