

Amazon

Exam Questions AWS-Certified-Machine-Learning-Specialty

AWS Certified Machine Learning - Specialty



NEW QUESTION 1

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 2

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 3

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 SQS.
- 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 scripts.
- M. Build a step function by using the AWS Step Functions Data Science workflow.
- N. Store the results in Amazon S3.

Answer: B

NEW QUESTION 4

A retail company wants to update its customer support system. The company wants to implement automatic routing of customer claims to different queues to prioritize the claims by category.

Currently, an operator manually performs the category assignment and routing. After the operator classifies and routes the claim, the company stores the claim's record in a central database. The claim's record includes the claim's category.

The company has no data science team or experience in the field of machine learning (ML). The company's small development team needs a solution that requires no ML expertise.

Which solution meets these requirements?

- A. Export the database to a .csv file with two columns: claim_label and claim_text.
- B. Use the Amazon SageMaker Object2Vec algorithm and the .csv file to train a model.
- C. Use SageMaker to deploy the model to an inference endpoint.
- D. Develop a service in the application to use the inference endpoint to process incoming claims, predict the labels, and route the claims to the appropriate queue.
- E. Export the database to a .csv file with one column: claim_text.
- F. Use the Amazon SageMaker Latent Dirichlet Allocation (LDA) algorithm and the .csv file to train a model.
- G. Use the LDA algorithm to detect labels automatically.
- H. Use SageMaker to deploy the model to an inference endpoint.
- I. Develop a service in the application to use the inference endpoint to process incoming claims, predict the labels, and route the claims to the appropriate queue.
- J. Use Amazon Textract to process the database and automatically detect two columns: claim_label and claim_text.
- K. Use Amazon Comprehend custom classification and the extracted information to train the custom classifier.
- L. Develop a service in the application to use the Amazon Comprehend API to process incoming claims, predict the labels, and route the claims to the appropriate queue.
- M. Export the database to a .csv file with two columns: claim_label and claim_text.
- N. Use Amazon Comprehend custom classification and the .csv file to train the custom classifier.

O. Develop a service in the application to use the Amazon Comprehend API to process incoming claims, predict the labels, and route the claims to the appropriate queue.

Answer: C

NEW QUESTION 5

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 6

An office security agency conducted a successful pilot using 100 cameras installed at key locations within the main office. Images from the cameras were uploaded to Amazon S3 and tagged using Amazon Rekognition, and the results were stored in Amazon ES. The agency is now looking to expand the pilot into a full production system using thousands of video cameras in its office locations globally. The goal is to identify activities performed by non-employees in real time. Which solution should the agency consider?

- A. Use a proxy server at each local office and for each camera, and stream the RTSP feed to a unique Amazon Kinesis Video Streams video stream
- B. On each stream, use Amazon Rekognition Video and create a stream processor to detect faces from a collection of known employees, and alert when non-employees are detected.
- C. Use a proxy server at each local office and for each camera, and stream the RTSP feed to a unique Amazon Kinesis Video Streams video stream
- D. On each stream, use Amazon Rekognition Image to detect faces from a collection of known employees and alert when non-employees are detected.
- E. Install AWS DeepLens cameras and use the DeepLens_Kinesis_Video module to stream video to Amazon Kinesis Video Streams for each camera
- F. On each stream, use Amazon Rekognition Video and create a stream processor to detect faces from a collection on each stream, and alert when nonemployees are detected.
- G. Install AWS DeepLens cameras and use the DeepLens_Kinesis_Video module to stream video to Amazon Kinesis Video Streams for each camera
- H. On each stream, run an AWS Lambda function to capture image fragments and then call Amazon Rekognition Image to detect faces from a collection of known employees, and alert when non-employees are detected.

Answer: C

NEW QUESTION 7

An agency collects census information within a country to determine healthcare and social program needs by province and city. The census form collects responses for approximately 500 questions from each citizen. Which combination of algorithms would provide the appropriate insights? (Select TWO)

- A. The factorization machines (FM) algorithm
- B. The Latent Dirichlet Allocation (LDA) algorithm
- C. The principal component analysis (PCA) algorithm
- D. The k-means algorithm
- E. The Random Cut Forest (RCF) algorithm

Answer: CD

Explanation:

The PCA and K-means algorithms are useful in collection of data using census form.

