Automated Web Testing using Machine Learning and Containerization

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***Abstract*—Testing practices in software engineering constantly evolves due to the complexity of the systems. This has opened the space for new testing methods to try to integrate artificial intelligence with software testing tools. Automation testing refers to the use of strategies and tools which reduce the need for manual or human involvement in redundant and repetitive tasks that tend to cause human errors and then generating and executing automatically test cases. However, while a test scripts is generated, its reuse may be challenging for several reasons. In our Web systems context, a web page may be modified leading to the adaptation of the testing architecture and the eventual rewriting of the test scripts. It becomes time and effort consuming to create generic test cases that can be applied on any website. Websites keep on changing dynamically and the testers need to adapt to these changes each time and alter the test cases. These changes are often made manually or using external scripts. In this paper, we propose an approach allowing the test scripts to automatically adapt to these eventual changes of the web pages by using containers and a learning technique. We defined and implemented an algorithm on a well designed test framework and successfully evaluated our approach on thousands of websites.**

***Index Terms*—Web Testing, Automation Testing, Selenium, Machine Learning, SVM, Containerization**