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Sample Exam – Questions

Sample Exam set A
Version 2.2

ISTQB® Automotive Software Tester Syllabus Specialist

Compatible with Syllabus version 2018

International Software Testing Qualifications Board



German Testing Board



Version 2.2
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ISTQB CT-AI Exam Syllabus Topics:

Topic	Details
Topic 1	<ul style="list-style-type: none">Using AI for Testing: In this section, the exam topics cover categorizing the AI technologies used in software testing.
Topic 2	<ul style="list-style-type: none">Test Environments for AI-Based Systems: This section is about factors that differentiate the test environments for AI-based
Topic 3	<ul style="list-style-type: none">Machine Learning ML: This section includes the classification and regression as part of supervised learning, explaining the factors involved in the selection of ML algorithms, and demonstrating underfitting and overfitting.
Topic 4	<ul style="list-style-type: none">Testing AI-Specific Quality Characteristics: In this section, the topics covered are about the challenges in testing created by the self-learning of AI-based systems.
Topic 5	<ul style="list-style-type: none">Quality Characteristics for AI-Based Systems: This section covers topics covered how to explain the importance of flexibility and adaptability as characteristics of AI-based systems and describes the vitality of managing evolution for AI-based systems. It also covers how to recall the characteristics that make it difficult to use AI-based systems in safety-related applications.
Topic 6	<ul style="list-style-type: none">systems from those required for conventional systems.
Topic 7	<ul style="list-style-type: none">ML Functional Performance Metrics: In this section, the topics covered include how to calculate the ML functional performance metrics from a given set of confusion matrices.
Topic 8	<ul style="list-style-type: none">Methods and Techniques for the Testing of AI-Based Systems: In this section, the focus is on explaining how the testing of ML systems can help prevent adversarial attacks and data poisoning.
Topic 9	<ul style="list-style-type: none">Testing AI-Based Systems Overview: In this section, focus is given to how system specifications for AI-based systems can create challenges in testing and explain automation bias and how this affects testing.
Topic 10	<ul style="list-style-type: none">Introduction to AI: This exam section covers topics such as the AI effect and how it influences the definition of AI. It covers how to distinguish between narrow AI, general AI, and super AI; moreover, the topics covered include describing how standards apply to AI-based systems.
Topic 11	<ul style="list-style-type: none">ML: Data: This section of the exam covers explaining the activities and challenges related to data preparation. It also covers how to test datasets create an ML model and recognize how poor data quality can cause problems with the resultant ML model.

ISTQB Certified Tester AI Testing Exam Sample Questions (Q55-Q60):

NEW QUESTION # 55

Pairwise testing can be used in the context of self-driving cars for controlling an explosion in the number of combinations of parameters.

Which ONE of the following options is LEAST likely to be a reason for this incredible growth of parameters?

SELECT ONE OPTION

- A. ML model metrics to evaluate the functional performance
- B. Different Road Types
- C. Different weather conditions
- D. Different features like ADAS, Lane Change Assistance etc.

Answer: A

Explanation:

Pairwise testing is used to handle the large number of combinations of parameters that can arise in complex systems like self-driving cars. The question asks which of the given options is least likely to be a reason for the explosion in the number of parameters.

* Different Road Types (A): Self-driving cars must operate on various road types, such as highways, city streets, rural roads, etc. Each road type can have different characteristics, requiring the car's system to adapt and handle different scenarios. Thus, this is a significant factor contributing to the growth of parameters.

* Different Weather Conditions (B): Weather conditions such as rain, snow, fog, and bright sunlight significantly affect the performance of self-driving cars. The car's sensors and algorithms must adapt to these varying conditions, which adds to the number of parameters that need to be considered.

* ML Model Metrics to Evaluate Functional Performance (C): While evaluating machine learning (ML) model performance is crucial, it does not directly contribute to the explosion of parameter combinations in the same way that road types, weather conditions, and car features do. Metrics are used to measure and assess performance but are not themselves variable conditions that the system must handle.

* Different Features like ADAS, Lane Change Assistance, etc. (D): Advanced Driver Assistance Systems (ADAS) and other features add complexity to self-driving cars. Each feature can have multiple settings and operational modes, contributing to the overall number of parameters.

Hence, the least likely reason for the incredible growth in the number of parameters is C. ML model metrics to evaluate the functional performance.

References:

* ISTQB CT-AI Syllabus Section 9.2 on Pairwise Testing discusses the application of this technique to manage the combinations of different variables in AI-based systems, including those used in self-driving cars.

* Sample Exam Questions document, Question #29 provides context for the explosion in parameter combinations in self-driving cars and highlights the use of pairwise testing as a method to manage this complexity.

NEW QUESTION # 56

Which ONE of the following options does NOT describe an AI technology related characteristic which differentiates AI test environments from other test environments?

SELECT ONE OPTION

- A. Challenges in the creation of scenarios of human handover for autonomous systems.
- B. The challenge of mimicking undefined scenarios generated due to self-learning
- C. The challenge of providing explainability to the decisions made by the system.
- D. Challenges resulting from low accuracy of the models.