NEW QUESTION 8

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 9

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 10

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 10

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 14

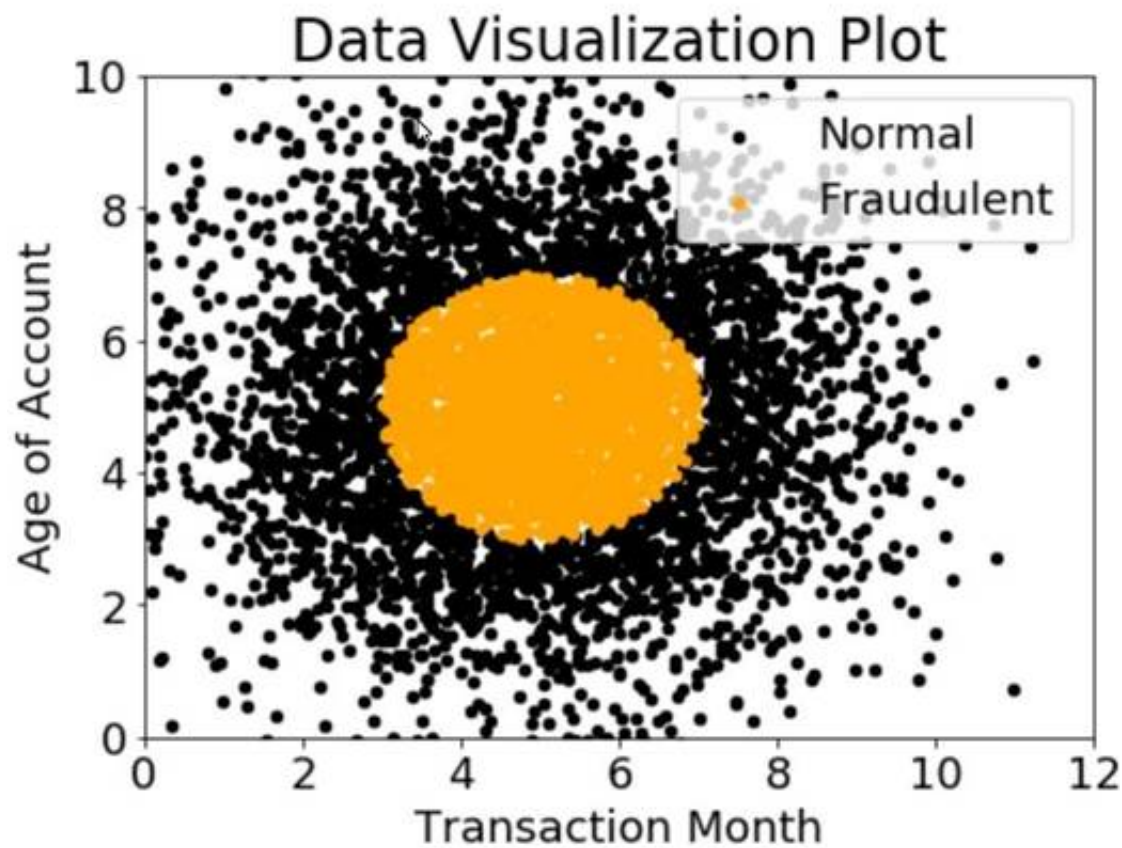
A bank wants to launch a low-rate credit promotion. The bank is located in a town that recently experienced economic hardship. Only some of the bank's customers were affected by the crisis, so the bank's credit team must identify which customers to target with the promotion. However, the credit team 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 mode
- 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 mode
- 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 value
- 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 mode
- 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 mode
- P. Create a notebook that uses the XGBoost training container to perform model training
- Q. Deploy the model at an endpoint
- R. Use Amazon SageMakerProcessing to post-analyze the model and create a feature importance explainability chart automatically for the credit team.

Answer: C

NEW QUESTION 17

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 22

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 23

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 24

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 26

A large company has developed a B1 application that generates reports and dashboards using data collected from various operational metrics The company wants to provide executives with an enhanced experience so they can use natural language to get data from the reports The company wants the executives to be able ask questions using written and spoken interlaces

Which combination of services can be used to build this conversational interface? (Select THREE)

- A. Alexa for Business
- B. Amazon Connect
- C. Amazon Lex
- D. Amazon Polly
- E. Amazon Comprehend
- F. Amazon Transcribe

Answer: BEF

NEW QUESTION 30

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 33

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 require
- I. Store the new dataset in Amazon S3.

Answer: BCE

NEW QUESTION 38

A Data Scientist is working on an application that performs sentiment analysis. The validation accuracy is poor and the Data Scientist thinks that the cause may be a rich vocabulary and a low average frequency of words in the dataset

Which tool should be used to improve the validation accuracy?

