

AN ADAPTIVE BASED TESTING FOR SOFTWARE RELIABILITY USING RELAI

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Abstract

Nowadays software testing plays an important role in developing software with no issues, failures and also make them unique. RELAI testing is also nothing but the software testing which invokes the real usage of the system in order to find the frequent number of failures occurring in corresponding software. During testing, it cannot be able to assess and improve the reliability of the software but oppositely debug testing many number failures at the runtime. A new way of technique has been implemented in this paper i.e., An adaptive based testing software reliability using RELAI to improve the delivered reliability and a continuous assessment of reliability is gained during testing and fault removal using adaptive testing scheme. This technique is implemented in the several software applications compared separately including the reliability improvement or for reliability assessment.

Keywords: Software Testing, Reliability, Adaptive Testing, Sampling, Operational Profile.

1. INTRODUCTION:

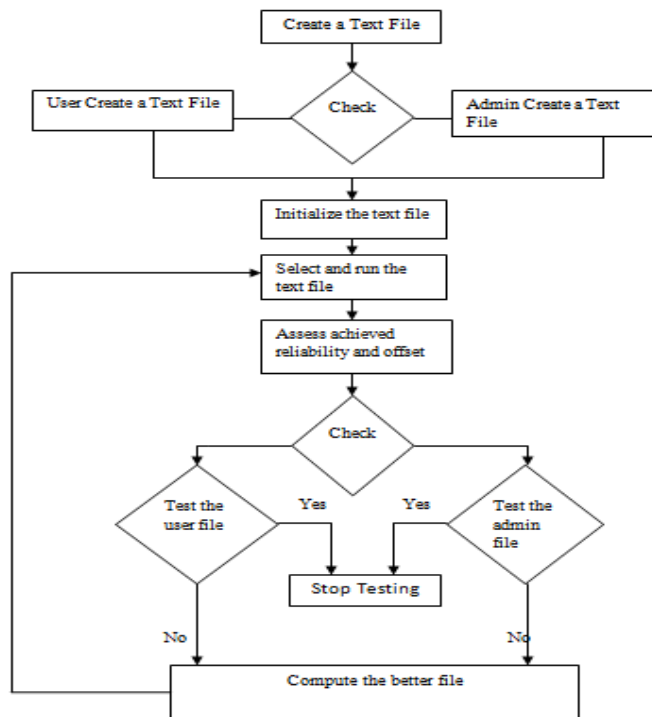
To expose failures is the objective of software testing. Testers prioritize inputs according to the pursued quality attribute, e.g., correctness, robustness, reliability, security. When high reliability is desired, tester wishes to sample those failure-causing inputs that have the largest impact on operational failure probability. This is the trend followed by those techniques based on the expected operational profile to derived tests. These select test cases by looking for high occurrence failure-causing inputs as they mainly impact reliability. RELAI adopts an adaptive sampling approach that iteratively learns from test execution results as they become available and based on them allocates test cases to the most reliability impacting input regions. Researchers and practitioners see two major limitations in operational testing:

- i) Demanding high reliability on the unsuitability for systems.
- ii) Knowing the assumption of the operational profile of the software under test.

2. PROPOSED SYSTEM:

In this article, a new approach called an adaptive based testing for software reliability using RELAI is an integrated technique conceived to improve the final delivered reliability and to provide in the same testing session, while overcoming both the low-occurrence failures problem and the inaccurate issue of the profile. By an adaptive testing, the user can be able to improve and assess reliability in the same testing session. Within each input region with an assigned number of test cases, to provide the interval estimate of attained reliability during testing a second sampling strategy is defined. Reliability assessment is usually conducted by assuming the code being frozen thus entailing a separate testing session devoted to assess the reliability and access the software.

3. ARCHITECTURAL DIAGRAM



From the architectural diagram, the user and the admin can be able to create text files individually and then they are allowed to insert the contents in the text file. This allows us to view and update their text files. Then it undergoes the testing session. Both the admin and user files are tested to generate the reliable file.

4. RELATED WORKS

Assessing Reliability Growth:

Recently Ku -Y. Cai, C.-H. Jiang, H. Hu, and C.-G. Bai [2] in 2008. “An experimental study of adaptive testing for software reliability assessment” paper where the adaptive testing strategy, the random testing strategy and the operational profile based testing strategy was applied. The experimental results demonstrate that the adaptive testing strategy can really work in practice and may noticeably outperform the other two. The operational profile based testing strategy if high confidence in the reliability estimates is required or the real-world operational profile of the software under test cannot be accurately identified.

Subsequently, J. Lv, B.-B. Yin, and K.-Y. CAI [3] in 2014, proposed a survey On the Asymptotic Behavior of Adaptive Testing Strategy for Software Reliability Assessment. This work aims to investigate and improve its global performance without losing the local optimality. Simulation and experiments are set up to validate AT-GD's but have no effectiveness and efficiency. It leads to less reliability of software for the users.

J. Lv, B.-B. Yin, and K.-Y. CAI [4] in 2014, proposed a survey on estimating confidence interval of software reliability with adaptive testing strategy. In this paper, Software reliability assessment is a critical problem in safety-critical and mission-critical systems. In the reliability assessment of such a system, both an accurate reliability estimate and a tight confidence interval are required. AT has been proved effective in minimizing reliability estimator variance, its performance on providing the corresponding confidence interval has not been investigated.

