An Analytical Method for Detecting the Change-Point in Simple Linear Regression Model. Application at Weibull Distribution

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Keywords
Change-point, simple linear regression model, Weibull distribution

Abstract
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1 Introduction

Change-point models have originally been developed in connection with applications in quality control, where a change from the in-control to the out-of-control state has to be detected based on the available random observations. Up to now various change-point models have been suggested for a broad spectrum of applications like quality control, reliability, econometrics, medicine, signal processing, meteorology, etc.

The general change-point problem can be described as follows: A random process indexed by time is observed and we want to investigate whether a change in the distribution of the random elements occurs. Formally, let $X_1, \ldots, X_n$ denote a sequence of independent random variables, where