CHAPTER 11

CONCLUSION & FUTURE WORK

11.1 SUMMARY OF RESEARCH ACHIEVEMENT

This research work mainly focuses on optimizing the test suite by discovering set of test cases that gives the same coverage as the original test suite based on some criterion. In this study, the minimization is achieved by using a Gravitational Bee Colony (GBC) algorithm which is a hybrid approach based on Artificial Bee Colony (ABC) and Gravitational Search Algorithm (GSA). The algorithm searches for the optimum solution by calculating fitness values using coverage information. The search process is repeated until a minimized test suite is identified. The developed technique efficiently identifies and minimizes the test suites. Additionally, the clustering concept of data mining is used to traverse through the minimized test suite and the corresponding data featured Fuzzy operation is done by using prioritization technique for efficient test suite running process. The proposed method gives the promising results in term of test suite coverage, time, test suite fault coverage, path coverage and number of iteration and it give positive feedback in the evaluation process.

Based on the comparison analysis above, the proposed approach is approximately 15% to 20% more proficient than the existing test suite optimization methods respect to the number of test cases and execution time. Many times, many researchers proved that the hybrid methods are more efficient than the base methods; likewise the proposed hybrid approach with prioritization provides promising results. With that said the current and future researchers need
to focus on hybrid approaches, not only within minimization process but also with test case generation and prioritization.

11.2 FUTURE WORK

Current work analyzed the efficiency and effectiveness of the proposed Gravitational Bee search with Fuzzy logic algorithm in terms of statement coverage, path coverage, fault coverage, number of iterations, size of test suite and execution time.

The idea of future work is to analyze the efficiency of the optimized test suite by changing the order of optimization, which is prioritizing the test suite first and then minimizing it. That should also include the analysis of time savings attained by max fault coverage in less number of iterations. Also the thought process is to incorporate cost analysis into the proposed framework to assess the cost efficiency.