

Google

Exam Questions Professional-Machine-Learning-Engineer

Google Professional Machine Learning Engineer



NEW QUESTION 1

You recently designed and built a custom neural network that uses critical dependencies specific to your organization's framework. You need to train the model using a managed training service on Google Cloud. However, the ML framework and related dependencies are not supported by AI Platform Training. Also, both your model and your data are too large to fit in memory on a single machine. Your ML framework of choice uses the scheduler, workers, and servers distribution structure. What should you do?

- A. Use a built-in model available on AI Platform Training
- B. Build your custom container to run jobs on AI Platform Training
- C. Build your custom containers to run distributed training jobs on AI Platform Training
- D. Reconfigure your code to a ML framework with dependencies that are supported by AI Platform Training

Answer: C

NEW QUESTION 2

You need to train a computer vision model that predicts the type of government ID present in a given image using a GPU-powered virtual machine on Compute Engine. You use the following parameters:

- Optimizer: SGD
- Image shape = 224x224
- Batch size = 64
- Epochs = 10
- Verbose = 2

During training you encounter the following error: ResourceExhaustedError: out of Memory (oom) when allocating tensor. What should you do?

- A. Change the optimizer
- B. Reduce the batch size
- C. Change the learning rate
- D. Reduce the image shape

Answer: A

NEW QUESTION 3

You are an ML engineer at a large grocery retailer with stores in multiple regions. You have been asked to create an inventory prediction model. Your models features include region, location, historical demand, and seasonal popularity. You want the algorithm to learn from new inventory data on a daily basis. Which algorithms should you use to build the model?

- A. Classification
- B. Reinforcement Learning
- C. Recurrent Neural Networks (RNN)
- D. Convolutional Neural Networks (CNN)

Answer: B

NEW QUESTION 4

You need to design a customized deep neural network in Keras that will predict customer purchases based on their purchase history. You want to explore model performance using multiple model architectures, store training data, and be able to compare the evaluation metrics in the same dashboard. What should you do?

- A. Create multiple models using AutoML Tables
- B. Automate multiple training runs using Cloud Composer
- C. Run multiple training jobs on AI Platform with similar job names
- D. Create an experiment in Kubeflow Pipelines to organize multiple runs

Answer: C

NEW QUESTION 5

You work for a toy manufacturer that has been experiencing a large increase in demand. You need to build an ML model to reduce the amount of time spent by quality control inspectors checking for product defects. Faster defect detection is a priority. The factory does not have reliable Wi-Fi. Your company wants to implement the new ML model as soon as possible. Which model should you use?

- A. AutoML Vision model
- B. AutoML Vision Edge mobile-versatile-1 model
- C. AutoML Vision Edge mobile-low-latency-1 model
- D. AutoML Vision Edge mobile-high-accuracy-1 model

Answer: A

NEW QUESTION 6

Your team has been tasked with creating an ML solution in Google Cloud to classify support requests for one of your platforms. You analyzed the requirements and decided to use TensorFlow to build the classifier so that you have full control of the model's code, serving, and deployment. You will use Kubeflow pipelines for the ML platform. To save time, you want to build on existing resources and use managed services instead of building a completely new model. How should you build the classifier?

- A. Use the Natural Language API to classify support requests
- B. Use AutoML Natural Language to build the support requests classifier
- C. Use an established text classification model on AI Platform to perform transfer learning
- D. Use an established text classification model on AI Platform as-is to classify support requests

Answer: D

NEW QUESTION 7

You are training a Resnet model on AI Platform using TPUs to visually categorize types of defects in automobile engines. You capture the training profile using the Cloud TPU profiler plugin and observe that it is highly input-bound. You want to reduce the bottleneck and speed up your model training process. Which modifications should you make to the tf.data dataset?

