

# Amazon

## Exam Questions AWS-Certified-Machine-Learning-Specialty

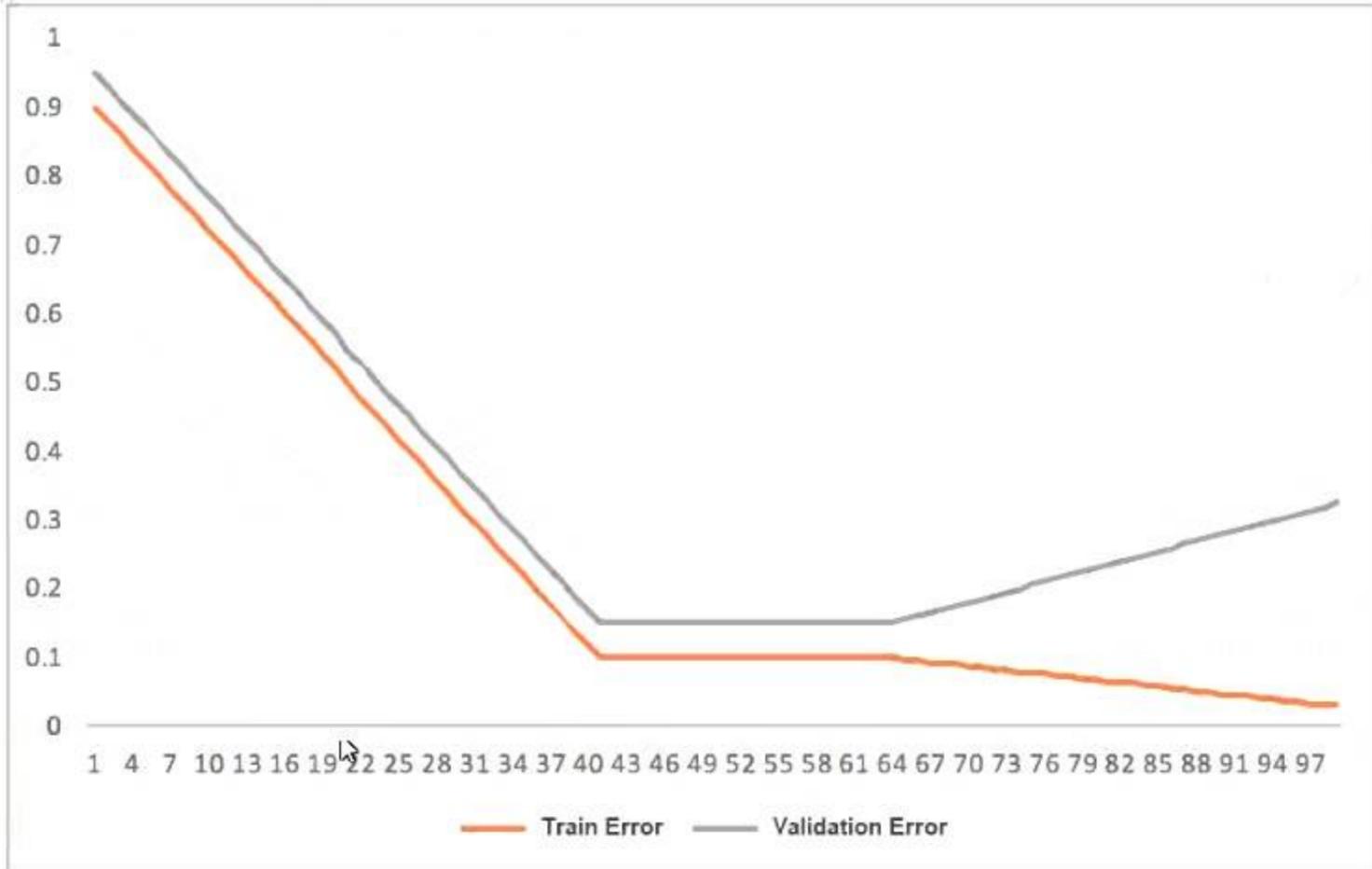
AWS Certified Machine Learning - Specialty



**NEW QUESTION 1**

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 2**

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 3**

A Machine Learning Specialist is working with a media company to perform classification on popular articles from the company's website. The company is using random forests to classify how popular an article will be before it is published. A sample of the data being used is below.

