

Amazon

Exam Questions AWS-Certified-Machine-Learning-Specialty

AWS Certified Machine Learning - Specialty



NEW QUESTION 1

A Data Scientist needs to create a serverless ingestion and analytics solution for high-velocity, real-time streaming data. The ingestion process must buffer and convert incoming records from JSON to a query-optimized, columnar format without data loss. The output datastore must be highly available, and Analysts must be able to run SQL queries against the data and connect to existing business intelligence dashboards. Which solution should the Data Scientist build to satisfy the requirements?

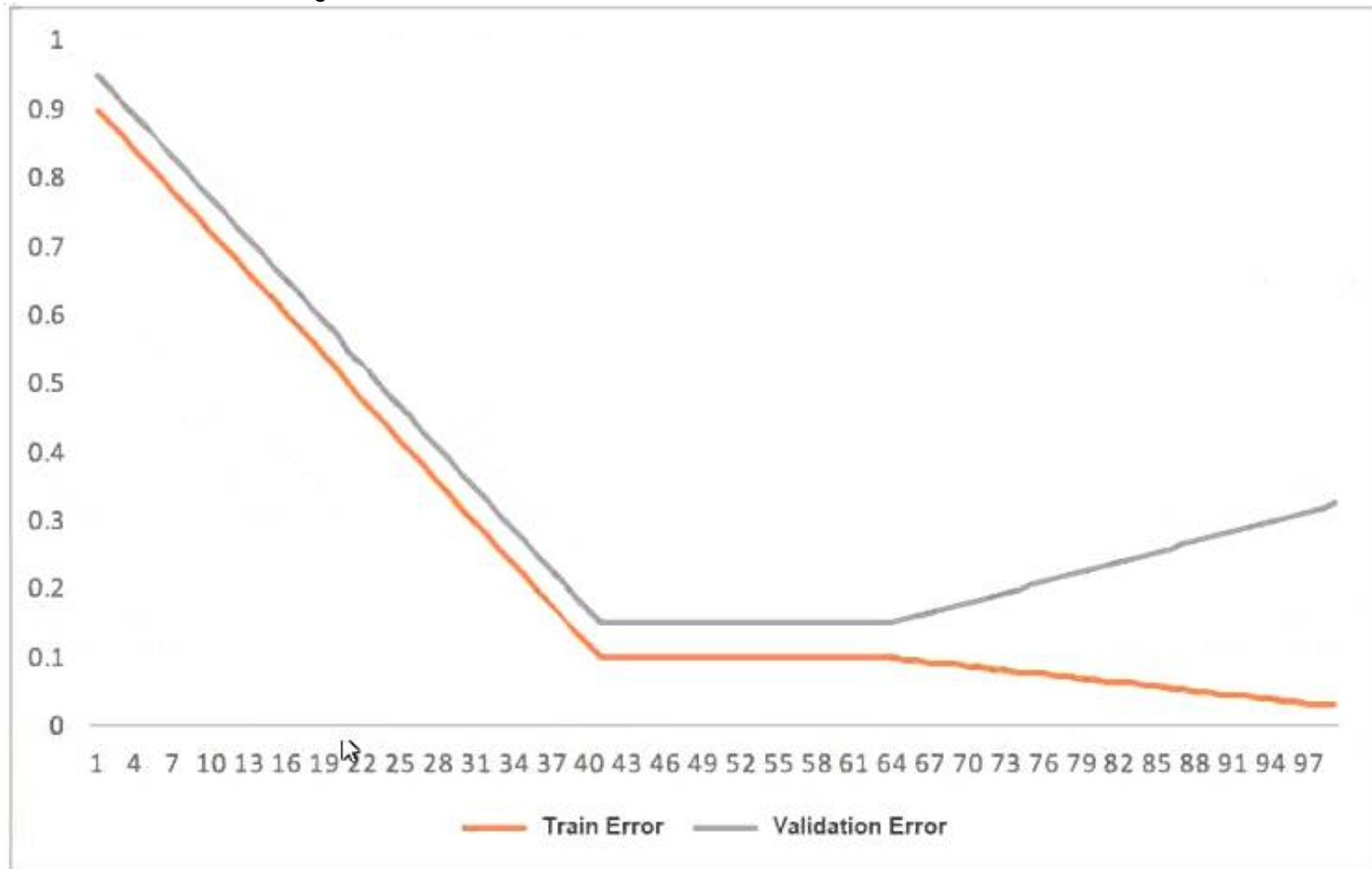
- A. Create a schema in the AWS Glue Data Catalog of the incoming data format.
- B. Use an Amazon Kinesis Data Firehose delivery stream to stream the data and transform the data to Apache Parquet or ORC format using the AWS Glue Data Catalog before delivering to Amazon S3. Have the Analysts query the data directly from Amazon S3 using Amazon Athena, and connect to BI tools using the Athena Java Database Connectivity (JDBC) connector.
- C. Write each JSON record to a staging location in Amazon S3. Use the S3 Put event to trigger an AWS Lambda function that transforms the data into Apache Parquet or ORC format and writes the data to a processed data location in Amazon S3. Have the Analysts query the data directly from Amazon S3 using Amazon Athena, and connect to BI tools using the Athena Java Database Connectivity (JDBC) connector.
- D. Write each JSON record to a staging location in Amazon S3. Use the S3 Put event to trigger an AWS Lambda function that transforms the data into Apache Parquet or ORC format and inserts it into an Amazon RDS PostgreSQL database.
- E. Have the Analysts query and run dashboards from the RDS database.
- F. Use Amazon Kinesis Data Analytics to ingest the streaming data and perform real-time SQL queries to convert the records to Apache Parquet before delivering to Amazon S3. Have the Analysts query the data directly from Amazon S3 using Amazon Athena and connect to BI tools using the Athena Java Database Connectivity (JDBC) connector.

Answer: A

NEW QUESTION 2

This graph shows the training and validation loss against the epochs for a neural network. The network being trained is as follows:

- Two dense layers, one output neuron
- 100 neurons in each layer
- 100 epochs
- Random initialization of weights



Which technique can be used to improve model performance in terms of accuracy in the validation set?

- A. Early stopping
- B. Random initialization of weights with appropriate seed
- C. Increasing the number of epochs
- D. Adding another layer with the 100 neurons

Answer: D

NEW QUESTION 3

A Machine Learning Specialist observes several performance problems with the training portion of a machine learning solution on Amazon SageMaker. The solution uses a large training dataset 2 TB in size and is using the SageMaker k-means algorithm. The observed issues include the unacceptable length of time it takes before the training job launches and poor I/O throughput while training the model. What should the Specialist do to address the performance issues with the current solution?

- A. Use the SageMaker batch transform feature.
- B. Compress the training data into Apache Parquet format.
- C. Ensure that the input mode for the training job is set to Pipe.
- D. Copy the training dataset to an Amazon EFS volume mounted on the SageMaker instance.

Answer: B

NEW QUESTION 4

A Data Scientist is developing a machine learning model to predict future patient outcomes based on information collected about each patient and their treatment plans. The model should output a continuous value as its prediction. The data available includes labeled outcomes for a set of 4,000 patients. The study was conducted on a group of individuals over the age of 65 who have a particular disease that is known to worsen with age. Initial models have performed poorly. While reviewing the underlying data, the Data Scientist notices that, out of 4,000 patient observations, there are 450 where the patient age has been input as 0. The other features for these observations appear normal compared to the rest of the sample population. How should the Data Scientist correct this issue?

- A. Drop all records from the dataset where age has been set to 0.
- B. Replace the age field value for records with a value of 0 with the mean or median value from the dataset.
- C. Drop the age feature from the dataset and train the model using the rest of the features.
- D. Use k-means clustering to handle missing features.

Answer: A

NEW QUESTION 5

A company is building a new version of a recommendation engine. Machine learning (ML) specialists need to keep adding new data from users to improve personalized recommendations. The ML specialists gather data from the users' interactions on the platform and from sources such as external websites and social media.

The pipeline cleans, transforms, enriches, and compresses terabytes of data daily, and this data is stored in Amazon S3. A set of Python scripts was coded to do the job and is stored in a large Amazon EC2 instance. The whole process takes more than 20 hours to finish, with each script taking at least an hour. The company wants to move the scripts out of Amazon EC2 into a more managed solution that will eliminate the need to maintain servers.

Which approach will address all of these requirements with the LEAST development effort?

- A. Load the data into an Amazon Redshift cluster
- B. Execute the pipeline by using SQ
- C. Store the results in Amazon S3.
- D. Load the data into Amazon DynamoDB
- E. Convert the scripts to an AWS Lambda function
- F. Execute the pipeline by triggering Lambda execution
- G. Store the results in Amazon S3.
- H. Create an AWS Glue job
- I. Convert the scripts to PySpark
- J. Execute the pipeline
- K. Store the results in Amazon S3.
- L. Create a set of individual AWS Lambda functions to execute each of the script
- M. Build a step function by using the AWS Step Functions Data Science SD
- N. Store the results in Amazon S3.

Answer: B

NEW QUESTION 6

A Machine Learning Specialist works for a credit card processing company and needs to predict which transactions may be fraudulent in near-real time. Specifically, the Specialist must train a model that returns the probability that a given transaction may be fraudulent. How should the Specialist frame this business problem?

- A. Streaming classification
- B. Binary classification
- C. Multi-category classification
- D. Regression classification

Answer: A

NEW QUESTION 7

A Marketing Manager at a pet insurance company plans to launch a targeted marketing campaign on social media to acquire new customers. Currently, the company has the following data in Amazon Aurora:

- Profiles for all past and existing customers
- Profiles for all past and existing insured pets
- Policy-level information
- Premiums received
- Claims paid

What steps should be taken to implement a machine learning model to identify potential new customers on social media?

- A. Use regression on customer profile data to understand key characteristics of consumer segments. Find similar profiles on social media.
- B. Use clustering on customer profile data to understand key characteristics of consumer segments. Find similar profiles on social media.
- C. Use a recommendation engine on customer profile data to understand key characteristics of consumer segment.
- D. Find similar profiles on social media.
- E. Use a decision tree classifier engine on customer profile data to understand key characteristics of consumer segment.
- F. Find similar profiles on social media.

Answer: C

NEW QUESTION 8

A data scientist has a dataset of machine part images stored in Amazon Elastic File System (Amazon EFS). The data scientist needs to use Amazon SageMaker to create and train an image classification machine learning model based on this dataset. Because of budget and time constraints, management wants the data scientist to create and train a model with the least number of steps and integration work required.

How should the data scientist meet these requirements?

- A. Mount the EFS file system to a SageMaker notebook and run a script that copies the data to an Amazon FSx for Lustre file system.

- B. Run the SageMaker training job with the FSx for Lustre file system as the data source.
- C. Launch a transient Amazon EMR cluster
- D. Configure steps to mount the EFS file system and copy the data to an Amazon S3 bucket by using S3DistC
- E. Run the SageMaker training job with Amazon S3 as the data source.
- F. Mount the EFS file system to an Amazon EC2 instance and use the AWS CLI to copy the data to an Amazon S3 bucket
- G. Run the SageMaker training job with Amazon S3 as the data source.
- H. Run a SageMaker training job with an EFS file system as the data source.

Answer: A

NEW QUESTION 9

A company ingests machine learning (ML) data from web advertising clicks into an Amazon S3 data lake. Click data is added to an Amazon Kinesis data stream by using the Kinesis Producer Library (KPL). The data is loaded into the S3 data lake from the data stream by using an Amazon Kinesis Data Firehose delivery stream. As the data volume increases, an ML specialist notices that the rate of data ingested into Amazon S3 is relatively constant. There also is an increasing backlog of data for Kinesis Data Streams and Kinesis Data Firehose to ingest. Which next step is MOST likely to improve the data ingestion rate into Amazon S3?

- A. Increase the number of S3 prefixes for the delivery stream to write to.
- B. Decrease the retention period for the data stream.
- C. Increase the number of shards for the data stream.
- D. Add more consumers using the Kinesis Client Library (KCL).

Answer: C

NEW QUESTION 10

A web-based company wants to improve its conversion rate on its landing page. Using a large historical dataset of customer visits, the company has repeatedly trained a multi-class deep learning network algorithm on Amazon SageMaker. However, there is an overfitting problem: training data shows 90% accuracy in predictions, while test data shows 70% accuracy only.