Choose 2 answers

- A. Use the interleave option for reading data
- B. Reduce the value of the repeat parameter
- C. Increase the buffer size for the shuffle option.
- D. Set the prefetch option equal to the training batch size
- E. Decrease the batch size argument in your transformation

Answer: AD

NEW QUESTION 8

You are going to train a DNN regression model with Keras APIs using this code:

```
model = tf.keras.Sequential()
model.add(tf.keras.layers.Dense(
    256,
    use_bias=True,
    activation='relu',
    kernel_initializer=None,
    kernel_regularizer=None,
    input_shape=(500,)))
model.add(tf.keras.layers.Dropout(rate=0.25))
model.add(tf.keras.layers.Dense(
    128, use_bias=True,
    activation='relu',
    kernel_initializer='uniform',
    kernel_regularizer='l2'))
model.add(tf.keras.layers.Dropout(rate=0.25))
model.add(tf.keras.layers.Dense(
    2, use_bias=False,
    activation='softmax'))
model.compile(loss='mse')
```

How many trainable weights does your model have? (The arithmetic below is correct.)

- A. $501 \times 256 + 257 \times 128 + 2 = 161154$
- B. $500 \times 256 + 256 \times 128 + 128 \times 2 = 161024$
- C. $501 \times 256 + 257 \times 128 + 128 \times 2 = 161408$
- D. $500 \times 256 + 256 \times 128 + 128 \times 2 = 40448$

Answer: D

NEW QUESTION 9

You are developing a Kubeflow pipeline on Google Kubernetes Engine. The first step in the pipeline is to issue a query against BigQuery. You plan to use the results of that query as the input to the next step in your pipeline. You want to achieve this in the easiest way possible. What should you do?

- A. Use the BigQuery console to execute your query and then save the query results into a new BigQuery table.
- B. Write a Python script that uses the BigQuery API to execute queries against BigQuery. Execute this script as the first step in your Kubeflow pipeline.
- C. Use the Kubeflow Pipelines domain-specific language to create a custom component that uses the Python BigQuery client library to execute queries.
- D. Locate the Kubeflow Pipelines repository on GitHub. Find the BigQuery Query Component, copy that component's URL, and use it to load the component into your pipeline.
- E. Use the component to execute queries against BigQuery.

Answer: A

NEW QUESTION 10

You developed an ML model with AI Platform, and you want to move it to production. You serve a few thousand queries per second and are experiencing latency issues. Incoming requests are served by a load balancer that distributes them across multiple Kubeflow CPU-only pods running on Google Kubernetes Engine (GKE). Your goal is to improve the serving latency without changing the underlying infrastructure. What should you do?

- A. Significantly increase the max_batch_size TensorFlow Serving parameter
- B. Switch to the tensorflow-model-server-universal version of TensorFlow Serving
- C. Significantly increase the max_enqueued_batches TensorFlow Serving parameter
- D. Recompile TensorFlow Serving using the source to support CPU-specific optimizations Instruct GKE to choose an appropriate baseline minimum CPU platform for serving nodes

Answer: A

NEW QUESTION 10

You are building a real-time prediction engine that streams files which may contain Personally Identifiable Information (PII) to Google Cloud. You want to use the Cloud Data Loss Prevention (DLP) API to scan the files. How should you ensure that the PII is not accessible by unauthorized individuals?

- A. Stream all files to Google CloudT and then write the data to BigQuery Periodically conduct a bulk scan of the table using the DLP API.
- B. Stream all files to Google Cloud, and write batches of the data to BigQuery While the data is being written to BigQuery conduct a bulk scan of the data using the DLP API.
- C. Create two buckets of data Sensitive and Non-sensitive Write all data to the Non-sensitive bucket Periodically conduct a bulk scan of that bucket using the DLP API, and move the sensitive data to the Sensitive bucket
- D. Create three buckets of data: Quarantine, Sensitive, and Non-sensitive Write all data to the Quarantine bucket.
- E. Periodically conduct a bulk scan of that bucket using the DLP API, and move the data to either the Sensitive or Non-Sensitive bucket

Answer: A

NEW QUESTION 12

You are building a linear regression model on BigQuery ML to predict a customer's likelihood of purchasing your company's products. Your model uses a city name variable as a key predictive component. In order to train and serve the model, your data must be organized in columns. You want to prepare your data using the least amount of coding while maintaining the predictable variables. What should you do?

- A. Create a new view with BigQuery that does not include a column with city information
- B. Use Dataprep to transform the state column using a one-hot encoding method, and make each city a column with binary values.
- C. Use Cloud Data Fusion to assign each city to a region labeled as 1, 2, 3, 4, or 5r and then use that number to represent the city in the model.
- D. Use TensorFlow to create a categorical variable with a vocabulary list Create the vocabulary file, and upload it as part of your model to BigQuery ML.

