

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 of the following is THE LEAST appropriate tests to be performed for testing a feature related to autonomy?
SELECT ONE OPTION

- A. Test for human handover to give rest to the system.
- B. Test for human handover when it should actually not be relinquishing control.
- C. Test for human handover requiring mandatory relinquishing control.
- D. Test for human handover after a given time interval.

Answer: B

Explanation:

Testing Autonomy: Testing for human handover when it should not be relinquishing control is the least appropriate because it contradicts the very definition of autonomous systems. The other tests are relevant to ensuring smooth operation and transitions between human and AI control.
Reference: ISTQB_CT-AI_Syllabus_v1.0, Sections on Testing Autonomous AI-Based Systems and Testing for Human-AI Interaction.

NEW QUESTION 3

Which ONE of the following statements is a CORRECT adversarial example in the context of machine learning systems that are working on image classifiers.
SELECT ONE OPTION

- A. Black box attacks based on adversarial examples create an exact duplicate model of the original.
- B. These attack examples cause a model to predict the correct class with slightly less accuracy even though they look like the original image.
- C. These attacks can't be prevented by retraining the model with these examples augmented to the training data.
- D. These examples are model specific and are not likely to cause another model trained on same task to fail.

Answer: D

Explanation:

? A. Black box attacks based on adversarial examples create an exact duplicate model of the original.
? B. These attack examples cause a model to predict the correct class with slightly less accuracy even though they look like the original image.
? C. These attacks can't be prevented by retraining the model with these examples augmented to the training data.
? D. These examples are model specific and are not likely to cause another model trained on the same task to fail.
Therefore, the correct answer is D because adversarial examples are typically model- specific and may not cause another model trained on the same task to fail.

NEW QUESTION 4

Which ONE of the following options BEST DESCRIBES clustering? SELECT ONE OPTION

- A. Clustering is classification of a continuous quantity.
- B. Clustering is supervised learning.
- C. Clustering is done without prior knowledge of output classes.
- D. Clustering requires you to know the classes.

Answer: C

Explanation:

Clustering is a type of machine learning technique used to group similar data points into clusters. It is a key concept in unsupervised learning, where the algorithm tries to find patterns or groupings in data without prior knowledge of output classes. Let's analyze each option:
? A. Clustering is classification of a continuous quantity.
? B. Clustering is supervised learning.
? C. Clustering is done without prior knowledge of output classes.
? D. Clustering requires you to know the classes.
Therefore, the correct answer is C because clustering is an unsupervised learning technique done without prior knowledge of output classes.

NEW QUESTION 5

A system was developed for screening the X-rays of patients for potential malignancy detection (skin cancer). A workflow system has been developed to screen

multiple cancers by using several individually trained ML models chained together in the workflow.
Testing the pipeline could involve multiple kind of tests (I - III): I.Pairwise testing of combinations
II.Testing each individual model for accuracy III.A/B testing of different sequences of models
Which ONE of the following options contains the kinds of tests that would be MOST APPROPRIATE to include in the strategy for optimal detection?
SELECT ONE OPTION

- A. Only III
- B. I and II
- C. I and III
- D. Only II

Answer: B

Explanation:

The question asks which combination of tests would be most appropriate to include in the strategy for optimal detection in a workflow system using multiple ML models.

? Pairwise testing of combinations (I): This method is useful for testing interactions

between different components in the workflow to ensure they work well together, identifying potential issues in the integration.

? Testing each individual model for accuracy (II): Ensuring that each model in the workflow performs accurately on its own is crucial before integrating them into a combined workflow.

? A/B testing of different sequences of models (III): This involves comparing different sequences to determine which configuration yields the best results. While useful, it might not be as fundamental as pairwise and individual accuracy testing in the initial stages.

References:

? ISTQB CT-AI Syllabus Section 9.2 on Pairwise Testing and Section 9.3 on Testing ML Models emphasize the importance of testing interactions and individual model accuracy in complex ML workflows.

NEW QUESTION 6

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 7

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.

