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Count data time series models for telecommunications data

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Abstract

The aim of the thesis is to try out the Poisson time series model for count data, in order to analyze telecommunications monitoring data from Ericsson AB. The amount of data a telecommunications network produces is untenable to check manually, and thus the detections of malfunctions can be both time consuming and extremely lengthy.

In this thesis we will explore the implementation of the above mentioned count data time series model on a subset of the data from a telecommunications network and the viability of such an approach, in particular, we will use identity link based generalized linear models to perform the analysis. We will also attempt to select the best model amongst several based on Akaike's information criteria. Finally we will cover how to implement said models in R and cover some of the more technical aspects of the Poisson time series model for count data.

It turns out that the model fits quite well on most of the studied time series, although, some of the data the telecommunications network produces have counts in order of magnitudes of millions, hence a better approach would probably have been to use an ordinary time series based framework using a Gaussian response model.

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