

Google

Exam Questions Professional-Machine-Learning-Engineer

Google Professional Machine Learning Engineer



NEW QUESTION 1

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 2

During batch training of a neural network, you notice that there is an oscillation in the loss. How should you adjust your model to ensure that it converges?

- A. Increase the size of the training batch
- B. Decrease the size of the training batch
- C. Increase the learning rate hyperparameter
- D. Decrease the learning rate hyperparameter

Answer: C

NEW QUESTION 3

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 4

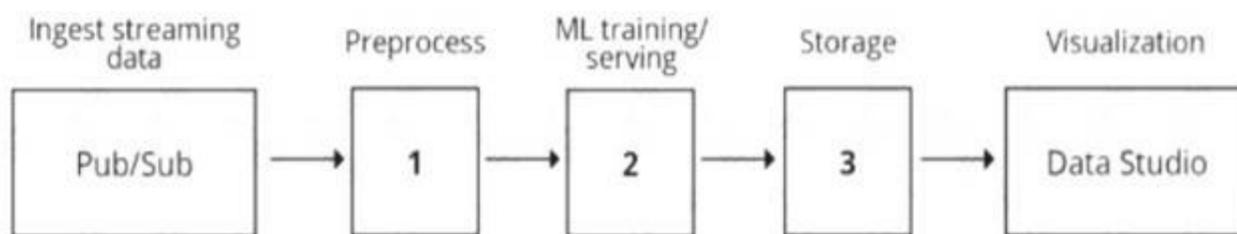
You recently joined a machine learning team that will soon release a new project. As a lead on the project, you are asked to determine the production readiness of the ML components. The team has already tested features and data, model development, and infrastructure. Which additional readiness check should you recommend to the team?

- A. Ensure that training is reproducible
- B. Ensure that all hyperparameters are tuned
- C. Ensure that model performance is monitored
- D. Ensure that feature expectations are captured in the schema

Answer: B

NEW QUESTION 5

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 6

You have a functioning end-to-end ML pipeline that involves tuning the hyperparameters of your ML model using AI Platform, and then using the best-tuned parameters for training. Hypertuning is taking longer than expected and is delaying the downstream processes. You want to speed up the tuning job without significantly compromising its effectiveness. Which actions should you take?

Choose 2 answers

- A. Decrease the number of parallel trials
- B. Decrease the range of floating-point values

- C. Set the early stopping parameter to TRUE
- D. Change the search algorithm from Bayesian search to random search.
- E. Decrease the maximum number of trials during subsequent training phases.

Answer: DE

NEW QUESTION 7

You have trained a text classification model in TensorFlow using AI Platform. You want to use the trained model for batch predictions on text data stored in BigQuery while minimizing computational overhead. What should you do?

- A. Export the model to BigQuery ML.
- B. Deploy and version the model on AI Platform.
- C. Use Dataflow with the SavedModel to read the data from BigQuery
- D. Submit a batch prediction job on AI Platform that points to the model location in Cloud Storage.

Answer: A

NEW QUESTION 8

You have trained a deep neural network model on Google Cloud. The model has low loss on the training data, but is performing worse on the validation data. You want the model to be resilient to overfitting. Which strategy should you use when retraining the model?

- A. Apply a dropout parameter of 0.2, and decrease the learning rate by a factor of 10
- B. Apply a L2 regularization parameter of 0.4, and decrease the learning rate by a factor of 10.
- C. Run a hyperparameter tuning job on AI Platform to optimize for the L2 regularization and dropout parameters
- D. Run a hyperparameter tuning job on AI Platform to optimize for the learning rate, and increase the number of neurons by a factor of 2.

Answer: A

NEW QUESTION 9

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 10

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', 'd', 'e', 'f']])
- D. data = json.dumps({"signature_name": "serving_default", "instances": [['a', 'b'], ['c', 'd'], ['e', 'f']])

Answer: B

NEW QUESTION 10

You work for a large technology company that wants to modernize their contact center. You have been asked to develop a solution to classify incoming calls by product so that requests can be more quickly routed to the correct support team. You have already transcribed the calls using the Speech-to-Text API. You want to minimize data preprocessing and development time. How should you build the model?

