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Exam : **CT-AI_(v1.0)_World**

Title : ISTQB® Certified Tester AI Testing (v 1.0)

Version : DEMO

1.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 resulting from low accuracy of the models.
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 in the creation of scenarios of human handover for autonomous systems.
Answer: D
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, optionDis the correct answer because it describes a challenge related to operational deployment rather than a technology-related characteristic unique to AI test environments.

2.Which ONE of the following options represents a technology MOST TYPICALLY used to implement AI? SELECT ONE OPTION
A. Search engines
B. Procedural programming
C. Case control structures
D. Genetic algorithms
Answer: D
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.

3."AllerEgo" is a product that uses sell-learning to predict the behavior of a pilot under combat situation for a variety of terrains and enemy aircraft formations. Post training the model was exposed to the real-world data and the model was found to bebehaving poorly. A lot of data quality tests had been performed on the data to bring it into a shape fit for training and testing.
Which ONE of the following options is least likely to describes the possible reason for the fall in the performance, especially when considering the self-learning nature of the AI system? SELECT ONE OPTION
A. The difficulty of defining criteria for improvement before the model can be accepted.
B. The fast pace of change did not allow sufficient time for testing.
C. The unknown nature and insufficient specification of the operating environment might have caused the poor performance.
D. There was an algorithmic bias in the AI system.
Answer: A
Explanation:
A. The difficulty of defining criteria for improvement before the model can be accepted.
Defining criteria for improvement is a challenge in the acceptance of AI models, but it is not directly related to the performance drop in real-world scenarios. It relates more to the evaluation and deployment phase rather than affecting the model's real-time performance post-deployment.
B. The fast pace of change did not allow sufficient time for testing.
This can significantly affect the model's performance. If the system is self-learning, it needs to adapt quickly, and insufficient testing time can lead to incomplete learning and poor performance.
C. The unknown nature and insufficient specification of the operating environment might have caused the poor performance.
This is highly likely to affect performance. Self-learning AI systems require detailed specifications of the operating environment to adapt and learn effectively. If the environment is insufficiently specified, the model may fail to perform accurately in real-world scenarios.
D. There was an algorithmic bias in the AI system.
Algorithmic bias can significantly impact the performance of AI systems. If the model has biases, it will not perform well across different scenarios and data distributions.
Given the context of the self-learning nature and the need for real-time adaptability, optionAis least likely to describe the fall in performance because it deals with acceptance criteria rather than real-time performance issues.

4.A software component uses machine learning to recognize the digits from a scan of handwritten numbers.
In the scenario above, which type of Machine Learning (ML) is this an example of? SELECT ONE OPTION
A. Reinforcement learning
B. Regression
C. Classification
D. Clustering
Answer: C
Explanation:

Recognizing digits from a scan of handwritten numbers using machine learning is an example of classification.
Here's a breakdown:
Classification: This type of machine learning involves categorizing input data into predefined classes. In this scenario, the input data (handwritten digits) are classified into one of the 10 digit classes (0-9).
Why Not Other Options:
Reinforcement Learning: This involves learning by interacting with an environment to achieve a goal, which does not fit the problem of recognizing digits.
Regression: This is used for predicting continuous values, not discrete categories like digit recognition.
Clustering: This involves grouping similar data points together without predefined classes, which is not the case here.
References: The explanation is based on the definitions of different machine learning types as outlined in the ISTQB CT-AI syllabus, specifically under supervised learning and classification.

5.An image classification system is being trained for classifying faces of humans. The distribution of the data is 70% ethnicity A and 30% for ethnicities B, C and D.
Based ONLY on the above information, which of the following options BEST describes the situation of this image classification system? SELECT ONE OPTION
A. This is an example of expert system bias.
B. This is an example of sample bias.
C. This is an example of hyperparameter bias.
D. This is an example of algorithmic bias.
Answer: B
Explanation:
A. This is an example of expert system bias.
Expert system bias refers to bias introduced by the rules or logic defined by experts in the system, not by the data distribution.
B. This is an example of sample bias.
Sample bias occurs when the training data is not representative of the overall population that the model will encounter in practice. In this case, the over-representation of ethnicity A (70%) compared to B, C, and D (30%) creates a sample bias, as the model may become biased towards better performance on ethnicity A.
C. This is an example of hyperparameter bias.
Hyperparameter bias relates to the settings and configurations used during the training process, not the data distribution itself.
D. This is an example of algorithmic bias.
Algorithmic bias refers to biases introduced by the algorithmic processes and decision-making rules, not directly by the distribution of training data.
Based on the provided information, option B (sample bias) best describes the situation because the training data is skewed towards ethnicity A, potentially leading to biased model performance.