- A. Amazon Comprehend syntax analysts and entity detection
- B. Amazon SageMaker BlazingText allow mode
- C. Natural Language Toolkit (NLTK) stemming and stop word removal
- D. Scikit-learn term frequency-inverse document frequency (TF-IDF) vectorizers

Answer: A

NEW QUESTION 41

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 dataset

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

Answer: B

NEW QUESTION 45

A machine learning (ML) specialist must develop a classification model for a financial services company. A domain expert provides the dataset, which is tabular with 10,000 rows and 1,020 features. During exploratory data analysis, the specialist finds no missing values and a small percentage of duplicate rows. There are correlation scores of > 0.9 for 200 feature pairs. The mean value of each feature is similar to its 50th percentile. Which feature engineering strategy should the ML specialist use with Amazon SageMaker?

- A. Apply dimensionality reduction by using the principal component analysis (PCA) algorithm.
- B. Drop the features with low correlation scores by using a Jupyter notebook.
- C. Apply anomaly detection by using the Random Cut Forest (RCF) algorithm.
- D. Concatenate the features with high correlation scores by using a Jupyter notebook.

Answer: C

NEW QUESTION 46

A real estate company wants to create a machine learning model for predicting housing prices based on a historical dataset. The dataset contains 32 features. Which model will meet the business requirement?

- A. Logistic regression
- B. Linear regression
- C. K-means
- D. Principal component analysis (PCA)

Answer: B

NEW QUESTION 47

A Machine Learning Specialist is deciding between building a naive Bayesian model or a full Bayesian network for a classification problem. The Specialist computes the Pearson correlation coefficients between each feature and finds that their absolute values range between 0.1 to 0.95. Which model describes the underlying data in this situation?

- A. A naive Bayesian model, since the features are all conditionally independent.
- B. A full Bayesian network, since the features are all conditionally independent.
- C. A naive Bayesian model, since some of the features are statistically dependent.
- D. A full Bayesian network, since some of the features are statistically dependent.

Answer: C

NEW QUESTION 50

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 51

A Machine Learning Specialist needs to create a data repository to hold a large amount of time-based training data for a new model. In the source system, new files are added every hour. Throughout a single 24-hour period, the volume of hourly updates will change significantly. The Specialist always wants to train on the last 24 hours of the data.

Which type of data repository is the MOST cost-effective solution?

- A. An Amazon EBS-backed Amazon EC2 instance with hourly directories
- B. An Amazon RDS database with hourly table partitions
- C. An Amazon S3 data lake with hourly object prefixes

D. An Amazon EMR cluster with hourly hive partitions on Amazon EBS volumes

Answer: C

NEW QUESTION 54

A media company with a very large archive of unlabeled images, text, audio, and video footage wishes to index its assets to allow rapid identification of relevant content by the Research team. The company wants to use machine learning to accelerate the efforts of its in-house researchers who have limited machine learning expertise.

Which is the FASTEST route to index the assets?

- A. Use Amazon Rekognition, Amazon Comprehend, and Amazon Transcribe to tag data into distinct categories/classes.
- B. Create a set of Amazon Mechanical Turk Human Intelligence Tasks to label all footage.
- C. Use Amazon Transcribe to convert speech to text
- D. Use the Amazon SageMaker Neural Topic Model (NTM) and Object Detection algorithms to tag data into distinct categories/classes.
- E. Use the AWS Deep Learning AML and Amazon EC2 GPU instances to create custom models for audio transcription and topic modeling, and use object detection to tag data into distinct categories/classes.

Answer: A

NEW QUESTION 57

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 61

An Amazon SageMaker notebook instance is launched into Amazon VPC. The SageMaker notebook references data contained in an Amazon S3 bucket in another account. The bucket is encrypted using SSE-KMS. The instance returns an access denied error when trying to access data in Amazon S3.

Which of the following are required to access the bucket and avoid the access denied error? (Select THREE)

- A. An AWS KMS key policy that allows access to the customer master key (CMK)
- B. A SageMaker notebook security group that allows access to Amazon S3
- C. An IAM role that allows access to the specific S3 bucket
- D. A permissive S3 bucket policy
- E. An S3 bucket owner that matches the notebook owner
- F. A SageMaker notebook subnet ACL that allows traffic to Amazon S3.

Answer: ACF

NEW QUESTION 66

A data engineer at a bank is evaluating a new tabular dataset that includes customer data. The data engineer will use the customer data to create a new model to predict customer behavior. After creating a correlation matrix for the variables, the data engineer notices that many of the 100 features are highly correlated with each other.

Which steps should the data engineer take to address this issue? (Choose two.)

- A. Use a linear-based algorithm to train the model.
- B. Apply principal component analysis (PCA).
- C. Remove a portion of highly correlated features from the dataset.
- D. Apply min-max feature scaling to the dataset.
- E. Apply one-hot encoding category-based variables.

