



ISTQB

Exam Questions CT-AI

Certified Tester AI Testing Exam

NEW QUESTION 1

A ML engineer is trying to determine the correctness of the new open-source implementation "X", of a supervised regression algorithm implementation. R-Square is one of the functional performance metrics used to determine the quality of the model.

Which ONE of the following would be an APPROPRIATE strategy to achieve this goal? SELECT ONE OPTION

- A. Add 10% of the rows randomly and create another model and compare the R-Square scores of both the model.
- B. Train various models by changing the order of input features and verify that the R- Square score of these models vary significantly.
- C. Compare the R-Square score of the model obtained using two different implementations that utilize two different programming languages while using the same algorithm and the same training and testing data.
- D. Drop 10% of the rows randomly and create another model and compare the R-Square scores of both the models.

Answer: C

Explanation:

? A. Add 10% of the rows randomly and create another model and compare the R- Square scores of both the models.

? B. Train various models by changing the order of input features and verify that the R-Square score of these models vary significantly.

? C. Compare the R-Square score of the model obtained using two different implementations that utilize two different programming languages while using the same algorithm and the same training and testing data.

? D. Drop 10% of the rows randomly and create another model and compare the R- Square scores of both the models.

Therefore, option C is the most appropriate strategy because it directly compares the performance of the new implementation "X" with another implementation using the same algorithm and datasets, which helps in verifying the correctness of the implementation.

NEW QUESTION 2

Which ONE of the following characteristics is the least likely to cause safety related issues for an AI system?

- A. Non-determinism
- B. Robustness
- C. High complexity
- D. Self-learning

Answer: B

Explanation:

The question asks which characteristic is least likely to cause safety-related issues for an AI system. Let's evaluate each option:

? Non-determinism (A): Non-deterministic systems can produce different outcomes even with the same inputs, which can lead to unpredictable behavior and potential safety issues.

? Robustness (B): Robustness refers to the ability of the system to handle errors, anomalies, and unexpected inputs gracefully. A robust system is less likely to cause safety issues because it can maintain functionality under varied conditions.

? High complexity (C): High complexity in AI systems can lead to difficulties in understanding, predicting, and managing the system's behavior, which can cause safety-related issues.

? Self-learning (D): Self-learning systems adapt based on new data, which can lead to unexpected changes in behavior. If not properly monitored and controlled, this can result in safety issues.

References:

? ISTQB CT-AI Syllabus Section 2.8 on Safety and AI discusses various factors affecting the safety of AI systems, emphasizing the importance of robustness in maintaining safe operation.

NEW QUESTION 3

"AllerEgo" is a product that uses self-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 be behaving 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?

- 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.

? 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.

Given the context of the self-learning nature and the need for real-time adaptability, option A is least likely to describe the fall in performance because it deals with acceptance criteria rather than real-time performance issues.

NEW QUESTION 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:

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.

NEW QUESTION 5

Which ONE of the following statements correctly describes the importance of flexibility for AI systems?

SELECT ONE OPTION

A. AI systems are inherently flexible.

B. AI systems require changing of operational environments; therefore, flexibility is required.

C. Flexible AI systems allow for easier modification of the system as a whole.

D. Self-learning systems are expected to deal with new situations without explicitly having to program for it.

Answer: C

Explanation:

Flexibility in AI systems is crucial for various reasons, particularly because it allows for easier modification and adaptation of the system as a whole.

? AI systems are inherently flexible (A): This statement is not correct. While some AI

systems may be designed to be flexible, they are not inherently flexible by nature. Flexibility depends on the system's design and implementation.

? AI systems require changing operational environments; therefore, flexibility is

required (B): While it's true that AI systems may need to operate in changing environments, this statement does not directly address the importance of flexibility for the modification of the system.

? Flexible AI systems allow for easier modification of the system as a whole (C): This

statement correctly describes the importance of flexibility. Being able to modify AI systems easily is critical for their maintenance, adaptation to new requirements, and improvement.

? Self-learning systems are expected to deal with new situations without explicitly

having to program for it (D): This statement relates to the adaptability of self-learning systems rather than their overall flexibility for modification.

Hence, the correct answer is C. Flexible AI systems allow for easier modification of the system as a whole.

References:

? ISTQB CT-AI Syllabus Section 2.1 on Flexibility and Adaptability discusses the importance of flexibility in AI systems and how it enables easier modification and adaptability to new situations.

? Sample Exam Questions document, Question #30 highlights the importance of flexibility in AI systems.

NEW QUESTION 6

The activation value output for a neuron in a neural network is obtained by applying computation to the neuron.

Which ONE of the following options BEST describes the inputs used to compute the activation value?

SELECT ONE OPTION

A. Individual bias at the neuron level, activation values of neurons in the previous layer, and weights assigned to the connections between the neurons.

B. Activation values of neurons in the previous layer, and weights assigned to the connections between the neurons.

C. Individual bias at the neuron level, and weights assigned to the connections between the neurons.

D. Individual bias at the neuron level, and activation values of neurons in the previous layer.

Answer: A

Explanation:

In a neural network, the activation value of a neuron is determined by a combination of inputs from the previous layer, the weights of the connections, and the bias at the neuron level. Here's a detailed breakdown:

? Inputs for Activation Value:

? Calculation:

? Why Option A is Correct:

? Eliminating Other Options:

References:

? ISTQB CT-AI Syllabus, Section 6.1, Neural Networks, discusses the components and functioning of neurons in a neural network.