Given the dataset, the Specialist wants to convert the Day-Of-Week column to binary values. What technique should be used to convert this column to binary values.

Article Title	Author	Top Keywords	Day Of Week	URL of Article	Page Views
Building a Big Data Platform	Jane Doe	Big Data, Spark, Hadoop	Tuesday	<a href="http://examplecorp.com/data_platform.html">http://examplecorp.com/data_platform.html</a>	1300456
Getting Started with Deep Learning	John Doe	Deep Learning, Machine Learning, Spark	Tuesday	<a href="http://examplecorp.com/started_deep_learning.html">http://examplecorp.com/started_deep_learning.html</a>	1230661
MXNet ML Guide	Jane Doe	Machine Learning, MXNet, Logistic Regression	Thursday	<a href="http://examplecorp.com/mxnet_guide.html">http://examplecorp.com/mxnet_guide.html</a>	937291
Intro to NoSQL Databases	Mary Major	NoSQL, Operations, Database	Monday	<a href="http://examplecorp.com/nosql_intro_guide.html">http://examplecorp.com/nosql_intro_guide.html</a>	407812

- A. Binarization
- B. One-hot encoding
- C. Tokenization
- D. Normalization transformation

**Answer: B**

#### NEW QUESTION 4

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 5

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 as an option. However, in analyzing customer historic data, there is no easy way to increase randomization in training. If you go deep into modeling and coding, when you build a model with TensorFlow/PyTorch, most of the time the trainloader is already sampling in data 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 6

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 7

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 8

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 9

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 10

A bank wants to launch a low-rate credit promotion. The bank is located in a town that recently experienced economic hardship. Only some of the bank's customers were affected by the crisis, so the bank's credit team must identify which customers to target with the promotion. However, the credit team wants to make sure that loyal customers' full credit history is considered when the decision is made. The bank's data science team developed a model that classifies account transactions and understands credit eligibility. The data science team used the XGBoost algorithm to train the model. The team used 7 years of bank transaction historical data for training and hyperparameter tuning over the course of several days. The accuracy of the model is sufficient, but the credit team is struggling to explain accurately why the model denies credit to some customers. The credit team has almost no skill in data science. What should the data science team do to address this issue in the MOST operationally efficient manner?

- A. Use Amazon SageMaker Studio to rebuild the model.
- B. Create a notebook that uses the XGBoost training container to perform model training.
- C. Deploy the model at an endpoint.
- D. Enable Amazon SageMaker Model Monitor to store inference.
- E. Use the inferences to create Shapley values that help explain model behavior.
- F. Create a chart that shows features and SHapley Additive explanation (SHAP) values to explain to the credit team how the features affect the model outcomes.
- G. Use Amazon SageMaker Studio to rebuild the model.
- H. Create a notebook that uses the XGBoost training container to perform model training.
- I. Activate Amazon SageMaker Debugger, and configure it to calculate and collect Shapley values.
- J. Create a chart that shows features and SHapley Additive explanation (SHAP) values to explain to the credit team how the features affect the model outcomes.
- K. Create an Amazon SageMaker notebook instance.
- L. Use the notebook instance and the XGBoost library to locally retrain the model.
- M. Use the plot\_importance() method in the Python XGBoost interface to create a feature importance chart.
- N. Use that chart to explain to the credit team how the features affect the model outcomes.
- O. Use Amazon SageMaker Studio to rebuild the model.
- P. Create a notebook that uses the XGBoost training container to perform model training.
- Q. Deploy the model at an endpoint.
- R. Use Amazon SageMaker Processing to post-analyze the model and create a feature importance explainability chart automatically for the credit team.