The company needs to boost the generalization of its model before deploying it into production to maximize conversions of visits to purchases.

Which action is recommended to provide the HIGHEST accuracy model for the company's test and validation data?

- A. Increase the randomization of training data in the mini-batches used in training.
- B. Allocate a higher proportion of the overall data to the training dataset.
- C. Apply L1 or L2 regularization and dropouts to the training.
- D. Reduce the number of layers and units (or neurons) from the deep learning network.

Answer: C

Explanation:

If this is a Computer Vision problem, augmentation can help, and we may consider A an option. However, in analyzing customer historic data, there is no easy way to increase randomization in training. If you go deep into modelling and coding, when you build a model with TensorFlow/PyTorch, most of the time the trainloader is already sampling in a random manner (with shuffle enabled). What we usually do to reduce overfitting is by adding dropout.

<https://docs.aws.amazon.com/machine-learning/latest/dg/model-fit-underfitting-vs-overfitting.html>

NEW QUESTION 10

A Machine Learning Specialist was given a dataset consisting of unlabeled data. The Specialist must create a model that can help the team classify the data into different buckets. What model should be used to complete this work?

- A. K-means clustering
- B. Random Cut Forest (RCF)
- C. XGBoost
- D. BlazingText

Answer: A

NEW QUESTION 13

A Machine Learning Specialist is implementing a full Bayesian network on a dataset that describes public transit in New York City. One of the random variables is discrete, and represents the number of minutes New Yorkers wait for a bus, given that the buses cycle every 10 minutes, with a mean of 3 minutes.

Which prior probability distribution should the ML Specialist use for this variable?

- A. Poisson distribution
- B. Uniform distribution
- C. Normal distribution
- D. Binomial distribution

Answer: A

NEW QUESTION 18

A Machine Learning Specialist is creating a new natural language processing application that processes a dataset comprised of 1 million sentences. The aim is to then run Word2Vec to generate embeddings of the sentences and enable different types of predictions.

Here is an example from the dataset:

"The quck BROWN FOX jumps over the lazy dog."

Which of the following are the operations the Specialist needs to perform to correctly sanitize and prepare the data in a repeatable manner? (Select THREE)

- A. Perform part-of-speech tagging and keep the action verb and the nouns only
- B. Normalize all words by making the sentence lowercase
- C. Remove stop words using an English stopword dictionary.
- D. Correct the typography on "quck" to "quick."

- E. One-hot encode all words in the sentence
- F. Tokenize the sentence into words.

Answer: BCF

NEW QUESTION 22

A large mobile network operating company is building a machine learning model to predict customers who are likely to unsubscribe from the service. The company plans to offer an incentive for these customers as the cost of churn is far greater than the cost of the incentive.

The model produces the following confusion matrix after evaluating on a test dataset of 100 customers: Based on the model evaluation results, why is this a viable model for production?

n = 100	PREDICTED CHURN	
	Yes	No
ACTUAL Churn Yes	10	4
Actual No	10	76

- A. The model is 86% accurate and the cost incurred by the company as a result of false negatives is less than the false positives.
- B. The precision of the model is 86%, which is less than the accuracy of the model.
- C. The model is 86% accurate and the cost incurred by the company as a result of false positives is less than the false negatives.
- D. The precision of the model is 86%, which is greater than the accuracy of the model.

Answer: A

NEW QUESTION 26

A Machine Learning team uses Amazon SageMaker to train an Apache MXNet handwritten digit classifier model using a research dataset. The team wants to receive a notification when the model is overfitting. Auditors want to view the Amazon SageMaker log activity report to ensure there are no unauthorized API calls. What should the Machine Learning team do to address the requirements with the least amount of code and fewest steps?

- A. Implement an AWS Lambda function to log Amazon SageMaker API calls to Amazon S3. Add code to push a custom metric to Amazon CloudWatch.
- B. Create an alarm in CloudWatch with Amazon SNS to receive a notification when the model is overfitting.
- C. Use AWS CloudTrail to log Amazon SageMaker API calls to Amazon S3. Add code to push a custom metric to Amazon CloudWatch.
- D. Create an alarm in CloudWatch with Amazon SNS to receive a notification when the model is overfitting.
- E. Implement an AWS Lambda function to log Amazon SageMaker API calls to AWS CloudTrail.
- F. Add code to push a custom metric to Amazon CloudWatch.
- G. Create an alarm in CloudWatch with Amazon SNS to receive a notification when the model is overfitting.
- H. Use AWS CloudTrail to log Amazon SageMaker API calls to Amazon S3. Set up Amazon SNS to receive a notification when the model is overfitting.

Answer: C

NEW QUESTION 28

A Machine Learning Specialist is preparing data for training on Amazon SageMaker. The Specialist is transformed into a numpy .array, which appears to be negatively affecting the speed of the training.

What should the Specialist do to optimize the data for training on SageMaker?

- A. Use the SageMaker batch transform feature to transform the training data into a DataFrame.
- B. Use AWS Glue to compress the data into the Apache Parquet format.
- C. Transform the dataset into the RecordIO protobuf format.
- D. Use the SageMaker hyperparameter optimization feature to automatically optimize the data.

Answer: C

NEW QUESTION 32

The Chief Editor for a product catalog wants the Research and Development team to build a machine learning system that can be used to detect whether or not individuals in a collection of images are wearing the company's retail brand. The team has a set of training data.

Which machine learning algorithm should the researchers use that BEST meets their requirements?

- A. Latent Dirichlet Allocation (LDA)
- B. Recurrent neural network (RNN)
- C. K-means
- D. Convolutional neural network (CNN)

Answer: C

NEW QUESTION 37

A manufacturer of car engines collects data from cars as they are being driven. The data collected includes timestamp, engine temperature, rotations per minute (RPM), and other sensor readings. The company wants to predict when an engine is going to have a problem so it can notify drivers in advance to get engine maintenance. The engine data is loaded into a data lake for training.

Which is the MOST suitable predictive model that can be deployed into production?

- A. Add labels over time to indicate which engine faults occur at what time in the future to turn this into a supervised learning problem. Use a recurrent neural network (RNN) to train the model to recognize when an engine might need maintenance for a certain fault.
- B. This data requires an unsupervised learning algorithm. Use Amazon SageMaker k-means to cluster the data.
- C. Add labels over time to indicate which engine faults occur at what time in the future to turn this into a supervised learning problem. Use a convolutional neural network (CNN) to train the model to recognize when an engine might need maintenance for a certain fault.

D. This data is already formulated as a time series Use Amazon SageMaker seq2seq to model the time series.

Answer: B

NEW QUESTION 40

A company is setting up an Amazon SageMaker environment. The corporate data security policy does not allow communication over the internet. How can the company enable the Amazon SageMaker service without enabling direct internet access to Amazon SageMaker notebook instances?

- A. Create a NAT gateway within the corporate VPC.
- B. Route Amazon SageMaker traffic through an on-premises network.
- C. Create Amazon SageMaker VPC interface endpoints within the corporate VPC.
- D. Create VPC peering with Amazon VPC hosting Amazon SageMaker.

Answer: A

NEW QUESTION 45

An Machine Learning Specialist discover the following statistics while experimenting on a model.

Experiment 1
Baseline model
Train error = 5%
Test error = 16%

Experiment 2
The Specialist added more layers and neurons to the model and received the following results:
Train error = 5.2%
Test error = 15.7%

Experiment 3
The Specialist reverted back to the original number of neurons from Experiment 1 and implemented regularization in the neural network, which yielded the following results:
Train error = 4.7%
Test error = 9.5%

What can the Specialist learn from the experiments?

- A. The model in Experiment 1 had a high variance error that was reduced in Experiment 3 by regularization Experiment 2 shows that there is minimal bias error in Experiment 1
- B. The model in Experiment 1 had a high bias error that was reduced in Experiment 3 by regularization Experiment 2 shows that there is minimal variance error in Experiment 1
- C. The model in Experiment 1 had a high bias error and a high variance error that were reduced in Experiment 3 by regularization Experiment 2 shows that high bias cannot be reduced by increasing layers and neurons in the model
- D. The model in Experiment 1 had a high random noise error that was reduced in Experiment 3 by regularization Experiment 2 shows that random noise cannot be reduced by increasing layers and neurons in the model

Answer: C

NEW QUESTION 50

A Machine Learning team runs its own training algorithm on Amazon SageMaker. The training algorithm requires external assets. The team needs to submit both its own algorithm code and algorithm-specific parameters to Amazon SageMaker.

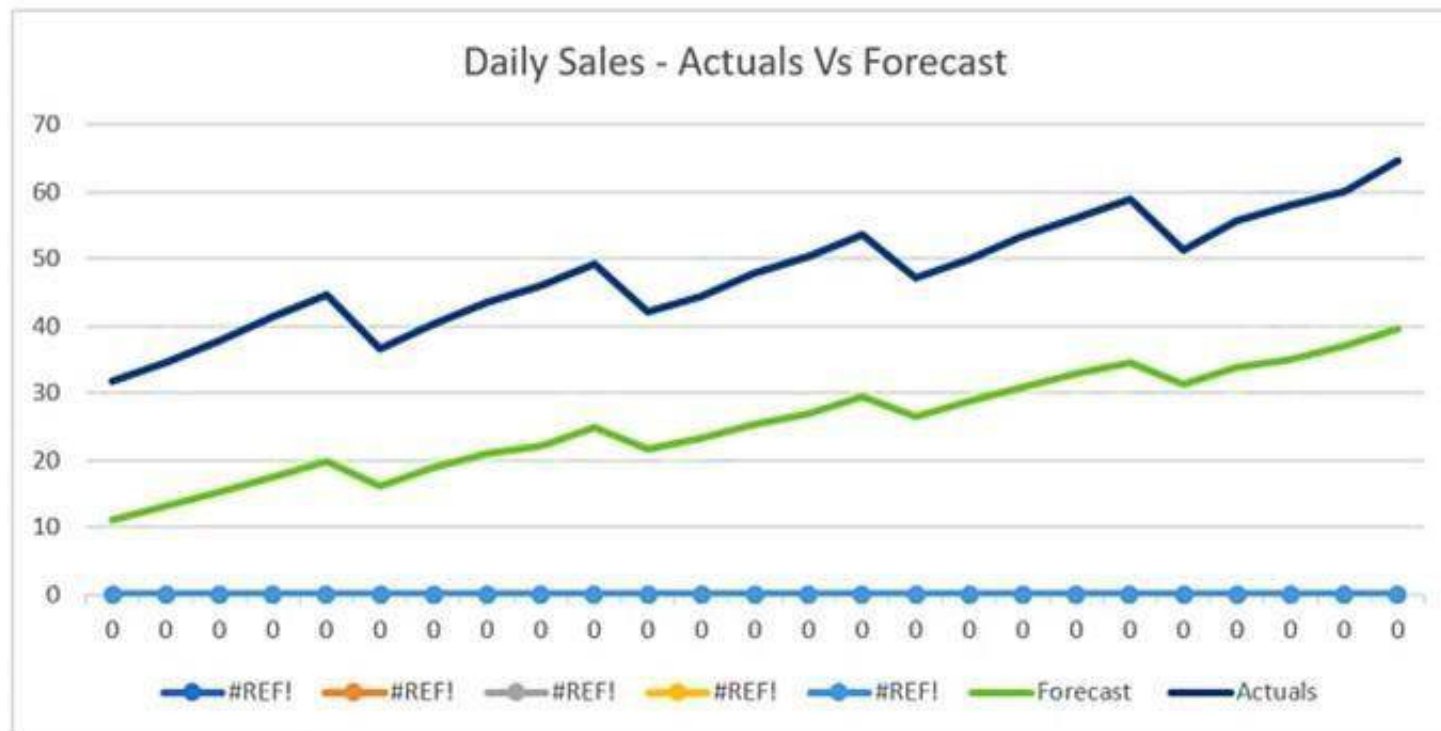
What combination of services should the team use to build a custom algorithm in Amazon SageMaker? (Choose two.)

- A. AWS Secrets Manager
- B. AWS CodeStar
- C. Amazon ECR
- D. Amazon ECS
- E. Amazon S3

Answer: CE

NEW QUESTION 52

The displayed graph is from a forecasting model for testing a time series.



