Unlocking the Present and the Future: How AI affects Software Testing

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Agenda

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03 POTENTIAL BENEFITS & CHALLENGES

04 LEARNING PATH

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Key Testing Use Cases & Expected Productivity Gains

Test Case Design & Development

EXAMPLES

- Analyzing requirements and automatically generating tests to cover application or component functionality
- Generating user acceptance tests, step and feature files
- Analyzing source code and API's and automatically generating tests that target the program implementation

Expected Productivity Gains - 30-60%

Test Code Generation & Maintenance

EXAMPLES

- Generating executable test scripts for automated unit, integration, and system-level testing to address both functional and non-functional testing
- Migrating existing test scripts from one language, framework or platform to another
- Updating test scripts as the application evolves

Expected Productivity Gains - 30-60%

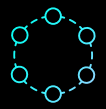
Test Planning, Execution & Results Analysis

EXAMPLES

- Generating comprehensive test strategies and plans.
- Prioritizing or scheduling tests for execution
- Automatically summarizing results or bug reports, including grouping similar failures and root cause analysis
- Automated failure triage including categorization and severity assignment

Expected Productivity Gains - 20-30%

Test Case Maintenance & Management



EXAMPLES

- Updating test cases over builds to keep pace with changes
- Identifying duplicate test cases to reduce redundancy and maintenance efforts
- Converting tests from one format or test case management system to another
- Simplifying complex tests to reduce the number of steps, improve readability, understandability and efficiency

Expected Productivity Gains - 20-40%

Test Data Generation & Management

EXAMPLES

- Automatically generating different types of test data based on a description of data characteristics or application fields
- Converting test data from one format or database platform to another
- Systematically updating or appending test data with new or modified values

Expected Productivity Gains - 15-25%

Test Result Analysis & Defect Management

EXAMPLES

- Automatically summarizing result of bug reports
- Grouping similar features or identifying common relationships or possible root cause for failures
- Automated failure triage including categorization and severity assignment

Expected Productivity Gains - 20-30%

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Potential Benefits & Challenges Motivate the Need for Generative AI

GENERATIVE AI FOR

Business Analysis

- Team coaching on prompt engineering and AI-styled ways of working
- Identify high-value processes and use cases that can be optimized by AI
- Build BA AI framework tailored for specifics of the project, client priorities & ecosystem

Quality/Testing

- Guidance on existing test prompts for generating test artifacts based on leading industry testing practices
- Defining testing/productivity KPIs
- Conducting workshops, training, and enabling team members on how to use generative AI for testing
- Coordinating & guiding testing use case implementation

Engineering

- Generative AI Code Assistant tool selection & training
- Analyze the impact of Gen AI tools on solving technical tasks
- Refined list of use cases & best practices tailored for a specific solution
- Provide ongoing support for developers

Engineering Excellence

- Baseline current software development process
- Establishing & collecting individual & team level metrics framework to evaluate the impact of Gen AI tools on software development performance
- Work with Scrum Masters to identify opportunities to accelerate their day-to-day duties

Training Material Based on Learning Path: Recommended Courses & Course Development

Functional Tester Learning Path

EXTERNAL PERSPECTIVE

- EPAM Systems
  - → ChatGPT for Functional Software Testers

SDET | Dev-Tester Learning Path

INTERNAL PERSPECTIVE

- DeepLearning.AI
  - → ChatGPT Prompt Engineering for Developers
  - → Building Systems with the ChatGPT API
  - → LangChain: Chat With Your Data
- HuggingFace.co
  - → Natural Language Processing in Python
- Google
  - → Transformer Models and BERT Encoder-Decoder Architecture

Foundational Courses

- EPAM Systems
  - → Prompt Engineering Foundations
  - Mastering Large Language Models (EngX)
- Google
  - → Introduction to Generative AI
  - → Introduction to Large Language Models
  - → Introduction to Responsible AI
  - → Generative AI Fundamentals
- DeepLearning.AI
  - → AI for Everyone

THANK YOU!

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