Answer: BD

NEW QUESTION 67

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 72

A Data Scientist wants to gain real-time insights into a data stream of GZIP files. Which solution would allow the use of SQL to query the stream with the LEAST latency?

- A. Amazon Kinesis Data Analytics with an AWS Lambda function to transform the data.
- B. AWS Glue with a custom ETL script to transform the data.
- C. An Amazon Kinesis Client Library to transform the data and save it to an Amazon ES cluster.
- D. Amazon Kinesis Data Firehose to transform the data and put it into an Amazon S3 bucket.

Answer: A

NEW QUESTION 74

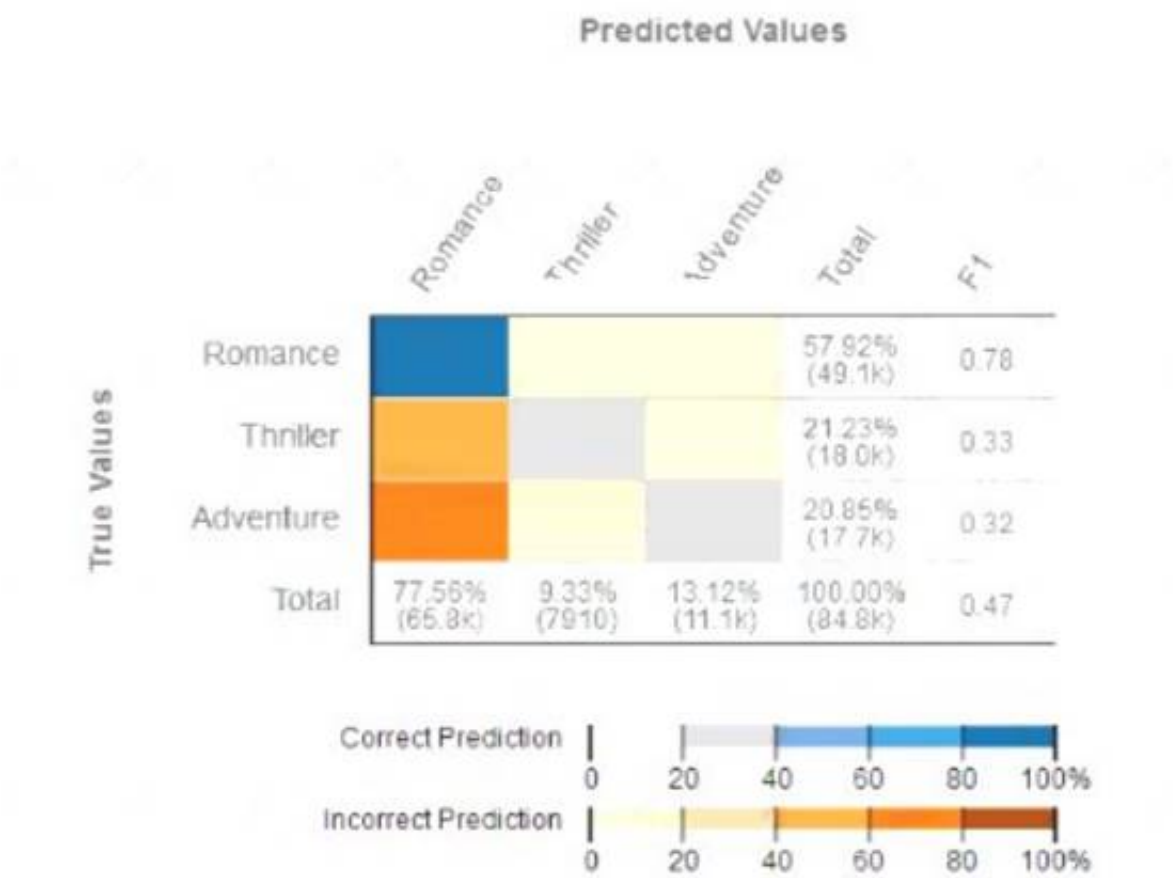
A technology startup is using complex deep neural networks and GPU compute to recommend the company’s products to its existing customers based upon each customer’s habits and interactions. The solution currently pulls each dataset from an Amazon S3 bucket before loading the data into a TensorFlow model 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 79

Given the following confusion matrix for a movie classification model, what is the true class frequency for Romance and the predicted class frequency for Adventure?