**Answer: C**

**NEW QUESTION 10**

A Machine Learning Specialist deployed a model that provides product recommendations on a company's website. Initially, the model was performing very well and resulted in customers buying more products on average. However, within the past few months, the Specialist has noticed that the effect of product recommendations has diminished and customers are starting to return to their original habits of spending less. The Specialist is unsure of what happened, as the model has not changed from its initial deployment over a year ago.

Which method should the Specialist try to improve model performance?

- A. The model needs to be completely re-engineered because it is unable to handle product inventory changes.
- B. The model's hyperparameters should be periodically updated to prevent drift.
- C. The model should be periodically retrained from scratch using the original data while adding a regularization term to handle product inventory changes.
- D. The model should be periodically retrained using the original training data plus new data as product inventory changes.

**Answer: D**

**NEW QUESTION 14**

An online reseller has a large, multi-column dataset with one column missing 30% of its data. A Machine Learning Specialist believes that certain columns in the dataset could be used to reconstruct the missing data.

Which reconstruction approach should the Specialist use to preserve the integrity of the dataset?

- A. Listwise deletion
- B. Last observation carried forward
- C. Multiple imputation
- D. Mean substitution

**Answer: C**

**NEW QUESTION 15**

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%

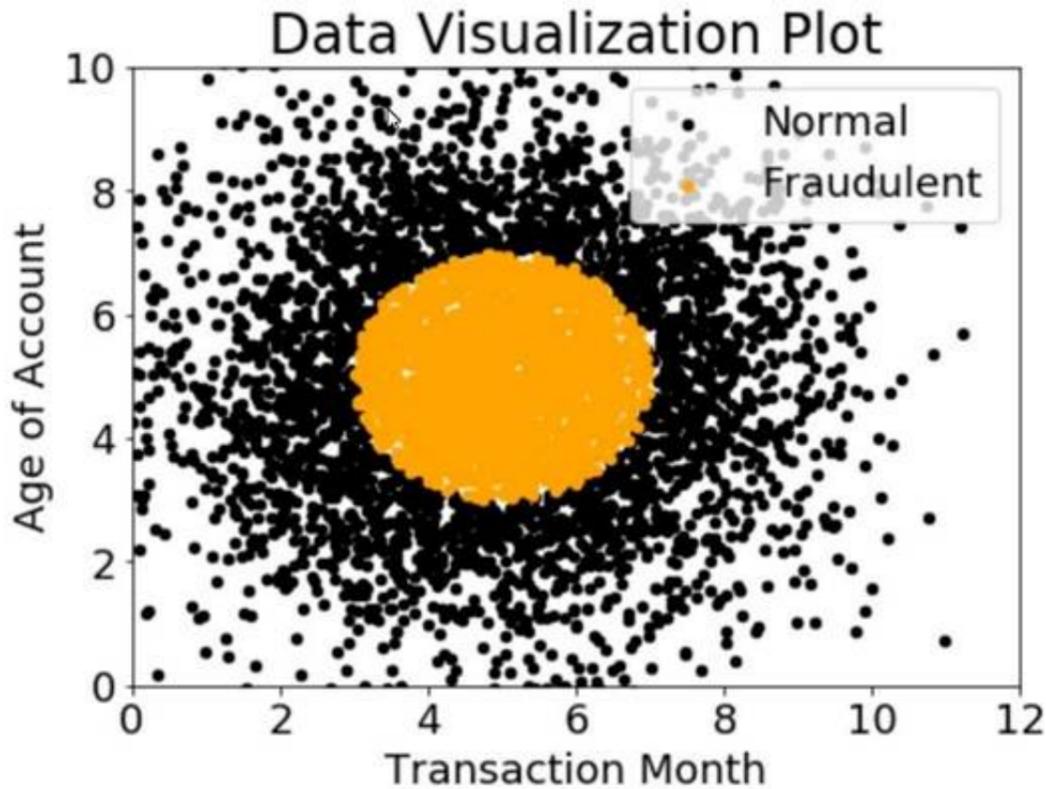
What can the Specialist learn from the experiments?

