

MT2Way: A novel strategy for pair-wise test data generation

Khandakar Fazley Rabbi; Abul Hashem Beg; Tutut Herawan
Faculty of Computer Systems & Software Engineering
University Malaysia
Pahang
Kuantan
Malaysia

ABSTRACT

Reducing the number of test cases by utilizing minimum possible amount of time during the testing process of software and hardware is highly desirable. For ensuring the reliability of the method the combination of a complete set of available inputs is recommended to be executed. But generally an exhaustive numbers of test cases are hard to execute. Besides, test data generation is an NP-hard (non-deterministic polynomial-time hard) problem. This is likely to present considerable difficulties in defining the best possible method for generating the test data. The reduction of test cases depends on the interaction level, 2-way interaction or pair-wise test data can reduce high number of test cases and it efficiently addresses most of the software errors. This paper presents MT2Way, an effective 2-way interaction algorithm to generate the test data which is more acceptable in terms of the number of test cases and execution time. The performance tests show that MT2Way achieve better results in terms of system configuration, generated test size, and executing time as compared to other techniques.

KEYWORDS:

Combinatorial Interaction Testing; Software Testing; Pair-wise Testing; Test Case Generation

REFERENCES

1. Lei, Y., Kacker, R., Kuhn, D.R., Okun, V., Lawrence, J.: IPOG: A General Strategy for T-Way Software Testing. In: Proceedings of the 14th Annual IEEE International Conference and Workshops on Engineering of Computer-Based Systems (ECBS 2007), pp. 549–556 (2007)
2. Cui, Y., Li, L., Yao, S.: A New strategy for pairwise test case generation. In: Third International Symposium on Intelligent Information Technology Application (IITA), pp. 303–306 (2009)
3. Younis, M.I., Zamli, K.Z., Isa, N.A.M.: Algebraic Strategy to Generate Pairwise Test Set for Prime Number Parameters and Variables. In: Proceedings of the IEEE International Conference on Computer and Information Technology (ITSim), pp. 1–4 (2008)
4. Chen, X., Gu, Q., Qi, J., Chen, D.: Applying Particle Swarm optimization to Pairwise Testing. In: Proceedings of the 34th Annual IEEE Computer Software and Application Conference (COMPSAC), pp. 107–116 (2010)
5. Klaib, M.F.J., Muthuraman, S., Ahmad, N., Sidek, R.M.: A Tree Based Strategy for Test Data Generation and Cost Calculation for Uniform and Non-Uniform Parametric Values. In: Proceedings of the 10th IEEE International Conference on Computer and Information Technology (CIT), pp. 1376–1383 (2010).