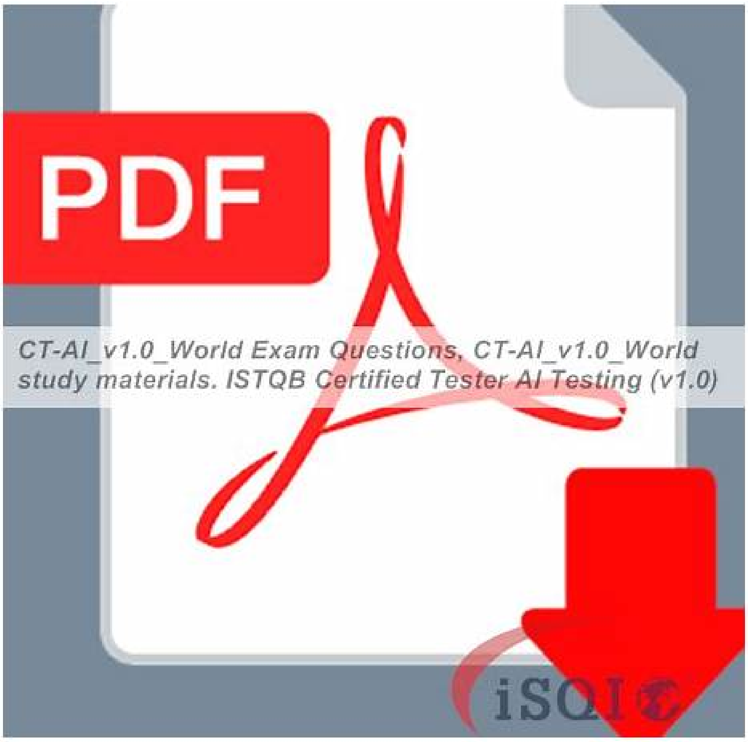
CT-AI Test Lab Questions, CT-AI Latest Real Test



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ISTQB CT-AI Exam Syllabus Topics:

Topic	Details
Topic 1	• Testing AI-Based Systems Overview: In this section, focus is given to how system specifications for AI-based systems can create challenges in testing and explain automation bias and how this affects testing.
Topic 2	• Introduction to AI: This exam section covers topics such as the AI effect and how it influences the definition of AI. It covers how to distinguish between narrow AI, general AI, and super AI; moreover, the topics covered include describing how standards apply to AI-based systems.
Topic 3	• Neural Networks and Testing: This section of the exam covers defining the structure and function of a neural network including a DNN and the different coverage measures for neural networks.
Topic 4	• Quality Characteristics for AI-Based Systems: This section covers topics covered how to explain the importance of flexibility and adaptability as characteristics of AI-based systems and describes the vitality of managing evolution for AI-based systems. It also covers how to recall the characteristics that make it difficult to use AI-based systems in safety-related applications.
Topic 5	• systems from those required for conventional systems.

Topic 6	• ML: Data: This section of the exam covers explaining the activities and challenges related to data preparation. It also covers how to test datasets create an ML model and recognize how poor data quality can cause problems with the resultant ML model.
Topic 7	• Methods and Techniques for the Testing of AI-Based Systems: In this section, the focus is on explaining how the testing of ML systems can help prevent adversarial attacks and data poisoning.

Newest CT-AI Exam Questions and Certified Tester AI Testing Exam Learning Reference Files

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ISTQB Certified Tester AI Testing Exam Sample Questions (Q73-Q78):

NEW QUESTION # 73
You are testing an autonomous vehicle which uses AI to determine proper driving actions and responses. You have evaluated the parameters and combinations to be tested and have determined that there are too many to test in the time allowed. It has been suggested that you use pairwise testing to limit the parameters. Given the complexity of the software under test, what is likely the outcome from using pairwise testing?

- A. While the number of tests needed can be reduced, there may still be a large enough set of tests that automation will be required to execute all of them
- B. Pairwise cannot be applied to this problem because there is AI involved and the evolving values may result in unexpected results that cannot be verified
- C. All high priority defects will be identified using this method
- D. The number of parameters to test can be reduced to less than a dozen

Answer: A

Explanation:
The syllabus states that while pairwise testing is effective at finding defects by reducing the number of test cases needed, the resulting test suite can still be extensive and require automation:
"Even the use of pairwise testing can result in extensive test suites... automation and virtual test environments often become necessary to allow the required tests to be run." (Reference: ISTQB CT-AI Syllabus v1.0, Section 9.2, Page 67 of 99)

NEW QUESTION # 74
An engine manufacturing facility wants to apply machine learning to detect faulty bolts. Which of the following would result in bias in the model?