Answer: C

NEW QUESTION 13

You have been asked to develop an input pipeline for an ML training model that processes images from disparate sources at a low latency. You discover that your input data does not fit in memory. How should you create a dataset following Google-recommended best practices?

- A. Create a tf.data.Dataset.prefetch transformation
- B. Convert the images to tf .Tensor Objects, and then run Datas
- C. from_tensor_slices().
- D. Convert the images to tf .Tensor Objects, and then run t
- E. dat
- F. Datas
- G. from_tensors ().
- H. Convert the images Into TFRecords, store the images in Cloud Storage, and then use the t
- I. data API to read the images for training

Answer: D

NEW QUESTION 14

You are an ML engineer at a global car manufacturer. You need to build an ML model to predict car sales in different cities around the world. Which features or feature crosses should you use to train city-specific relationships between car type and number of sales?

- A. Three individual features binned latitude, binned longitude, and one-hot encoded car type
- B. One feature obtained as an element-wise product between latitude, longitude, and car type
- C. One feature obtained as an element-wise product between binned latitude, binned longitude, and one-hot encoded car type
- D. Two feature crosses as a element-wise product the first between binned latitude and one-hot encoded car type, and the second between binned longitude and one-hot encoded car type

Answer: A

NEW QUESTION 19

You are developing ML models with AI Platform for image segmentation on CT scans. You frequently update your model architectures based on the newest available research papers, and have to rerun training on the same dataset to benchmark their performance. You want to minimize computation costs and manual intervention while having version control for your code. What should you do?

- A. Use Cloud Functions to identify changes to your code in Cloud Storage and trigger a retraining job
- B. Use the gcloud command-line tool to submit training jobs on AI Platform when you update your code
- C. Use Cloud Build linked with Cloud Source Repositories to trigger retraining when new code is pushed to the repository
- D. Create an automated workflow in Cloud Composer that runs daily and looks for changes in code in Cloud Storage using a sensor.

Answer: A

NEW QUESTION 20

You are responsible for building a unified analytics environment across a variety of on-premises data marts. Your company is experiencing data quality and security challenges when integrating data across the servers, caused by the use of a wide range of disconnected tools and temporary solutions. You need a fully

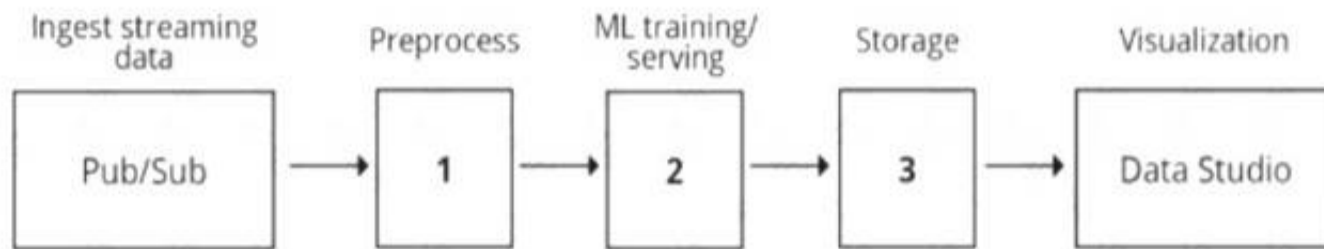
managed, cloud-native data integration service that will lower the total cost of work and reduce repetitive work. Some members on your team prefer a codeless interface for building Extract, Transform, Load (ETL) process. Which service should you use?

- A. Dataflow
- B. Dataprep
- C. Apache Flink
- D. Cloud Data Fusion

Answer: D

NEW QUESTION 24

You are building an ML model to detect anomalies in real-time sensor data. You will use Pub/Sub to handle incoming requests. You want to store the results for analytics and visualization. How should you configure the pipeline?