Considering the graph only, which conclusion should a Machine Learning Specialist make about the behavior of the model?

- A. The model predicts both the trend and the seasonality well.
- B. The model predicts the trend well, but not the seasonality.
- C. The model predicts the seasonality well, but not the trend.
- D. The model does not predict the trend or the seasonality well.

Answer: D

NEW QUESTION 55

A data science team is planning to build a natural language processing (NLP) application. The application's text preprocessing stage will include part-of-speech tagging and key phrase extraction. The preprocessed text will be input to a custom classification algorithm that the data science team has already written and trained using Apache MXNet.

Which solution can the team build MOST quickly to meet these requirements?

- A. Use Amazon Comprehend for the part-of-speech tagging, key phrase extraction, and classification tasks.
- B. Use an NLP library in Amazon SageMaker for the part-of-speech tagging
- C. Use Amazon Comprehend for the key phrase extractio
- D. Use AWS Deep Learning Containers with Amazon SageMaker to build the custom classifier.
- E. Use Amazon Comprehend for the part-of-speech tagging and key phrase extraction task
- F. Use Amazon SageMaker built-in Latent Dirichlet Allocation (LDA) algorithm to build the custom classifier.
- G. Use Amazon Comprehend for the part-of-speech tagging and key phrase extraction task
- H. Use AWS Deep Learning Containers with Amazon SageMaker to build the custom classifier.

Answer: B

NEW QUESTION 60

A financial services company wants to adopt Amazon SageMaker as its default data science environment. The company's data scientists run machine learning (ML) models on confidential financial data. The company is worried about data egress and wants an ML engineer to secure the environment.

Which mechanisms can the ML engineer use to control data egress from SageMaker? (Choose three.)

- A. Connect to SageMaker by using a VPC interface endpoint powered by AWS PrivateLink.
- B. Use SCPs to restrict access to SageMaker.
- C. Disable root access on the SageMaker notebook instances.
- D. Enable network isolation for training jobs and models.
- E. Restrict notebook presigned URLs to specific IPs used by the company.
- F. Protect data with encryption at rest and in transi
- G. Use AWS Key Management Service (AWS KMS) to manage encryption keys.

Answer: BDE

Explanation:

<https://aws.amazon.com/blogs/machine-learning/millennium-management-secure-machine-learning-using-amaz>

NEW QUESTION 61

A company wants to use automatic speech recognition (ASR) to transcribe messages that are less than 60 seconds long from a voicemail-style application. The company requires the correct identification of 200 unique product names, some of which have unique spellings or pronunciations.

The company has 4,000 words of Amazon SageMaker Ground Truth voicemail transcripts it can use to customize the chosen ASR model. The company needs to ensure that everyone can update their customizations multiple times each hour.

Which approach will maximize transcription accuracy during the development phase?

- A. Use a voice-driven Amazon Lex bot to perform the ASR customizatio
- B. Create customer slots within the bot that specifically identify each of the required product name
- C. Use the Amazon Lex synonym mechanism to provide additional variations of each product name as mis-transcriptions are identified in development.
- D. Use Amazon Transcribe to perform the ASR customizatio
- E. Analyze the word confidence scores in the transcript, and automatically create or update a custom vocabulary file with any word that has a confidence score below an acceptable threshold valu
- F. Use this updated custom vocabulary file in all future transcription tasks.

- G. Create a custom vocabulary file containing each product name with phonetic pronunciations, and use it with Amazon Transcribe to perform the ASR customization.
- H. Analyze the transcripts and manually update the custom vocabulary file to include updated or additional entries for those names that are not being correctly identified.
- I. Use the audio transcripts to create a training dataset and build an Amazon Transcribe custom language model.
- J. Analyze the transcripts and update the training dataset with a manually corrected version of transcripts where product names are not being transcribed correctly.
- K. Create an updated custom language model.

Answer: A

NEW QUESTION 64

A Data Scientist needs to migrate an existing on-premises ETL process to the cloud. The current process runs at regular time intervals and uses PySpark to combine and format multiple large data sources into a single consolidated output for downstream processing. The Data Scientist has been given the following requirements for the cloud solution:

- * Combine multiple data sources
- * Reuse existing PySpark logic
- * Run the solution on the existing schedule
- * Minimize the number of servers that will need to be managed

Which architecture should the Data Scientist use to build this solution?

- A. Write the raw data to Amazon S3. Schedule an AWS Lambda function to submit a Spark step to a persistent Amazon EMR cluster based on the existing schedule. Use the existing PySpark logic to run the ETL job on the EMR cluster. Output the results to a "processed" location in Amazon S3 that is accessible for downstream use.
- B. Write the raw data to Amazon S3. Create an AWS Glue ETL job to perform the ETL processing against the input data. Write the ETL job in PySpark to leverage the existing logic. Create a new AWS Glue trigger to trigger the ETL job based on the existing schedule. Configure the output target of the ETL job to write to a "processed" location in Amazon S3 that is accessible for downstream use.
- C. Write the raw data to Amazon S3. Schedule an AWS Lambda function to run on the existing schedule and process the input data from Amazon S3. Write the Lambda logic in Python and implement the existing PySpark logic to perform the ETL process. Have the Lambda function output the results to a "processed" location in Amazon S3 that is accessible for downstream use.
- D. Use Amazon Kinesis Data Analytics to stream the input data and perform realtime SQL queries against the stream to carry out the required transformations within the stream. Deliver the output results to a "processed" location in Amazon S3 that is accessible for downstream use.

Answer: A

NEW QUESTION 67

A Machine Learning Specialist needs to move and transform data in preparation for training. Some of the data needs to be processed in near-real time and other data can be moved hourly. There are existing Amazon EMR MapReduce jobs to clean and feature engineer data to perform on the data. Which of the following services can feed data to the MapReduce jobs? (Select TWO.)

- A. AWS DMS
- B. Amazon Kinesis
- C. AWS Data Pipeline
- D. Amazon Athena
- E. Amazon ES

Answer: BC

Explanation:

<https://aws.amazon.com/jp/emr/?whats-new-cards.sort-by=item.additionalFields.postDateTime&whats-new-cards.sort-order=desc>

NEW QUESTION 72

A Machine Learning Specialist is packaging a custom ResNet model into a Docker container so the company can leverage Amazon SageMaker for training. The Specialist is using Amazon EC2 P3 instances to train the model and needs to properly configure the Docker container to leverage the NVIDIA GPUs. What does the Specialist need to do?

- A. Bundle the NVIDIA drivers with the Docker image.
- B. Build the Docker container to be NVIDIA-Docker compatible.
- C. Organize the Docker container's file structure to execute on GPU instances.
- D. Set the GPU flag in the Amazon SageMaker CreateTrainingJob request body.

Answer: A

NEW QUESTION 76

A machine learning (ML) specialist wants to secure calls to the Amazon SageMaker Service API. The specialist has configured Amazon VPC with a VPC interface endpoint for the Amazon SageMaker Service API and is attempting to secure traffic from specific sets of instances and IAM users. The VPC is configured with a single public subnet.

Which combination of steps should the ML specialist take to secure the traffic? (Choose two.)

- A. Add a VPC endpoint policy to allow access to the IAM users.
- B. Modify the users' IAM policy to allow access to Amazon SageMaker Service API calls only.
- C. Modify the security group on the endpoint network interface to restrict access to the instances.
- D. Modify the ACL on the endpoint network interface to restrict access to the instances.
- E. Add a SageMaker Runtime VPC endpoint interface to the VPC.

Answer: AC

NEW QUESTION 78

A Data Scientist received a set of insurance records, each consisting of a record ID, the final outcome among 200 categories, and the date of the final outcome.

Some partial information on claim contents is also provided, but only for a few of the 200 categories. For each outcome category, there are hundreds of records distributed over the past 3 years. The Data Scientist wants to predict how many claims to expect in each category from month to month, a few months in advance. What type of machine learning model should be used?

- A. Classification month-to-month using supervised learning of the 200 categories based on claim contents.
- B. Reinforcement learning using claim IDs and timestamps where the agent will identify how many claims in each category to expect from month to month.
- C. Forecasting using claim IDs and timestamps to identify how many claims in each category to expect from month to month.
- D. Classification with supervised learning of the categories for which partial information on claim contents is provided, and forecasting using claim IDs and timestamps for all other categories.

Answer: C

NEW QUESTION 82

A Machine Learning Specialist wants to bring a custom algorithm to Amazon SageMaker. The Specialist implements the algorithm in a Docker container supported by Amazon SageMaker.

How should the Specialist package the Docker container so that Amazon SageMaker can launch the training correctly?

- A. Modify the `bash_profile` file in the container and add a bash command to start the training program
- B. Use `CMD` config in the Dockerfile to add the training program as a CMD of the image
- C. Configure the training program as an `ENTRYPOINT` named `train`
- D. Copy the training program to directory `/opt/ml/train`

Answer: B

NEW QUESTION 86

An ecommerce company is automating the categorization of its products based on images. A data scientist has trained a computer vision model using the Amazon SageMaker image classification algorithm. The images for each product are classified according to specific product lines. The accuracy of the model is too low when categorizing new products. All of the product images have the same dimensions and are stored within an Amazon S3 bucket. The company wants to improve the model so it can be used for new products as soon as possible.

Which steps would improve the accuracy of the solution? (Choose three.)

- A. Use the SageMaker semantic segmentation algorithm to train a new model to achieve improved accuracy.
- B. Use the Amazon Rekognition DetectLabels API to classify the products in the dataset.
- C. Augment the images in the dataset
- D. Use open source libraries to crop, resize, flip, rotate, and adjust the brightness and contrast of the images.
- E. Use a SageMaker notebook to implement the normalization of pixels and scaling of the image
- F. Store the new dataset in Amazon S3.
- G. Use Amazon Rekognition Custom Labels to train a new model.
- H. Check whether there are class imbalances in the product categories, and apply oversampling or undersampling as required
- I. Store the new dataset in Amazon S3.

Answer: BCE

NEW QUESTION 89

A Machine Learning Specialist is configuring Amazon SageMaker so multiple Data Scientists can access notebooks, train models, and deploy endpoints. To ensure the best operational performance, the Specialist needs to be able to track how often the Scientists are deploying models, GPU and CPU utilization on the deployed SageMaker endpoints, and all errors that are generated when an endpoint is invoked.

Which services are integrated with Amazon SageMaker to track this information? (Select TWO.)

- A. AWS CloudTrail
- B. AWS Health
- C. AWS Trusted Advisor
- D. Amazon CloudWatch
- E. AWS Config

Answer: AD

NEW QUESTION 94

Example Corp has an annual sale event from October to December. The company has sequential sales data from the past 15 years and wants to use Amazon ML to predict the sales for this year's upcoming event. Which method should Example Corp use to split the data into a training dataset and evaluation dataset?

- A. Pre-split the data before uploading to Amazon S3
- B. Have Amazon ML split the data randomly.
- C. Have Amazon ML split the data sequentially.
- D. Perform custom cross-validation on the data

Answer: C

NEW QUESTION 96

A large JSON dataset for a project has been uploaded to a private Amazon S3 bucket. The Machine Learning Specialist wants to securely access and explore the data from an Amazon SageMaker notebook instance. A new VPC was created and assigned to the Specialist.

How can the privacy and integrity of the data stored in Amazon S3 be maintained while granting access to the Specialist for analysis?

- A. Launch the SageMaker notebook instance within the VPC with SageMaker-provided internet access enabled. Use an S3 ACL to open read privileges to the everyone group.
- B. Launch the SageMaker notebook instance within the VPC and create an S3 VPC endpoint for the notebook to access the data. Copy the JSON dataset from Amazon S3 into the ML storage volume on the SageMaker notebook instance and work against the local dataset.
- C. Launch the SageMaker notebook instance within the VPC and create an S3 VPC endpoint for the notebook to access the data. Define a custom S3 bucket.

policy to only allow requests from your VPC to access the S3 bucket
D. Launch the SageMaker notebook instance within the VPC with SageMaker-provided internet access enable
E. Generate an S3 pre-signed URL for access to data in the bucket

Answer: B

NEW QUESTION 99

A company is running a machine learning prediction service that generates 100 TB of predictions every day. A Machine Learning Specialist must generate a visualization of the daily precision-recall curve from the predictions, and forward a read-only version to the Business team. Which solution requires the LEAST coding effort?

