Q-LEAP

CFTL / ISTQB® Certified Tester, Artificial Intelligence.

Duration : **4 days**
Languages : **EN & FR**

Mastering AI Testing: Trends, Implementation, and Challenges in Machine Learning.

The course aims to provide a comprehensive understanding of current and future AI trends, its implementation across industries, and its impact on various sectors. It focuses on developing essential skills in testing machine learning models, addressing challenges like bias and transparency, and learning how to design and execute AI-specific test scenarios.

Learning Objectives

This training aims to:

- Understanding current and future trends in artificial intelligence, its implementation, and its impact on business sectors.
- Developing skills in testing ML models by addressing challenges such as bias and transparency.
- Learning how to design and execute AI-specific test scenarios.

Prerequisites

The mandatory prerequisite for taking the ISTQB® Certified Tester AI Testing exam is that candidates have achieved ISTQB® Certified Tester – Foundation Level certification.

Target Audience

Software testers, quality assurance professionals, AI engineers, and developers, along with product owners, project managers, and quality managers, play key roles. Analysts, consultants, and professionals in AI-dependent sectors also benefit from these advancements.

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SOFTWARE QUALITY EXPERTS

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Course Program

1. **Introduction to AI (Day 1)**
   - Types of AI: Narrow AI, General AI, and Superintelligent AI
   - AI as a Service (AIaaS)
   - Standards and regulations

2. **Quality Characteristics of AI Systems (Day 1)**
   - Flexibility, adaptability, and autonomy
   - Bias, ethics, and security in AI
   - Transparency, interpretability, and explainability

3. **Overview of Machine Learning (ML) (Day 1)**
   - ML workflow and algorithm selection
   - Overfitting, underfitting

4. **ML - Data (Day 2)**
   - Training, validation, and test datasets
   - Data quality issues and their impact on ML models
   - Data labeling and approaches

5. **Measuring Functional Performance of ML (Day 2)**
   - Confusion matrix and performance in ML
   - Limits and test suites for ML models

6. **ML - Neural Networks and Testing (Day 2)**
   - Introduction to neural networks
   - Implementing a simple perceptron
   - Coverage measures for neural networks
   - Challenges in testing autonomous systems

7. **Testing AI-Based Systems - Overview (Day 3)**
   - Specification and test levels
   - Test data and approaches
   - Testing automation biases

8. **Testing AI Quality Characteristics (Day 3)**
   - Challenges in testing autonomous systems
   - Addressing algorithmic bias and complexity
   - Testing complex AI systems

9. **Methods and Techniques for Testing AI Systems (Day 3)**
   - Adversarial attacks and data poisoning
   - Pairwise, back-to-back, A/B, and metamorphic testing
   - Test technique selection

10. **Test Environments for AI Systems (Day 4)**
    - Setup and considerations for test environments
    - Virtual test environments for AI testing

11. **Using AI for Testing (Day 4)**
    - AI technologies for testing
    - AI in defect analysis, test case generation
    - AI in defect prediction and UI testing

12. **Certification Exam (Day 4 at 4 PM)**
    1 hour, 65% correct answers required - Multiple-choice questionnaire, 40 questions

Practical Exercises

This training includes exercises and practical work, accounting for 30% of the course, designed to enhance the understanding of key concepts and ensure hands-on experience with AI and machine learning testing techniques.

Trainer's Skills

The experts who lead our training or those organized with a partner are specialists in the subjects covered. They are validated by our internal teams in terms of both business knowledge and teaching skills for each course they teach. They have a minimum of five to ten years of experience in their field and hold or have held positions covering these topics in the industry.