NEW QUESTION 8

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 9

Max. Score: 2

AI-enabled medical devices are used nowadays for automating certain parts of the medical diagnostic processes. Since these are life-critical process the relevant authorities are considering bringing about suitable certifications for these AI enabled medical devices. This certification may involve several facets of AI testing (I - V).

A. I.Autonomy II.Maintainability III.Safety IV.Transparency V.Side EffectsWhich ONE of the following options contains the three MOST required aspects to be satisfied for the above scenario of certification of AI enabled medical devices?SELECT ONE OPTION

- B. Aspects II, III and IV
- C. Aspects I, II, and III
- D. Aspects III, IV, and V
- E. Aspects I, IV, and V

Answer: C

Explanation:

For AI-enabled medical devices, the most required aspects for certification are safety, transparency, and side effects. Here??s why:

? Safety (Aspect III): Critical for ensuring that the AI system does not cause harm to patients.

? Transparency (Aspect IV): Important for understanding and verifying the decisions made by the AI system.

? Side Effects (Aspect V): Necessary to identify and mitigate any unintended consequences of the AI system.

Why Not Other Options:

? Autonomy and Maintainability (Aspects I and II): While important, they are secondary to the immediate concerns of safety, transparency, and managing side effects in life-critical processes.

References: This explanation is aligned with the critical quality characteristics for AI-based systems as mentioned in the ISTQB CT-AI syllabus, focusing on the certification of medical devices.

NEW QUESTION 10

Arihant Meditation is a startup using AI to aid people in deeper and better meditation based on analysis of various factors such as time and duration of the meditation, pulse and blood pressure, EEG patters etc. among others. Their model accuracy and other functional performance parameters have not yet reached their desired level.

Which ONE of the following factors is NOT a factor affecting the ML functional performance?

SELECT ONE OPTION

- A. The data pipeline
- B. The quality of the labeling
- C. Biased data
- D. The number of classes

Answer: D

Explanation:

Factors Affecting ML Functional Performance: The data pipeline, quality of the labeling, and biased data are all factors that significantly affect the performance of machine learning models. The number of classes, while relevant for the model structure, is not a direct factor affecting the performance metrics such as accuracy or bias.

Reference: ISTQB_CT-AI_Syllabus_v1.0, Sections on Data Quality and its Effect on the ML Model and ML Functional Performance Metrics.

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 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 15

Which ONE of the following combinations of Training, Validation, Testing data is used during the process of learning/creating the model?

SELECT ONE OPTION

- A. Training data - validation data - test data
- B. Training data - validation data
- C. Training data • test data
- D. Validation data - test data

Answer: A

Explanation:

The process of developing a machine learning model typically involves the use of three types of datasets:

? Training Data: This is used to train the model, i.e., to learn the patterns and relationships in the data.

? Validation Data: This is used to tune the model's hyperparameters and to prevent overfitting during the training process.

? Test Data: This is used to evaluate the final model's performance and to estimate how it will perform on unseen data.

Let's analyze each option:

? A. Training data - validation data - test data

? B. Training data - validation data

? C. Training data - test data

? D. Validation data - test data

Therefore, the correct answer is A because it includes all necessary datasets used during the process of learning and creating the model: training, validation, and test data.

NEW QUESTION 20

??BioSearch?? is creating an AI model used for predicting cancer occurrence via examining X- Ray images. The accuracy of the model in isolation has been found to be good. However, the users of the model started complaining of the poor quality of results, especially inability to detect real cancer cases, when put to practice in the diagnosis lab, leading to stopping of the usage of the model.

A testing expert was called in to find the deficiencies in the test planning which led to the above scenario.

Which ONE of the following options would you expect to MOST likely be the reason to be discovered by the test expert?

SELECT ONE OPTION

- A. A lack of similarity between the training and testing data.
- B. The input data has not been tested for quality prior to use for testing.
- C. A lack of focus on choosing the right functional-performance metrics.
- D. A lack of focus on non-functional requirements testing.

Answer: A

Explanation:

The question asks which deficiency is most likely to be discovered by the test expert given the scenario of poor real-world performance despite good isolated accuracy.