- A. Run a daily Amazon EMR workflow to generate precision-recall data, and save the results in Amazon S3. Give the Business team read-only access to S3.
- B. Generate daily precision-recall data in Amazon QuickSight, and publish the results in a dashboard shared with the Business team.
- C. Run a daily Amazon EMR workflow to generate precision-recall data, and save the results in Amazon S3. Visualize the arrays in Amazon QuickSight, and publish them in a dashboard shared with the Business team.
- D. Generate daily precision-recall data in Amazon ES, and publish the results in a dashboard shared with the Business team.

Answer: C

NEW QUESTION 101

A Machine Learning Specialist is developing a daily ETL workflow containing multiple ETL jobs. The workflow consists of the following processes:

- * Start the workflow as soon as data is uploaded to Amazon S3.
- * When all the datasets are available in Amazon S3, start an ETL job to join the uploaded datasets with multiple terabyte-sized datasets already stored in Amazon S3.
- * Store the results of joining datasets in Amazon S3.
- * If one of the jobs fails, send a notification to the Administrator. Which configuration will meet these requirements?

- A. Use AWS Lambda to trigger an AWS Step Functions workflow to wait for dataset uploads to complete in Amazon S3. Use AWS Glue to join the datasets. Use an Amazon CloudWatch alarm to send an SNS notification to the Administrator in the case of a failure.
- B. Develop the ETL workflow using AWS Lambda to start an Amazon SageMaker notebook instance. Use a lifecycle configuration script to join the datasets and persist the results in Amazon S3. Use an Amazon CloudWatch alarm to send an SNS notification to the Administrator in the case of a failure.
- C. Develop the ETL workflow using AWS Batch to trigger the start of ETL jobs when data is uploaded to Amazon S3. Use AWS Glue to join the datasets in Amazon S3. Use an Amazon CloudWatch alarm to send an SNS notification to the Administrator in the case of a failure.
- D. Use AWS Lambda to chain other Lambda functions to read and join the datasets in Amazon S3 as soon as the data is uploaded to Amazon S3. Use an Amazon CloudWatch alarm to send an SNS notification to the Administrator in the case of a failure.

Answer: A

NEW QUESTION 106

A machine learning (ML) specialist needs to extract embedding vectors from a text series. The goal is to provide a ready-to-ingest feature space for a data scientist to develop downstream ML predictive models. The text consists of curated sentences in English. Many sentences use similar words but in different contexts. There are questions and answers among the sentences, and the embedding space must differentiate between them. Which options can produce the required embedding vectors that capture word context and sequential QA information? (Choose two.)

- A. Amazon SageMaker seq2seq algorithm
- B. Amazon SageMaker BlazingText algorithm in Skip-gram mode
- C. Amazon SageMaker Object2Vec algorithm
- D. Amazon SageMaker BlazingText algorithm in continuous bag-of-words (CBOW) mode
- E. Combination of the Amazon SageMaker BlazingText algorithm in Batch Skip-gram mode with a custom recurrent neural network (RNN)

Answer: AC

NEW QUESTION 110

A Machine Learning Specialist is training a model to identify the make and model of vehicles in images. The Specialist wants to use transfer learning and an existing model trained on images of general objects. The Specialist collated a large custom dataset of pictures containing different vehicle makes and models.

- A. Initialize the model with random weights in all layers including the last fully connected layer.
- B. Initialize the model with pre-trained weights in all layers and replace the last fully connected layer.
- C. Initialize the model with random weights in all layers and replace the last fully connected layer.
- D. Initialize the model with pre-trained weights in all layers including the last fully connected layer.

Answer: D

NEW QUESTION 115

A retail company wants to combine its customer orders with the product description data from its product catalog. The structure and format of the records in each dataset is different. A data analyst tried to use a spreadsheet to combine the datasets, but the effort resulted in duplicate records and records that were not properly combined. The company needs a solution that it can use to combine similar records from the two datasets and remove any duplicates. Which solution will meet these requirements?

- A. Use an AWS Lambda function to process the data.
- B. Use two arrays to compare equal strings in the fields from the two datasets and remove any duplicates.
- C. Create AWS Glue crawlers for reading and populating the AWS Glue Data Catalog.
- D. Call the AWS Glue SearchTables API operation to perform a fuzzy-matching search on the two datasets, and cleanse the data accordingly.
- E. Create AWS Glue crawlers for reading and populating the AWS Glue Data Catalog.
- F. Use the FindMatches transform to cleanse the data.
- G. Create an AWS Lake Formation custom transform.
- H. Run a transformation for matching products from the Lake Formation console to cleanse the data automatically.

Answer: D

NEW QUESTION 119

A manufacturing company has structured and unstructured data stored in an Amazon S3 bucket. A Machine Learning Specialist wants to use SQL to run queries on this data. Which solution requires the LEAST effort to be able to query this data?

- A. Use AWS Data Pipeline to transform the data and Amazon RDS to run queries.
- B. Use AWS Glue to catalogue the data and Amazon Athena to run queries.
- C. Use AWS Batch to run ETL on the data and Amazon Aurora to run the queries.
- D. Use AWS Lambda to transform the data and Amazon Kinesis Data Analytics to run queries.

Answer: D

NEW QUESTION 123

A machine learning (ML) specialist wants to create a data preparation job that uses a PySpark script with complex window aggregation operations to create data for training and testing. The ML specialist needs to evaluate the impact of the number of features and the sample count on model performance. Which approach should the ML specialist use to determine the ideal data transformations for the model?

- A. Add an Amazon SageMaker Debugger hook to the script to capture key metric.
- B. Run the script as an AWS Glue job.
- C. Add an Amazon SageMaker Experiments tracker to the script to capture key metric.
- D. Run the script as an AWS Glue job.
- E. Add an Amazon SageMaker Debugger hook to the script to capture key parameter.
- F. Run the script as a SageMaker processing job.
- G. Add an Amazon SageMaker Experiments tracker to the script to capture key parameter.
- H. Run the script as a SageMaker processing job.

Answer: B

NEW QUESTION 128

A financial company is trying to detect credit card fraud. The company observed that, on average, 2% of credit card transactions were fraudulent. A data scientist trained a classifier on a year's worth of credit card transactions data. The model needs to identify the fraudulent transactions (positives) from the regular ones (negatives). The company's goal is to accurately capture as many positives as possible. Which metrics should the data scientist use to optimize the model? (Choose two.)

- A. Specificity
- B. False positive rate
- C. Accuracy
- D. Area under the precision-recall curve
- E. True positive rate

Answer: DE

NEW QUESTION 132

A Machine Learning Specialist is working for a credit card processing company and receives an unbalanced dataset containing credit card transactions. It contains 99,000 valid transactions and 1,000 fraudulent transactions. The Specialist is asked to score a model that was run against the dataset. The Specialist has been advised that identifying valid transactions is equally as important as identifying fraudulent transactions. What metric is BEST suited to score the model?

- A. Precision
- B. Recall
- C. Area Under the ROC Curve (AUC)
- D. Root Mean Square Error (RMSE)

Answer: A

NEW QUESTION 134

A Data Scientist is developing a machine learning model to classify whether a financial transaction is fraudulent. The labeled data available for training consists of 100,000 non-fraudulent observations and 1,000 fraudulent observations.

The Data Scientist applies the XGBoost algorithm to the data, resulting in the following confusion matrix when the trained model is applied to a previously unseen validation dataset. The accuracy of the model is 99.1%, but the Data Scientist needs to reduce the number of false negatives.

Predicted	0	1
Actual	0 99,966 34	
	1 877 123	

Which combination of steps should the Data Scientist take to reduce the number of false negative predictions by the model? (Choose two.)

- A. Change the XGBoost eval_metric parameter to optimize based on Root Mean Square Error (RMSE).
- B. Increase the XGBoost scale_pos_weight parameter to adjust the balance of positive and negative weights.
- C. Increase the XGBoost max_depth parameter because the model is currently underfitting the data.
- D. Change the XGBoost eval_metric parameter to optimize based on Area Under the ROC Curve (AUC).
- E. Decrease the XGBoost max_depth parameter because the model is currently overfitting the data.

Answer: BD

NEW QUESTION 139

A machine learning specialist is developing a regression model to predict rental rates from rental listings. A variable named Wall_Color represents the most

prominent exterior wall color of the property. The following is the sample data, excluding all other variables:

Property_ID	Wall_Color
1000	Red
1001	White
1002	Green

The specialist chose a model that needs numerical input data.

Which feature engineering approaches should the specialist use to allow the regression model to learn from the Wall_Color data? (Choose two.)

- A. Apply integer transformation and set Red = 1, White = 5, and Green = 10.
- B. Add new columns that store one-hot representation of colors.
- C. Replace the color name string by its length.
- D. Create three columns to encode the color in RGB format.
- E. Replace each color name by its training set frequency.

Answer: AD

NEW QUESTION 141

A company is building a demand forecasting model based on machine learning (ML). In the development stage, an ML specialist uses an Amazon SageMaker notebook to perform feature engineering during work hours that consumes low amounts of CPU and memory resources. A data engineer uses the same notebook to perform data preprocessing once a day on average that requires very high memory and completes in only 2 hours. The data preprocessing is not configured to use GPU. All the processes are running well on an ml.m5.4xlarge notebook instance.

The company receives an AWS Budgets alert that the billing for this month exceeds the allocated budget. Which solution will result in the MOST cost savings?

- A. Change the notebook instance type to a memory optimized instance with the same vCPU number as the ml.m5.4xlarge instance ha
- B. Stop the notebook when it is not in us
- C. Run both data preprocessing and feature engineering development on that instance.
- D. Keep the notebook instance type and size the sam
- E. Stop the notebook when it is not in us
- F. Run data preprocessing on a P3 instance type with the same memory as the ml.m5.4xlarge instance by using Amazon SageMaker Processing.
- G. Change the notebook instance type to a smaller general purpose instanc
- H. Stop the notebook when it is not in us
- I. Run data preprocessing on an ml.r5 instance with the same memory size as the ml.m5.4xlarge instance by using Amazon SageMaker Processing.
- J. Change the notebook instance type to a smaller general purpose instanc
- K. Stop the notebook when it is not in us
- L. Run data preprocessing on an R5 instance with the same memory size as the ml.m5.4xlarge instance by using the Reserved Instance option.

Answer: B

NEW QUESTION 144

A library is developing an automatic book-borrowing system that uses Amazon Rekognition. Images of library members' faces are stored in an Amazon S3 bucket. When members borrow books, the Amazon Rekognition CompareFaces API operation compares real faces against the stored faces in Amazon S3.

The library needs to improve security by making sure that images are encrypted at rest. Also, when the images are used with Amazon Rekognition. they need to be encrypted in transit. The library also must ensure that the images are not used to improve Amazon Rekognition as a service.

How should a machine learning specialist architect the solution to satisfy these requirements?

- A. Enable server-side encryption on the S3 bucke
- B. Submit an AWS Support ticket to opt out of allowing images to be used for improving the service, and follow the process provided by AWS Support.
- C. Switch to using an Amazon Rekognition collection to store the image
- D. Use the IndexFaces andSearchFacesByImage API operations instead of the CompareFaces API operation.
- E. Switch to using the AWS GovCloud (US) Region for Amazon S3 to store images and for Amazon Rekognition to compare face
- F. Set up a VPN connection and only call the Amazon Rekognition API operations through the VPN.
- G. Enable client-side encryption on the S3 bucke
- H. Set up a VPN connection and only call the Amazon Rekognition API operations through the VPN.

Answer: B

NEW QUESTION 147

A data scientist is training a text classification model by using the Amazon SageMaker built-in BlazingText algorithm. There are 5 classes in the dataset, with 300 samples for category A, 292 samples for category B, 240 samples for category C, 258 samples for category D, and 310 samples for category E.

The data scientist shuffles the data and splits off 10% for testing. After training the model, the data scientist generates confusion matrices for the training and test sets.

Training data confusion matrix

		Predicted class					
		A	B	C	D	E	Total
True class	A	270	0	0	0	0	270
	B	1	260	0	0	2	263
	C	0	0	111	100	5	216
	D	4	3	132	92	1	232
	E	0	0	2	3	274	279
	Total	275	263	245	195	282	1260

Test data confusion matrix

		Predicted class					
		A	B	C	D	E	Total
True class	A	9	1	0	0	0	10
	B	2	25	0	2	0	29
	C	10	2	11	10	1	34
	D	1	0	12	14	0	27
	E	9	1	4	1	25	40
	Total	31	29	27	27	26	140

What could the data scientist conclude from these results?

