Optimal Software Testing

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Summary

In this paper, we formulate an optimal testing procedure for software. The objective function is taken to be the expected value of the cost associated with accepting faulty software plus the expected value of the accumulated cost of testing. The model can be used to design optimal testing plans for unit testing as well as for complete programs. The model assigns different costs for normal bugs and major bugs, and considers the costs of various types of misclassification as well The model is demonstrated by an example, and the cost function is plotted for a range of test cycles to illustrate the minimum cost solution.

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