# 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:
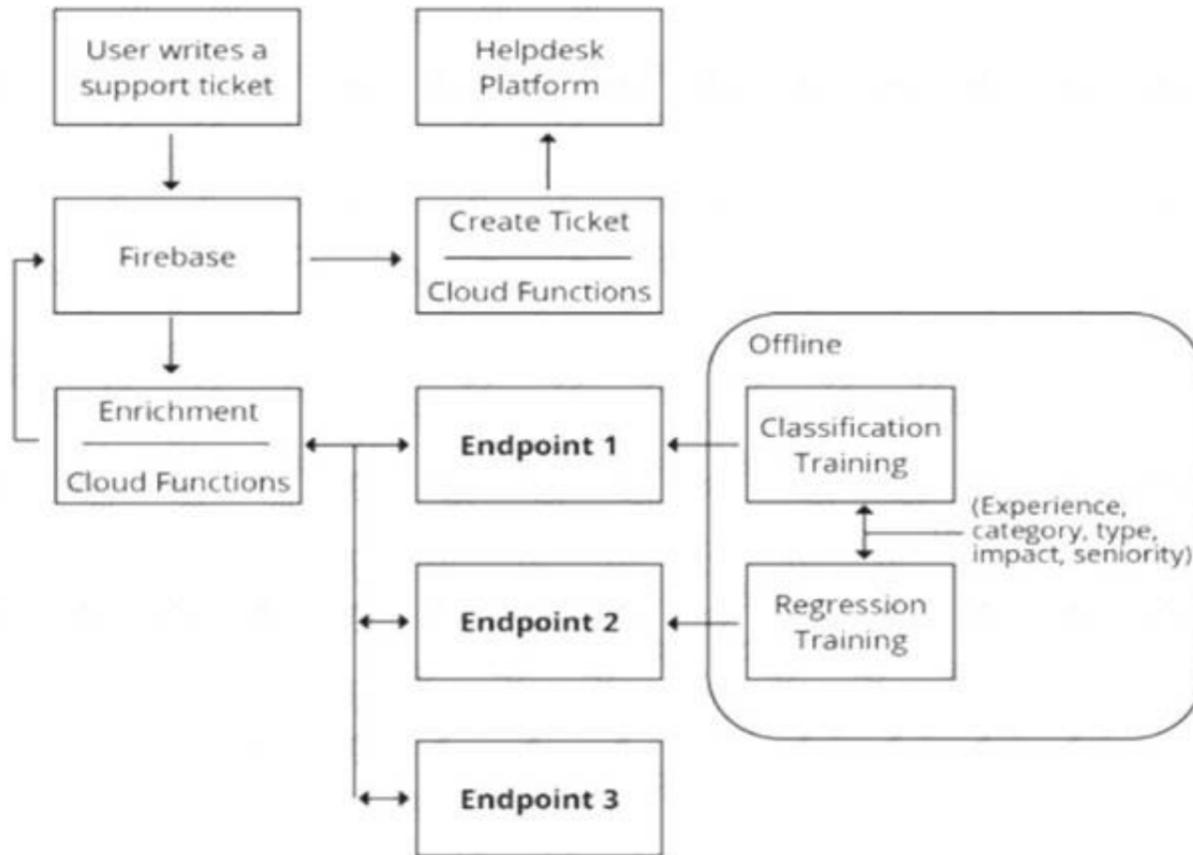
Which endpoints should the Enrichment Cloud Functions call?

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
You want to rebuild your ML pipeline for structured data on Google Cloud. You are using PySpark to conduct data transformations at scale, but your pipelines are taking over 12 hours to run. To speed up development and pipeline run time, you want to use a serverless tool and SQL syntax. You have already moved your raw data into Cloud Storage. How should you build the pipeline on Google Cloud while meeting the speed and processing requirements?

A. Use Data Fusion's GUI to build the transformation pipelines, and then write the data into BigQuery
B. Convert your PySpark into SparkSQL queries to transform the data and then run your pipeline on Dataproc to write the data into BigQuery.
C. Ingest your data into Cloud SQL convert your PySpark commands into SQL queries to transform the data, and then use federated queries from BigQuery for machine learning
D. Ingest your data into BigQuery using BigQuery Load, convert your PySpark commands into BigQuery SQL queries to transform the data, and then write the transformations to a new table