- A. Classes C and D are too similar.
- B. The dataset is too small for holdout cross-validation.
- C. The data distribution is skewed.
- D. The model is overfitting for classes B and E.

Answer: B

NEW QUESTION 148

A Machine Learning Specialist is attempting to build a linear regression model. Given the displayed residual plot only, what is the MOST likely problem with the model?

- A. Linear regression is inappropriate
- B. The residuals do not have constant variance.
- C. Linear regression is inappropriate
- D. The underlying data has outliers.
- E. Linear regression is appropriate
- F. The residuals have a zero mean.
- G. Linear regression is appropriate
- H. The residuals have constant variance.

Answer: D

NEW QUESTION 150

A company is building a line-counting application for use in a quick-service restaurant. The company wants to use video cameras pointed at the line of customers at a given register to measure how many people are in line and deliver notifications to managers if the line grows too long. The restaurant locations have limited bandwidth for connections to external services and cannot accommodate multiple video streams without impacting other operations. Which solution should a machine learning specialist implement to meet these requirements?

- A. Install cameras compatible with Amazon Kinesis Video Streams to stream the data to AWS over the restaurant's existing internet connection
- B. Write an AWS Lambda function to take an image and send it to Amazon Rekognition to count the number of faces in the image
- C. Send an Amazon Simple Notification Service (Amazon SNS) notification if the line is too long.
- D. Deploy AWS DeepLens cameras in the restaurant to capture video
- E. Enable Amazon Rekognition on the AWS DeepLens device, and use it to trigger a local AWS Lambda function when a person is recognized
- F. Use the Lambda function to send an Amazon Simple Notification Service (Amazon SNS) notification if the line is too long.
- G. Build a custom model in Amazon SageMaker to recognize the number of people in an image
- H. Install cameras compatible with Amazon Kinesis Video Streams in the restaurant
- I. Write an AWS Lambda function to take an image
- J. Use the SageMaker endpoint to call the model to count people
- K. Send an Amazon Simple Notification Service (Amazon SNS) notification if the line is too long.
- L. Build a custom model in Amazon SageMaker to recognize the number of people in an image
- M. Deploy AWS DeepLens cameras in the restaurant

- N. Deploy the model to the camera
- O. Deploy an AWS Lambda function to the cameras to use the model to count people and send an Amazon Simple Notification Service (Amazon SNS) notification if the line is too long.

Answer: A

NEW QUESTION 151

A Machine Learning Specialist uploads a dataset to an Amazon S3 bucket protected with server-side encryption using AWS KMS. How should the ML Specialist define the Amazon SageMaker notebook instance so it can read the same dataset from Amazon S3?

- A. Define security group(s) to allow all HTTP inbound/outbound traffic and assign those security group(s) to the Amazon SageMaker notebook instance.
- B. Configure the Amazon SageMaker notebook instance to have access to the VPC
- C. Grant permission in the KMS key policy to the notebook's KMS role.
- D. Assign an IAM role to the Amazon SageMaker notebook with S3 read access to the dataset
- E. Grant permission in the KMS key policy to that role.
- F. Assign the same KMS key used to encrypt data in Amazon S3 to the Amazon SageMaker notebook instance.

Answer: D

NEW QUESTION 154

A company wants to create a data repository in the AWS Cloud for machine learning (ML) projects. The company wants to use AWS to perform complete ML lifecycles and wants to use Amazon S3 for the data storage. All of the company's data currently resides on premises and is 40 TB in size. The company wants a solution that can transfer and automatically update data between the on-premises object storage and Amazon S3. The solution must support encryption, scheduling, monitoring, and data integrity validation. Which solution meets these requirements?

- A. Use the S3 sync command to compare the source S3 bucket and the destination S3 bucket
- B. Determine which source files do not exist in the destination S3 bucket and which source files were modified.
- C. Use AWS Transfer for FTPS to transfer the files from the on-premises storage to Amazon S3.
- D. Use AWS DataSync to make an initial copy of the entire dataset
- E. Schedule subsequent incremental transfers of changing data until the final cutover from on premises to AWS.
- F. Use S3 Batch Operations to pull data periodically from the on-premises storage
- G. Enable S3 Versioning on the S3 bucket to protect against accidental overwrites.

Answer: C

Explanation:

Configure DataSync to make an initial copy of your entire dataset, and schedule subsequent incremental transfers of changing data until the final cut-over from on-premises to AWS.

NEW QUESTION 156

A retail chain has been ingesting purchasing records from its network of 20,000 stores to Amazon S3 using Amazon Kinesis Data Firehose. To support training an improved machine learning model, training records will require new but simple transformations, and some attributes will be combined. The model needs to be retrained daily. Given the large number of stores and the legacy data ingestion, which change will require the LEAST amount of development effort?

- A. Require that the stores switch to capturing their data locally on AWS Storage Gateway for loading into Amazon S3 then use AWS Glue to do the transformation
- B. Deploy an Amazon EMR cluster running Apache Spark with the transformation logic, and have the cluster run each day on the accumulating records in Amazon S3, outputting new/transformed records to Amazon S3
- C. Spin up a fleet of Amazon EC2 instances with the transformation logic, have them transform the data records accumulating on Amazon S3, and output the transformed records to Amazon S3.
- D. Insert an Amazon Kinesis Data Analytics stream downstream of the Kinesis Data Firehose stream that transforms raw record attributes into simple transformed values using SQL.

Answer: D

NEW QUESTION 159

A data scientist is working on a public sector project for an urban traffic system. While studying the traffic patterns, it is clear to the data scientist that the traffic behavior at each light is correlated, subject to a small stochastic error term. The data scientist must model the traffic behavior to analyze the traffic patterns and reduce congestion. How will the data scientist MOST effectively model the problem?

- A. The data scientist should obtain a correlated equilibrium policy by formulating this problem as a multi-agent reinforcement learning problem.
- B. The data scientist should obtain the optimal equilibrium policy by formulating this problem as a single-agent reinforcement learning problem.
- C. Rather than finding an equilibrium policy, the data scientist should obtain accurate predictors of traffic flow by using historical data through a supervised learning approach.
- D. Rather than finding an equilibrium policy, the data scientist should obtain accurate predictors of traffic flow by using unlabeled simulated data representing the new traffic patterns in the city and applying an unsupervised learning approach.

Answer: D

NEW QUESTION 161

A Machine Learning Specialist has created a deep learning neural network model that performs well on the training data but performs poorly on the test data. Which of the following methods should the Specialist consider using to correct this? (Select THREE.)

- A. Decrease regularization.
- B. Increase regularization.

- C. Increase dropout.
- D. Decrease dropout.
- E. Increase feature combinations.
- F. Decrease feature combinations.

Answer: BCD

NEW QUESTION 165

A company has an ecommerce website with a product recommendation engine built in TensorFlow. The recommendation engine endpoint is hosted by Amazon SageMaker. Three compute-optimized instances support the expected peak load of the website. Response times on the product recommendation page are increasing at the beginning of each month. Some users are encountering errors. The website receives the majority of its traffic between 8 AM and 6 PM on weekdays in a single time zone. Which of the following options are the MOST effective in solving the issue while keeping costs to a minimum? (Choose two.)

- A. Configure the endpoint to use Amazon Elastic Inference (EI) accelerators.
- B. Create a new endpoint configuration with two production variants.
- C. Configure the endpoint to automatically scale with the `InvocationsPerInstance` metric.
- D. Deploy a second instance pool to support a blue/green deployment of models.
- E. Reconfigure the endpoint to use burstable instances.

Answer: BD

NEW QUESTION 166

While working on a neural network project, a Machine Learning Specialist discovers that some features in the data have very high magnitude resulting in this data being weighted more in the cost function. What should the Specialist do to ensure better convergence during backpropagation?

- A. Dimensionality reduction
- B. Data normalization
- C. Model regularization
- D. Data augmentation for the minority class

Answer: D

NEW QUESTION 169

A machine learning specialist is running an Amazon SageMaker endpoint using the built-in object detection algorithm on a P3 instance for real-time predictions in a company's production application. When evaluating the model's resource utilization, the specialist notices that the model is using only a fraction of the GPU. Which architecture changes would ensure that provisioned resources are being utilized effectively?

- A. Redeploy the model as a batch transform job on an M5 instance.
- B. Redeploy the model on an M5 instance.
- C. Attach Amazon Elastic Inference to the instance.
- D. Redeploy the model on a P3dn instance.
- E. Deploy the model onto an Amazon Elastic Container Service (Amazon ECS) cluster using a P3 instance.

Answer: B

Explanation:

<https://aws.amazon.com/machine-learning/elastic-inference/>

NEW QUESTION 171

A credit card company wants to build a credit scoring model to help predict whether a new credit card applicant will default on a credit card payment. The company has collected data from a large number of sources with thousands of raw attributes. Early experiments to train a classification model revealed that many attributes are highly correlated, the large number of features slows down the training speed significantly, and that there are some overfitting issues. The Data Scientist on this project would like to speed up the model training time without losing a lot of information from the original dataset. Which feature engineering technique should the Data Scientist use to meet the objectives?

- A. Run self-correlation on all features and remove highly correlated features
- B. Normalize all numerical values to be between 0 and 1
- C. Use an autoencoder or principal component analysis (PCA) to replace original features with new features
- D. Cluster raw data using k-means and use sample data from each cluster to build a new dataset

Answer: B

NEW QUESTION 173

A Machine Learning Specialist is using an Amazon SageMaker notebook instance in a private subnet of a corporate VPC. The ML Specialist has important data stored on the Amazon SageMaker notebook instance's Amazon EBS volume, and needs to take a snapshot of that EBS volume. However the ML Specialist cannot find the Amazon SageMaker notebook instance's EBS volume or Amazon EC2 instance within the VPC. Why is the ML Specialist not seeing the instance visible in the VPC?

- A. Amazon SageMaker notebook instances are based on the EC2 instances within the customer account, but they run outside of VPCs.
- B. Amazon SageMaker notebook instances are based on the Amazon ECS service within customer accounts.
- C. Amazon SageMaker notebook instances are based on EC2 instances running within AWS service accounts.
- D. Amazon SageMaker notebook instances are based on AWS ECS instances running within AWS service accounts.

Answer: C

NEW QUESTION 178

A data scientist has developed a machine learning translation model for English to Japanese by using Amazon SageMaker's built-in seq2seq algorithm with 500,000 aligned sentence pairs. While testing with sample sentences, the data scientist finds that the translation quality is reasonable for an example as short as five words. However, the quality becomes unacceptable if the sentence is 100 words long. Which action will resolve the problem?

- A. Change preprocessing to use n-grams.
- B. Add more nodes to the recurrent neural network (RNN) than the largest sentence's word count.
- C. Adjust hyperparameters related to the attention mechanism.
- D. Choose a different weight initialization type.

