IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 4.819
Volume 8, Issue 1, August 2019

Advancing Element Identification for Web and Mobile Automation

Vinaysimha Varma Yadavali
Independent Researcher

Abstract: *Element identification is a cornerstone of automation testing, directly influencing the reliability, scalability, and efficiency of test scripts. With the rapid evolution of web and mobile applications, traditional element identification methods—such as XPath, CSS Selectors, and static attributes—are increasingly challenged by dynamic DOM structures, shadow DOMs, virtual DOMs, and hybrid frameworks. These challenges are further amplified in mobile environments, where gestures, native elements, and platform-specific attributes add layers of complexity.*

This paper explores the advancements in element identification techniques that address these challenges for both web and mobile automation testing. It presents a comparative analysis of traditional methods and emerging solutions, highlighting their limitations in modern application scenarios. The study introduces hybrid strategies, including context-aware locators, heuristic-based identification, and early implementations of adaptive and self-healing locators. It also examines the role of cross-platform tools like Selenium, Appium, and Cypress in tackling identification issues.

Furthermore, the paper emphasizes the importance of unified approaches that bridge web and mobile testing, particularly in hybrid applications with embedded web views. Future trends, such as collaborative tagging standards between development and testing teams, are discussed to provide a forward-looking perspective on overcoming element identification bottlenecks.

By addressing key pain points and proposing innovative techniques, this paper aims to guide testers, developers, and tool creators in adopting resilient, scalable, and adaptable element identification strategies that meet the demands of modern software applications.

Keywords: Element Identification, Automation Testing, Web and Mobile Applications, Dynamic DOM, Shadow DOM, Locator Strategies, Hybrid Applications, Test Automation Tools, Cross-Platform Testing, Selenium, Appium, Cypress

DOI: 10.48175/IJARSCT-6232