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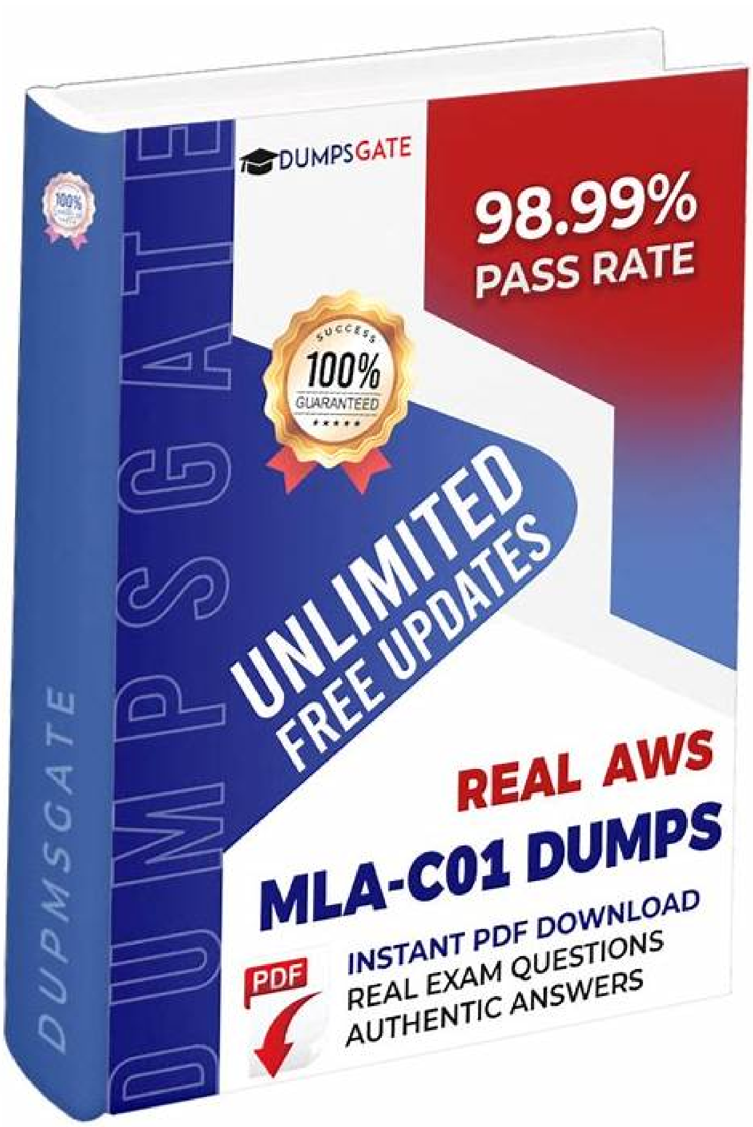

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Amazon MLA-C01 Exam Syllabus Topics:

Topic	Details
Topic 1	• ML Solution Monitoring, Maintenance, and Security: This section of the exam measures skills of Fraud Examiners and assesses the ability to monitor machine learning models, manage infrastructure costs, and apply security best practices. It includes setting up model performance tracking, detecting drift, and using AWS tools for logging and alerts. Candidates are also tested on configuring access controls, auditing environments, and maintaining compliance in sensitive data environments like financial fraud detection.

Topic 2	• ML Model Development: This section of the exam measures skills of Fraud Examiners and covers choosing and training machine learning models to solve business problems such as fraud detection. It includes selecting algorithms, using built-in or custom models, tuning parameters, and evaluating performance with standard metrics. The domain emphasizes refining models to avoid overfitting and maintaining version control to support ongoing investigations and audit trails.
Topic 3	• Data Preparation for Machine Learning (ML): This section of the exam measures skills of Forensic Data Analysts and covers collecting, storing, and preparing data for machine learning. It focuses on understanding different data formats, ingestion methods, and AWS tools used to process and transform data. Candidates are expected to clean and engineer features, ensure data integrity, and address biases or compliance issues, which are crucial for preparing high-quality datasets in fraud analysis contexts.
Topic 4	• Deployment and Orchestration of ML Workflows: This section of the exam measures skills of Forensic Data Analysts and focuses on deploying machine learning models into production environments. It covers choosing the right infrastructure, managing containers, automating scaling, and orchestrating workflows through CI • CD pipelines. Candidates must be able to build and script environments that support consistent deployment and efficient retraining cycles in real-world fraud detection systems.