- A. The true class frequency for Romance is 77.56% and the predicted class frequency for Adventure is 20.85%
- B. The true class frequency for Romance is 57.92% and the predicted class frequency for Adventure is 13.12%
- C. The true class frequency for Romance is 0.78 and the predicted class frequency for Adventure is (0.47 - 0.32).
- D. The true class frequency for Romance is 77.56% * 0.78 and the predicted class frequency for Adventure is 20.85% ' 0.32

Answer: B

Explanation:
<https://docs.aws.amazon.com/machine-learning/latest/dg/multiclass-model-insights.html>

NEW QUESTION 80

A data scientist has been running an Amazon SageMaker notebook instance for a few weeks. During this time, a new version of Jupyter Notebook was released along with additional software updates. The security team mandates that all running SageMaker notebook instances use the latest security and software updates provided by SageMaker. How can the data scientist meet this requirements?

- A. Call the CreateNotebookInstanceLifecycleConfig API operation
- B. Create a new SageMaker notebook instance and mount the Amazon Elastic Block Store (Amazon EBS) volume from the original instance
- C. Stop and then restart the SageMaker notebook instance
- D. Call the UpdateNotebookInstanceLifecycleConfig API operation

Answer: C

NEW QUESTION 85

A company is launching a new product and needs to build a mechanism to monitor comments about the company and its new product on social media. The company needs to be able to evaluate the sentiment expressed in social media posts, and visualize trends and configure alarms based on various thresholds. The company needs to implement this solution quickly, and wants to minimize the infrastructure and data science resources needed to evaluate the messages. The company already has a solution in place to collect posts and store them within an Amazon S3 bucket. What services should the data science team use to deliver this solution?

- A. Train a model in Amazon SageMaker by using the BlazingText algorithm to detect sentiment in the corpus of social media post
- B. Expose an endpoint that can be called by AWS Lambda
- C. Trigger a Lambda function when posts are added to the S3 bucket to invoke the endpoint and record the sentiment in an Amazon DynamoDB table and in a custom Amazon CloudWatch metri
- D. Use CloudWatch alarms to notify analysts of trends.
- E. Train a model in Amazon SageMaker by using the semantic segmentation algorithm to model the semantic content in the corpus of social media post
- F. Expose an endpoint that can be called by AWS Lambda
- G. Trigger a Lambda function when objects are added to the S3 bucket to invoke the endpoint and record the sentiment in an Amazon DynamoDB tabl
- H. Schedule a second Lambda function to query recently added records and send an Amazon Simple Notification Service (Amazon SNS) notification to notify analysts of trends.
- I. Trigger an AWS Lambda function when social media posts are added to the S3 bucke
- J. Call Amazon Comprehend for each post to capture the sentiment in the message and record the sentiment in an Amazon DynamoDB tabl
- K. Schedule a second Lambda function to query recently added records and send an Amazon Simple Notification Service (Amazon SNS) notification to notify analysts of trends.
- L. Trigger an AWS Lambda function when social media posts are added to the S3 bucke
- M. Call Amazon Comprehend for each post to capture the sentiment in the message and record the sentiment in a custom Amazon CloudWatch metric and in S3. Use CloudWatch alarms to notify analysts of trends.

Answer: A

NEW QUESTION 90

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 connectio
- B. Write an AWS Lambda function to take an image and send it to Amazon Rekognition to count the number of faces in the imag
- 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 vide
- E. Enable Amazon Rekognition on the AWS DeepLens device, and use it to trigger a local AWS Lambda function when a person is recognize
- 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 imag
- H. Install cameras compatible with Amazon Kinesis Video Streams in the restauran
- I. Write an AWS Lambda function to take an imag
- J. Use the SageMaker endpoint to call the model to count peopl
- 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 imag
- M. Deploy AWS DeepLens cameras in the restauran
- 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 92

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 95

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 to 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 Firehouse stream that transforms raw record attributes into simple transformed values using SQL.

Answer: D

NEW QUESTION 96

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 101

An aircraft engine manufacturing company is measuring 200 performance metrics in a time-series. Engineers want to detect critical manufacturing defects in near-real time during testing. All of the data needs to be stored for offline analysis.

What approach would be the MOST effective to perform near-real time defect detection?

- A. Use AWS IoT Analytics for ingestion, storage, and further analysis
- B. Use Jupyter notebooks from within AWS IoT Analytics to carry out analysis for anomalies.
- C. Use Amazon S3 for ingestion, storage, and further analysis
- D. Use an Amazon EMR cluster to carry out Apache Spark ML k-means clustering to determine anomalies.
- E. Use Amazon S3 for ingestion, storage, and further analysis
- F. Use the Amazon SageMaker Random Cut Forest (RCF) algorithm to determine anomalies.
- G. Use Amazon Kinesis Data Firehose for ingestion and Amazon Kinesis Data Analytics Random Cut Forest (RCF) to perform anomaly detection
- H. Use Kinesis Data Firehose to store data in Amazon S3 for further analysis.

