A Hidden-Markovian Software Reliability Modeling and Its Parameter Estimation with Simultaneous Debugging at Random Number of Fault Times

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Abstract

This paper discusses a new Hidden-Markovian software reliability model and suggests several methods to estimate the parameters characterizing this model. While the existing models assume that the debugging is taken whenever a fault is detected, our new model considers the case when the debugging activity is performed at the time when a random number of non-critical faults is occurred. Thus, the existing model can be considered as the special case of our model. Based on the proposed model, we study the numerical methods to estimate the relevant parameters using the software fault-occurrence data. Numerical examples are presented for the illustrative purpose.