- 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 20**

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 accuracy?

- A. Long short-term memory (LSTM) model with scaled exponential linear unit (SELL)
- B. Logistic regression
- C. Support vector machine (SVM) with non-linear kernel
- D. Single perceptron with tanh activation function

Answer: C

**NEW QUESTION 25**

A Machine Learning Specialist at a company sensitive to security is preparing a dataset for model training. The dataset is stored in Amazon S3 and contains Personally Identifiable Information (PII). The dataset:

\* Must be accessible from a VPC only.

\* Must not traverse the public internet. How can these requirements be satisfied?

- A. Create a VPC endpoint and apply a bucket access policy that restricts access to the given VPC endpoint and the VPC.
- B. Create a VPC endpoint and apply a bucket access policy that allows access from the given VPC endpoint and an Amazon EC2 instance.
- C. Create a VPC endpoint and use Network Access Control Lists (NACLs) to allow traffic between only the given VPC endpoint and an Amazon EC2 instance.
- D. Create a VPC endpoint and use security groups to restrict access to the given VPC endpoint and an Amazon EC2 instance.

Answer: B

**NEW QUESTION 26**

A power company wants to forecast future energy consumption for its customers in residential properties and commercial business properties. Historical power consumption data for the last 10 years is available. A team of data scientists who performed the initial data analysis and feature selection will include the historical power consumption data and data such as weather, number of individuals on the property, and public holidays.

The data scientists are using Amazon Forecast to generate the forecasts.

Which algorithm in Forecast should the data scientists use to meet these requirements?

- A. Autoregressive Integrated Moving Average (AIRMA)
- B. Exponential Smoothing (ETS)
- C. Convolutional Neural Network - Quantile Regression (CNN-QR)
- D. Prophet

Answer: B

**NEW QUESTION 30**

A company needs to quickly make sense of a large amount of data and gain insight from it. The data is in different formats, the schemas change frequently, and new data sources are added regularly. The company wants to use AWS services to explore multiple data sources, suggest schemas, and enrich and transform the data. The solution should require the least possible coding effort for the data flows and the least possible infrastructure management.

Which combination of AWS services will meet these requirements?

- A. Amazon EMR for data discovery, enrichment, and transformation Amazon Athena for querying and analyzing the results in Amazon S3 using standard SQL Amazon QuickSight for reporting and getting insights
- B. Amazon Kinesis Data Analytics for data ingestion Amazon EMR for data discovery, enrichment, and transformation Amazon Redshift for querying and analyzing the results in Amazon S3
- C. AWS Glue for data discovery, enrichment, and transformation Amazon Athena for querying and analyzing the results in Amazon S3 using standard SQL Amazon QuickSight for reporting and getting insights
- D. AWS Data Pipeline for data transfer AWS Step Functions for orchestrating AWS Lambda jobs for data discovery, enrichment, and transformation Amazon Athena for querying and analyzing the results in Amazon S3 using standard SQL Amazon QuickSight for reporting and getting insights

Answer: A

**NEW QUESTION 35**

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 40

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 customizatio
- 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 mode
- J. Analyze the transcripts and update the training dataset with a manually corrected version of transcripts where product names are not being transcribed correctl
- K. Create an updated custom language model.

**Answer:** A

#### NEW QUESTION 41

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 46

A global financial company is using machine learning to automate its loan approval process. The company has a dataset of customer information. The dataset contains some categorical fields, such as customer location by city and housing status. The dataset also includes financial fields in different units, such as account balances in US dollars and monthly interest in US cents. The company's data scientists are using a gradient boosting regression model to infer the credit score for each customer. The model has a training accuracy of 99% and a testing accuracy of 75%. The data scientists want to improve the model's testing accuracy. Which process will improve the testing accuracy the MOST?