Answer: C

Explanation:

<https://docs.aws.amazon.com/sagemaker/latest/dg/seq-2-seq-howitworks.html>

NEW QUESTION 182

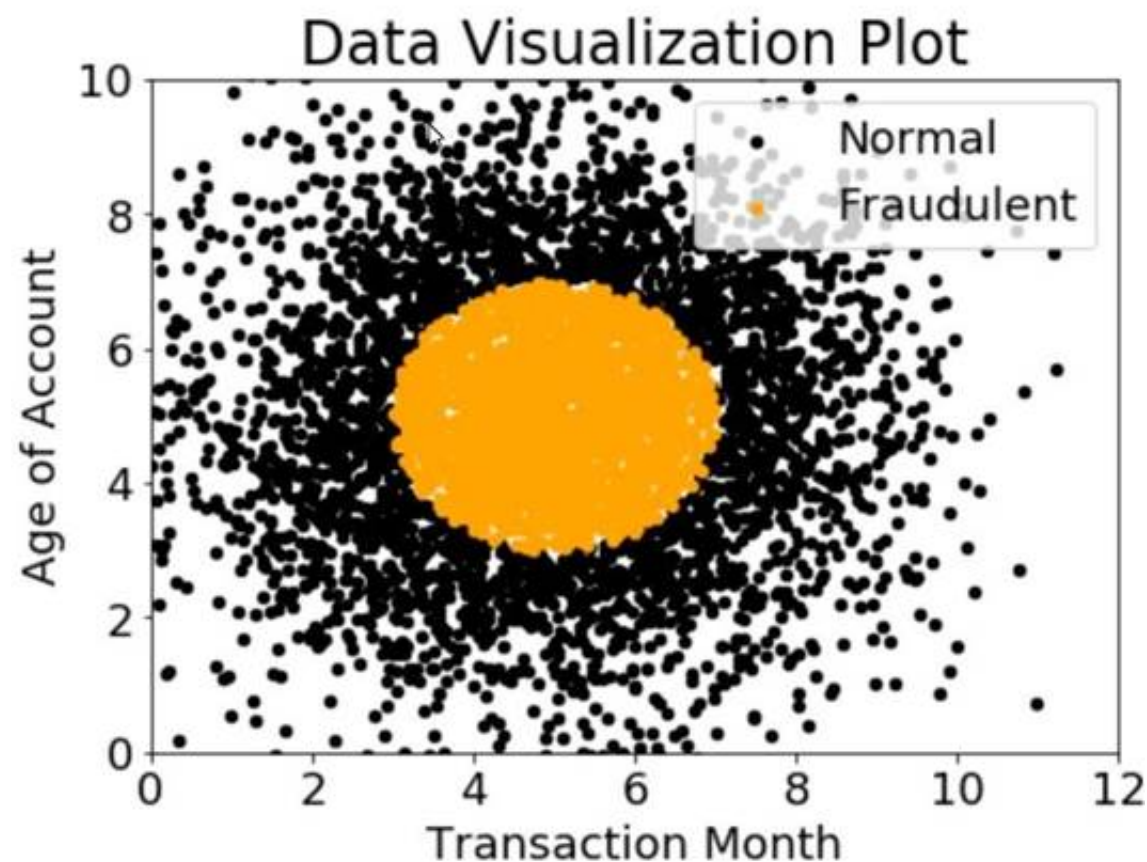
A company provisions Amazon SageMaker notebook instances for its data science team and creates Amazon VPC interface endpoints to ensure communication between the VPC and the notebook instances. All connections to the Amazon SageMaker API are contained entirely and securely using the AWS network. However, the data science team realizes that individuals outside the VPC can still connect to the notebook instances across the internet. Which set of actions should the data science team take to fix the issue?

- A. Modify the notebook instances' security group to allow traffic only from the CIDR ranges of the VP
- B. Apply this security group to all of the notebook instances' VPC interfaces.
- C. Create an IAM policy that allows the sagemaker:CreatePresignedNotebookInstanceUrl and sagemaker:DescribeNotebookInstance actions from only the VPC endpoint
- D. Apply this policy to all IAM users, groups, and roles used to access the notebook instances.
- E. Add a NAT gateway to the VP
- F. Convert all of the subnets where the Amazon SageMaker notebook instances are hosted to private subnet
- G. Stop and start all of the notebook instances to reassign only private IP addresses.
- H. Change the network ACL of the subnet the notebook is hosted in to restrict access to anyone outside the VPC.

Answer: B

NEW QUESTION 184

A company wants to classify user behavior as either fraudulent or normal. Based on internal research, a Machine Learning Specialist would like to build a binary classifier based on two features: age of account and transaction month. The class distribution for these features is illustrated in the figure provided.



Based on this information, which model would have the HIGHEST recall with respect to the fraudulent class?

- A. Decision tree
- B. Linear support vector machine (SVM)
- C. Naive Bayesian classifier
- D. Single Perceptron with sigmoidal activation function

Answer: C

NEW QUESTION 188

A company is running an Amazon SageMaker training job that will access data stored in its Amazon S3 bucket A compliance policy requires that the data never be transmitted across the internet How should the company set up the job?

- A. Launch the notebook instances in a public subnet and access the data through the public S3 endpoint
- B. Launch the notebook instances in a private subnet and access the data through a NAT gateway
- C. Launch the notebook instances in a public subnet and access the data through a NAT gateway
- D. Launch the notebook instances in a private subnet and access the data through an S3 VPC endpoint.

Answer: D

NEW QUESTION 191

IT leadership wants to transition a company's existing machine learning data storage environment to AWS as a temporary ad hoc solution. The company currently uses a custom software process that heavily leverages SQL as a query language and exclusively stores generated CSV documents for machine learning. The ideal state for the company would be a solution that allows it to continue to use the current workforce of SQL experts. The solution must also support the storage of CSV and JSON files, and be able to query over semi-structured data. The following are high priorities for the company:

- Solution simplicity
- Fast development time
- Low cost
- High flexibility

What technologies meet the company's requirements?

- A. Amazon S3 and Amazon Athena
- B. Amazon Redshift and AWS Glue
- C. Amazon DynamoDB and DynamoDB Accelerator (DAX)
- D. Amazon RDS and Amazon ES

Answer: B

NEW QUESTION 196

A monitoring service generates 1 TB of scale metrics record data every minute. A Research team performs queries on this data using Amazon Athena. The queries run slowly due to the large volume of data, and the team requires better performance.

How should the records be stored in Amazon S3 to improve query performance?

- A. CSV files
- B. Parquet files
- C. Compressed JSON
- D. RecordIO

Answer: D

NEW QUESTION 200

A Mobile Network Operator is building an analytics platform to analyze and optimize a company's operations using Amazon Athena and Amazon S3.

The source systems send data in CSV format in real time. The Data Engineering team wants to transform the data to the Apache Parquet format before storing it on Amazon S3.

Which solution takes the LEAST effort to implement?

- A. Ingest .CSV data using Apache Kafka Streams on Amazon EC2 instances and use Kafka Connect S3 to serialize data as Parquet.
- B. Ingest .CSV data from Amazon Kinesis Data Streams and use Amazon Glue to convert data into Parquet.
- C. Ingest .CSV data using Apache Spark Structured Streaming in an Amazon EMR cluster and use Apache Spark to convert data into Parquet.
- D. Ingest .CSV data from Amazon Kinesis Data Streams and use Amazon Kinesis Data Firehose to convert data into Parquet.

Answer: B

Explanation:

<https://medium.com/search/convert-csv-json-files-to-apache-parquet-using-aws-glue-a760d177b45f> <https://github.com/ecloudvalley/Building-a-Data-Lake-with-AWS-Glue-and-Amazon-S3>

NEW QUESTION 205

A company is observing low accuracy while training on the default built-in image classification algorithm in Amazon SageMaker. The Data Science team wants to use an Inception neural network architecture instead of a ResNet architecture.

Which of the following will accomplish this? (Select TWO.)

- A. Customize the built-in image classification algorithm to use Inception and use this for model training.
- B. Create a support case with the SageMaker team to change the default image classification algorithm to Inception.
- C. Bundle a Docker container with TensorFlow Estimator loaded with an Inception network and use this for model training.
- D. Use custom code in Amazon SageMaker with TensorFlow Estimator to load the model with an Inception network and use this for model training.
- E. Download and apt-get install the inception network code into an Amazon EC2 instance and use this instance as a Jupyter notebook in Amazon SageMaker.

Answer: AD

NEW QUESTION 208

A machine learning (ML) specialist is administering a production Amazon SageMaker endpoint with model monitoring configured. Amazon SageMaker Model Monitor detects violations on the SageMaker endpoint, so the ML specialist retrains the model with the latest dataset. This dataset is statistically representative of the current production traffic. The ML specialist notices that even after deploying the new SageMaker model and running the first monitoring job, the SageMaker endpoint still has violations.

What should the ML specialist do to resolve the violations?

- A. Manually trigger the monitoring job to re-evaluate the SageMaker endpoint traffic sample.
- B. Run the Model Monitor baseline job again on the new training set.
- C. Configure Model Monitor to use the new baseline.
- D. Delete the endpoint and recreate it with the original configuration.
- E. Retrain the model again by using a combination of the original training set and the new training set.

Answer: B

NEW QUESTION 209

A company uses camera images of the tops of items displayed on store shelves to determine which items were removed and which ones still remain. After several hours of data labeling, the company has a total of 1,000 hand-labeled images covering 10 distinct items. The training results were poor. Which machine learning approach fulfills the company's long-term needs?

- A. Convert the images to grayscale and retrain the model
- B. Reduce the number of distinct items from 10 to 2, build the model, and iterate
- C. Attach different colored labels to each item, take the images again, and build the model
- D. Augment training data for each item using image variants like inversions and translations, build the model, and iterate.

Answer: A

NEW QUESTION 214

A health care company is planning to use neural networks to classify their X-ray images into normal and abnormal classes. The labeled data is divided into a training set of 1,000 images and a test set of 200 images. The initial training of a neural network model with 50 hidden layers yielded 99% accuracy on the training set, but only 55% accuracy on the test set.

What changes should the Specialist consider to solve this issue? (Choose three.)

- A. Choose a higher number of layers
- B. Choose a lower number of layers
- C. Choose a smaller learning rate
- D. Enable dropout
- E. Include all the images from the test set in the training set
- F. Enable early stopping

Answer: ADE

NEW QUESTION 216

A company that manufactures mobile devices wants to determine and calibrate the appropriate sales price for its devices. The company is collecting the relevant data and is determining data features that it can use to train machine learning (ML) models. There are more than 1,000 features, and the company wants to determine the primary features that contribute to the sales price.

Which techniques should the company use for feature selection? (Choose three.)

- A. Data scaling with standardization and normalization
- B. Correlation plot with heat maps
- C. Data binning
- D. Univariate selection
- E. Feature importance with a tree-based classifier
- F. Data augmentation

Answer: CDF

NEW QUESTION 217

A Machine Learning Specialist needs to be able to ingest streaming data and store it in Apache Parquet files for exploration and analysis. Which of the following services would both ingest and store this data in the correct format?

- A. AWS DMS
- B. Amazon Kinesis Data Streams
- C. Amazon Kinesis Data Firehose
- D. Amazon Kinesis Data Analytics

Answer: C

NEW QUESTION 222

A Machine Learning Specialist trained a regression model, but the first iteration needs optimizing. The Specialist needs to understand whether the model is more frequently overestimating or underestimating the target.

What option can the Specialist use to determine whether it is overestimating or underestimating the target value?

- A. Root Mean Square Error (RMSE)
- B. Residual plots
- C. Area under the curve
- D. Confusion matrix

Answer: B

NEW QUESTION 226

An agricultural company is interested in using machine learning to detect specific types of weeds in a 100-acre grassland field. Currently, the company uses tractor-mounted cameras to capture multiple images of the field as 10 × 10 grids. The company also has a large training dataset that consists of annotated images of popular weed classes like broadleaf and non-broadleaf docks.

The company wants to build a weed detection model that will detect specific types of weeds and the location of each type within the field. Once the model is ready, it will be hosted on Amazon SageMaker endpoints. The model will perform real-time inferencing using the images captured by the cameras. Which approach should a Machine Learning Specialist take to obtain accurate predictions?

- A. Prepare the images in RecordIO format and upload them to Amazon S3. Use Amazon SageMaker to train, test, and validate the model using an image classification algorithm to categorize images into various weed classes.
- B. Prepare the images in Apache Parquet format and upload them to Amazon S3. Use Amazon SageMaker to train, test, and validate the model using an object-detection single-shot multibox detector (SSD) algorithm.
- C. Prepare the images in RecordIO format and upload them to Amazon S3. Use Amazon SageMaker to train, test, and validate the model using an object-

detection single-shot multibox detector (SSD) algorithm.

D. Prepare the images in Apache Parquet format and upload them to Amazon S3. Use Amazon SageMaker to train, test, and validate the model using an image classification algorithm to categorize images into various weed classes.

Answer: C

NEW QUESTION 227

A Machine Learning Specialist has completed a proof of concept for a company using a small data sample and now the Specialist is ready to implement an end-to-end solution in AWS using Amazon SageMaker. The historical training data is stored in Amazon RDS.

Which approach should the Specialist use for training a model using that data?

- A. Write a direct connection to the SQL database within the notebook and pull data in.
- B. Push the data from Microsoft SQL Server to Amazon S3 using an AWS Data Pipeline and provide the S3 location within the notebook.
- C. Move the data to Amazon DynamoDB and set up a connection to DynamoDB within the notebook to pull data in.
- D. Move the data to Amazon ElastiCache using AWS DMS and set up a connection within the notebook to pull data in for fast access.

