

EBOOK

The Future is Now

Mobile & Web Application Testing With AI

Introduction

Artificial Intelligence (AI) has taken the world by storm — from retail, banking, healthcare, marketing, and more. AI is transforming the digital landscape and continues to grow in importance every day.

AI is making similar strides in application development and testing, with teams racing to determine how AI will help them achieve a faster time to market, improve software quality, and mitigate risks. [Research from EY](#) supports this notion that time is of the essence. Their findings note that despite AI's low barrier to entry, "AI isn't yet a mainstream part of enterprise testing, but if you wait too long, you'll fall behind."

Perforce's most recent State of Continuous Testing report also shows that AI adoption in testing is well on its way to becoming mainstream, even if it is taking some time for testing teams to take the plunge. In this report, 48% of survey respondents indicated interest of AI, but only 11% were implementing any AI-related initiatives as part of their application testing efforts.

The message could not be clearer – the future is now. To remain efficient and test ahead of the curve, testing teams must address how they will factor AI into their testing strategy.

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Chapter 1: Enhancing Testing Efficiency, Quality, & Speed With AI

AI is already transforming the digital landscape in key areas. When you embrace the power of AI, your team will experience the following benefits:

1. Enhanced Operational Efficiency

AI empowers your team to quickly identify and resolve the true root causes of failures, reducing the time spent sifting through error messages.

2. Reduced Script Dependency

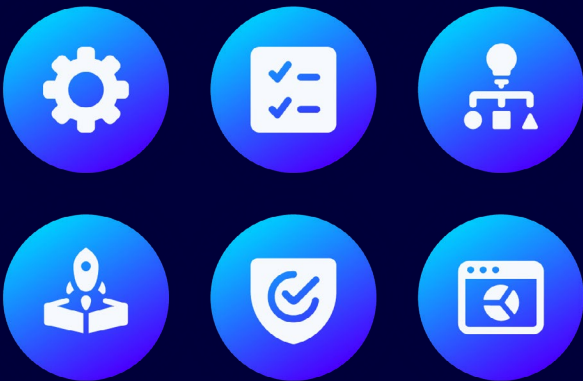
By enabling teams to create and execute tests in plain language using AI — thus eliminating the need for scripts — AI simplifies test maintenance and reduces errors.

3. Streamlined Testing with Generative Data and Images

AI enables teams to create and inject test images on the fly with generative AI, streamlining the testing process.

4. Ensured Smooth and Reliable Test Execution

With AI, teams can automatically detect when tests are blocked by pop-ups, ensuring smooth test execution.



5. Ensured Robust and Reliable Tests

AI helps identify objects on the page despite layout changes, ensuring robust and reliable tests.

6. Reliable Test Data On Demand

AI enables teams to obtain and use reliable test data to support test coverage and production quality.

While the benefits of AI in testing are numerous, it is important for testing teams to not choose a product simply for its AI capabilities. Most products now incorporate some form of AI into their platform to remain competitive—with the intelligence of their tools varying significantly.

Teams should thoroughly evaluate any potential testing tool and weigh it against the results they are seeking, rather than simply choose a tool because it uses AI—discernment is key.

Chapter 2: The Game-Changing Impact of AI on App Testing

In the competitive world of application testing, AI integration is essential for boosting efficiency, mitigating risks, and accelerating time to market.

In the past year especially, AI has grown exponentially in prominence and is transforming the digital landscape at a rapid rate. AI is not just a trend—it is a paradigm shift.

Some of the areas where AI is already being used for both mobile and web testing include:

Automated Test Generation and Execution

AI automatically generates and executes test cases based on application behavior, user interactions, and historical data. This reduces manual test creation and ensures comprehensive coverage.

- **Web:** AI uses natural language processing (NLP) to convert requirements into test cases and computer vision to analyze web page layouts and elements.
- **Mobile:** AI tools automate test script creation and execution, mimicking user interactions across various devices and configurations.

Self-Healing Test Scripts

AI detects changes in the application's UI and automatically updates test scripts to accommodate these changes, reducing maintenance efforts.