- A. Use a one-hot encoder for the categorical fields in the datase
- B. Perform standardization on the financial fields in the datase
- C. Apply L1 regularization to the data.
- D. Use tokenization of the categorical fields in the datase
- E. Perform binning on the financial fields in the datase
- F. Remove the outliers in the data by using the z-score.
- G. Use a label encoder for the categorical fields in the datase
- H. Perform L1 regularization on the financial fields in the datase
- I. Apply L2 regularization to the data.
- J. Use a logarithm transformation on the categorical fields in the datase
- K. Perform binning on the financial fields in the datase
- L. Use imputation to populate missing values in the dataset.

**Answer:** B

#### NEW QUESTION 47

A real-estate company is launching a new product that predicts the prices of new houses. The historical data for the properties and prices is stored in .csv format in an Amazon S3 bucket. The data has a header, some categorical fields, and some missing values. The company's data scientists have used Python with a common open-source library to fill the missing values with zeros. The data scientists have dropped all of the categorical fields and have trained a model by using the open-source linear regression algorithm with the default parameters.

The accuracy of the predictions with the current model is below 50%. The company wants to improve the model performance and launch the new product as soon as possible.

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

- A. Create a service-linked role for Amazon Elastic Container Service (Amazon ECS) with access to the S3 bucket
- B. Create an ECS cluster that is based on an AWS Deep Learning Containers image
- C. Write the code to perform the feature engineering
- D. Train a logistic regression model for predicting the price, pointing to the bucket with the dataset
- E. Wait for the training job to complete
- F. Perform the inferences.
- G. Create an Amazon SageMaker notebook with a new IAM role that is associated with the notebook
- H. Pull the dataset from the S3 bucket
- I. Explore different combinations of feature engineering transformations, regression algorithms, and hyperparameters
- J. Compare all the results in the notebook, and deploy the most accurate configuration in an endpoint for predictions.
- K. Create an IAM role with access to Amazon S3, Amazon SageMaker, and AWS Lambda
- L. Create a training job with the SageMaker built-in XGBoost model pointing to the bucket with the dataset
- M. Specify the price as the target feature
- N. Wait for the job to complete
- O. Load the model artifact to a Lambda function for inference on prices of new houses.
- P. Create an IAM role for Amazon SageMaker with access to the S3 bucket
- Q. Create a SageMaker AutoML job with SageMaker Autopilot pointing to the bucket with the dataset
- R. Specify the price as the target attribute
- S. Wait for the job to complete
- T. Deploy the best model for predictions.

**Answer: A**

#### NEW QUESTION 50

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 55

Amazon Connect has recently been rolled out across a company as a contact call center. The solution has been configured to store voice call recordings on Amazon S3.

The content of the voice calls are being analyzed for the incidents being discussed by the call operators. Amazon Transcribe is being used to convert the audio to text, and the output is stored on Amazon S3.

Which approach will provide the information required for further analysis?

- A. Use Amazon Comprehend with the transcribed files to build the key topics
- B. Use Amazon Translate with the transcribed files to train and build a model for the key topics
- C. Use the AWS Deep Learning AMI with Gluon Semantic Segmentation on the transcribed files to train and build a model for the key topics
- D. Use the Amazon SageMaker k-Nearest-Neighbors (kNN) algorithm on the transcribed files to generate a word embeddings dictionary for the key topics

**Answer: B**

#### NEW QUESTION 58

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

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

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

**Answer: AB**

#### NEW QUESTION 61

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 64

A technology startup is using complex deep neural networks and GPU compute to recommend the company's products to its existing customers based upon each customer's habits and interactions. The solution currently pulls each dataset from an Amazon S3 bucket before loading the data into a TensorFlow model pulled from the company's Git repository that runs locally. This job then runs for several hours while continually outputting its progress to the same S3 bucket. The job can be paused, restarted, and continued at any time in the event of a failure, and is run from a central queue.

Senior managers are concerned about the complexity of the solution's resource management and the costs involved in repeating the process regularly. They ask for the workload to be automated so it runs once a week, starting Monday and completing by the close of business Friday.

Which architecture should be used to scale the solution at the lowest cost?

