FREQUENCY BASED TEST CASE PRIORITIZATION

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CERTIFICATE

We accept the work contained in this report as a confirmation to the required standard for the partial fulfilment of the degree of MS(SE).

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DEDICATION

Dedicated to my beloved parents and to all those, whose prayers always pave the way to success for me.

DECLARATION OF AUTHORSHIP

I hereby declare that content of this thesis is my own work and that it is the result of work done during the period of registration. To the best of my knowledge, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgement has been made in the text.

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ABSTRACT

Softwares are ever evolving. Every time software evolves, it requires testing in order to verify that the evolution did not affect the already working parts of the system. Thus, software testing is of fundamental importance in software development life cycle. For each new release, testing the entire test suite is often called regression testing and may not be feasible due to resource constraints. Researchers have proposed prioritization schemes for prioritising test cases in the test suite such that as many test cases are executed as possible within the given time and effort constraints. However, a prioritisation scheme should not compromise the ability of the test suite in identifying the faults. In this work, we propose a test case prioritisation scheme that is based on the two kinds of input, i.e. it considers tester's perspective and the user's perspective. Test cases are prioritised based on both the perspectives and the workflows which are long and relatively complex are prioritised over smaller in length and relatively less complex workflows. We call the prioritization scheme Frequency based Test-case Prioritization (FTCP). We propose three algorithms for the purpose namely Interaction Mining Algorithm, a Mapping Algorithm and a Prioritization Algorithm. We consider two applications as case studies and validate the effectiveness of FTCP.

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ABBREVIATIONS

TCP   Test Case Prioritization

FTCP   Frequency based Test Case Prioritization

LMSP   Longest Most Significant Path

SPM   Sequential Pattern Mining