- **Web:** AI-driven tools use self-healing mechanisms to fix broken test scripts due to changes in the web application's code or design.
- **Mobile:** Tools utilize self-repairing technology to keep test scripts up to date.

Enhanced Test Coverage

AI quickly and efficiently tests across a wide range of devices, operating systems, and configurations, increasing overall test coverage.

- **Web:** AI runs tests across different browsers, devices, and platforms using parallel testing and intelligent scheduling.
- **Mobile:** AI-powered tools simulate various real-world scenarios and user interactions, ensuring comprehensive testing.



Visual Regression and Layout Testing

AI-driven visual testing tools compare current app screenshots against baseline images to identify visual regressions, layout issues, or rendering problems.

- **Web:** AI uses computer vision to analyze and verify the visual aspects of web pages, such as layout, size, and color.
- **Mobile:** AI tools ensure the visual integrity of mobile apps across different devices and screen sizes.

Performance and Security Testing

AI simulates real-world user behavior and network conditions to identify performance bottlenecks and security vulnerabilities.

- **Web:** AI tools scan for security vulnerabilities and optimize performance under various load conditions.
- **Mobile:** AI-driven solutions monitor app performance and security, ensuring apps are robust and secure.

“Teams can experience many benefits incorporating [AI into performance testing workflows](#). Two of the biggest benefits teams realize right away are improved quality and increased efficiency.”

Failure Analysis and Reporting

AI enhances failure reporting by automatically analyzing logs and configurations to identify the root causes of failures.

- **Web:** AI uses data mining and analytics to provide actionable insights and suggest fixes for web application defects.
- **Mobile:** AI tools rank failures by severity and prioritize issues based on their impact on user experience or system stability.

Continuous Testing and Integration

AI integrates into the CI/CD pipeline, allowing for continuous testing and quick feedback.

- **Web:** AI supports continuous testing, ensuring that testing keeps pace with rapid development cycles.
- **Mobile:** AI integration in CI/CD pipelines accelerates release cycles and enhances testing efficiency.

Test Data Generation

AI generates realistic user profiles, transactions, and scenarios, improving the app's performance and security testing.

- **Web:** AI uses machine learning models to generate data sets that closely mimic real-world usage.
- **Mobile:** AI generates test data that reflects actual user behavior, enhancing the realism and effectiveness of tests.

Intelligent API Testing

AI examines API traffic to identify patterns and connections, creating and updating tests based on these insights.

- **Web:** AI-based API automation tools analyze traffic and group API calls by scenario, simplifying test creation and maintenance.
- **Mobile:** AI tools ensure that API changes are automatically reflected in the test suite, maintaining test accuracy.

Predictive Analytics and Prioritization

AI algorithms prioritize test cases based on historical data, code changes, and associated risks.

- **Web:** AI uses predictive analytics to focus testing efforts on the most critical areas, improving efficiency.
- **Mobile:** AI helps prioritize test cases to ensure that the most likely defect-prone areas are tested first.

“While 48% of Perforce’s most recent [State of Continuous Testing](#) participants indicated interest of AI, only 11% were implementing any AI-related initiatives as part of their application testing efforts.”

Chapter 3: Essential AI Capabilities for Test Automation Success

Perforce is already ahead of the curve when it comes to incorporating AI capabilities into our continuous testing suite, Perfecto and BlazeMeter. Our AI-powered tools help teams save time, money, and reputation—all while consistently creating world-class applications.

The following AI-powered tools are already part of Perforce’s platform, and are continuously being expanded upon to stay ahead of this paradigm shift with support for these and other capabilities:

AI-Powered Root Cause Analysis

Perforce’s Root Cause Analysis (RCA) suite enhances testing efficiency by quickly identifying and addressing the root causes of issues, reducing downtime, and improving application reliability and quality for enterprise customers.

By harnessing the power of Root Cause Analysis, testing teams can benefit from the following key capabilities:

- Identifying real failure reasons and groups similar causes for easier resolution.
- Highlighting differences between failed and successful executions automatically.
- Analyzing API call traces to find backend-related test failures.
- Prioritizing the most critical failures and suggesting corrective steps.

AI-Driven Test Execution and Validation

AI-driven Testing empowers testers to define validation conditions and execute tests using everyday language, eliminating the need for complex scripting.

