Adaptive Web Application Testing on Web-based Platforms using Emerging Technologies: A Review

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Abstract

Automated testing is performed to trace and detect the errors and defects of a web application. A test case suite is executed using specialized automated testing software employing the automation testing approach. Compared to traditional and manual testing, web testing is more interactive and dynamic. Thus, this paper reviews adaptive web automation using emerging technologies for faster and smarter testing on web-based platforms. However, most web application testing encounters challenges where they have difficulty integrating various technologies to address the issues. Initially, this paper identified significant issues and challenges of web application testing that are influenced by manual and labor-intensive test maintenance are expensive. Furthermore, the advancement of technology, like Machine Learning, Codeless Functional Test Automation, and Visual Regression Testing, can address the issues and challenges faced in web application testing. These technologies have an algorithm defined and applied to determine how to automate the web service products to detect or predict any changes and adapt them to the appropriate test cases. In addition, this study compares which testing approach is the most viable solution to address the issues and challenges of web testing. The research finding shows that machine learning can solve all the issues, and applying machine learning has dramatically affected the testing process and provides a better testing environment. Codeless and visual regression testing also shows a more innovative testing process; however, these have limitations, and further development is needed. Finally, for future work of this study, further machine-learning approaches need to be identified and determined for test case prioritization using Artificial Neural Networks that have been effectively utilized as white-box test oracles in the literature.

Keywords: Web automation testing, machine learning, codeless testing, visual regression testing, literature review, Philippines