Answer: B

NEW QUESTION 104

A Data Scientist needs to analyze employment data. The dataset contains approximately 10 million observations on people across 10 different features. During the preliminary analysis, the Data Scientist notices that income and age distributions are not normal. While income levels show a right skew as expected, with fewer individuals having a higher income, the age distribution also shows a right skew, with fewer older individuals participating in the workforce.

Which feature transformations can the Data Scientist apply to fix the incorrectly skewed data? (Choose two.)

- A. Cross-validation
- B. Numerical value binning
- C. High-degree polynomial transformation
- D. Logarithmic transformation
- E. One hot encoding

Answer: AB

NEW QUESTION 109

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 114

A company sells thousands of products on a public website and wants to automatically identify products with potential durability problems. The company has 1,000 reviews with date, star rating, review text, review summary, and customer email fields, but many reviews are incomplete and have empty fields. Each review has already been labeled with the correct durability result.

A machine learning specialist must train a model to identify reviews expressing concerns over product durability. The first model needs to be trained and ready to review in 2 days.

What is the MOST direct approach to solve this problem within 2 days?

- A. Train a custom classifier by using Amazon Comprehend.
- B. Build a recurrent neural network (RNN) in Amazon SageMaker by using Gluon and Apache MXNet.
- C. Train a built-in BlazingText model using Word2Vec mode in Amazon SageMaker.
- D. Use a built-in seq2seq model in Amazon SageMaker.

Answer: B

NEW QUESTION 117

A company that runs an online library is implementing a chatbot using Amazon Lex to provide book recommendations based on category. This intent is fulfilled by an AWS Lambda function that queries an Amazon DynamoDB table for a list of book titles, given a particular category. For testing, there are only three categories implemented as the custom slot types: "comedy," "adventure," and "documentary."

A machine learning (ML) specialist notices that sometimes the request cannot be fulfilled because Amazon Lex cannot understand the category spoken by users with utterances such as "funny," "fun," and "humor." The ML specialist needs to fix the problem without changing the Lambda code or data in DynamoDB. How should the ML specialist fix the problem?

- A. Add the unrecognized words in the enumeration values list as new values in the slot type.
- B. Create a new custom slot type, add the unrecognized words to this slot type as enumeration values, and use this slot type for the slot.
- C. Use the AMAZON.SearchQuery built-in slot types for custom searches in the database.
- D. Add the unrecognized words as synonyms in the custom slot type.

Answer: C

NEW QUESTION 118

A manufacturing company uses machine learning (ML) models to detect quality issues. The models use images that are taken of the company's product at the end of each production step. The company has thousands of machines at the production site that generate one image per second on average.

The company ran a successful pilot with a single manufacturing machine. For the pilot, ML specialists used an industrial PC that ran AWS IoT Greengrass with a long-running AWS Lambda function that uploaded the images to Amazon S3. The uploaded images invoked a Lambda function that was written in Python to perform inference by using an Amazon SageMaker endpoint that ran a custom model. The inference results were forwarded back to a web service that was hosted at the production site to prevent faulty products from being shipped.