- A. Implement the solution using AWS Deep Learning Containers and run the container as a job using AWS Batch on a GPU-compatible Spot Instance
- B. Implement the solution using a low-cost GPU-compatible Amazon EC2 instance and use the AWS Instance Scheduler to schedule the task
- C. Implement the solution using AWS Deep Learning Containers, run the workload using AWS Fargate running on Spot Instances, and then schedule the task using the built-in task scheduler
- D. Implement the solution using Amazon ECS running on Spot Instances and schedule the task using the ECS service scheduler

**Answer: C**

#### NEW QUESTION 66

A Data Science team within a large company uses Amazon SageMaker notebooks to access data stored in Amazon S3 buckets. The IT Security team is concerned that internet-enabled notebook instances create a security vulnerability where malicious code running on the instances could compromise data privacy. The company mandates that all instances stay within a secured VPC with no internet access, and data communication traffic must stay within the AWS network. How should the Data Science team configure the notebook instance placement to meet these requirements?

- A. Associate the Amazon SageMaker notebook with a private subnet in a VP
- B. Place the Amazon SageMaker endpoint and S3 buckets within the same VPC.
- C. Associate the Amazon SageMaker notebook with a private subnet in a VP
- D. Use IAM policies to grant access to Amazon S3 and Amazon SageMaker.
- E. Associate the Amazon SageMaker notebook with a private subnet in a VP
- F. Ensure the VPC has S3 VPC endpoints and Amazon SageMaker VPC endpoints attached to it.
- G. Associate the Amazon SageMaker notebook with a private subnet in a VP
- H. Ensure the VPC has a NAT gateway and an associated security group allowing only outbound connections to Amazon S3 and Amazon SageMaker

**Answer: D**

#### NEW QUESTION 70

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. onfigure the Amazon SageMaker notebook instance to have access to the VP
- 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 datase
- 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 71

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 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 bucke
- 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 datase
- 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 storag
- 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 76**

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 77**

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 79**

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 82**

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 VPC
- 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 VPC
- 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 84**

A Data Engineer needs to build a model using a dataset containing customer credit card information. How can the Data Engineer ensure the data remains encrypted and the credit card information is secure?

- A. Use a custom encryption algorithm to encrypt the data and store the data on an Amazon SageMaker instance in a VPC
- B. Use the SageMaker DeepAR algorithm to randomize the credit card numbers.
- C. Use an IAM policy to encrypt the data on the Amazon S3 bucket and Amazon Kinesis to automatically discard credit card numbers and insert fake credit card numbers.
- D. Use an Amazon SageMaker launch configuration to encrypt the data once it is copied to the SageMaker instance in a VPC
- E. Use the SageMaker principal component analysis (PCA) algorithm to reduce the length of the credit card numbers.
- F. Use AWS KMS to encrypt the data on Amazon S3 and Amazon SageMaker, and redact the credit card numbers from the customer data with AWS Glue.

**Answer:** D

**NEW QUESTION 85**

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 88**

A financial services company is building a robust serverless data lake on Amazon S3. The data lake should be flexible and meet the following requirements:

- \* Support querying old and new data on Amazon S3 through Amazon Athena and Amazon Redshift Spectrum.
- \* Support event-driven ETL pipelines.
- \* Provide a quick and easy way to understand metadata. Which approach meets these requirements?

- A. Use an AWS Glue crawler to crawl S3 data, an AWS Lambda function to trigger an AWS Glue ETL job, and an AWS Glue Data catalog to search and discover metadata.
- B. Use an AWS Glue crawler to crawl S3 data, an AWS Lambda function to trigger an AWS Batch job, and an external Apache Hive metastore to search and discover metadata.
- C. Use an AWS Glue crawler to crawl S3 data, an Amazon CloudWatch alarm to trigger an AWS Batch job, and an AWS Glue Data Catalog to search and discover metadata.
- D. Use an AWS Glue crawler to crawl S3 data, an Amazon CloudWatch alarm to trigger an AWS Glue ETL job, and an external Apache Hive metastore to search and discover metadata.

