



### State of the Art Table (SOTA): Software Testing

| Source Information   | Karuturi Sneha & Malle Gowda M (2017)   | Mubarak Albarka Umar & Chen Zhanfang (2019)   | Fathima Naja Musthafa, Syeda Mansur & Adika Wibawanto (2020)   | Prof. Dr. Subarna Shakya (2020)   |
|--|---|---|--|---|
| Research topic/question  | What is the most effective test using white box testing, black box testing or gray box testing?   | Automation tools and frameworks used in software testing  | Automated software testing on android mobile software  | Reliable Automated Soware Testing Through Hybrid Optimization Algorithm   |
| Methodology  | Survey: Qualitative   | Comprehensive study   | Comprehensive study  | Survey: Qualitative   |
| Findings   | <ul style="list-style-type: none"> <li>White box testing: Techniques are rarely used practically</li> <li>Black box testing: The technique is more practical just by reviewing the inputs and outputs</li> <li>Grey box testing: The technique is more effective because of the combination of white box testing and black box testing</li> </ul> | <ul style="list-style-type: none"> <li>Automation testing is the biggest bottleneck for delivering quality at speed, as it saves time, reduces costs, increases efficiency and improves accuracy</li> <li>The process of evaluating and selecting a framework requires planning because it is very important to consider proper automation to ensure that the framework can easily accommodate various automation tools and changes in the software being tested.</li> <li>There are no good or bad automation tools because it depends a lot on the nature of the software to be tested</li> </ul> | <ul style="list-style-type: none"> <li>According to the literature it's stated that testing takes up to 50% of total development costs</li> <li>All software testing techniques involved in ensuring product quality</li> <li>Automated testing should use tools that are included in the standard android developer toolkit and do not require any additional requirements</li> </ul> | <ul style="list-style-type: none"> <li>Ant colony optimization is better in terms of sensitivity and specificity</li> <li>The proposed model also has a better accuracy which reaches a range of 96.2% accuracy rate</li> <li>The proposed model also has a better computation time which reaches a range of 96.2% accuracy rate</li> </ul> |
| Limitations  | <ul style="list-style-type: none"> <li>White box testing</li> <li>Black box testing</li> <li>Grey box testing</li> </ul>  | Automation tools and frameworks   | Automated software testing on the android platform   | <ul style="list-style-type: none"> <li>ANN Algorithm</li> <li>PSO Algorithm</li> <li>H-ACO Algorithm</li> </ul>   |
| Areas for future research  | Choosing the best technique in software testing or maximizing the use of all three  | Mengoptimalkan Automation Tools dan Frameworks yang digunakan dalam Software Testing  | Choosing the right tool to help reduce challenges during the testing process using automation test   | Differential evaluation used to select features   |
| Related features quantitative research on automated software testing | Comparison of software testing by manual and automated methods needs to be done using the right methods and tools so that they can choose the right test so as to produce quality software.   | The selection of the right method can help automate testing so that the results can be seen from the software, especially Android which is of higher quality so that it is free from bugs etc. along with the tools that are growing  | The selection of the right method can help automate testing so that the results can be seen from the software, especially Android which is of higher quality so that it is free from bugs etc. along with the tools that are growing   | How high is the percentage generated by testing software using automated testing compared to doing tests manually   |



INTERNATIONAL COMMUNITY FORUM (ICF)

# Research on Quantitative in Automation Software Testing

Fajar Setiady, 2111600470@student.budiluhur.ac.id

Magister of Computer Science  
Budi Luhur University

Good quality software is software which free from defects (defects, bugs or faults). To produce a good quality software, testing is needed, either manual testing or automation. The selection of the right test must be based on the right method and technique, so that the level of accuracy of the resulting test is quite high. Software testing can help developers find errors in each software before it is used by the user (live to production), so understand each quality metric is important. Automation testing is an option to minimize human error when testing. Software testers can use scripts to execute automation test programs and can perform these tests repeatedly. Automation testing can also help software testers perform software testing in a large number of projects and short project deadlines.

In software testing, there is 2 methods, for example manual testing and automation testing. And there is 3 techniques, for example white box testing, black box testing and gray box testing. The methods and the techniques has own advantages and deficiencies.

## REFERENCES

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