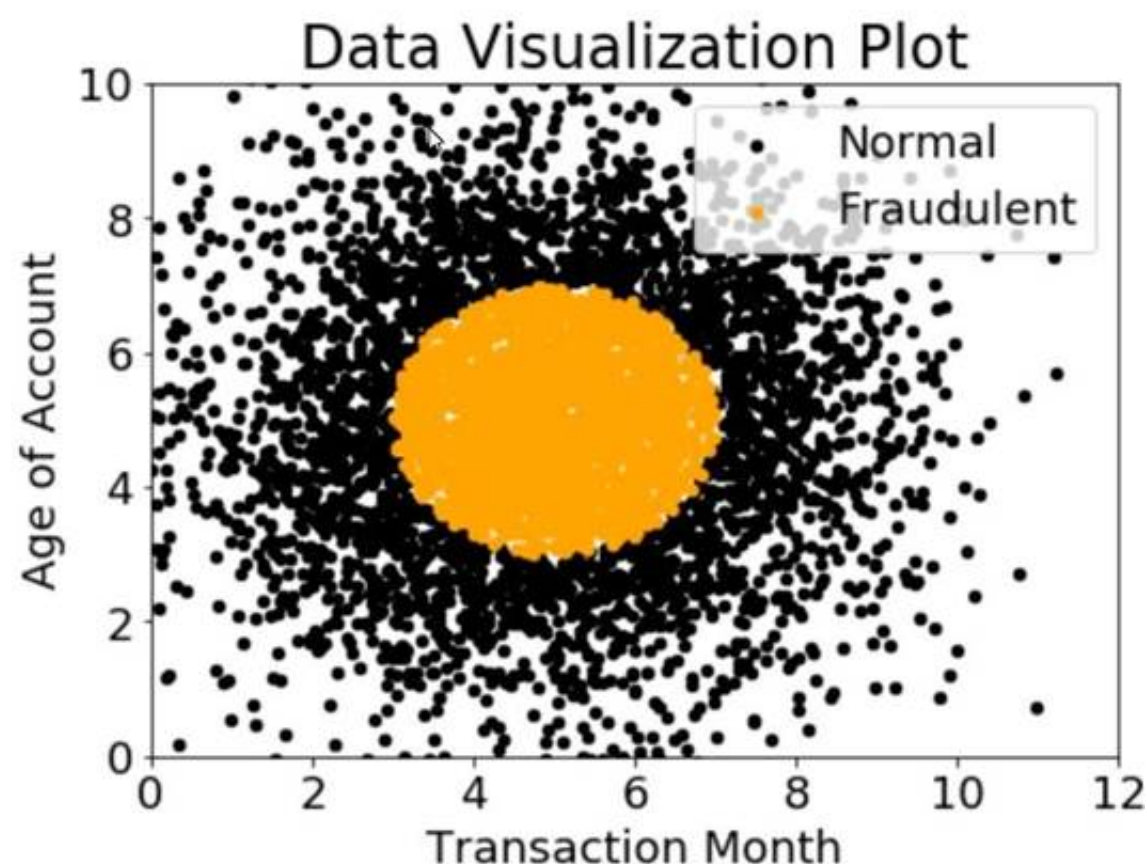
The company scaled the solution out to all manufacturing machines by installing similarly configured industrial PCs on each production machine. However, latency for predictions increased beyond acceptable limits. Analysis shows that the internet connection is at its capacity limit. How can the company resolve this issue MOST cost-effectively?

- A. Set up a 10 Gbps AWS Direct Connect connection between the production site and the nearest AWS Region
- B. Use the Direct Connect connection to upload the image
- C. Increase the size of the instances and the number of instances that are used by the SageMaker endpoint.
- D. Extend the long-running Lambda function that runs on AWS IoT Greengrass to compress the images and upload the compressed files to Amazon S3. Decompress the files by using a separate Lambda function that invokes the existing Lambda function to run the inference pipeline.
- E. Use auto scaling for SageMaker
- F. Set up an AWS Direct Connect connection between the production site and the nearest AWS Region
- G. Use the Direct Connect connection to upload the images.
- H. Deploy the Lambda function and the ML models onto the AWS IoT Greengrass core that is running on the industrial PCs that are installed on each machine
- I. Extend the long-running Lambda function that runs on AWS IoT Greengrass to invoke the Lambda function with the captured images and run the inference on the edge component that forwards the results directly to the web service.

Answer: D

NEW QUESTION 120

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 121

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 126

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 128

A manufacturing company has a large set of labeled historical sales data. The manufacturer would like to predict how many units of a particular part should be produced each quarter. Which machine learning approach should be used to solve this problem?

- A. Logistic regression
- B. Random Cut Forest (RCF)
- C. Principal component analysis (PCA)
- D. Linear regression

Answer: D

NEW QUESTION 129

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 134

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: C

NEW QUESTION 137

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 142

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 146

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 148

A Data Scientist is building a model to predict customer churn using a dataset of 100 continuous numerical features. The Marketing team has not provided any insight about which features are relevant for churn prediction. The Marketing team wants to interpret the model and see the direct impact of relevant features on the model outcome. While training a logistic regression model, the Data Scientist observes that there is a wide gap between the training and validation set accuracy.

Which methods can the Data Scientist use to improve the model performance and satisfy the Marketing team's needs? (Choose two.)

- A. Add L1 regularization to the classifier
- B. Add features to the dataset
- C. Perform recursive feature elimination
- D. Perform t-distributed stochastic neighbor embedding (t-SNE)
- E. Perform linear discriminant analysis

Answer: BE

NEW QUESTION 152

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 156

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 160

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 163

A company has raw user and transaction data stored in Amazon S3, 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 166

A Machine Learning Specialist is using Amazon SageMaker to host a model for a highly available customer-facing application.

The Specialist has trained a new version of the model, validated it with historical data, and now wants to deploy it to production. To limit any risk of a negative customer experience, the Specialist wants to be able to monitor the model and roll it back, if needed.

What is the SIMPLEST approach with the LEAST risk to deploy the model and roll it back, if needed?

