Google

## Exam Questions Professional-Machine-Learning-Engineer

Google Professional Machine Learning Engineer

NEW QUESTION 1

You are designing an architecture with a serveress ML system to enrich customer support tickets with informative metadata before they are routed to a support agent. You need a set of models to predict ticket priority, predict ticket resolution time, and perform sentiment analysis to help agents make strategic decisions when they process support requests. Tickets are not expected to have any domain-specific terms or jargon.

The proposed architecture has the following flow:
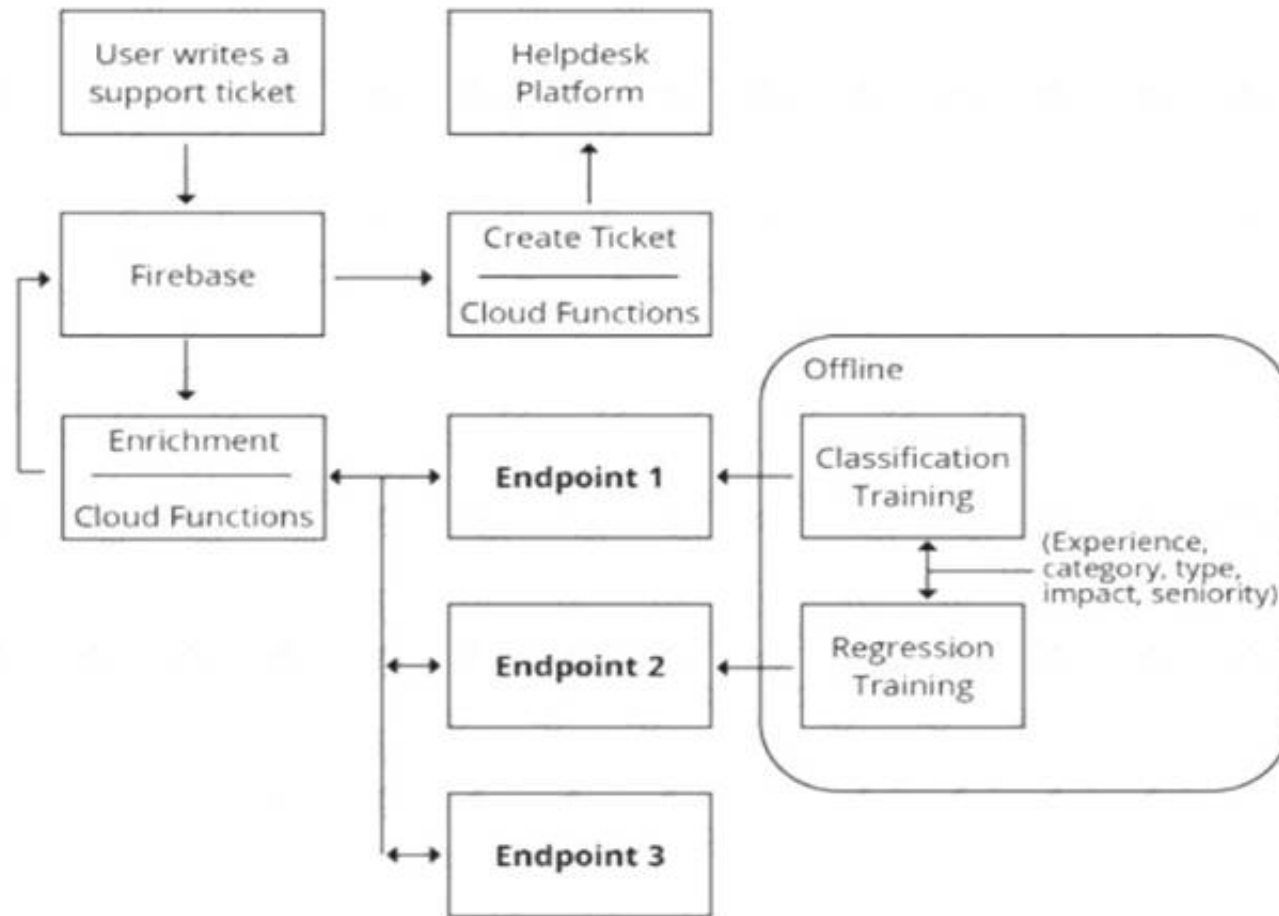
Which endpoints should the Enrichment Cloud Functions call?