- A. Use the AI Platform Training built-in algorithms to create a custom model
- B. Use AutoML Natural Language to extract custom entities for classification
- C. Use the Cloud Natural Language API to extract custom entities for classification
- D. Build a custom model to identify the product keywords from the transcribed calls, and then run the keywords through a classification algorithm

Answer: A

NEW QUESTION 12

Your team is working on an NLP research project to predict political affiliation of authors based on articles they have written. You have a large training dataset that is structured like this:

```
AuthorA: Political Party A
  TextA1: [SentenceA11, SentenceA12, SentenceA13, ...]
  TextA2: [SentenceA21, SentenceA22, SentenceA23, ...]
  ...
AuthorB: Political Party B
  TextB1: [SentenceB11, SentenceB12, SentenceB13, ...]
  TextB2: [SentenceB21, SentenceB22, SentenceB23, ...]
  ...
AuthorC: Political Party B
  TextC1: [SentenceC11, SentenceC12, SentenceC13, ...]
  TextC2: [SentenceC21, SentenceC22, SentenceC23, ...]
  ...
AuthorD: Political Party A
  TextD1: [SentenceD11, SentenceD12, SentenceD13, ...]
  TextD2: [SentenceD21, SentenceD22, SentenceD23, ...]
  ...
...
```

A)

Distribute texts randomly across the train-test-eval subsets:

Train set: [TextA1, TextB2, ...]

Test set: [TextA2, TextC1, TextD2, ...]

Eval set: [TextB1, TextC2, TextD1, ...]

B)

Distribute authors randomly across the train-test-eval subsets: (*)

Train set: [TextA1, TextA2, TextD1, TextD2, ...]

Test set: [TextB1, TextB2, ...]

Eval set: [TextC1, TextC2, ...]

C)

Distribute sentences randomly across the train-test-eval subsets:

Train set: [SentenceA11, SentenceA21, Sentence B11, SentenceB21, SentenceC11, SentenceD21, ...]

Test set: [SentenceA12, SentenceA22, Sentence B12, SentenceC22, SentenceC12, SentenceD22, ...]

Eval set: [SentenceA13, SentenceA23, Sentence B13, SentenceC23, SentenceC13, SentenceD31, ...]

D)

Distribute paragraphs of texts (i.e., chunks of consecutive sentences) across the train-test-eval subsets:

Train set: [SentenceA11, SentenceA12, Sentence D11, SentenceD12, ...]

Test set: [SentenceA13, SentenceB13, Sentence B21, SentenceD23, SentenceC12, SentenceD13, ...]

Eval set: [SentenceA11, SentenceA22, Sentence B13, SentenceD22, SentenceC23, SentenceD11, ...]

A. Option A

B. Option B

C. Option C

D. Option D

Answer: D

NEW QUESTION 15

Your data science team needs to rapidly experiment with various features, model architectures, and hyperparameters. They need to track the accuracy metrics for various experiments and use an API to query the metrics over time. What should they use to track and report their experiments while minimizing manual effort?

A. Use Kubeflow Pipelines to execute the experiments Export the metrics file, and query the results using the Kubeflow Pipelines API.

B. Use AI Platform Training to execute the experiments Write the accuracy metrics to BigQuery, and query the results using the BigQueryAPI.

C. Use AI Platform Training to execute the experiments Write the accuracy metrics to Cloud Monitoring, and query the results using the Monitoring API.

D. Use AI Platform Notebooks to execute the experiment

E. Collect the results in a shared Google Sheetsfile, and query the results using the Google Sheets API

Answer: A

NEW QUESTION 17

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 20

Your team needs to build a model that predicts whether images contain a driver's license, passport, or credit card. The data engineering team already built the pipeline and generated a dataset composed of 10,000 images with driver's licenses, 1,000 images with passports, and 1,000 images with credit cards. You now have to train a model with the following label map: ['driverslicense', 'passport', 'credit_card']. Which loss function should you use?

A. Categorical hinge

B. Binary cross-entropy

C. Categorical cross-entropy

D. Sparse categorical cross-entropy

Answer: B

NEW QUESTION 25

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 30

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