- A. 1 = Dataflow, 2 - AI Platform, 3 = BigQuery
- B. 1 = DataProc, 2 = AutoML, 3 = Cloud Bigtable
- C. 1 = BigQuery, 2 = AutoML, 3 = Cloud Functions
- D. 1 = BigQuery, 2 = AI Platform, 3 = Cloud Storage

Answer: C

NEW QUESTION 28

You are developing models to classify customer support emails. You created models with TensorFlow Estimators using small datasets on your on-premises system, but you now need to train the models using large datasets to ensure high performance. You will port your models to Google Cloud and want to minimize code refactoring and infrastructure overhead for easier migration from on-prem to cloud. What should you do?

- A. Use AI Platform for distributed training
- B. Create a cluster on Dataproc for training
- C. Create a Managed Instance Group with autoscaling
- D. Use Kubeflow Pipelines to train on a Google Kubernetes Engine cluster.

Answer: D

NEW QUESTION 32

You work for a social media company. You need to detect whether posted images contain cars. Each training example is a member of exactly one class. You have trained an object detection neural network and deployed the model version to AI Platform Prediction for evaluation. Before deployment, you created an evaluation job and attached it to the AI Platform Prediction model version. You notice that the precision is lower than your business requirements allow. How should you adjust the model's final layer softmax threshold to increase precision?

- A. Increase the recall
- B. Decrease the recall.
- C. Increase the number of false positives
- D. Decrease the number of false negatives

Answer: D

NEW QUESTION 37

You are training an LSTM-based model on AI Platform to summarize text using the following job submission script:

```

gcloud ai-platform jobs submit training $JOB_NAME \
  --package-path $TRAINER_PACKAGE_PATH \
  --module-name $MAIN_TRAINER_MODULE \
  --job-dir $JOB_DIR \
  --region $REGION \
  --scale-tier basic \
  -- \
  --epochs 20 \
  --batch_size=32 \
  --learning_rate=0.001 \

```

You want to ensure that training time is minimized without significantly compromising the accuracy of your model. What should you do?

- A. Modify the 'epochs' parameter
- B. Modify the 'scale-tier' parameter

- C. Modify the batch size' parameter
- D. Modify the 'learning rate' parameter

Answer: A

NEW QUESTION 41

You trained a text classification model. You have the following SignatureDefs:

```
signature_def['serving_default']:
  The given SavedModel SignatureDef contains the following input(s):
    inputs['text'] tensor_info:
      dtype: DT_STRING
      shape: (-1, 2)
      name: serving_default_text:0
  The given SavedModel SignatureDef contains the following output(s):
    outputs['Softmax'] tensor_info:
      dtype: DT_FLOAT
      shape: (-1, 2)
      name: StatefulPartitionedCall:0
  Method name is: tensorflow/serving/predict
```

You started a TensorFlow-serving component server and tried to send an HTTP request to get a prediction using:

```
headers = {"content-type": "application/json"}
json_response = requests.post('http://localhost:8501/v1/models/text_model:predict', data=data,
headers=headers)
```

What is the correct way to write the predict request?

- A. data = json.dumps({"signature_name": "serving_default\ "instances": [fab', 'be1, 'cd']})
- B. data = json.dumps({"signature_name": "serving_default"! "instances": [['a', 'b', "c", 'd', 'e', 'f']])
- C. data = json.dumps({"signature_name": "serving_default, "instances": [['a', 'b\ 'c'1, [d\ 'e\ T']])
- D. data = json.dumps({"signature_name": f,serving_default", "instances": [['a', 'b'], [c\ 'd'], [e\ T']])

Answer: B

NEW QUESTION 43

You work for a global footwear retailer and need to predict when an item will be out of stock based on historical inventory data. Customer behavior is highly dynamic since footwear demand is influenced by many different factors. You want to serve models that are trained on all available data, but track your performance on specific subsets of data before pushing to production. What is the most streamlined and reliable way to perform this validation?

- A. Use the TFX ModelValidator tools to specify performance metrics for production readiness
- B. Use k-fold cross-validation as a validation strategy to ensure that your model is ready for production.
- C. Use the last relevant week of data as a validation set to ensure that your model is performing accurately on current data
- D. Use the entire dataset and treat the area under the receiver operating characteristics curve (AUC ROC) as the main metric.

Answer: A

NEW QUESTION 45

You need to build classification workflows over several structured datasets currently stored in BigQuery.