A. 1 = AI Platform, 2 = AI Platform, 3 = AutoML Vision
B. 1 = AI Platform, 2 = AI Platform, 3 = AutoML Natural Language
C. 1 = AI Platform, 2 = AI Platform, 3 = Cloud Natural Language API
D. 1 = cloud Natural Language API, 2 = AI Platform, 3 = Cloud Vision API

Answer: B

NEW QUESTION 2

Your organization wants to make its internal shuttle service route more efficient. The shuttles currently stop at all pick-up points across the city every 30 minutes between 7 am and 10 am. The development team has already built an application on Google Kubernetes Engine that requires users to confirm their presence and shuttle station one day in advance. What approach should you take?

A. 1. Build a tree-based regression model that predicts how many passengers will be picked up at each shuttle station.* 2. Dispatch an appropriately sized shuttle and provide the map with the required stops based on the prediction.
B. 1. Build a tree-based classification model that predicts whether the shuttle should pick up passengers at each shuttle station.* 2. Dispatch an available shuttle and provide the map with the required stops based on the prediction
C. 1. Define the optimal route as the shortest route that passes by all shuttle stations with confirmed attendance at the given time under capacity constraints.* 2 Dispatch an appropriately sized shuttle and indicate the required stops on the map
D. 1. Build a reinforcement learning model with tree-based classification models that predict the presenceof passengers at shuttle stops as agents and a reward function around a distance-based metric* 2. Dispatch an appropriately sized shuttle and provide the map with the required stops based on the simulated outcome.

Answer: D

NEW QUESTION 3

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 4

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 5
You work for a large hotel chain and have been asked to assist the marketing team in gathering predictions for a targeted marketing strategy. You need to make predictions about user lifetime value (LTV) over the next 30 days so that marketing can be adjusted accordingly. The customer dataset is in BigQuery, and you are preparing the tabular data for training with AutoML Tables. This data has a time signal that is spread across multiple columns. How should you ensure that AutoML fits the best model to your data?

A. Manually combine all columns that contain a time signal into an array Allow AutoML to interpret this array appropriatelyChoose an automatic data split across the training, validation, and testing sets
B. Submit the data for training without performing any manual transformations Allow AutoML to handle the appropriatetransformations Choose an automatic data split across the training, validation, and testing sets
C. Submit the data for training without performing any manual transformations, and indicate an appropriate column as the Time column Allow AutoML to split your data based on the time signal provided, and reserve the more recent data for the validation and testing sets
D. Submit the data for training without performing any manual transformations Use the columns that have a time signal to manually split your data Ensure that the data in your validation set is from 30 days after the data in your training set and that the data in your testing set is from 30 days after your validation set

Answer: D

NEW QUESTION 6
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 7
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 8
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 9
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 10
You have deployed multiple versions of an image classification model on AI Platform. You want to monitor the performance of the model versions overtime. How should you perform this comparison?

A. Compare the loss performance for each model on a held-out dataset.
B. Compare the loss performance for each model on the validation data
C. Compare the receiver operating characteristic (ROC) curve for each model using the What-If Tool
D. Compare the mean average precision across the models using the Continuous Evaluation feature

Answer: B

NEW QUESTION 10

Your team is building an application for a global bank that will be used by millions of customers. You built a forecasting model that predicts customers1 account balances 3 days in the future. Your team will use the results in a new feature that will notify users when their account balance is likely to drop below $25. How should you serve your predictions?

A. 1. Create a Pub/Sub topic for each user* 2 Deploy a Cloud Function that sends a notification when your model predicts that a user's account balance will drop below the $25 threshold.
B. 1. Create a Pub/Sub topic for each user* 2. Deploy an application on the App Engine standard environment that sends a notification when your model predicts thata user's account balance will drop below the $25 threshold
C. 1. Build a notification system on Firebase* 2. Register each user with a user ID on the Firebase Cloud Messaging server, which sends a notification when the average of all account balance predictions drops below the $25 threshold
D. 1 Build a notification system on Firebase* 2. Register each user with a user ID on the Firebase Cloud Messaging server, which sends a notification when your model predicts that a user's account balance will drop below the $25 threshold

Answer: B

NEW QUESTION 13

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 Pll 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 17

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 19

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 Datase
C. from_tensor_slices{).
D. Convert the images to tf .Tensor Objects, and then run t
E. dat
F. Datase
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 20

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 25
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 28
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 29
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 31
As the lead ML Engineer for your company, you are responsible for building ML models to digitize scanned customer forms. You have developed a TensorFlow model that converts the scanned images into text and stores them in Cloud Storage. You need to use your ML model on the aggregated data collected at the end of each day with minimal manual intervention. What should you do?