Answer: B

NEW QUESTION 3
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 4
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 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
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 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 8
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 9
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 10
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?
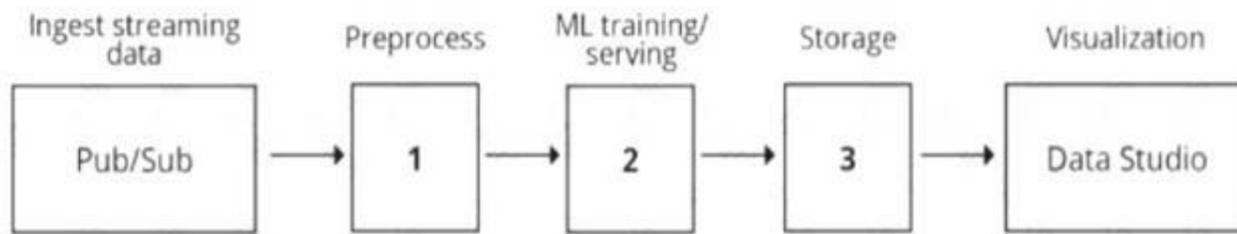
A. 1 = Dataflow, 2 - AI Platform, 3 = BigQuery
B. 1 = DataProc, 2 = AutoML, 3 = Cloud Bigtable
C. 1 = BigQuery, 2 = AutoML, 3 = Cloud Functions
D. 1 = BigQuery, 2 = AI Platform, 3 = Cloud Storage

Answer: C

NEW QUESTION 10
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 12
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 15
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 12 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 18
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 20
You are training a TensorFlow model on a structured data set with 100 billion records stored in several CSV files. You need to improve the input/output execution performance. What should you do?

A. Load the data into BigQuery and read the data from BigQuery.
B. Load the data into Cloud Bigtable, and read the data from Bigtable
C. Convert the CSV files into shards of TFRecords, and store the data in Cloud Storage
D. Convert the CSV files into shards of TFRecords, and store the data in the Hadoop Distributed File System (HDFS)

Answer: B

NEW QUESTION 22
You are an ML engineer at a regulated insurance company. You are asked to develop an insurance approval model that accepts or rejects insurance applications from potential customers. What factors should you consider before building the model?

A. Redaction, reproducibility, and explainability
B. Traceability, reproducibility, and explainability
C. Federated learning, reproducibility, and explainability
D. Differential privacy federated learning, and explainability

Answer: B

NEW QUESTION 23
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 28
Your team trained and tested a DNN regression model with good results. Six months after deployment, the model is performing poorly due to a change in the distribution of the input data. How should you address the input differences in production?

A. Create alerts to monitor for skew, and retrain the model.
B. Perform feature selection on the model, and retrain the model with fewer features
C. Retrain the model, and select an L2 regularization parameter with a hyperparameter tuning service
D. Perform feature selection on the model, and retrain the model on a monthly basis with fewer features

Answer: C

NEW QUESTION 31
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 34
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 39
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 44
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 47
Your organization's call center has asked you to develop a model that analyzes customer sentiments in each call. The call center receives over one million calls daily, and data is stored in Cloud Storage. The data collected must not leave the region in which the call originated, and no Personally Identifiable Information (PII) can be stored or analyzed. The data science team has a third-party tool for visualization and access which requires a SQL ANSI-2011 compliant interface. You need to select components for data processing and for analytics. How should the data pipeline be designed?
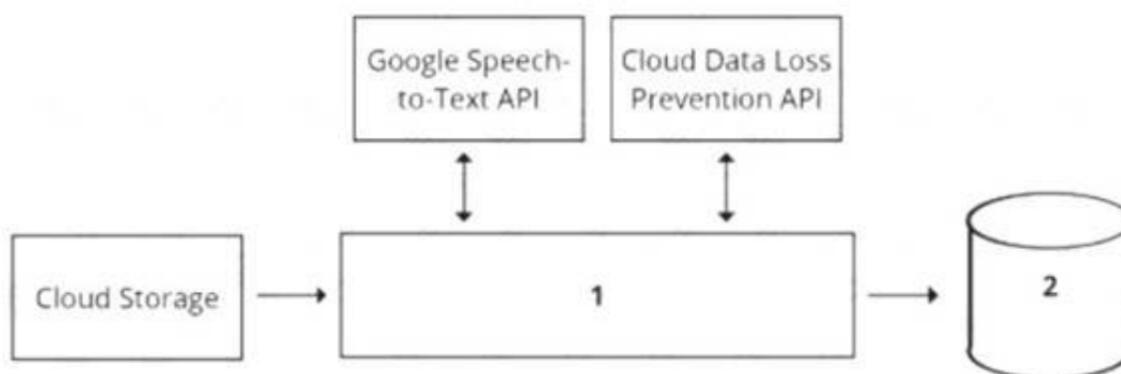
A. 1 = Dataflow, 2 = BigQuery
B. 1 = Pub/Sub, 2 = Datastore
C. 1 = Dataflow, 2 = Cloud SQL
D. 1 = Cloud Function, 2 = Cloud SQL

Answer: D

NEW QUESTION 50
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 Repositorie
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 54
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