Answer: A

Explanation:

AI test environments have several unique characteristics that differentiate them from traditional test environments. Let's evaluate each option:

A . Challenges resulting from low accuracy of the models.

Low accuracy is a common challenge in AI systems, especially during initial development and training phases. Ensuring the model performs accurately in varied and unpredictable scenarios is a critical aspect of AI testing.

B . The challenge of mimicking undefined scenarios generated due to self-learning.

AI systems, particularly those that involve machine learning, can generate undefined or unexpected scenarios due to their self-learning capabilities. Mimicking and testing these scenarios is a unique challenge in AI environments.

C . The challenge of providing explainability to the decisions made by the system.

Explainability, or the ability to understand and articulate how an AI system arrives at its decisions, is a significant and unique challenge in AI testing. This is crucial for trust and transparency in AI systems.

D . Challenges in the creation of scenarios of human handover for autonomous systems.

While important, the creation of scenarios for human handover in autonomous systems is not a characteristic unique to AI test environments. It is more related to the operational and deployment challenges of autonomous systems rather than the intrinsic technology-related characteristics of AI .

Given the above points, option D is the correct answer because it describes a challenge related to operational deployment rather than a technology-related characteristic unique to AI test environments.

NEW QUESTION # 57

Which ONE of the following options represents a technology MOST TYPICALLY used to implement AI?

SELECT ONE OPTION

- A. Search engines
- B. Case control structures

- C. Genetic algorithms
- D. Procedural programming

Answer: C

Explanation:

- * Technology Most Typically Used to Implement AI: Genetic algorithms are a well-known technique used in AI. They are inspired by the process of natural selection and are used to find approximate solutions to optimization and search problems. Unlike search engines, procedural programming, or case control structures, genetic algorithms are specifically designed for evolving solutions and are commonly employed in AI implementations.
- * Reference: ISTQB_CT-AI_Syllabus_v1.0, Section 1.4 AI Technologies, which identifies different technologies used to implement AI.

NEW QUESTION # 58

Which statement regarding flexibility and adaptability of AI-based systems is correct?

Choose ONE option (1 out of 4)

- A. Flexibility is considered to be the ease with which the system can be reprogrammed to a changed operating condition.
- B. **Adaptability and flexibility are important when the system needs to change its behavior and determine the change on its own.**
- C. Adaptability is considered to be the ability of the system to be used in unspecified situations.
- D. Self-learning AI-based systems are classified according to whether they are adaptable only or flexible only.

Answer: B

Explanation:

The ISTQB CT-AI syllabus defines these two concepts clearly in Section 2.1 - Flexibility and Adaptability.

Flexibility is described as the ability of a system to operate in situations not explicitly covered in its original requirements, while adaptability refers to how easily the system can be modified to handle new environments or conditions. The syllabus stresses that both flexibility and adaptability are crucial, particularly in self-learning AI systems that may need to respond to changes in their environment and adjust their behavior accordingly. It states that systems must be capable of determining when and how to adjust behavior in evolving situations, especially when the operational environment is not fully known at deployment time. This directly aligns with Option A.

Option B reverses definitions—the syllabus states flexibility (not adaptability) relates to unspecified situations. Option C is incorrect: self-learning systems require both flexibility and adaptability; they are not categorized as one or the other. Option D incorrectly defines flexibility; the syllabus defines adaptability—not flexibility—as ease of modification.

Thus, Option A correctly reflects the syllabus.

NEW QUESTION # 59

Which of the following descriptions of quality aspects of a data set is correct?

Choose ONE option (1 out of 4)

- A. **The quality aspect "Incomplete data" describes the fact that data is missing, e.g., for a certain time interval.**
- B. The quality aspect "Irrelevant data" describes the fact that irrelevant data does not affect the ML model.
- C. The quality aspect "Unbalanced data" describes the fact that the data used should be as up-to-date as possible.
- D. The quality aspect "Data not preprocessed" describes the fact that the collected data was recorded incorrectly.

Answer: A

Explanation:

The ISTQB CT-AI syllabus describes several data quality aspects that affect ML performance. In Section 2.2

- Data Preparation, it explains that datasets may suffer from issues such as incomplete data, irrelevant data, incorrect data, unbalanced data, or data lacking preprocessing. "Incomplete data" means that portions of the required data are missing, often because some time periods, records, or sources were not captured. This aligns exactly with Option A, which correctly identifies missing intervals as incomplete data.

Option B is incorrect: "data not preprocessed" refers to data that has not undergone normalization, cleaning, or transformation—not data recorded incorrectly. Option C is wrong because irrelevant data does negatively affect ML models by introducing noise and unnecessary features. The syllabus explicitly states that including irrelevant features can degrade model learning. Option D is incorrect: "unbalanced data" relates to disproportionate class distribution, not recency or freshness of data.

Thus, Option A is the only statement that correctly matches the syllabus definition of this data quality aspect.

NEW QUESTION # 60

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