A. Use the batch prediction functionality of AI Platform
B. Create a serving pipeline in Compute Engine for prediction
C. Use Cloud Functions for prediction each time a new data point is ingested
D. Deploy the model on AI Platform and create a version of it for online inference.

Answer: D

NEW QUESTION 34
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 36
You were asked to investigate failures of a production line component based on sensor readings. After receiving the dataset, you discover that less than 1% of the readings are positive examples representing failure incidents. You have tried to train several classification models, but none of them converge. How should you resolve the class imbalance problem?

A. Use the class distribution to generate 10% positive examples
B. Use a convolutional neural network with max pooling and softmax activation
C. Downsample the data with upweighting to create a sample with 10% positive examples
D. Remove negative examples until the numbers of positive and negative examples are equal

Answer: D

NEW QUESTION 37
You work for an advertising company and want to understand the effectiveness of your company's latest advertising campaign. You have streamed 500 MB of campaign data into BigQuery. You want to query the table, and then manipulate the results of that query with a pandas dataframe in an AI Platform notebook. What should you do?

A. Use AI Platform Notebooks' BigQuery cell magic to query the data, and ingest the results as a pandas dataframe
B. Export your table as a CSV file from BigQuery to Google Drive, and use the Google Drive API to ingest the file into your notebook instance
C. Download your table from BigQuery as a local CSV file, and upload it to your AI Platform notebook instance Use panda
D. read_csv to ingest the file as a pandas dataframe
E. From a bash cell in your AI Platform notebook, use the bq extract command to export the table as a CSV file to Cloud Storage, and then use gsutii cp to copy the data into the notebook Use panda
F. read_csv to ingest the file as a pandas dataframe

Answer: B

NEW QUESTION 42
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 47
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 48

You have a demand forecasting pipeline in production that uses Dataflow to preprocess raw data prior to model training and prediction. During preprocessing, you employ Z-score normalization on data stored in BigQuery and write it back to BigQuery. New training data is added every week. You want to make the process more efficient by minimizing computation time and manual intervention. What should you do?

A. Normalize the data using Google Kubernetes Engine
B. Translate the normalization algorithm into SQL for use with BigQuery
C. Use the normalizer_fn argument in TensorFlow's Feature Column API
D. Normalize the data with Apache Spark using the Dataproc connector for BigQuery

Answer: B

NEW QUESTION 53

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 58

You work for a public transportation company and need to build a model to estimate delay times for multiple transportation routes. Predictions are served directly to users in an app in real time. Because different seasons and population increases impact the data relevance, you will retrain the model every month. You want to follow Google-recommended best practices. How should you configure the end-to-end architecture of the predictive model?

A. Configure Kubeflow Pipelines to schedule your multi-step workflow from training to deploying your model.
B. Use a model trained and deployed on BigQuery ML and trigger retraining with the scheduled query feature in BigQuery
C. Write a Cloud Functions script that launches a training and deploying job on Ai Platform that is triggered by Cloud Scheduler
D. Use Cloud Composer to programmatically schedule a Dataflow job that executes the workflow from training to deploying your model

Answer: B

NEW QUESTION 62

You are building a linear model with over 100 input features, all with values between -1 and 1. You suspect that many features are non-informative. You want to remove the non-informative features from your model while keeping the informative ones in their original form. Which technique should you use?

A. Use Principal Component Analysis to eliminate the least informative features.
B. Use L1 regularization to reduce the coefficients of uninformative features to 0.
C. After building your model, use Shapley values to determine which features are the most informative.
D. Use an iterative dropout technique to identify which features do not degrade the model when removed.

Answer: C

NEW QUESTION 64

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 66

You are an ML engineer in the contact center of a large enterprise. You need to build a sentiment analysis tool that predicts customer sentiment from recorded phone conversations. You need to identify the best approach to building a model while ensuring that the gender, age, and cultural differences of the customers who called the contact center do not impact any stage of the model development pipeline and results. What should you do?

A. Extract sentiment directly from the voice recordings
B. Convert the speech to text and build a model based on the words
C. Convert the speech to text and extract sentiments based on the sentences
D. Convert the speech to text and extract sentiment using syntactical analysis

Answer: C

NEW QUESTION 69
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