CMPE-285

Lab8 – Software Testing Strategies

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Lab2 Task:

Reading: Learn about the impact of AI and ML in Software Testing Jobs

Video: How AI Could Empower Any Business | Andrew Ng | TED

Research: Research how ChatGPT or similar technologies can be used for automation and testing

Revisit your answer in Lab 1 above.

Discuss with your group how AI can be used to perform testing in the future. Discuss do you still need to have a four people group to perform tasks from Lab 1.

Impact of AI and ML in Software Testing Jobs:

AI and ML technologies are significantly impacting the field of software testing.

1. Test Automation: AI and ML can enhance test automation by enabling intelligent test script generation, self-healing test suites, and predictive analysis of potential issues. This reduces the manual effort required for scripting and maintenance.

2. Test Data Generation: AI can generate diverse and realistic test data, reducing the reliance on static datasets and improving test coverage.

3. Defect Prediction: ML models can predict potential defects by analyzing historical data, code quality metrics, and developer behavior, enabling proactive defect prevention.

4. Test Prioritization: AI-driven algorithms can prioritize test cases based on code changes, historical failures, and the impact on critical functionality, optimizing testing efforts.

5. Exploratory Testing: AI can assist in exploratory testing by suggesting test cases, uncovering hidden defects, and providing insights into test coverage.

6. Performance Testing: ML can analyze system behavior under load, automatically detect performance bottlenecks, and recommend optimizations.

7. Security Testing: AI can assist in identifying vulnerabilities and potential security threats through automated code analysis and penetration testing.

AI in Discover Tab Testing - Revisited:

With AI and ML technologies, the testing approach for the Discover tab at https://creativecloud.adobe.com/ can be significantly optimized. Here's how AI can be integrated:

1. AI-Powered Test Case Generation: AI algorithms can automatically generate test cases based on the application's requirements and user behavior, reducing the need for manual test case development.

2. Self-Healing Test Scripts: AI can enable test scripts to adapt to changes in the user interface, making them more robust and reducing maintenance efforts.

3. Defect Prediction: ML models can predict potential defects and vulnerabilities, allowing the team to focus testing efforts where they are most likely to find issues.

4. Load and Performance Testing Optimization: AI can determine the optimal number of concurrent users for load testing and identify performance bottlenecks more efficiently.

5. Usability and Compatibility Testing: AI-driven testing can simulate a wide range of devices and screen sizes, ensuring comprehensive compatibility testing.

Impact on Team Size:

The integration of AI and ML technologies can reduce the dependency on a large team for testing. While the exact team size would depend on the specific project's complexity, the role of AI would typically lead to a leaner team. Here's how:

Test Automation: AI-driven automation can significantly reduce the manual effort required for test case creation and execution, potentially reducing the need for a large team of test engineers.

Defect Prediction: AI's ability to predict defects early in the development process can reduce the number of issues that need to be fixed post-release, lowering the demand for a large group of testers.

Self-Healing Test Scripts: Automation scripts that adapt to changes with AI can minimize the time spent on script maintenance.