A Random search based effective algorithm for pairwise test data generation

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ABSTRACT
Testing is a very important task to build error free software. As the resources and time to market is limited for a software product, it is impossible to perform exhaustive test i.e., to test all combinations of input data. To reduce the number of test cases in an acceptable level, it is preferable to use higher interaction level (t way, where $t \geq 2$). Pairwise (2-way or $t = 2$) interaction can find most of the software faults. This paper proposes an effective random search based pairwise test data generation algorithm named R2Way to optimize the number of test cases. Java program has been used to test the performance of the algorithm. The algorithm is able to support both uniform and non-uniform values effectively with performance better than the existing algorithms/tools in terms of number of generated test cases and time consumption.

KEYWORDS:
Combinatorial interaction testing; Software testing; Pairwise testing; Test case generation

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