



Automotive HMI Test Automation

Elevating the efficiency, quality, and safety of HMI testing

Automotive HMI Test Automation

Automotive human-machine interface (HMI) refers to the technology and design elements that enable drivers and passengers to interact with and control various functions and systems in a vehicle, such as infotainment, navigation, and vehicle settings. Technology plays a crucial role in enhancing safety, convenience, and user experience in vehicles, helping drivers and passengers interact with complex technology while minimizing distractions and ensuring a more intuitive and enjoyable driving experience.

Amidst the evolution of automotive digital transformation and the advent of next-generation mobility experiences, vehicles seamlessly immerse themselves in the digital realm. This integration not only fosters heightened connectivity, automation, and personalization but also sets the stage for a transformative user experience. As part of this journey, user behavior testing and exploration play a pivotal role in understanding and enhancing the human-machine interaction within the digital cockpit.

In this dynamic landscape, where permanent data exchange between vehicles and the cloud drives continuous advancements, Keysight Eggplant stands at the forefront. In support of the vision for fully programmable, software-defined vehicles. Recognizing the importance of user-centric experiences, Eggplant presents a distinctive integrated end-to-end testing solution.

This framework empowers automotive manufacturers by facilitating rapid, AI-based testing to refine software-centric functions, ensuring both efficiency and safety in the operation of software. In doing so, Eggplant contributes to elevating the user experience, aligning with the progressive trajectory of automotive innovation.

The Keysight Eggplant solution enables you to transform your HMI testing processes with a cutting-edge solution designed to elevate the efficiency and accuracy of your testing procedures. In today's rapidly evolving automotive industry, where HMI plays a pivotal role in the user experience, Eggplant empowers test automation engineers to streamline their testing efforts, optimize performance, and deliver superior business outcomes.



Automotive HMI systems have become increasingly complex, comprising diverse applications and functionalities operating across a wide range of in-vehicle and infotainment environments.

Testing these systems presents unique challenges, such as system complexity, specialized environments, and legal and safety responsibilities.

System complexity

The interconnectivity of multiple devices in automotive HMI makes traditional testing methods challenging because they struggle to accurately replicate the complex web of interactions between infotainment systems, sensors, and other components.

Specialized environments

Traditional testing methods often fall short when evaluating the automotive HMI because these systems represent unique environments that do not align with the standard testing protocols used in other industries.

Legal and safety obligations

Testing the automotive HMI with traditional methods is difficult due to the high confidence level required, especially when considering obligations that original equipment manufacturers (OEMs) must meet. These systems must adapt and update rapidly to address evolving regulations and ensure passenger safety, a demand that traditional testing may not accommodate effectively.

Test the next-generation automotive experience

Dashboard 2.0



Infotainment



Heads up display



Gauge cluster



Safety



The Eggplant Software Solution

Eggplant software for automotive HMI testing leverages state-of-the-art technologies to overcome these challenges and streamline your testing efforts. Eggplant excels at HMI testing because it seamlessly integrates vendor and OEM components.

In the automotive industry, it is crucial to validate the proper functioning of various elements without delving into the underlying codebase. Eggplant's approach leverages the user interface (UI) as the testing interface, enabling testers to interact with and evaluate multiple components of the HMI system. By ensuring the integration of these diverse elements works cohesively, the system provides a comprehensive view of the HMI's functionality and performance.

This non-invasive and UI-based approach is particularly valuable when navigating complex automotive HMI systems where traditional testing methods often fall short in assessing the interplay of these intricate, interconnected components.

Advanced Computer Vision Technology

The use of advanced technology, such as optical character recognition (OCR) and graphic element recognition algorithms, allows for the automation of HMI testing without the need to access underlying code, facilitating comprehensive evaluation of visual elements, text, and graphics.

Seamless integration capabilities

Eggplant enables end-to-end testing of all components within an automotive HMI, from in-vehicle displays to infotainment systems and navigation interfaces. This comprehensive testing approach ensures that all critical business scenarios go through an in-depth examination to enhance the overall quality and reliability of the HMI systems.

Optimized testing process

Eggplant's intelligent algorithms and SenseTalk, a high-level scripting language, contribute to script robustness and adaptability, particularly in response to changes in the location and movement of graphic elements. This self-healing feature simplifies computer vision-based automation, streamlining the testing method.

Test case automation

By supporting image-based testing, Eggplant software provides companies with the capability to automate test cases for all HMI applications, including the assessment of moving 3D images and the construction of parts associated with inventory digital twins within product lifecycle management (PLM) applications. This approach streamlines the testing of complex HMI components and their integration.

Reduced maintenance time

Eggplant's computer vision mode eliminates the need to modify tags during version upgrades, reducing maintenance. By following this process, companies engaged in automotive HMI testing can ensure the relevancy of their tests to achieve significant time and cost savings.

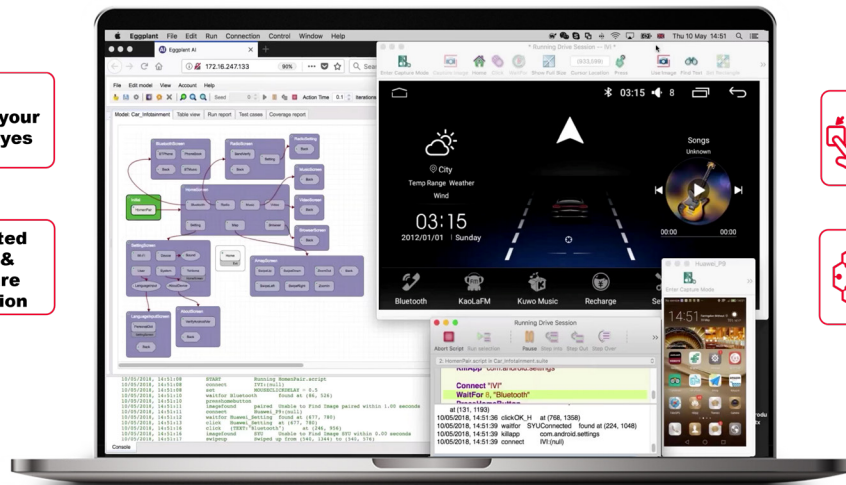
Enhanced testing capabilities

With its seamless integration into DevOps environments and support for headless mode operation, the Eggplant solution contributes to improved user experience and more efficient testing processes. The software facilitates the transmission of test results, including screenshots and videos, making it an invaluable tool for businesses looking to improve their testing processes.

One tool for all test needs

Eggplant serves as a comprehensive standalone solution that includes its own test case and result management capabilities. This feature simplifies the management of HMI testing processes, allowing companies to oversee and control their testing workflows efficiently.

Eggplant in action



Unlock the Full Potential of Your Automotive HMI

Eggplant is the answer to your automotive HMI testing needs, offering a comprehensive solution that adapts to the ever-changing automotive landscape. Eggplant ensures your HMI systems operate flawlessly by seamlessly integrating with diverse environments, employing cutting-edge computer vision, streamlining your testing processes, enhancing user experience, and boosting your business outcomes. Experience smarter and faster automotive HMI testing with Eggplant and elevate your testing excellence to the next level.

Learn more at www.keysight.com/find/eggplant

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.



This information is subject to change without notice. © Keysight Technologies, 2023 - 2024, Published in USA, March 15, 2024, 7123-1133.EN