

Investigation of AI Tools and Techniques Currently Used in Software Testing and Quality Control

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Abstract: *Artificial Intelligence (AI) has revolutionized the field of software testing and quality control by introducing advanced tools and techniques that augment traditional approaches. This research investigates a comprehensive array of AI applications currently employed in these domains, aiming to categorize, evaluate, and analyze their impact on software development practices. The study identifies and examines AI tools across various functionalities, including test automation, defect detection, performance optimization, code analysis, and predictive analytics. Through a systematic review and comparative analysis, the research assesses the effectiveness, benefits, challenges, and limitations associated with each AI tool. Case studies and examples highlight successful implementations, showcasing how AI enhances testing efficiency, accuracy, and scalability. Additionally, the research discusses emerging trends, future directions, and ethical considerations in the adoption of AI for software testing and quality control. By synthesizing these insights, this study provides valuable guidance for practitioners, researchers, and organizations seeking to leverage AI to improve software reliability and user satisfaction in an increasingly digital landscape.*

Keywords: Artificial Intelligence, Software Testing, Quality Control.