International J. of Math. Sci. & Engg. Appls. (IJMSEA)
ISSN 0973-9424, Vol. 3 No. I (2009), pp. 191-208

INTELLIGENT TEST CASE OPTIMIZATION USING HYBRID GENETIC ALGORITHM

T. PRABAHAR GODWIN JAMES, S. GURUSUBRAMANI AND GURU SUBRAMANI

Abstract

Software testing is both an expensive and a time taken activity in Software Development Life Cycle (SDLC). Studies show that, more than 50% of cost is spent for software testing during the development process. In order to get zero-defect software, the number of test cases generated needs to be infinite which is impossible in real world. Since exhaustive testing is impossible, we need an optimized testing approach to find the optimal number of test cases which can find out more number of bugs in the software within less time and cost. In this paper we applied Hybrid Genetic Algorithm (HGA) which gives the optimal number of test cases needed for testing. Evolutionary algorithms (EA) play a vital role in most of the optimization problems. Among the various evolutionary algorithms, Simple Genetic algorithm is the easiest, flexible and can be applied to multi-objective optimization problems. Some of the drawbacks in applying Simple Genetic algorithm (SGA) are it is a non-linear one and will usually strike up at local optima. In order to avoid this, we not only should generate the population of test cases but also include a local search approach in the solution space for an intelligent decision making So, we are going in for an enhanced genetic algorithm called hybrid genetic algorithm in which some more heuristics are introduced for optimal decision making in selecting the parent for
further generations.

Key Words : Software testing, Test case optimization, Evolutionary Algorithms (EA), Genetic Algorithm (GA), Hybrid Genetic Algorithm (HGA), Heuristics, Mutation Score (ms).