On the Monitoring of Linear Berkson Profiles

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Abstract

In many applications the quality of a process or product is best characterized and summarized by a functional relationship between a response variable and one or more explanatory variables. At each sampling stage one observes a collection of data points that can be represented by a curve (or profile). We consider the quality of a process which can be described by a simple linear Berkson profile. Some existing methods for monitoring the simple linear profile and several new proposed schemes are studied for charting the simple linear Berkson profile in Phase II. Simulation studies demonstrate the effectiveness and efficiency of one of the proposed monitoring scheme. Additionally, a systematic diagnostic approach is provided to spot the change point location of the process and identify the type of change in the profile. Finally, an example is used to illustrate the implementation of the proposed monitoring scheme and diagnostic approach.