? "Neural Network Activation Functions" (ISTQB CT-AI Syllabus, Section 6.1.1).

NEW QUESTION 7

Which ONE of the following types of coverage SHOULD be used if test cases need to cause each neuron to achieve both positive and negative activation values?

SELECT ONE OPTION

A. Value coverage

B. Threshold coverage

C. Sign change coverage

D. Neuron coverage

Answer: C

Explanation:

Coverage for Neuron Activation Values: Sign change coverage is used to ensure that test cases cause each neuron to achieve both positive and negative activation values. This type of coverage ensures that the neurons are thoroughly tested under different activation states.

Reference: ISTQB_CT-AI_Syllabus_v1.0, Section 6.2 Coverage Measures for Neural Networks, which details different types of coverage measures, including sign change coverage.

NEW QUESTION 8

Which ONE of the following options describes a scenario of A/B testing the LEAST? SELECT ONE OPTION

- A. A comparison of two different websites for the same company to observe from a user acceptance perspective.
- B. A comparison of two different offers in a recommendation system to decide on the more effective offer for same users.
- C. A comparison of the performance of an ML system on two different input datasets.
- D. A comparison of the performance of two different ML implementations on the same input data.

Answer: C

Explanation:

A/B testing, also known as split testing, is a method used to compare two versions of a product or system to determine which one performs better. It is widely used in web development, marketing, and machine learning to optimize user experiences and model performance. Here's why option C is the least descriptive of an A/B testing scenario:

? Understanding A/B Testing:

? Application in Machine Learning:

? Why Option C is the Least Descriptive:

? Clarifying the Other Options:

References:

? ISTQB CT-AI Syllabus, Section 9.4, A/B Testing, explains the methodology and application of A/B testing in various contexts.

? "Understanding A/B Testing" (ISTQB CT-AI Syllabus).

NEW QUESTION 9

Which ONE of the following tests is MOST likely to describe a useful test to help detect different kinds of biases in ML pipeline? SELECT ONE OPTION

- A. Testing the distribution shift in the training data for inappropriate bias.
- B. Test the model during model evaluation for data bias.
- C. Testing the data pipeline for any sources for algorithmic bias.
- D. Check the input test data for potential sample bias.

Answer: B

Explanation:

Detecting biases in the ML pipeline involves various tests to ensure fairness and accuracy throughout the ML process.

? Testing the distribution shift in the training data for inappropriate bias (A): This

involves checking if there is any shift in the data distribution that could lead to bias in the model. It is an important test but not the most direct method for detecting biases.

? Test the model during model evaluation for data bias (B): This is a critical stage

where the model is evaluated to detect any biases in the data it was trained on. It directly addresses potential data biases in the model.

? Testing the data pipeline for any sources for algorithmic bias (C): This test is

crucial as it helps identify biases that may originate from the data processing and transformation stages within the pipeline. Detecting sources of algorithmic bias ensures that the model does not inherit biases from these processes.

? Check the input test data for potential sample bias (D): While this is an important

step, it focuses more on the input data and less on the overall data pipeline. Hence, the most likely useful test to help detect different kinds of biases in the ML pipeline is B. Test the model during model evaluation for data bias.

References:

? ISTQB CT-AI Syllabus Section 8.3 on Testing for Algorithmic, Sample, and Inappropriate Bias discusses various tests that can be performed to detect biases at different stages of the ML pipeline.

? Sample Exam Questions document, Question #32 highlights the importance of evaluating the model for biases.

NEW QUESTION 10

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.

? B. This is an example of sample bias.

? C. This is an example of hyperparameter bias.

? D. This is an example of algorithmic bias.

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.

NEW QUESTION 10

A company producing consumable goods wants to identify groups of people with similar tastes for the purpose of targeting different products for each group. You have to choose and apply an appropriate ML type for this problem.

Which ONE of the following options represents the BEST possible solution for this above- mentioned task?

SELECT ONE OPTION

- A. Regression
- B. Association
- C. Clustering

D. Classification

Answer: C

Explanation:

- ? A. Regression
- ? B. Association
- ? C. Clustering
- ? D. Classification

Therefore, the correct answer is C because clustering is the most suitable method for grouping people with similar tastes for targeted product marketing.

NEW QUESTION 12

Written requirements are given in text documents, which ONE of the following options is the BEST way to generate test cases from these requirements?
SELECT ONE OPTION

- A. Natural language processing on textual requirements
- B. Analyzing source code for generating test cases
- C. Machine learning on logs of execution
- D. GUI analysis by computer vision

Answer: A

Explanation:

When written requirements are given in text documents, the best way to generate test cases is by using Natural Language Processing (NLP). Here's why:

? Natural Language Processing (NLP): NLP can analyze and understand human language. It can be used to process textual requirements to extract relevant information and generate test cases. This method is efficient in handling large volumes of textual data and identifying key elements necessary for testing.

? Why Not Other Options:

References: This aligns with the methodology discussed in the syllabus under the section on using AI for generating test cases from textual requirements.

NEW QUESTION 14

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