? A lack of similarity between the training and testing data (A): This is a common issue in ML where the model performs well on training data but poorly on real- world data due to a lack of representativeness in the training data. This leads to poor generalization to new, unseen data.

? The input data has not been tested for quality prior to use for testing (B): While data quality is important, this option is less likely to be the primary reason for the described issue compared to the representativeness of training data.

? A lack of focus on choosing the right functional-performance metrics (C): Proper metrics are crucial, but the issue described seems more related to the data mismatch rather than metric selection.

? A lack of focus on non-functional requirements testing (D): Non-functional requirements are important, but the scenario specifically mentions issues with detecting real cancer cases, pointing more towards data issues.

References:

? ISTQB CT-AI Syllabus Section 4.2 on Training, Validation, and Test Datasets emphasizes the importance of using representative datasets to ensure the model generalizes well to real-world data.

? Sample Exam Questions document, Question #40 addresses issues related to data representativeness and model generalization.

NEW QUESTION 22

Which ONE of the following approaches to labelling requires the least time and effort? SELECT ONE OPTION

- A. Outsourced
- B. Pre-labeled dataset
- C. Internal

D. AI-Assisted

Answer: B

Explanation:

Labelling Approaches: Among the options provided, pre-labeled datasets require the least time and effort because the data has already been labeled, eliminating the need for further manual or automated labeling efforts.

Reference: ISTQB_CT-AI_Syllabus_v1.0, Section 4.5 Data Labelling for Supervised Learning, which discusses various approaches to data labeling, including pre-labeled datasets, and their associated time and effort requirements.

NEW QUESTION 27

Which ONE of the following options is an example that BEST describes a system with AI- based autonomous functions?

SELECT ONE OPTION

- A. A system that utilizes human beings for all important decisions.
- B. A fully automated manufacturing plant that uses no software.
- C. A system that utilizes a tool like Selenium.
- D. A system that is fully able to respond to its environment.

Answer: D

Explanation:

AI-Based Autonomous Functions: An AI-based autonomous system is one that can respond to its environment without human intervention. The other options either involve human decisions or do not use AI at all.

Reference: ISTQB_CT-AI_Syllabus_v1.0, Sections on Autonomy and Testing Autonomous AI-Based Systems.

NEW QUESTION 29

Which ONE of the following options does NOT describe a challenge for acquiring test data in ML systems?

SELECT ONE OPTION

- A. Compliance needs require proper care to be taken of input personal data.
- B. Nature of data constantly changes with time.
- C. Data for the use case is being generated at a fast pace.
- D. Test data being sourced from public sources.

Answer: C

Explanation:

Challenges for Acquiring Test Data in ML Systems: Compliance needs, the changing nature of data over time, and sourcing data from public sources are significant challenges. Data being generated quickly is generally not a challenge; it can actually be beneficial as it provides more data for training and testing.

Reference: ISTQB_CT-AI_Syllabus_v1.0, Sections on Data Preparation and Data Quality Issues.

NEW QUESTION 31

Upon testing a model used to detect rotten tomatoes, the following data was observed by the test engineer, based on certain number of tomato images.

Confusion Matrix	Actually Rotten	Actually Fresh
Predicted Rotten	45	8
Predicted Fresh	5	42

For this confusion matrix which combinations of values of accuracy, recall, and specificity respectively is CORRECT?

SELECT ONE OPTION

- A. 0.87,0.9, 0.84
- B. 1,0.87,0.84
- C. 1,0.9, 0.8
- D. 0.84,1,0.9

Answer: A

Explanation:

To calculate the accuracy, recall, and specificity from the confusion matrix provided, we use the following formulas:

? Confusion Matrix:

? Accuracy:

? Recall (Sensitivity):

? Specificity:

Therefore, the correct combinations of accuracy, recall, and specificity are 0.87, 0.9, and 0.84 respectively.

References:

? ISTQB CT-AI Syllabus, Section 5.1, Confusion Matrix, provides detailed formulas and explanations for calculating various metrics including accuracy, recall, and

specificity.

? "ML Functional Performance Metrics" (ISTQB CT-AI Syllabus, Section 5).

NEW QUESTION 35

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