- A. Create a SageMaker endpoint and configuration for the new model version
- B. Redirect production traffic to the new endpoint by updating the client configuration
- C. Revert traffic to the last version if the model does not perform as expected.
- D. Create a SageMaker endpoint and configuration for the new model version
- E. Redirect production traffic to the new endpoint by using a load balancer. Revert traffic to the last version if the model does not perform as expected.
- F. Update the existing SageMaker endpoint to use a new configuration that is weighted to send 5% of the traffic to the new variant
- G. Revert traffic to the last version by resetting the weights if the model does not perform as expected.
- H. Update the existing SageMaker endpoint to use a new configuration that is weighted to send 100% of the traffic to the new variant. Revert traffic to the last version by resetting the weights if the model does not perform as expected.

Answer: A

NEW QUESTION 167

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

What is the MOST efficient way to accomplish these tasks?

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

Answer: A

NEW QUESTION 170

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 172

Which of the following metrics should a Machine Learning Specialist generally use to compare/evaluate machine learning classification models against each other?

- A. Recall
- B. Misclassification rate
- C. Mean absolute percentage error (MAPE)
- D. Area Under the ROC Curve (AUC)

Answer: D

NEW QUESTION 174

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 179

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 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 184

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 dataset
- 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 format.
- 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 186

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 190

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 194

A Machine Learning Specialist is applying a linear least squares regression model to a dataset with 1 000 records and 50 features. Prior to training, the ML Specialist notices that two features are perfectly linearly dependent.

Why could this be an issue for the linear least squares regression model?

- A. It could cause the backpropagation algorithm to fail during training.
- B. It could create a singular matrix during optimization which fails to define a unique solution.
- C. It could modify the loss function during optimization causing it to fail during training.
- D. It could introduce non-linear dependencies within the data which could invalidate the linear assumptions of the model.

Answer: C

NEW QUESTION 199

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 jobs.
- 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 jobs.
- 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 204

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 a 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 205

A Machine Learning Specialist is building a model to predict future employment rates based on a wide range of economic factors. While exploring the data, the Specialist notices that the magnitude of the input features vary greatly. The Specialist does not want variables with a larger magnitude to dominate the model. What should the Specialist do to prepare the data for model training?

- A. Apply quantile binning to group the data into categorical bins to keep any relationships in the data by replacing the magnitude with distribution
- B. Apply the Cartesian product transformation to create new combinations of fields that are independent of the magnitude
- C. Apply normalization to ensure each field will have a mean of 0 and a variance of 1 to remove any significant magnitude
- D. Apply the orthogonal sparse Diagram (OSD) transformation to apply a fixed-size sliding window to generate new features of a similar magnitude.

Answer: C

NEW QUESTION 206

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 207

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 210

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 212

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 the 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 214

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 217

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 220

A company wants to predict the sale prices of houses based on available historical sales data. The target variable in the company's dataset is the sale price. The features include parameters such as the lot size, living area measurements, non-living area measurements, number of bedrooms, number of bathrooms, year built, and postal code. The company wants to use multi-variable linear regression to predict house sale prices. Which step should a machine learning specialist take to remove features that are irrelevant for the analysis and reduce the model's complexity?

- A. Plot a histogram of the features and compute their standard deviation
- B. Remove features with high variance.
- C. Plot a histogram of the features and compute their standard deviation
- D. Remove features with low variance.
- E. Build a heatmap showing the correlation of the dataset against itself
- F. Remove features with low mutual correlation scores.
- G. Run a correlation check of all features against the target variable
- H. Remove features with low target variable correlation scores.

Answer: D

NEW QUESTION 223

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 225

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 227

A Machine Learning Specialist is planning to create a long-running Amazon EMR cluster. The EMR cluster will have 1 master node, 10 core nodes, and 20 task nodes. To save on costs, the Specialist will use Spot Instances in the EMR cluster.

Which nodes should the Specialist launch on Spot Instances?

- A. Master node
- B. Any of the core nodes
- C. Any of the task nodes
- D. Both core and task nodes

Answer: A

NEW QUESTION 232

A city wants to monitor its air quality to address the consequences of air pollution. A Machine Learning Specialist needs to forecast the air quality in parts per million of contaminants for the next 2 days in the city. As this is a prototype, only daily data from the last year is available. Which model is MOST likely to provide the best results in Amazon SageMaker?

- A. Use the Amazon SageMaker k-Nearest-Neighbors (kNN) algorithm on the single time series consisting of the full year of data with a predictor_type of regressor.
- B. Use Amazon SageMaker Random Cut Forest (RCF) on the single time series consisting of the full year of data.
- C. Use the Amazon SageMaker Linear Learner algorithm on the single time series consisting of the full year of data with a predictor_type of regressor.
- D. Use the Amazon SageMaker Linear Learner algorithm on the single time series consisting of the full year of data with a predictor_type of classifier.

Answer: C

NEW QUESTION 237

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