New capabilities that result from AI-driven test execution and validation include:

- Using plain language to define test success criteria.
- Creating and running tests based on natural language specifications. This approach surpasses traditional script-based testing, allowing direct testing based on requirements and test plans.

AI-Driven Image Data Generation

When performing tests that require the uploading of images (such as checks, pay stubs, and other documents containing sensitive user data), testers will now be able to automatically generate these images on the fly. In the same way that AI facilitates the generations of usable test data, it will now generate images based on tester specs, complete with usable data like account numbers.

AI-Driven Image Data Generation will save testing teams the hassle of having to create usable test images. Instead, they can generate these images as they go, without having to stop the testing process.

Pop-Up Detection

Pop-Up Detection utilizes a trained ML model to detect if there is a pop-up displayed on screen during a test. Pop-ups typically cause tests to fail, as the pop-up blocks the expected flow of the test.

With Pop-Up Detection, AI will recognize when the test was stuck due to a pop-up.

Self-Healing Object Identification

Self-Healing Object Identification locates elements on screen during a test, such as menus, buttons, and text fields. By learning over time which location for these objects on the screen are the most efficient and resilient during a test, AI-based self-healing tests ensure that testers can locate the right object on the page despite changes made to the page layout and structure.

BlazeMeter Test Data Pro

Every software test needs data—and you've never experienced test data like this. With AI-powered [Test Data Pro](#), teams can transform their testing through optimized AI test data generation, vastly expanded test coverage, increased and reliable accuracy, and bolstered resilience of your app. Accelerate testing and elevating application quality just got easier.

AI-based test data generation is particularly lucrative, offering the following capabilities:

- **AI-Driven Data Profiler:** Rapidly identify hardcoded data and automatically generate additional data from predefined lists.
- **AI-Driven Test Data Creator:** Streamline test data generation by converting text to test data functions through generative AI.

- **AI-Assisted Test Data Function Generator:** Eliminate manual coding by instantly generating test data functions with natural language.
- **Chaos Testing:** Enhance system resilience with AI-driven test data to challenge systems and identify system vulnerabilities.

Chapter 4: Staying Ahead: Perforce's Innovative Approach

Perforce consistently keeps a finger on the pulse of new market trends—including AI. By embracing application testing innovation with a forward-thinking approach, we enable our customers to stay at the forefront of application testing trends. We are continuously innovating to align technical advancements with new releases—enabling teams to adapt quickly to changes in technology.

Perforce ensures a seamless testing experience, helping our customers deliver high quality apps faster and more efficiently.

Our guiding principles:

1. **Continuous Testing:** Ensure your app is always ready for release.
2. **Security:** Protect your app and user data with robust testing.
3. **Quality:** Deliver a flawless user experience with high-quality testing.

When you partner with Perforce, you are partnering with a trusted testing platform that has helped countless customers, including large enterprises, deliver competitive, high-quality applications. Perforce offers the most comprehensive AI-driven test automation platform available, enhancing quality, innovation, speed, and accuracy.

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Bottom Line

AI-driven app testing is not just a trend; it is a necessity for staying competitive. By leveraging Perforce's cutting-edge AI-powered tools, you can future-proof your testing strategy, deliver higher quality apps faster, and exceed customer expectations.

Experience Perforce's AI capabilities in action by starting a free trial of [Perfecto](#) or [BlazeMeter](#) today.



About BlazeMeter

BlazeMeter is your complete continuous testing platform for web and mobile apps. Get your apps ready for any device and any situation, all in one place with the premier load testing and [AI-driven test data](#).

Visit www.blazemeter.com for a free trial, demo, or to learn more.

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About Perfecto

Perfecto powers exceptional digital experiences by combining the power of flexible test authoring, cross-platform execution, and [AI-driven intelligent testing](#) into one secure, cloud-based web and mobile testing platform.

Visit www.perfecto.io for a free trial, demo, or to learn more.

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Related Resources

- [\[Webinar\] The Future of Testing: A Conversation About the Use of AI and ML](#)
- [\[Webinar\] Transform Performance Testing with the Latest Advancements in AI](#)