**Answer:** A

**NEW QUESTION 92**

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 96**

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 97**

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 100**

A company has set up and deployed its machine learning (ML) model into production with an endpoint using Amazon SageMaker hosting services. The ML team has configured automatic scaling for its SageMaker instances to support workload changes. During testing, the team notices that additional instances are being launched before the new instances are ready. This behavior needs to change as soon as possible. How can the ML team solve this issue?

- A. Decrease the cooldown period for the scale-in activity.
- B. Increase the configured maximum capacity of instances.
- C. Replace the current endpoint with a multi-model endpoint using SageMaker.
- D. Set up Amazon API Gateway and AWS Lambda to trigger the SageMaker inference endpoint.

E. Increase the cooldown period for the scale-out activity.

**Answer:** A

#### NEW QUESTION 104

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 106

A Machine Learning Specialist receives customer data for an online shopping website. The data includes demographics, past visits, and locality information. The Specialist must develop a machine learning approach to identify the customer shopping patterns, preferences and trends to enhance the website for better service and smart recommendations.

Which solution should the Specialist recommend?

- A. Latent Dirichlet Allocation (LDA) for the given collection of discrete data to identify patterns in the customer database.
- B. A neural network with a minimum of three layers and random initial weights to identify patterns in the customer database
- C. Collaborative filtering based on user interactions and correlations to identify patterns in the customer database
- D. Random Cut Forest (RCF) over random subsamples to identify patterns in the customer database

**Answer:** C

#### NEW QUESTION 107

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 109

A machine learning specialist works for a fruit processing company and needs to build a system that categorizes apples into three types. The specialist has collected a dataset that contains 150 images for each type of apple and applied transfer learning on a neural network that was pretrained on ImageNet with this dataset.

The company requires at least 85% accuracy to make use of the model.

After an exhaustive grid search, the optimal hyperparameters produced the following: 68% accuracy on the training set 67% accuracy on the validation set

What can the machine learning specialist do to improve the system's accuracy?

- A. Upload the model to an Amazon SageMaker notebook instance and use the Amazon SageMaker HPO feature to optimize the model's hyperparameters.
- B. Add more data to the training set and retrain the model using transfer learning to reduce the bias.
- C. Use a neural network model with more layers that are pretrained on ImageNet and apply transfer learning to increase the variance.
- D. Train a new model using the current neural network architecture.

**Answer:** B

#### NEW QUESTION 112

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 mode
- 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 tas
- 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 mode
- G. Create a workforce with a third-party AWS Marketplace vendo
- 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 tas
- J. Use a private workforce as the labeling workforce.

**Answer: B**

**NEW QUESTION 115**

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 js 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 cod
- 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 SageMake
- 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 116**

A data scientist wants to use Amazon Forecast to build a forecasting model for inventory demand for a retail company. The company has provided a dataset of historic inventory demand for its products as a .csv file stored in an Amazon S3 bucket. The table below shows a sample of the dataset.

timestamp	item_id	demand	category	lead_time
2019-12-14	uni_000736	120	hardware	90
2020-01-31	uni_003429	98	hardware	30
2020-03-04	uni_000211	234	accessories	10

How should the data scientist transform the data?

- A. Use ETL jobs in AWS Glue to separate the dataset into a target time series dataset and an item metadata datase
- B. Upload both datasets as .csv files to Amazon S3.
- C. Use a Jupyter notebook in Amazon SageMaker to separate the dataset into a related time series dataset and an item metadata dataset
- D. Upload both datasets as tables in Amazon Aurora.
- E. Use AWS Batch jobs to separate the dataset into a target time series dataset, a related time series dataset, and an item metadata dataset
- F. Upload them directly to Forecast from a local machine.
- G. Use a Jupyter notebook in Amazon SageMaker to transform the data into the optimized protobuf recordIO forma
- H. Upload the dataset in this format to Amazon S3.