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Valid MLA-C01 Test Voucher, New MLA-C01 Exam Questions

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Amazon AWS Certified Machine Learning Engineer - Associate Sample Questions (Q51-Q56):

NEW QUESTION # 51
Case study
An ML engineer is developing a fraud detection model on AWS. The training dataset includes transaction logs, customer profiles, and tables from an on-premises MySQL database. The transaction logs and customer profiles are stored in Amazon S3.
The dataset has a class imbalance that affects the learning of the model's algorithm. Additionally, many of the features have interdependencies. The algorithm is not capturing all the desired underlying patterns in the data.
The ML engineer needs to use an Amazon SageMaker built-in algorithm to train the model.
Which algorithm should the ML engineer use to meet this requirement?

- A. Linear learner
- B. LightGBM
- C. Neural Topic Model (NTM)
- D. #-means clustering

Answer: A

Explanation:
Why Linear Learner?
* SageMaker'sLinear Learneralgorithm is well-suited for binary classification problems such as fraud detection. It handles class imbalance effectively by incorporating built-in options forweight balancing across classes.
* Linear Learner can capture patterns in the data while being computationally efficient.
Key Features of Linear Learner:
* Automatically weights minority and majority classes.

* Supports both classification and regression tasks.
* Handles interdependencies among features effectively through gradient optimization.
Steps to Implement:
* Use the SageMaker Python SDK to set up a training job with the Linear Learner algorithm.
* Configure the hyperparameters to enable balanced class weights.
* Train the model with the balanced dataset created using SageMaker Data Wrangler.

NEW QUESTION # 52
A government agency is conducting a national census to assess program needs by area and city. The census form collects approximately 500 responses from each citizen. The agency needs to analyze the data to extract meaningful insights. The agency wants to reduce the dimensions of the high-dimensional data to uncover hidden patterns.
Which solution will meet these requirements?

- A. Use the k-means algorithm in Amazon SageMaker AI.
- B. Use the Random Cut Forest (RCF) algorithm in Amazon SageMaker AI.
- C. Use the principal component analysis (PCA) algorithm in Amazon SageMaker AI.
- D. Use the t-Distributed Stochastic Neighbor Embedding (t-SNE) algorithm in Amazon SageMaker AI.

Answer: C

Explanation:
The primary requirement is dimensionality reduction on high-dimensional structured data to uncover hidden patterns. Principal Component Analysis (PCA) is a linear dimensionality reduction technique specifically designed for this purpose and is available as a built-in algorithm in Amazon SageMaker.
PCA transforms the original features into a smaller set of orthogonal components that preserve the maximum possible variance. This makes PCA ideal for large tabular datasets such as census data, where hundreds of correlated variables are common.
t-SNE (Option B) is mainly used for visualization in very low dimensions (2D or 3D) and does not scale well for large datasets or production analysis. k-means (Option C) is a clustering algorithm, not a dimensionality reduction method. Random Cut Forest (Option D) is used for anomaly detection.
Therefore, PCA is the correct and AWS-recommended solution.

NEW QUESTION # 53
An ML engineer is using an Amazon SageMaker AI shadow test to evaluate a new model that is hosted on a SageMaker AI endpoint. The shadow test requires significant GPU resources for high performance. The production variant currently runs on a less powerful instance type.
The ML engineer needs to configure the shadow test to use a higher performance instance type for a shadow variant. The solution must not affect the instance type of the production variant.
Which solution will meet these requirements?

- A. Create a separate SageMaker AI endpoint for the shadow variant that uses the larger instance type.
  Create an AWS Lambda function that routes a portion of the traffic to the shadow endpoint. Assign the Lambda function to the original endpoint.
- B. Create a new endpoint configuration with two ProductionVariant definitions. Configure one definition for the existing production variant and one definition for the shadow variant with the larger instance type. Use the UpdateEndpoint action to apply the new configuration.
- C. Use the CreateEndpointConfig action to define a new configuration. Specify the existing production variant in the configuration and add a separate ShadowProductionVariants list. Specify the larger instance type for the shadow variant. Use the CreateEndpoint action and pass the new configuration to the endpoint.
- D. Modify the existing ProductionVariant configuration in the endpoint to include a ShadowProductionVariants list. Specify the larger instance type for the shadow variant.

