Free Questions for CT-AI by braindumpscollection

Shared by Lee on 22-07-2024

For More Free Questions and Preparation Resources

Check the Links on Last Page

Question 1

Question Type: MultipleChoice

Which ONE of the following models BEST describes a way to model defect prediction by looking at the history of bugs in modules by using code quality metrics of modules of historical versions as input?

SELECT ONE OPTION

Options:

A- Identifying the relationship between developers and the modules developed by them.

B- Search of similar code based on natural language processing.

C- Clustering of similar code modules to predict based on similarity.

D- Using a classification model to predict the presence of a defect by using code quality metrics as the input data.

Answer:

D

Explanation:

Defect prediction models aim to identify parts of the software that are likely to contain defects by analyzing historical data and code quality metrics. The primary goal is to use this predictive information to allocate testing and maintenance resources effectively. Let's break down why option D is the correct choice:

Understanding Classification Models:

Classification models are a type of supervised learning algorithm used to categorize or classify data into predefined classes or labels. In the context of defect prediction, the classification model would classify parts of the code as either 'defective' or 'non-defective' based on the input features.

Input Data - Code Quality Metrics:

The input data for these classification models typically includes various code quality metrics such as cyclomatic complexity, lines of code, number of methods, depth of inheritance, coupling between objects, etc. These metrics help the model learn patterns associated with defects.

Historical Data:

Historical versions of the code along with their defect records provide the labeled data needed for training the classification model. By analyzing this historical data, the model can learn which metrics are indicative of defects.

Why Option D is Correct:

Option D specifies using a classification model to predict the presence of defects by using code quality metrics as input data. This accurately describes the process of defect prediction using historical bug data and quality metrics.

Eliminating Other Options:

A . Identifying the relationship between developers and the modules developed by them: This does not directly involve predicting defects based on code quality metrics and historical data.

B . Search of similar code based on natural language processing: While useful for other purposes, this method does not describe defect prediction using classification models and code metrics.

C . Clustering of similar code modules to predict based on similarity: Clustering is an unsupervised learning technique and does not directly align with the supervised learning approach typically used in defect prediction models.

ISTQB CT-AI Syllabus, Section 9.5, Metamorphic Testing (MT), describes various testing techniques including classification models for defect prediction.

'Using AI for Defect Prediction' (ISTQB CT-AI Syllabus, Section 11.5.1).

Question 2

Question Type: **MultipleChoice**

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

Options:

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.

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.

Question 3

Question Type: MultipleChoice

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

SELECT ONE OPTION

Options:

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.

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.

Question 4

Question Type: MultipleChoice

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

SELECT ONE OPTION

Options:

A- Al systems are inherently flexible.

B- Al 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.

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.

Question 5

Question Type: MultipleChoice

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

Options:

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.

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.

Question 6

Question Type: **MultipleChoice**

Which ONE of the following is the BEST option to optimize the regression test selection and prevent the regression suite from growing large?

SELECT ONE OPTION

Options:

A- Identifying suitable tests by looking at the complexity of the test cases.

B- Using of a random subset of tests.

C- Automating test scripts using Al-based test automation tools.

D- Using an Al-based tool to optimize the regression test suite by analyzing past test results

Answer:

D

Explanation:

A . Identifying suitable tests by looking at the complexity of the test cases.

While complexity analysis can help in selecting important test cases, it does not directly address the issue of optimizing the entire regression suite effectively.

B . Using a random subset of tests.

Randomly selecting test cases may miss critical tests and does not ensure an optimized regression suite. This approach lacks a systematic method for ensuring comprehensive coverage.

C . Automating test scripts using AI-based test automation tools.

Automation helps in running tests efficiently but does not inherently optimize the selection of tests to prevent the suite from growing too large.

D . Using an AI-based tool to optimize the regression test suite by analyzing past test results.

This is the most effective approach as AI-based tools can analyze historical test data, identify patterns, and prioritize tests that are more likely to catch defects based on past results. This method ensures an optimized and manageable regression test suite by focusing on the most impactful test cases.

Therefore, the correct answer is D because using an AI-based tool to analyze past test results is the best option to optimize regression test selection and manage the size of the regression suite effectively.

Question 7

Question Type: **MultipleChoice**

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

Options:

A- Regression

B- Association

C- Clustering

D- Classification

Answer:

C

Explanation:

A . Regression

Regression is used to predict a continuous value and is not suitable for grouping people based on similar tastes.

B . Association

Association is used to find relationships between variables in large datasets, often in the form of rules (e.g., market basket analysis). It does not directly group individuals but identifies patterns of co-occurrence.

C . Clustering

Clustering is an unsupervised learning method used to group similar data points based on their features. It is ideal for identifying groups of people with similar tastes without prior knowledge of the group labels. This technique will help the company segment its customer base effectively.

D . Classification

Classification is a supervised learning method used to categorize data points into predefined classes. It requires labeled data for training, which is not the case here as we want to identify groups without predefined labels.

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