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To be eligible to take the exam, candidates should have at least one year of experience in designing and implementing machine learning solutions on AWS, as well as a strong understanding of core AWS services and the ability to use them to solve real-world problems. AWS Certified Machine Learning - Specialty certification exam is intended for professionals who work in roles such as data scientists, data analysts, machine learning engineers, and developers who want to specialize in machine learning. Achieving this certification can help professionals boost their careers, as it demonstrates to employers and clients that they have the necessary skills and knowledge to design and implement machine learning solutions on AWS.

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Achieving the Amazon MLS-C01 certification is a significant accomplishment for machine learning professionals. It demonstrates a high level of knowledge and expertise in the field of machine learning and validates the skills required to design, build, and deploy machine learning models on AWS. AWS Certified Machine Learning - Specialty certification can help professionals advance their careers and increase their earning potential.

Amazon AWS Certified Machine Learning - Specialty Sample Questions (Q219-Q224):

NEW QUESTION # 219

A company has collected customer comments on its products, rating them as safe or unsafe, using decision trees. The training dataset has the following features: id, date, full review, full review summary, and a binary safe/unsafe tag. During training, any data sample with missing features was dropped. In a few instances, the test set was found to be missing the full review text field.

For this use case, which is the most effective course of action to address test data samples with missing features?

- A. Copy the summary text fields and use them to fill in the missing full review text fields, and then run through the test set.
- B. Use an algorithm that handles missing data better than decision trees.
- C. Generate synthetic data to fill in the fields that are missing data, and then run through the test set.
- D. Drop the test samples with missing full review text fields, and then run through the test set.

Answer: A

Explanation:

In this case, a full review summary usually contains the most descriptive phrases of the entire review and is a valid stand-in for the missing full review text field.

NEW QUESTION # 220

A company wants to predict the classification of documents that are created from an application. New documents are saved to an Amazon S3 bucket every 3 seconds. The company has developed three versions of a machine learning (ML) model within Amazon SageMaker to classify document text. The company wants to deploy these three versions to predict the classification of each document.

Which approach will meet these requirements with the LEAST operational overhead?

- A. Deploy all the models to a single SageMaker endpoint. Treat each model as a production variant. Configure an S3 event notification that invokes an AWS Lambda function when new documents are created. Configure the Lambda function to call each production variant and return the results of each model.
- B. Deploy each model to its own SageMaker endpoint. Create three AWS Lambda functions. Configure each Lambda function to call a different endpoint and return the results. Configure three S3 event notifications to invoke the Lambda functions when new documents are created.
- C. Deploy each model to its own SageMaker endpoint. Configure an S3 event notification that invokes an AWS Lambda function when new documents are created. Configure the Lambda function to call each endpoint and return the results of each model.
- D. Configure an S3 event notification that invokes an AWS Lambda function when new documents are created. Configure the Lambda function to create three SageMaker batch transform jobs, one batch transform job for each model for each document.

Answer: A

Explanation:

The approach that will meet the requirements with the least operational overhead is to deploy all the models to a single SageMaker endpoint, treat each model as a production variant, configure an S3 event notification that invokes an AWS Lambda function when new documents are created, and configure the Lambda function to call each production variant and return the results of each model. This approach involves the following steps:

* Deploy all the models to a single SageMaker endpoint. Amazon SageMaker is a service that can build, train, and deploy machine learning models. Amazon SageMaker can deploy multiple models to a single endpoint, which is a web service that can serve predictions from the models. Each model can be treated as a production variant, which is a version of the model that runs on one or more instances. Amazon SageMaker can distribute the traffic among the production variants according to the specified weights¹.

* Treat each model as a production variant. Amazon SageMaker can deploy multiple models to a single endpoint, which is a web service that can serve predictions from the models. Each model can be treated as a production variant, which is a version of the model that runs on one or more instances. Amazon SageMaker can distribute the traffic among the production variants according to the specified weights¹.

