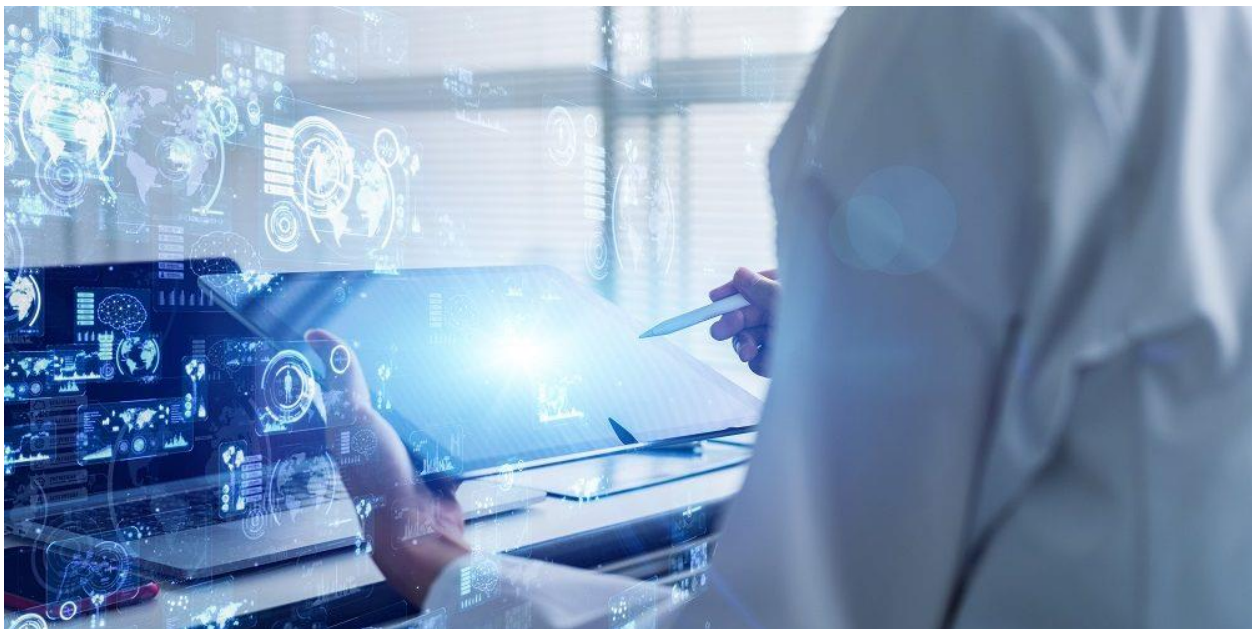**IT INFRASTRUCTURE**

AI-Powered Test Automation: Embracing the Future of Software Testing

Traditional test automation has enabled test teams with a smarter and quicker means for delivering quality, AI-powered tools can drive its capabilities to the next level.

📅 June 4, 2021 ✎ Ajay Kaul 💬 Leave a Comment

Last year, the global pandemic caused a major shift in how businesses operate, introducing new challenges of remote work and accelerated digital transformation at an unprecedented pace.

Organizations are now in a race against time to build high-quality software to propel their digital transformation initiatives forward. However, ensuring optimal software quality in a fast-paced, hyper-connected and complex world is not an easy task.

While traditional test automation has enabled test teams with a smarter and quicker means for delivering high software quality, AI-powered tools can drive its capabilities to the next level.

How AI is Transforming Test Automation

Traditional test automation delivers tools to control test execution and compare test results against expected outcomes.

While such tools can test and deliver results automatically, they still need human supervision. Without human supervision, traditional test automation tools can't identify which tests to run, so they end up running every test or a predetermined set of tests.

When powered by AI, a test automation tool can review the current test status, recent code changes, code coverage and other associated metrics to intelligently decide which tests to run and then trigger them automatically.