Answer: C

Explanation:
Amazon SageMaker AI shadow testing enables ML engineers to evaluate new model versions by sending a copy of live production traffic to a shadow variant without affecting production inference responses. AWS documentation specifies that shadow variants are configured separately from production variants and can use different instance types, including higher-performance GPU instances.
The correct approach is to create a new endpoint configuration using the CreateEndpointConfig API. This configuration includes the existing production variant and a separate ShadowProductionVariants list. The shadow variant can be assigned a larger instance type

to meet GPU performance requirements while leaving the production variant unchanged. After creating the configuration, the engineer deploys it using the CreateEndpoint action.
Option A is incorrect because production variant configurations cannot be directly modified to include shadow variants. Option B is incorrect because shadow variants are not defined as standard production variants; defining two production variants would route traffic differently and could affect production behavior. Option C introduces unnecessary complexity and deviates from SageMaker's built-in shadow testing functionality.
AWS explicitly documents that shadow variants are designed to isolate testing resources, support different instance types, and ensure zero impact on production inference. Therefore, Option D is the correct and AWS- recommended solution.

NEW QUESTION # 54
A company is building a web-based AI application by using Amazon SageMaker. The application will provide the following capabilities and features: ML experimentation, training, a central model registry, model deployment, and model monitoring.
The application must ensure secure and isolated use of training data during the ML lifecycle. The training data is stored in Amazon S3.
The company is experimenting with consecutive training jobs.
How can the company MINIMIZE infrastructure startup times for these jobs?

- A. Use the SageMaker distributed data parallelism (SMDDP) library.
- B. Use SageMaker managed warm pools.
- C. Use Managed Spot Training.
- D. Use SageMaker Training Compiler.

Answer: B

Explanation:
When running consecutive training jobs in Amazon SageMaker, infrastructure provisioning can introduce latency, as each job typically requires the allocation and setup of compute resources. To minimize this startup time and enhance efficiency, Amazon SageMaker offers Managed Warm Pools.
Key Features of Managed Warm Pools:
* Reduced Latency: Reusing existing infrastructure significantly reduces startup time for training jobs.
* Configurable Retention Period: Allows retention of resources after training jobs complete, defined by the KeepAlivePeriodInSeconds parameter.
* Automatic Matching: Subsequent jobs with matching configurations (e.g., instance type) can reuse retained infrastructure.
Implementation Steps:
* Request Warm Pool Quota Increase: Increase the default resource quota for warm pools through AWS Service Quotas.
* Configure Training Jobs:
* Set KeepAlivePeriodInSeconds for the first training job to retain resources.
* Ensure subsequent jobs match the retained pool's configuration to enable reuse.
* Monitor Warm Pool Usage: Track warm pool status through the SageMaker console or API to confirm resource reuse.
Considerations:
* Billing: Resources in warm pools are billable during the retention period.
* Matching Requirements: Jobs must have consistent configurations to use warm pools effectively.
Alternative Options:
* Managed Spot Training: Reduces costs by using spare capacity but doesn't address startup latency.
* SageMaker Training Compiler: Optimizes training time but not infrastructure setup.
* SageMaker Distributed Data Parallelism Library: Enhances training efficiency but doesn't reduce setup time.
By using Managed Warm Pools, the company can significantly reduce startup latency for consecutive training jobs, ensuring faster experimentation cycles with minimal operational overhead.
AWS Documentation: Managed Warm Pools
AWS Blog: Reduce ML Model Training Job Startup Time

NEW QUESTION # 55
An ML engineer is using a training job to fine-tune a deep learning model in Amazon SageMaker Studio. The ML engineer previously used the same pre-trained model with a similar dataset. The ML engineer expects vanishing gradient, underutilized GPU, and overfitting problems.
The ML engineer needs to implement a solution to detect these issues and to react in predefined ways when the issues occur. The solution also must provide comprehensive real-time metrics during the training.
Which solution will meet these requirements with the LEAST operational overhead?

- A. Use Amazon CloudWatch default metrics to gain insights about the training job. Use the metrics to invoke an AWS Lambda function to initiate the predefined actions.
- B. Use TensorBoard to monitor the training job. Publish the findings to an Amazon Simple Notification Service (Amazon SNS) topic. Create an AWS Lambda function to consume the findings and to initiate the predefined actions.
- C. Expand the metrics in Amazon CloudWatch to include the gradients in each training step. Use the metrics to invoke an AWS Lambda function to initiate the predefined actions.
- D. Use SageMaker Debugger built-in rules to monitor the training job. Configure the rules to initiate the predefined actions.

Answer: D

Explanation:
SageMaker Debugger provides built-in rules to automatically detect issues like vanishing gradients, underutilized GPU, and overfitting during training jobs. It generates real-time metrics and allows users to define predefined actions that are triggered when specific issues occur. This solution minimizes operational overhead by leveraging the managed monitoring capabilities of SageMaker Debugger without requiring custom setups or extensive manual intervention.

NEW QUESTION # 56
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