Answer: B

NEW QUESTION 230

A company offers an online shopping service to its customers. The company wants to enhance the site's security by requesting additional information when customers access the site from locations that are different from their normal location. The company wants to update the process to call a machine learning (ML) model to determine when additional information should be requested.

The company has several terabytes of data from its existing ecommerce web servers containing the source IP addresses for each request made to the web server. For authenticated requests, the records also contain the login name of the requesting user.

Which approach should an ML specialist take to implement the new security feature in the web application?

- A. Use Amazon SageMaker Ground Truth to label each record as either a successful or failed access attempt.
- B. Use Amazon SageMaker to train a binary classification model using the factorization machines (FM) algorithm.
- C. Use Amazon SageMaker to train a model using the IP Insights algorithm.
- D. Schedule updates and retraining of the model using new log data nightly.
- E. Use Amazon SageMaker Ground Truth to label each record as either a successful or failed access attempt.
- F. Use Amazon SageMaker to train a binary classification model using the IP Insights algorithm.
- G. Use Amazon SageMaker to train a model using the Object2Vec algorithm.
- H. Schedule updates and retraining of the model using new log data nightly.

Answer: C

NEW QUESTION 231

A large consumer goods manufacturer has the following products on sale:

- 34 different toothpaste variants
- 48 different toothbrush variants
- 43 different mouthwash variants

The entire sales history of all these products is available in Amazon S3. Currently, the company is using custom-built autoregressive integrated moving average (ARIMA) models to forecast demand for these products. The company wants to predict the demand for a new product that will soon be launched.

Which solution should a Machine Learning Specialist apply?

- A. Train a custom ARIMA model to forecast demand for the new product.
- B. Train an Amazon SageMaker DeepAR algorithm to forecast demand for the new product.
- C. Train an Amazon SageMaker k-means clustering algorithm to forecast demand for the new product.
- D. Train a custom XGBoost model to forecast demand for the new product.

Answer: B

Explanation:

The Amazon SageMaker DeepAR forecasting algorithm is a supervised learning algorithm for forecasting scalar (one-dimensional) time series using recurrent neural networks (RNN). Classical forecasting methods, such as autoregressive integrated moving average (ARIMA) or exponential smoothing (ETS), fit a single model to each individual time series. They then use that model to extrapolate the time series into the future.

NEW QUESTION 233

A telecommunications company is developing a mobile app for its customers. The company is using an Amazon SageMaker hosted endpoint for machine learning model inferences.

Developers want to introduce a new version of the model for a limited number of users who subscribed to a preview feature of the app. After the new version of the model is tested as a preview, developers will evaluate its accuracy. If a new version of the model has better accuracy, developers need to be able to gradually release the new version for all users over a fixed period of time.

How can the company implement the testing model with the LEAST amount of operational overhead?

- A. Update the ProductionVariant data type with the new version of the model by using the CreateEndpointConfig operation with the InitialVariantWeight parameter set to 0. Specify the TargetVariant parameter for InvokeEndpoint calls for users who subscribed to the preview feature.
- B. When the new version of the model is ready for release, gradually increase InitialVariantWeight until all users have the updated version.
- C. Configure two SageMaker hosted endpoints that serve the different versions of the model.
- D. Create an Application Load Balancer (ALB) to route traffic to both endpoints based on the TargetVariant query string parameter.
- E. Reconfigure the app to send the TargetVariant query string parameter for users who subscribed to the preview feature.
- F. When the new version of the model is ready for release, change the ALB's routing algorithm to weighted until all users have the updated version.
- G. Update the DesiredWeightsAndCapacity data type with the new version of the model by using the UpdateEndpointWeightsAndCapacities operation with the DesiredWeight parameter set to 0. Specify the TargetVariant parameter for InvokeEndpoint calls for users who subscribed to the preview feature.
- H. When the new version of the model is ready for release, gradually increase DesiredWeight until all users have the updated version.
- I. Configure two SageMaker hosted endpoints that serve the different versions of the model.
- J. Create an Amazon Route 53 record that is configured with a simple routing policy and that points to the current version of the model.
- K. Configure the mobile app to use the endpoint URL for users who subscribed to the preview feature and to use the Route 53 record for other users.

L. When the new version of the model is ready for release, add a new model version endpoint to Route 53, and switch the policy to weighted until all users have the updated version.

Answer: D

NEW QUESTION 236

An employee found a video clip with audio on a company's social media feed. The language used in the video is Spanish. English is the employee's first language, and they do not understand Spanish. The employee wants to do a sentiment analysis. What combination of services is the MOST efficient to accomplish the task?

- A. Amazon Transcribe, Amazon Translate, and Amazon Comprehend
- B. Amazon Transcribe, Amazon Comprehend, and Amazon SageMaker seq2seq
- C. Amazon Transcribe, Amazon Translate, and Amazon SageMaker Neural Topic Model (NTM)
- D. Amazon Transcribe, Amazon Translate, and Amazon SageMaker BlazingText

Answer: A

NEW QUESTION 237

A company has raw user and transaction data stored in AmazonS3 a MySQL database, and Amazon RedShift A Data Scientist needs to perform an analysis by joining the three datasets from Amazon S3, MySQL, and Amazon RedShift, and then calculating the average-of a few selected columns from the joined data Which AWS service should the Data Scientist use?

- A. Amazon Athena
- B. Amazon Redshift Spectrum
- C. AWS Glue
- D. Amazon QuickSight

Answer: A

NEW QUESTION 238

A machine learning specialist stores IoT soil sensor data in Amazon DynamoDB table and stores weather event data as JSON files in Amazon S3. The dataset in DynamoDB is 10 GB in size and the dataset in Amazon S3 is 5 GB in size. The specialist wants to train a model on this data to help predict soil moisture levels as a function of weather events using Amazon SageMaker.

Which solution will accomplish the necessary transformation to train the Amazon SageMaker model with the LEAST amount of administrative overhead?

- A. Launch an Amazon EMR cluster
- B. Create an Apache Hive external table for the DynamoDB table and S3 data
- C. Join the Hive tables and write the results out to Amazon S3.
- D. Crawl the data using AWS Glue crawler
- E. Write an AWS Glue ETL job that merges the two tables and writes the output to an Amazon Redshift cluster.
- F. Enable Amazon DynamoDB Streams on the sensor table
- G. Write an AWS Lambda function that consumes the stream and appends the results to the existing weather files in Amazon S3.
- H. Crawl the data using AWS Glue crawler
- I. Write an AWS Glue ETL job that merges the two tables and writes the output in CSV format to Amazon S3.

Answer: C

NEW QUESTION 239

A company has video feeds and images of a subway train station. The company wants to create a deep learning model that will alert the station manager if any passenger crosses the yellow safety line when there is no train in the station. The alert will be based on the video feeds. The company wants the model to detect the yellow line, the passengers who cross the yellow line, and the trains in the video feeds. This task requires labeling. The video data must remain confidential.

A data scientist creates a bounding box to label the sample data and uses an object detection model. However, the object detection model cannot clearly demarcate the yellow line, the passengers who cross the yellow line, and the trains.

Which labeling approach will help the company improve this model?

- A. Use Amazon Rekognition Custom Labels to label the dataset and create a custom Amazon Rekognition object detection model
- B. Create a private workforce
- C. Use Amazon Augmented AI (Amazon A2I) to review the low-confidence predictions and retrain the custom Amazon Rekognition model.
- D. Use an Amazon SageMaker Ground Truth object detection labeling task
- E. Use Amazon Mechanical Turk as the labeling workforce.
- F. Use Amazon Rekognition Custom Labels to label the dataset and create a custom Amazon Rekognition object detection model
- G. Create a workforce with a third-party AWS Marketplace vendor
- H. Use Amazon Augmented AI (Amazon A2I) to review the low-confidence predictions and retrain the custom Amazon Rekognition model.
- I. Use an Amazon SageMaker Ground Truth semantic segmentation labeling task
- J. Use a private workforce as the labeling workforce.

Answer: B

NEW QUESTION 244

A company's Machine Learning Specialist needs to improve the training speed of a time-series forecasting model using TensorFlow. The training is currently implemented on a single-GPU machine and takes approximately 23 hours to complete. The training needs to be run daily.

The model accuracy is acceptable, but the company anticipates a continuous increase in the size of the training data and a need to update the model on an hourly, rather than a daily, basis. The company also wants to minimize coding effort and infrastructure changes

What should the Machine Learning Specialist do to the training solution to allow it to scale for future demand?

- A. Do not change the TensorFlow code
- B. Change the machine to one with a more powerful GPU to speed up the training.
- C. Change the TensorFlow code to implement a Horovod distributed framework supported by Amazon SageMaker

- D. Parallelize the training to as many machines as needed to achieve the business goals.
- E. Switch to using a built-in AWS SageMaker DeepAR mode
- F. Parallelize the training to as many machines as needed to achieve the business goals.
- G. Move the training to Amazon EMR and distribute the workload to as many machines as needed to achieve the business goals.

Answer: B

NEW QUESTION 245

A manufacturing company wants to use machine learning (ML) to automate quality control in its facilities. The facilities are in remote locations and have limited internet connectivity. The company has 20 of training data that consists of labeled images of defective product parts. The training data is in the corporate on-premises data center.

The company will use this data to train a model for real-time defect detection in new parts as the parts move on a conveyor belt in the facilities. The company needs a solution that minimizes costs for compute infrastructure and that maximizes the scalability of resources for training. The solution also must facilitate the company's use of an ML model in the low-connectivity environments.

Which solution will meet these requirements?

- A. Move the training data to an Amazon S3 bucket
- B. Train and evaluate the model by using Amazon SageMaker
- C. Optimize the model by using SageMaker Ne
- D. Deploy the model on a SageMaker hosting services endpoint.
- E. Train and evaluate the model on premise
- F. Upload the model to an Amazon S3 bucket
- G. Deploy the model on an Amazon SageMaker hosting services endpoint.
- H. Move the training data to an Amazon S3 bucket
- I. Train and evaluate the model by using Amazon SageMaker
- J. Optimize the model by using SageMaker Ne
- K. Set up an edge device in the manufacturing facilities with AWS IoT Greengrass
- L. Deploy the model on the edge device.
- M. Train the model on premise
- N. Upload the model to an Amazon S3 bucket
- O. Set up an edge device in the manufacturing facilities with AWS IoT Greengrass
- P. Deploy the model on the edge device.

Answer: A

NEW QUESTION 249

A machine learning specialist is developing a proof of concept for government users whose primary concern is security. The specialist is using Amazon SageMaker to train a convolutional neural network (CNN) model for a photo classifier application. The specialist wants to protect the data so that it cannot be accessed and transferred to a remote host by malicious code accidentally installed on the training container.

Which action will provide the MOST secure protection?

- A. Remove Amazon S3 access permissions from the SageMaker execution role.
- B. Encrypt the weights of the CNN model.
- C. Encrypt the training and validation dataset.
- D. Enable network isolation for training jobs.

Answer: D

NEW QUESTION 251

The chief editor for a product catalog wants the research and development team to build a machine learning system that can be used to detect whether or not individuals in a collection of images are wearing the company's retail brand. The team has a set of training data.

Which machine learning algorithm should the researchers use that BEST meets their requirements?

- A. Latent Dirichlet Allocation (LDA)
- B. Recurrent neural network (RNN)
- C. K-means
- D. Convolutional neural network (CNN)

Answer: D

NEW QUESTION 254

A Data Scientist is developing a machine learning model to classify whether a financial transaction is fraudulent. The labeled data available for training consists of 100,000 non-fraudulent observations and 1,000 fraudulent observations.

The Data Scientist applies the XGBoost algorithm to the data, resulting in the following confusion matrix when the trained model is applied to a previously unseen validation dataset. The accuracy of the model is 99.1%, but the Data Scientist has been asked to reduce the number of false negatives.

Predicted	0	1
Actual	0 99,966 34	
	1	877 123

Which combination of steps should the Data Scientist take to reduce the number of false positive predictions by the model? (Select TWO.)

