Optimal Controlled Random Tests

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Abstract: Controlled random tests, methods of their generation, main criteria used for their synthesis, such as the Hamming distance and the Euclidean distance, as well as their application to the testing of both hardware and software systems are discussed. Available evidences suggest that high computational complexity is one of the main drawbacks of these methods. Therefore we propose a technique to overcome this problem. In the paper we propose the algorithm for optimal controlled random tests generation. Both experimental and analytical investigation clearly show the high efficiency of proposed solution especially for the multi-run tests with small number of iterations. The given tests can be applied for hardware and software testing but it seems they may be particularly interesting from the perspective of the effective detection of pattern sensitive faults in RAMs.

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