

AI in QA: Transforming Test Automation & Software Quality Through Intelligent Solutions

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Abstract: Artificial intelligence is revolutionizing quality assurance processes in the rapidly evolving software development landscape, offering unprecedented enhancements to test automation and overall software quality. This technical article explores the transformative impact of AI across multiple dimensions of QA, including test case generation based on user behavior analytics, self-healing test automation frameworks that adapt to UI changes, advanced defect prediction systems that identify high-risk code modifications, and computer vision applications for visual regression testing. The article provides a comprehensive analysis of current capabilities and implementation strategies by examining industry-leading tools such as Testim, AppliTools, Selenium with Healenium, and SonarQube with AI anomaly detection; the discussion culminates in a real-world enterprise case study demonstrating significant efficiency improvements, offering readers practical insights for integrating AI-powered testing methodologies into their development workflows.

Keywords: Artificial Intelligence Testing, Self-Healing Automation, Defect Prediction, Visual Regression Testing, Test Case Generation