Because you will be performing the classification several times, you want to complete the following steps without writing code: exploratory data analysis, feature selection, model building, training, and hyperparameter tuning and serving. What should you do?

- A. Configure AutoML Tables to perform the classification task
- B. Run a BigQuery ML task to perform logistic regression for the classification
- C. Use AI Platform Notebooks to run the classification model with pandas library
- D. Use AI Platform to run the classification model job configured for hyperparameter tuning

Answer: C

NEW QUESTION 46

You work for an online retail company that is creating a visual search engine. You have set up an end-to-end ML pipeline on Google Cloud to classify whether an image contains your company's product. Expecting the release of new products in the near future, you configured a retraining functionality in the pipeline so that new data can be fed into your ML models. You also want to use AI Platform's continuous evaluation service to ensure that the models have high accuracy on your test data set. What should you do?

- A. Keep the original test dataset unchanged even if newer products are incorporated into retraining
- B. Extend your test dataset with images of the newer products when they are introduced to retraining
- C. Replace your test dataset with images of the newer products when they are introduced to retraining.
- D. Update your test dataset with images of the newer products when your evaluation metrics drop below a pre-decided threshold.

Answer: C

NEW QUESTION 47

You are an ML engineer at a global shoe store. You manage the ML models for the company's website. You are asked to build a model that will recommend new products to the user based on their purchase behavior and similarity with other users. What should you do?

- A. Build a classification model
- B. Build a knowledge-based filtering model
- C. Build a collaborative-based filtering model
- D. Build a regression model using the features as predictors

Answer: C

NEW QUESTION 51

You manage a team of data scientists who use a cloud-based backend system to submit training jobs. This system has become very difficult to administer, and you want to use a managed service instead. The data scientists you work with use many different frameworks, including Keras, PyTorch, theano. Scikit-team, and custom libraries. What should you do?

- A. Use the AI Platform custom containers feature to receive training jobs using any framework
- B. Configure Kubeflow to run on Google Kubernetes Engine and receive training jobs through TFJob
- C. Create a library of VM images on Compute Engine; and publish these images on a centralized repository
- D. Set up Slurm workload manager to receive jobs that can be scheduled to run on your cloud infrastructure.

Answer: D

NEW QUESTION 54

You have trained a model on a dataset that required computationally expensive preprocessing operations. You need to execute the same preprocessing at prediction time. You deployed the model on AI Platform for high-throughput online prediction. Which architecture should you use?

- A. • Validate the accuracy of the model that you trained on preprocessed data• Create a new model that uses the raw data and is available in real time• Deploy the new model onto AI Platform for online prediction
- B. • Send incoming prediction requests to a Pub/Sub topic• Transform the incoming data using a Dataflow job• Submit a prediction request to AI Platform using the transformed data• Write the predictions to an outbound Pub/Sub queue
- C. • Stream incoming prediction request data into Cloud Spanner• Create a view to abstract your preprocessing logic. • Query the view every second for new records• Submit a prediction request to AI Platform using the transformed data• Write the predictions to an outbound Pub/Sub queue.
- D. • Send incoming prediction requests to a Pub/Sub topic• Set up a Cloud Function that is triggered when messages are published to the Pub/Sub topic. • Implement your preprocessing logic in the Cloud Function• Submit a prediction request to AI Platform using the transformed data• Write the predictions to an outbound Pub/Sub queue

Answer: D

NEW QUESTION 58

You have written unit tests for a Kubeflow Pipeline that require custom libraries. You want to automate the execution of unit tests with each new push to your development branch in Cloud Source Repositories. What should you do?

- A. Write a script that sequentially performs the push to your development branch and executes the unit tests on Cloud Run
- B. Using Cloud Build, set an automated trigger to execute the unit tests when changes are pushed to your development branch.
- C. Set up a Cloud Logging sink to a Pub/Sub topic that captures interactions with Cloud Source Repositories Configure a Pub/Sub trigger for Cloud Run, and execute the unit tests on Cloud Run.
- D. Set up a Cloud Logging sink to a Pub/Sub topic that captures interactions with Cloud Source Repositories
- E. Execute the unit tests using a Cloud Function that is triggered when messages are sent to the Pub/Sub topic

Answer: B

NEW QUESTION 60

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