

On the Quasi-likelihood Estimation for Monitoring Profile Data

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Abstract

In some applications, the quality of process or product is characterized and summarized by a relationship between a response variable and one or more explanatory variables. Profile monitoring is a technique for checking the stability of the relationship over time. The existing linear profile monitoring methods usually assumed that the error distribution to be normal. However, this assumption may not always be true in practice. To handle this situations, we propose a distribution-free method for profile monitoring under generalized linear model framework. Two multivariate exponentially weighted moving average (MEWMA) control schemes are proposed based on quasi-likelihood estimation. We will evaluate the performances of the proposed methods by simulation studies. Furthermore, the proposed methods are applied to a real data set.

Keywords: profile monitoring, generalized linear model, quasi-likelihood estimation.