Development of optimal accelerated test plan

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Résumé en anglais	This paper describes an optimal accelerated test plan considering an economic approach. We introduce a general framework to obtain plans of optimal accelerate tests with a specific objective, such as cost. The optimal test plans are defined by considering prior knowledge of reliability, including the reliability function and its scale and shape parameters, and the appropriate model to characterize the accelerated life. This information is used in Bayesian inference to optimize the test plan. The prior knowledge contains the uncertainty on real reliability of new product. So, the proposed methodology consists of defining an optimal accelerated testing plan while considering an objective function based on economic value, using Bayesian inference for optimizing the test plan, and using the uncertainty of the parameters to obtain a robust, optimal testing plan. The objective function consists of two terms: the cost linked to testing activities and the cost associated with operation of the product. Finally, we will develop our optimal plan by extending our approach to include theoretical formulation of the various degrees of freedom with respect to the parameters. To complete this development, we need to improve the algorithm of optimization. To obtain the best test plan, we propose an optimization procedure using the genetic algorithm. The proposed method will be illustrated by a numerical example based on a well-known problem.
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