Optimal accelerated test plan: optimization procedure using Genetic Algorithm

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Mots-clés	accelerated testing [4], Bayesian inference [5], cost [6], genetic algorithm [7], maximum a posteriori [8], optimization [9], parameter estimation [10], Robustness [11]
Résumé en anglais	This paper describes an optimization procedure using Genetic Algorithm to define 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 objective is to minimize the costs involved in testing without reducing the quality of the data obtained. 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. To perform optimization, a specific genetic algorithm is decribed and applied to obtain the best test plan. This procedure is then illustrated on a numerical example.
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