- A. Change the XGBoost eval_metric parameter to optimize based on rmse instead of error.
- B. Increase the XGBoost scale_pos_weight parameter to adjust the balance of positive and negative weights.
- C. Increase the XGBoost max_depth parameter because the model is currently underfitting the data.
- D. Change the XGBoost eval_metric parameter to optimize based on AUC instead of error.
- E. Decrease the XGBoost max_depth parameter because the model is currently overfitting the data.

Answer: DE

NEW QUESTION 256

An interactive online dictionary wants to add a widget that displays words used in similar contexts. A Machine Learning Specialist is asked to provide word features for the downstream nearest neighbor model powering the widget. What should the Specialist do to meet these requirements?

- A. Create one-hot word encoding vectors.
- B. Produce a set of synonyms for every word using Amazon Mechanical Turk.
- C. Create word embedding factors that store edit distance with every other word.
- D. Download word embedding's pre-trained on a large corpus.

Answer: D

NEW QUESTION 261

A Data Scientist is training a multilayer perception (MLP) on a dataset with multiple classes. The target class of interest is unique compared to the other classes within the dataset, but it does not achieve an acceptable recall metric. The Data Scientist has already tried varying the number and size of the MLP's hidden layers, which has not significantly improved the results. A solution to improve recall must be implemented as quickly as possible. Which techniques should be used to meet these requirements?

- A. Gather more data using Amazon Mechanical Turk and then retrain
- B. Train an anomaly detection model instead of an MLP
- C. Train an XGBoost model instead of an MLP
- D. Add class weights to the MLP's loss function and then retrain

Answer: C

NEW QUESTION 266

A Machine Learning Specialist wants to determine the appropriate SageMakerVariant Invocations Per Instance setting for an endpoint automatic scaling configuration. The Specialist has performed a load test on a single instance and determined that peak requests per second (RPS) without service degradation is about 20 RPS. As this is the first deployment, the Specialist intends to set the invocation safety factor to 0.5. Based on the stated parameters and given that the invocations per instance setting is measured on a per-minute basis, what should the Specialist set as the sageMakervariantinvocationsPerinstance setting?

- A. 10
- B. 30
- C. 600
- D. 2,400

Answer: C

NEW QUESTION 269

A company is building a predictive maintenance model based on machine learning (ML). The data is stored in a fully private Amazon S3 bucket that is encrypted at rest with AWS Key Management Service (AWS KMS) CMKs. An ML specialist must run data preprocessing by using an Amazon SageMaker Processing job that is triggered from code in an Amazon SageMaker notebook. The job should read data from Amazon S3, process it, and upload it back to the same S3 bucket. The preprocessing code is stored in a container image in Amazon Elastic Container Registry (Amazon ECR). The ML specialist needs to grant permissions to ensure a smooth data preprocessing workflow. Which set of actions should the ML specialist take to meet these requirements?

- A. Create an IAM role that has permissions to create Amazon SageMaker Processing jobs, S3 read and write access to the relevant S3 bucket, and appropriate KMS and ECR permission
- B. Attach the role to the SageMaker notebook instance
- C. Create an Amazon SageMaker Processing job from the notebook.
- D. Create an IAM role that has permissions to create Amazon SageMaker Processing job
- E. Attach the role to the SageMaker notebook instance
- F. Create an Amazon SageMaker Processing job with an IAM role that has read and write permissions to the relevant S3 bucket, and appropriate KMS and ECR permissions.
- G. Create an IAM role that has permissions to create Amazon SageMaker Processing jobs and to access Amazon ECR
- H. Attach the role to the SageMaker notebook instance
- I. Set up both an S3 endpoint and a KMS endpoint in the default VPC
- J. Create Amazon SageMaker Processing jobs from the notebook.
- K. Create an IAM role that has permissions to create Amazon SageMaker Processing job
- L. Attach the role to the SageMaker notebook instance
- M. Set up an S3 endpoint in the default VPC
- N. Create Amazon SageMaker Processing jobs with the access key and secret key of the IAM user with appropriate KMS and ECR permissions.

Answer: D

NEW QUESTION 273

A machine learning specialist needs to analyze comments on a news website with users across the globe. The specialist must find the most discussed topics in the comments that are in either English or Spanish. What steps could be used to accomplish this task? (Choose two.)

- A. Use an Amazon SageMaker BlazingText algorithm to find the topics independently from language. Proceed with the analysis.
- B. Use an Amazon SageMaker seq2seq algorithm to translate from Spanish to English, if necessary
- C. Use an Amazon SageMaker Latent Dirichlet Allocation (LDA) algorithm to find the topics.
- D. Use Amazon Translate to translate from Spanish to English, if necessary
- E. Use Amazon Comprehend topic modeling to find the topics.

- F. Use Amazon Translate to translate from Spanish to English, if necessary.
- G. Use Amazon Lex to extract topics from the content.
- H. Use Amazon Translate to translate from Spanish to English, if necessary.
- I. Use Amazon SageMaker Neural Topic Model (NTM) to find the topics.

Answer: B

NEW QUESTION 275

A retail company is selling products through a global online marketplace. The company wants to use machine learning (ML) to analyze customer feedback and identify specific areas for improvement. A developer has built a tool that collects customer reviews from the online marketplace and stores them in an Amazon S3 bucket. This process yields a dataset of 40 reviews. A data scientist building the ML models must identify additional sources of data to increase the size of the dataset.

Which data sources should the data scientist use to augment the dataset of reviews? (Choose three.)

- A. Emails exchanged by customers and the company's customer service agents
- B. Social media posts containing the name of the company or its products
- C. A publicly available collection of news articles
- D. A publicly available collection of customer reviews
- E. Product sales revenue figures for the company
- F. Instruction manuals for the company's products

Answer: BDF

NEW QUESTION 279

During mini-batch training of a neural network for a classification problem, a Data Scientist notices that training accuracy oscillates. What is the MOST likely cause of this issue?

- A. The class distribution in the dataset is imbalanced
- B. Dataset shuffling is disabled
- C. The batch size is too big
- D. The learning rate is very high

Answer: B

NEW QUESTION 283

A data scientist uses an Amazon SageMaker notebook instance to conduct data exploration and analysis. This requires certain Python packages that are not natively available on Amazon SageMaker to be installed on the notebook instance.

How can a machine learning specialist ensure that required packages are automatically available on the notebook instance for the data scientist to use?

- A. Install AWS Systems Manager Agent on the underlying Amazon EC2 instance and use Systems Manager Automation to execute the package installation commands.
- B. Create a Jupyter notebook file (.ipynb) with cells containing the package installation commands to execute and place the file under the /etc/init directory of each Amazon SageMaker notebook instance.
- C. Use the conda package manager from within the Jupyter notebook console to apply the necessary conda packages to the default kernel of the notebook.
- D. Create an Amazon SageMaker lifecycle configuration with package installation commands and assign the lifecycle configuration to the notebook instance.

Answer: D

Explanation:

<https://docs.aws.amazon.com/sagemaker/latest/dg/nbi-add-external.html>

NEW QUESTION 284

A data scientist needs to identify fraudulent user accounts for a company's ecommerce platform. The company wants the ability to determine if a newly created account is associated with a previously known fraudulent user. The data scientist is using AWS Glue to cleanse the company's application logs during ingestion. Which strategy will allow the data scientist to identify fraudulent accounts?

- A. Execute the built-in FindDuplicates Amazon Athena query.
- B. Create a FindMatches machine learning transform in AWS Glue.
- C. Create an AWS Glue crawler to infer duplicate accounts in the source data.
- D. Search for duplicate accounts in the AWS Glue Data Catalog.

Answer: B

NEW QUESTION 287

A Machine Learning Specialist built an image classification deep learning model. However the Specialist ran into an overfitting problem in which the training and testing accuracies were 99% and 75% respectively.

How should the Specialist address this issue and what is the reason behind it?

- A. The learning rate should be increased because the optimization process was trapped at a local minimum.
- B. The dropout rate at the flatten layer should be increased because the model is not generalized enough.
- C. The dimensionality of dense layer next to the flatten layer should be increased because the model is not complex enough.
- D. The epoch number should be increased because the optimization process was terminated before it reached the global minimum.

Answer: A

NEW QUESTION 290

A Machine Learning Specialist must build out a process to query a dataset on Amazon S3 using Amazon Athena. The dataset contains more than 800,000 records.

stored as plaintext CSV files Each record contains 200 columns and is approximately 1.5 MB in size Most queries will span 5 to 10 columns only
How should the Machine Learning Specialist transform the dataset to minimize query runtime?

- A. Convert the records to Apache Parquet format
- B. Convert the records to JSON format
- C. Convert the records to GZIP CSV format
- D. Convert the records to XML format

Answer: A

Explanation:

Using compressions will reduce the amount of data scanned by Amazon Athena, and also reduce your S3 bucket storage. It's a Win-Win for your AWS bill.
Supported formats: GZIP, LZO, SNAPPY (Parquet) and ZLIB.

NEW QUESTION 295

A Machine Learning Specialist is designing a scalable data storage solution for Amazon SageMaker. There is an existing TensorFlow-based model implemented as a train.py script that relies on static training data that is currently stored as TFRecords.

Which method of providing training data to Amazon SageMaker would meet the business requirements with the LEAST development overhead?

- A. Use Amazon SageMaker script mode and use train.py unchanged
- B. Point the Amazon SageMaker training invocation to the local path of the data without reformatting the training data.
- C. Use Amazon SageMaker script mode and use train.py unchanged
- D. Put the TFRecord data into an Amazon S3 bucket
- E. Point the Amazon SageMaker training invocation to the S3 bucket without reformatting the training data.
- F. Rewrite the train.py script to add a section that converts TFRecords to protobuf and ingests the protobuf data instead of TFRecords.
- G. Prepare the data in the format accepted by Amazon SageMaker
- H. Use AWS Glue or AWS Lambda to reformat and store the data in an Amazon S3 bucket.

Answer: B

Explanation:

<https://github.com/aws-samples/amazon-sagemaker-script-mode/blob/master/tf-horovod-inference-pipeline/train>

NEW QUESTION 296

A manufacturing company has structured and unstructured data stored in an Amazon S3 bucket. A Machine Learning Specialist wants to use SQL to run queries on this data.

Which solution requires the LEAST effort to be able to query this data?

- A. Use AWS Data Pipeline to transform the data and Amazon RDS to run queries.
- B. Use AWS Glue to catalogue the data and Amazon Athena to run queries.
- C. Use AWS Batch to run ETL on the data and Amazon Aurora to run the queries.
- D. Use AWS Lambda to transform the data and Amazon Kinesis Data Analytics to run queries.

Answer: B

NEW QUESTION 300

A Machine Learning Specialist is developing a recommendation engine for a photography blog. Given a picture, the recommendation engine should show a picture that captures similar objects. The Specialist would like to create a numerical representation feature to perform nearest-neighbor searches.

What actions would allow the Specialist to get relevant numerical representations?

- A. Reduce image resolution and use reduced resolution pixel values as features
- B. Use Amazon Mechanical Turk to label image content and create a one-hot representation indicating the presence of specific labels
- C. Run images through a neural network pre-trained on ImageNet, and collect the feature vectors from the penultimate layer
- D. Average colors by channel to obtain three-dimensional representations of images.

Answer: A

NEW QUESTION 303

A gaming company has launched an online game where people can start playing for free but they need to pay if they choose to use certain features. The company needs to build an automated system to predict whether or not a new user will become a paid user within 1 year. The company has gathered a labeled dataset from 1 million users.

The training dataset consists of 1,000 positive samples (from users who ended up paying within 1 year) and 999.1 negative samples (from users who did not use any paid features). Each data sample consists of 200 features including user age, device, location, and play patterns.

Using this dataset for training, the Data Science team trained a random forest model that converged with over 99% accuracy on the training set. However, the prediction results on a test dataset were not satisfactory.

Which of the following approaches should the Data Science team take to mitigate this issue? (Select TWO.)

- A. Add more deep trees to the random forest to enable the model to learn more features.
- B. Indicate a copy of the samples in the test database in the training dataset.
- C. Generate more positive samples by duplicating the positive samples and adding a small amount of noise to the duplicated data.
- D. Change the cost function so that false negatives have a higher impact on the cost value than false positives.
- E. Change the cost function so that false positives have a higher impact on the cost value than false negatives.

Answer: CD

NEW QUESTION 305

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