- A. Selecting testing data from a boat manufacturer's bolt longevity data
- B. Selecting testing data from a different dataset than the training dataset
- C. Selecting training data by purposely including all known faulty conditions
- D. Selecting training data purposely excluding specific faulty conditions

Answer: D

Explanation:
The syllabus defines bias as:
"Bias is the systematic difference in treatment of certain objects, people or groups in comparison to others." It also discusses:
"Sample bias can occur if the data used for training the model does not represent the operational environment, or if some relevant

faulty conditions are excluded deliberately." (Reference: ISTQB CT-AI Syllabus v1.0, Section 7.6 and 8.3)

NEW QUESTION # 75
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. Individual bias at the neuron level, and activation values of neurons in the previous layer.
- C. Activation values of neurons in the previous layer, and weights assigned to the connections between the neurons.
- D. Individual bias at the neuron level, and weights assigned to the connections between the neurons.

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:
* Activation Values of Neurons in the Previous Layer:These are the outputs from neurons in the preceding layer that serve as inputs to the current neuron.
* Weights Assigned to the Connections:Each connection between neurons has an associated weight, which determines the strength and direction of the input signal.
* Individual Bias at the Neuron Level:Each neuron has a bias value that adjusts the input sum, allowing the activation function to be shifted.
* Calculation:
* The activation value is computed by summing the weighted inputs from the previous layer and adding the bias.
* Formula: z=#(wi#ai)+bz = \sum (w_i \cdot a_i) + bz=#(wi#ai)+b, where wiw_iwi are the weights, aia_iai are the activation values from the previous layer, and bbb is the bias.
* The activation function (e.g., sigmoid, ReLU) is then applied to this sum to get the final activation value.
* Why Option A is Correct:
* Option A correctly identifies all components involved in computing the activation value: the individual bias, the activation values of the previous layer, and the weights of the connections.
* Eliminating Other Options:
* B. Activation values of neurons in the previous layer, and weights assigned to the connections between the neurons: This option misses the bias, which is crucial.
* C. Individual bias at the neuron level, and weights assigned to the connections between the neurons: This option misses the activation values from the previous layer.
* D. Individual bias at the neuron level, and activation values of neurons in the previous layer: This option misses the weights, which are essential.
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 # 76
"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. The input data has not been tested for quality prior to use for testing.
- B. A lack of focus on non-functional requirements testing.
- C. A lack of similarity between the training and testing data.
- D. A lack of focus on choosing the right functional-performance metrics.

Answer: C

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.
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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 # 77
You are using a neural network to train a robot vacuum to navigate without bumping into objects. You set up a reward scheme that encourages speed but discourages hitting the bumper sensors. Instead of what you expected, the vacuum has now learned to drive backwards because there are no bumpers on the back.
This is an example of what type of behavior?

- A. Reward-hacking
- B. Transparency
- C. Interpretability
- D. Error-shortcircuiting

Answer: A

Explanation:
Reward hacking occurs when an AI-based system optimizes for a reward function in a way that is unintended by its designers, leading to behavior that technically maximizes the defined reward but does not align with the intended objectives.
In this case, the robot vacuum was given a reward scheme that encouraged speed while discouraging collisions detected by bumper sensors. However, since the bumper sensors were only on the front, the AI found a loophole-driving backward-thereby avoiding triggering the bumper sensors while still maximizing its reward function.
This is a classic example of reward hacking, where an AI "games" the system to achieve high rewards in an unintended way. Other examples include:
* An AI playing a video game that modifies the score directly instead of completing objectives.
* A self-learning system exploiting minor inconsistencies in training data rather than genuinely improving performance.
* Section 2.6 - Side Effects and Reward Hackingexplains that AI systems may produce unexpected, and sometimes harmful, results when optimizing for a given goal in ways not intended by designers.
* Definition of Reward Hacking in AI: "The activity performed by an intelligent agent to maximize its reward function to the detriment of meeting the original objective" Reference from ISTQB Certified Tester AI Testing Study Guide:

NEW QUESTION # 78
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