AI enables test automation to move beyond its scope of simple rule-based automation. It utilizes AI algorithms to efficiently train systems using large data sets.

Through the application of reasoning, problem-solving and machine learning, an AI-powered test automation tool can mimic human behavior and reduce the direct involvement of software testers in mundane tasks.

How AI is Impacting Various Software Testing Use Cases

AI is changing software testing in many ways. It is removing many limitations in traditional test automation and delivering more value to testers and developers alike.

It enables organizations to test faster and better while reducing costs and human dependencies. AI has imparted an incredible positive impact on most software testing use cases, including:

Unit Testing
Testers can use RPA tools (an application of AI) to reduce flaky test cases while conducting unit testing. Such tools can also help with the maintenance of unit test scripts.

API Testing
AI-powered test automation tools can convert manual UI tests into automated API tests. This lowers the requirement of specialized testing skills for the process and enables organizations to build a more sustainable API testing strategy.

UI Testing
Ensures more accuracy in comparison to manual testing. It is hard to manually detect parameters such as GUI size difference and a combination of colors, which can be easily identified with AI.

Regression Testing
Enables test teams to run the entire test suite in a timely manner on every change, however minor it may be. AI can prioritize and re-target regression tests to test high-risk areas with short run-times. •

Image-Based Testing
Visual validations involved in image-based testing can be simplified with the ML capability of AI. Automated visual validation tools make image-based testing a breeze.

How is AI-powered Test Automation helping Organizations?

Like any new technology, there is a lot of hype around AI-powered software testing. The utilization of AI in various testing scenarios is delivering significant improvements and making intelligent test

automation a reality. AI-powered test automation is helping organizations reimagine software testing and delivering real business benefits. Some of its key benefits for organizations include:

1. Auto-Generation of Test Scripts

AI-powered test automation helps teams with the auto-generation of test codes that perform all the required functions, such as click buttons, form fills, app logins and more.

There will be complex test cases for which AI-powered test automation tools can't generate code, but it can auto-generate more than 80% of the required code reliably, enhancing the productivity of testing teams significantly.

Furthermore, AI also helps with auto-maintenance to ensure continuous quality while reducing the burden on human testers.

2. Optimization of Testing Process

AI is the force behind the product recommendations on Amazon or the shows Netflix suggests. An AI-enabled recommendation engine allows marketers to provide relevant product recommendations to customers in real-time.

The same approach can be applied to simplify software testing. AI can suggest tests with the maximum probability of finding bugs, based on the risk information, removing the guesswork from testing and empowering teams to home in on the actual risk areas.

3. Measurement of Release Impact

AI-powered test automation tools can predict how an upcoming software release will impact end-users. By leveraging neural networks and analyzing test history and data from current test runs, the tool can predict whether customer satisfaction will move up or down. Equipped with such information, organizations can adjust likewise and ensure that their customers remain satisfied with the user experience.

4. Delivers a Competitive Edge

AI-powered test automation tools help organizations gain a competitive edge. Various AI capabilities such as ML and neural networks can be used to understand how various technical factors are impacting the user experience and business outcomes.

For example, AI can detect whether a new implementation is negatively impacting the load times and could lower conversion rates upon release.

By delivering predictions on how releases will affect the business, AI-powered tools empower organizations to make course corrections to have a positive impact.

5. Enables Productivity and Cost Gains

A recent study discovered that testers spend 17% of their time dealing with false positives and another 14% on additional test maintenance tasks. An AI-powered tool with its auto-generation and auto-maintenance capabilities can help test teams save valuable time and effort and put it toward tackling complex requirements.

It can also help organizations optimize testing costs by reducing human dependence on mundane testing tasks.

Embracing AI Technologies

It's quite clear that AI-powered test automation is not a passing fad. Such tools are enabling organizations to understand and adapt better to ever-changing customer expectations. Rather than taking a wait-and-watch approach, it's time to embrace the innovation that AI has unleashed in test automation.