Software Testing is continuous process of development and maintenance in life of software. In maintenance phase, regression testing gets exercised with additional resources/time for performance. The prioritization of test cases helps to reduce the cost-time of regression testing. Hence, completing Regression Testing effectively and on schedule is challenge for software
 tester. In this research paper, the Particle Swarm Optimization (PSO) technology has been studied and used with the blend of Genetic Algorithm (GA) and the hybrid prioritized algorithm has been proposed. The Particle Swarm Optimization is an optimization algorithm based on heuristic search which can be used to solve time-constraint environment of Test Case Prioritization and the concept of Genetic Algorithm will further help in diversifying the solution within whole search space. For finding the effectiveness of hybrid prioritization algorithm: the efficiency %, saving %, reduction % and APFD/APCC has been calculated.

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**Index Terms**

Computer Science

Software Engineering

**Key words**

Regression Testing

Particle Swarm Optimization

Genetic Algorithms