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A Novel Approach towards Test Case Prioritization Technique

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Abstract : Software testing is a time and cost intensive process. A scrutiny of the code and rigorous testing is required to identify and rectify the putative bugs. The process of bug identification and its consequent correction is continuous in nature and often some of the bugs are removed after the software has been launched in the market. This process of code validation of the altered software during the maintenance phase is termed as Regression testing. Regression testing ubiquitously considers resource constraints; therefore, the deduction of an appropriate set of test cases, from the ensemble of the entire gamut of test cases, is a critical issue for regression test planning. This paper presents a novel method for designing a suitable prioritization process to optimize fault detection rate and performance of regression test on predefined constraints. The proposed method for test case prioritization m-ACO alters the food source selection criteria of natural ants and is basically a modified version of Ant Colony Optimization (ACO). The proposed m-ACO approach has been coded in 'Perl' language and results are validated using three examples by computation of Average Percentage of Faults Detected (APFD) metric.

Keywords : regression testing, software testing, test case prioritization, test suite optimization
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