



ISTQB

Exam Questions CT-AI

Certified Tester AI Testing Exam

NEW QUESTION 1

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 2

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

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 3

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 4

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 5

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 6

Which ONE of the following describes a situation of back-to-back testing the LEAST? SELECT ONE OPTION

- A. Comparison of the results of a current neural network model ML model implemented in platform A (for example Pytorch) with a similar neural network model ML model implemented in platform B (for example Tensorflow), for the same data.
- B. Comparison of the results of a home-grown neural network model ML model with results in a neural network model implemented in a standard implementation (for example Pytorch) for same data
- C. Comparison of the results of a neural network ML model with a current decision tree ML model for the same data.
- D. Comparison of the results of the current neural network ML model on the current data set with a slightly modified data set.

Answer: C

Explanation:

Back-to-back testing is a method where the same set of tests are run on multiple implementations of the system to compare their outputs. This type of testing is typically used to ensure consistency and correctness by comparing the outputs of different implementations under identical conditions. Let's analyze the options given:

? A. Comparison of the results of a current neural network model ML model

implemented in platform A (for example Pytorch) with a similar neural network model ML model implemented in platform B (for example Tensorflow), for the same data.

? B. Comparison of the results of a home-grown neural network model ML model

with results in a neural network model implemented in a standard implementation (for example Pytorch) for the same data.

? C. Comparison of the results of a neural network ML model with a current decision

tree ML model for the same data.

? D. Comparison of the results of the current neural network ML model on the current data set with a slightly modified data set.

Based on this analysis, option C is the one that describes a situation of back-to-back testing the least because it compares two fundamentally different models, which is not the intent of back-to-back testing.

NEW QUESTION 7

In a certain coffee producing region of Colombia, there have been some severe weather storms, resulting in massive losses in production. This caused a massive drop in stock price of coffee.

Which ONE of the following types of testing SHOULD be performed for a machine learning model for stock-price prediction to detect influence of such phenomenon as above on price of coffee stock.

SELECT ONE OPTION

- A. Testing for accuracy
- B. Testing for bias
- C. Testing for concept drift
- D. Testing for security

Answer: C

Explanation:

Type of Testing for Stock-Price Prediction Models: Concept drift refers to the change in the statistical properties of the target variable over time. Severe weather storms causing massive losses in coffee production and affecting stock prices would require testing for concept drift to ensure that the model adapts to new patterns in data over time. Reference: ISTQB_CT-AI_Syllabus_v1.0, Section 7.6 Testing for Concept Drift, which explains the need to test for concept drift in models that might be affected by changing external factors.

NEW QUESTION 8

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

Answer: C

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 9

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 10

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