* Configure an S3 event notification that invokes an AWS Lambda function when new documents are created. Amazon S3 is a service that can store and retrieve any amount of data. Amazon S3 can send event notifications when certain actions occur on the objects in a bucket, such as object creation, deletion, or modification. Amazon S3 can invoke an AWS Lambda function as a destination for the event notifications. AWS Lambda is a service that can run code without provisioning or managing servers².

* Configure the Lambda function to call each production variant and return the results of each model.

AWS Lambda can execute the code that can call the SageMaker endpoint and specify the production variant to invoke. AWS Lambda can use the AWS SDK or the SageMaker Runtime API to send requests to the endpoint and receive the predictions from the models. AWS Lambda can return the results of each model as a response to the event notification³.

The other options are not suitable because:

* Option A: Configuring an S3 event notification that invokes an AWS Lambda function when new documents are created, configuring the Lambda function to create three SageMaker batch transform jobs, one batch transform job for each model for each document, will incur more operational overhead than using a single SageMaker endpoint. Amazon SageMaker batch transform is a

service that can process large datasets in batches and store the predictions in Amazon S3. Amazon SageMaker batch transform is not suitable for real-time inference, as it introduces a delay between the request and the response. Moreover, creating three batch transform jobs for each document will increase the complexity and cost of the solution⁴.

* Option C: Deploying each model to its own SageMaker endpoint, configuring an S3 event notification that invokes an AWS Lambda function when new documents are created, configuring the Lambda function to call each endpoint and return the results of each model, will incur more operational overhead than using a single SageMaker endpoint. Deploying each model to its own endpoint will increase the number of resources and endpoints to manage and monitor. Moreover, calling each endpoint separately will increase the latency and network traffic of the solution⁵.

* Option D: Deploying each model to its own SageMaker endpoint, creating three AWS Lambda functions, configuring each Lambda function to call a different endpoint and return the results, configuring three S3 event notifications to invoke the Lambda functions when new documents are created, will incur more operational overhead than using a single SageMaker endpoint and a single Lambda function. Deploying each model to its own endpoint will increase the number of resources and endpoints to manage and monitor. Creating three Lambda functions will increase the complexity and cost of the solution. Configuring three S3 event notifications will increase the number of triggers and destinations to manage and monitor⁶.

1: Deploying Multiple Models to a Single Endpoint - Amazon SageMaker

2: Configuring Amazon S3 Event Notifications - Amazon Simple Storage Service

3: Invoke an Endpoint - Amazon SageMaker

4: Get Inferences for an Entire Dataset with Batch Transform - Amazon SageMaker

5: Deploy a Model - Amazon SageMaker

6: AWS Lambda

NEW QUESTION # 221

A company supplies wholesale clothing to thousands of retail stores. A data scientist must create a model that predicts the daily sales volume for each item for each store. The data scientist discovers that more than half of the stores have been in business for less than 6 months. Sales data is highly consistent from week to week. Daily data from the database has been aggregated weekly, and weeks with no sales are omitted from the current dataset. Five years (100 MB) of sales data is available in Amazon S3.

Which factors will adversely impact the performance of the forecast model to be developed, and which actions should the data scientist take to mitigate them? (Choose two.)

- **A. Sales data is aggregated by week. Request daily sales data from the source database to enable building a daily model.**
- **B. The sales data is missing zero entries for item sales. Request that item sales data from the source database include zero entries to enable building the model.**
- C. Only 100 MB of sales data is available in Amazon S3. Request 10 years of sales data, which would provide 200 MB of training data for the model.
- D. The sales data does not have enough variance. Request external sales data from other industries to improve the model's ability to generalize.
- E. Detecting seasonality for the majority of stores will be an issue. Request categorical data to relate new stores with similar stores that have more historical data.

Answer: A,B

Explanation:

The factors that will adversely impact the performance of the forecast model are:

Sales data is aggregated by week. This will reduce the granularity and resolution of the data, and make it harder to capture the daily patterns and variations in sales volume. The data scientist should request daily sales data from the source database to enable building a daily model, which will be more accurate and useful for the prediction task.