**Answer: A**

**Explanation:**

<https://docs.aws.amazon.com/forecast/latest/dg/dataset-import-guidelines-troubleshooting.html>

**NEW QUESTION 120**

A Machine Learning Specialist is building a supervised model that will evaluate customers' satisfaction with their mobile phone service based on recent usage The model's output should infer whether or not a customer is likely to switch to a competitor in the next 30 days Which of the following modeling techniques should the Specialist use1?

- A. Time-series prediction
- B. Anomaly detection
- C. Binary classification
- D. Regression

**Answer: D**

**NEW QUESTION 125**

An insurance company is developing a new device for vehicles that uses a camera to observe drivers' behavior and alert them when they appear distracted The company created approximately 10,000 training images in a controlled environment that a Machine Learning Specialist will use to train and evaluate machine

learning models

During the model evaluation the Specialist notices that the training error rate diminishes faster as the number of epochs increases and the model is not accurately inferring on the unseen test images

Which of the following should be used to resolve this issue? (Select TWO)

- A. Add vanishing gradient to the model
- B. Perform data augmentation on the training data
- C. Make the neural network architecture complex.
- D. Use gradient checking in the model
- E. Add L2 regularization to the model

**Answer:** BD

#### NEW QUESTION 130

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 131

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 136

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 139

A company is using Amazon Textract to extract textual data from thousands of scanned text-heavy legal documents daily. The company uses this information to process loan applications automatically. Some of the documents fail business validation and are returned to human reviewers, who investigate the errors. This activity increases the time to process the loan applications.

What should the company do to reduce the processing time of loan applications?

- A. Configure Amazon Textract to route low-confidence predictions to Amazon SageMaker Ground Truth. Perform a manual review on those words before performing a business validation.
- B. Use an Amazon Textract synchronous operation instead of an asynchronous operation.
- C. Configure Amazon Textract to route low-confidence predictions to Amazon Augmented AI (AmazonA2I). Perform a manual review on those words before performing a business validation.
- D. Use Amazon Rekognition's feature to detect text in an image to extract the data from scanned images. Use this information to process the loan applications.

**Answer:** C

#### NEW QUESTION 144

A manufacturer is operating a large number of factories with a complex supply chain relationship where unexpected downtime of a machine can cause production to stop at several factories. A data scientist wants to analyze sensor data from the factories to identify equipment in need of preemptive maintenance and then dispatch a service team to prevent unplanned downtime. The sensor readings from a single machine can include up to 200 data points including temperatures, voltages, vibrations, RPMs, and pressure readings.

To collect this sensor data, the manufacturer deployed Wi-Fi and LANs across the factories. Even though many factory locations do not have reliable or high-speed internet connectivity, the manufacturer would like to maintain near-real-time inference capabilities.

Which deployment architecture for the model will address these business requirements?

- A. Deploy the model in Amazon SageMaker
- B. Run sensor data through this model to predict which machines need maintenance.

- C. Deploy the model on AWS IoT Greengrass in each factor
- D. Run sensor data through this model to infer which machines need maintenance.
- E. Deploy the model to an Amazon SageMaker batch transformation job
- F. Generate inferences in a daily batch report to identify machines that need maintenance.
- G. Deploy the model in Amazon SageMaker and use an IoT rule to write data to an Amazon DynamoDB table. Consume a DynamoDB stream from the table with an AWS Lambda function to invoke the endpoint.

**Answer: B**

**Explanation:**

<https://aws.amazon.com/blogs/iot/industrial-iot-from-condition-based-monitoring-to-predictive-quality-to-digitiz> <https://aws.amazon.com/blogs/iot/using-aws-iot-for-predictive-maintenance/>

**NEW QUESTION 145**

For the given confusion matrix, what is the recall and precision of the model?

		Actual	
		Yes	No
Predicted	Yes	12	3
	No	1	9

- A. Recall = 0.92 Precision = 0.84
- B. Recall = 0.84 Precision = 0.8
- C. Recall = 0.92 Precision = 0.8
- D. Recall = 0.8 Precision = 0.92

**Answer: C**

**NEW QUESTION 147**

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