

ISTQB Certified Tester AI Testing Exam Sample Questions (Q41-Q46):

NEW QUESTION # 41

Which ONE of the following options describes the LEAST LIKELY usage of AI for detection of GUI changes due to changes in test objects?

SELECT ONE OPTION

- A. Using a computer vision to compare the GUI before and after the test object changes.
- B. Using a vision-based detection of the GUI layout changes before and after test object changes.
- C. Using a ML-based classifier to flag if changes in GUI are to be flagged for humans.
- D. Using a pixel comparison of the GUI before and after the change to check the differences.

Answer: D

Explanation:

* A. Using a pixel comparison of the GUI before and after the change to check the differences.

Pixel comparison is a traditional method and does not involve AI. It compares images at the pixel level, which can be effective but is not an intelligent approach. It is not considered an AI usage and is the least likely usage of AI for detecting GUI changes.

* B. Using computer vision to compare the GUI before and after the test object changes.

Computer vision involves using AI techniques to interpret and process images. It is a likely usage of AI for detecting changes in the GUI.

* C. Using vision-based detection of the GUI layout changes before and after test object changes.

Vision-based detection is another AI technique where the layout and structure of the GUI are analyzed to detect changes. This is a typical application of AI.

* D. Using a ML-based classifier to flag if changes in GUI are to be flagged for humans.

An ML-based classifier can intelligently determine significant changes and decide if they need human review, which is a sophisticated AI application.

NEW QUESTION # 42

Which ONE of the following options is the MOST APPROPRIATE stage of the ML workflow to set model and algorithm hyperparameters?

SELECT ONE OPTION

- A. Deploying the model
- B. Data testing
- C. Tuning the model
- D. Evaluating the model

Answer: C

Explanation:

Setting model and algorithm hyperparameters is an essential step in the machine learning workflow, primarily occurring during the tuning phase.

* Evaluating the model (A): This stage involves assessing the model's performance using metrics and does not typically include the setting of hyperparameters.

* Deploying the model (B): Deployment is the stage where the model is put into production and used in real-world applications. Hyperparameters should already be set before this stage.

* Tuning the model (C): This is the correct stage where hyperparameters are set. Tuning involves adjusting the hyperparameters to optimize the model's performance.

* Data testing (D): Data testing involves ensuring the quality and integrity of the data used for training and testing the model. It does not include setting hyperparameters.

Hence, the most appropriate stage of the ML workflow to set model and algorithm hyperparameters is C.

Tuning the model.

References:

* ISTQB CT-AI Syllabus Section 3.2 on the ML Workflow outlines the different stages of the ML process, including the tuning phase where hyperparameters are set.

* Sample Exam Questions document, Question #31 specifically addresses the stage in the ML workflow where hyperparameters are configured.

NEW QUESTION # 43

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 algorithmic bias.
- B. This is an example of expert system bias.
- C. This is an example of sample bias.
- D. This is an example of hyperparameter bias.

Answer: C

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, optionB(sample bias) best describes the situation because the training data is skewed towards ethnicity A, potentially leading to biased model performance.

NEW QUESTION # 44

Which of the following approaches would help overcome testing challenges associated with probabilistic and non-deterministic AI-based systems?

- A. Run the test several times to ensure that the AI always returns the same correct test result.
- B. Decompose the system test into multiple data ingestion tests to determine if the AI system is getting a sufficient volume of input data.
- C. Decompose the system test into multiple data ingestion tests to determine if the AI system is getting precise and accurate input data.
- D. Run the test several times to generate a statistically valid test result to ensure that an appropriate number of answers are accurate.

Answer: D

Explanation:

Probabilistic and non-deterministic AI-based systems do not always produce the same output for identical inputs. This makes traditional testing approaches ineffective. Instead, the best approach is to run tests multiple times and analyze results statistically.

* Statistical Validity: Running tests multiple times ensures that observed results are statistically significant. Instead of relying on a single test run, analyzing multiple iterations helps determine trends, probabilities, and outliers.

* Expected Result Tolerance: AI-based systems may produce different results within an acceptable range. Defining acceptable tolerances (e.g., "result must be within 2% of the optimal value") improves test effectiveness.

* A (Run Several Times for the Same Correct Result): AI systems are often inherently non-deterministic and may not return the exact same result every time. Expecting identical outputs contradicts the nature of these systems.

* B & C (Decomposing Tests into Data Ingestion Tests): While data ingestion quality is important, it does not directly solve the issue of probabilistic test results. Statistical analysis is the key approach.

* ISTQB CT-AI Syllabus (Section 8.4: Challenges Testing Probabilistic and Non-Deterministic AI- Based Systems)

* "For probabilistic systems, running a test multiple times may be necessary to obtain a statistically valid test result."

* "Where a single definitive output is not possible, results should be analyzed statistically rather than relying on individual test cases."

Why Other Options Are Incorrect: Supporting References from ISTQB Certified Tester AI Testing Study

Guide Conclusion: Since probabilistic AI systems do not always return the same result, the best approach is to run multiple test iterations and validate results statistically. Hence, the correct answer is D.

NEW QUESTION # 45

Which of the following problems would best be solved using the supervised learning category of regression?

- A. Recognizing a knife in carry on luggage at a security checkpoint in an airport scanner.
- B. Determining if an animal is a pig or a cow based on image recognition.
- **C. Determining the optimal age for a chicken's egg laying production using input data of the chicken's age and average daily egg production for one million chickens.**
- D. Predicting shopper purchasing behavior based on the category of shopper and the positioning of promotional displays within a store.

Answer: C

Explanation:

Understanding Supervised Learning - Regression Supervised learning is a category of machine learning where the model is trained on labeled data. Within this category, regression is used when the goal is to predict a continuous numeric value.

* Regression deals with problems where the output variable is continuous in nature, meaning it can take any numerical value within a range.

* Common examples include predicting prices, estimating demand, and analyzing production trends.

* (A) Determining the optimal age for a chicken's egg-laying production using input data of the chicken's age and average daily egg production for one million chickens. #(Correct)

* This is a classic regression problem because it involves predicting a continuous variable: daily egg production based on the input variable chicken's age.

* The goal is to find a numerical relationship between age and egg production, which makes regression the appropriate supervised learning method.

* (B) Recognizing a knife in carry-on luggage at a security checkpoint in an airport scanner. #(Incorrect)

* This is an image recognition task, which falls under classification, not regression.

* Classification problems involve assigning inputs to discrete categories (e.g., "knife detected" or "no knife detected").

* (C) Determining if an animal is a pig or a cow based on image recognition. #(Incorrect)

* This is another classification problem where the goal is to categorize an image into one of two labels (pig or cow).

* (D) Predicting shopper purchasing behavior based on the category of shopper and the positioning of promotional displays within a store. #(Incorrect)

* This problem could involve a mix of classification and association rule learning, but it does not explicitly predict a continuous variable in the way regression does.

* Regression is used when predicting a numeric output. "Predicting the age of a person based on input data about their habits or predicting the future prices of stocks are examples of problems that use regression."

* Supervised learning problems are divided into classification and regression. "If the output is numeric and continuous in nature, it may be regression."

* Regression is commonly used for predicting numerical trends over time. "Regression models result in a numerical or continuous output value for a given input." Analysis of Answer Choices References from ISTQB Certified Tester AI Testing Study Guide Thus, option A is the correct answer, as it aligns with the principles of regression-based supervised learning.

NEW QUESTION # 46

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