5. SYSTEM REQUIREMENTS:

Hardware Configuration:

RAM	2GB
Hard Disk	500 GB
Keyboard	Standard Windows Keyboard
Mouse	Two or Three button mouse

Software Configuration:

Operating System	Windows XP
Programming Language	JAVA JDK 1.7/JSP
Front End Tool	Net beans IDE
Back End Tool	MYSQL

6. RESEARCH METHODS:

6.1 Software Creating:

Here, the new software can be created. For instance, in this project create a text file which is created by both admin and user. Admin can create the file and at the same time user also create the text file.

6.2 Software View:

Here, the software can view their specialty such as text document, java coding testing, etc. For instance, in our project, we can able to view specialty of creating the text file. We can able to view the content of the file which is created by admin and user.

6.3 Software Comparing:

In this third module, creating new software is compared to the Existing software. For instance, in our project compare the creating text file. Admin created the text file is compared to the user created the text file.

6.4 Software Testing:

Here, the existing software is compared to newly created software and tested which one is reliable. For instance, in our project, the admin created text file is compared to user created text file and tested which one is reliable.

6.5 Software Result View:

Here, view the result based on the software testing. For instance, in our project, we can show that which one is reliable based on the chart. In our project, the admin created text file is compared to the user text file and show reliable file based on the chart.

7. RESULTS AND DISCUSSIONS:

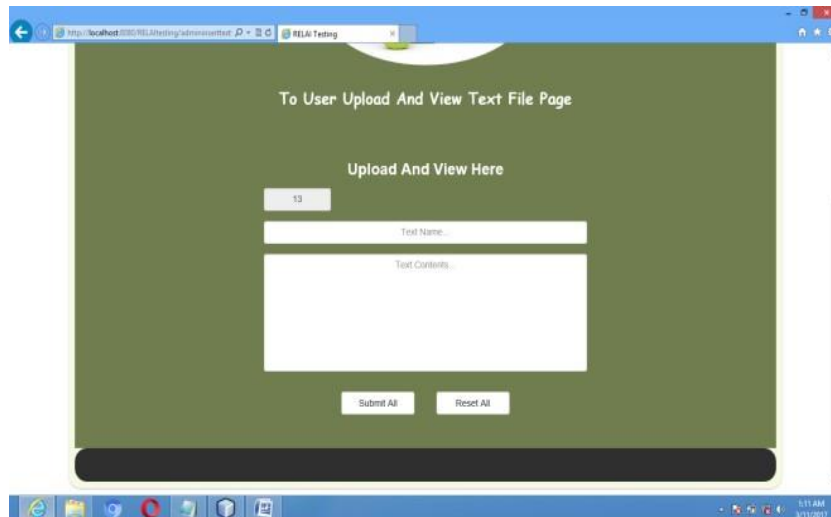
Operational profile based testing selects test cases by looking for high occurrence failure-causing inputs, as they mainly impact reliability. By an adaptive testing, the user can be able to improve and assess reliability in the same testing session, while overcoming both the low-occurrence failures problem and the inaccurate issue of the profile. By an adaptive testing, user can be able to improve and assess reliability in the same testing session. Within each input region with an assigned number of test cases, to provide the interval estimate of attained reliability during testing a second sampling strategy is defined. Reliability assessment is usually conducted by assuming the code being frozen thus entailing a separate testing session devoted to assess the reliability and access the software.

8. EXPERIMENTAL RESULTS:

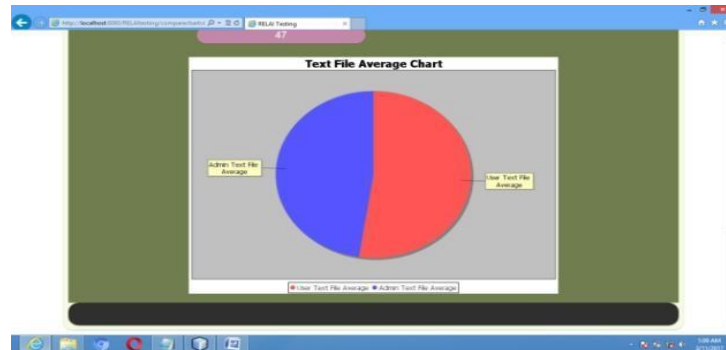
Creating Text File:



Create Text File By Admin:



Upload & View File:



9. CONCLUSIONS AND FUTURE WORK:

In particular, future studies could address these challenges:

I Developing the relation between the uncertainties associated operational profile and the resulting uncertainty in the reliability estimation

II Investigating new sampling strategies at domain level (namely, for reliability improvement) while assessing at sub-domain level (e.g., investigating other Montecarlo-based inference methods)

III Similarly, in other sampling techniques for reliability assessment investigation. Example: estimating the intervals are derived from the RHC-based method.

IV Using intervals derived from the RHC-based method to devise maximizing the confidence in the estimate.

V Comparing the assessment ability with software reliability growth models, that takes the different methods or to combine them for a better assessment;

VI Removal of assumptions on perfect envisioning strategies and debugging introduce new bugs during removal of fault (e.g., considering an imperfect debugging factor like in the literature on software reliability growth models)

VII Removing the assumption of perfect oracle knowledge (e.g., survey borrowing methods, sampling under “random responses”). These challenges are the starting point of our next research to the improvements and best tuning of RELAI testing.

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