Sales data is missing zero entries for item sales. This will introduce bias and incompleteness in the data, and make it difficult to account for the items that have no demand or are out of stock. The data scientist should request that item sales data from the source database include zero entries to enable building the model, which will be more robust and realistic.

The other options are not valid because:

Detecting seasonality for the majority of stores will not be an issue, as sales data is highly consistent from week to week. Requesting categorical data to relate new stores with similar stores that have more historical data may not improve the model performance significantly, and may introduce unnecessary complexity and noise.

The sales data does not need to have more variance, as it reflects the actual demand and behavior of the customers. Requesting external sales data from other industries will not improve the model's ability to generalize, but may introduce irrelevant and misleading information.

Only 100 MB of sales data is not a problem, as it is sufficient to train a forecast model with Amazon S3 and Amazon Forecast.

Requesting 10 years of sales data will not provide much benefit, as it may contain outdated and obsolete information that does not reflect the current market trends and customer preferences.

References:

NEW QUESTION # 222

A Machine Learning Specialist is working with a large cybersecurity company that manages security events in real time for companies around the world. The cybersecurity company wants to design a solution that will allow it to use machine learning to score malicious events as anomalies on the data as it is being ingested. The company also wants to be able to save the results in its data lake for later processing and analysis.

What is the MOST efficient way to accomplish these tasks?

- A. Ingest the data and store it in Amazon S3. Use AWS Batch along with the AWS Deep Learning AMIs to train a k-means model using TensorFlow on the data in Amazon S3.
- B. Ingest the data into Apache Spark Streaming using Amazon EMR, and use Spark MLlib with k-means to perform anomaly detection. Then store the results in an Apache Hadoop Distributed File System (HDFS) using Amazon EMR with a replication factor of three as the data lake.
- **C. Ingest the data using Amazon Kinesis Data Firehose, and use Amazon Kinesis Data Analytics Random Cut Forest (RCF) for anomaly detection. Then use Kinesis Data Firehose to stream the results to Amazon S3.**
- D. Ingest the data and store it in Amazon S3. Have an AWS Glue job that is triggered on demand transform the new data. Then use the built-in Random Cut Forest (RCF) model within Amazon SageMaker to detect anomalies in the data.

Answer: C

Explanation:

<https://aws.amazon.com/tw/blogs/machine-learning/use-the-built-in-amazon-sagemaker-random-cut-forest-algorithm-for-anomaly-detection/>

NEW QUESTION # 223

A Machine Learning Specialist is building a prediction model for a large number of features using linear models, such as linear regression and logistic regression. During exploratory data analysis the Specialist observes that many features are highly correlated with each other. This may make the model unstable. What should be done to reduce the impact of having such a large number of features?

- A. Perform one-hot encoding on highly correlated features
- B. Apply the Pearson correlation coefficient
- **C. Create a new feature space using principal component analysis (PCA)**
- D. Use matrix multiplication on highly correlated features.

Answer: C

Explanation:

Principal component analysis (PCA) is an unsupervised machine learning algorithm that attempts to reduce the dimensionality (number of features) within a dataset while still retaining as much information as possible. This is done by finding a new set of features called components, which are composites of the original features that are uncorrelated with one another. They are also constrained so that the first component accounts for the largest possible variability in the data, the second component the second most variability, and so on. By using PCA, the impact of having a large number of features that are highly correlated with each other can be reduced, as the new feature space will have fewer dimensions and less redundancy. This can make the linear models more stable and less prone to overfitting. References:

Principal Component Analysis (PCA) Algorithm - Amazon SageMaker

Perform a large-scale principal component analysis faster using Amazon SageMaker | AWS Machine Learning Blog
Machine Learning- Principal Component Analysis | i2tutorials

NEW QUESTION # 224

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