

Imaging Seminar - Department of Mathematics

Date and Time: Monday May 4, 2015, 2-3 PM

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A Bayesian statistical process control approach in modeling count type data

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Abstract

We will start with a short introduction to Statistical Process Control (SPC). Then we will consider a process producing count type data from a Poisson distribution. The Poisson parameter (mean and variance) can experience jumps at random times. These jumps can be of either direction, i.e. either upward (process degradation) or downward (process improvement) and of random size. Our interest is in monitoring in an on-line fashion the underline parameter (detecting “out of control” behavior). The methodology is based on a Bayesian sequentially updated scheme of mixture of Gamma distributions coming from adopting a change point model. Issues regarding inference, prediction and robustness will be covered. The proposed method will be tested against the Shiryaev-Roberts change point alternative and will be applied to a real data set. The developed methodology is very appealing for Phase I and/or short run count data.