

Google GCP-MLE

Machine Learning Engineer

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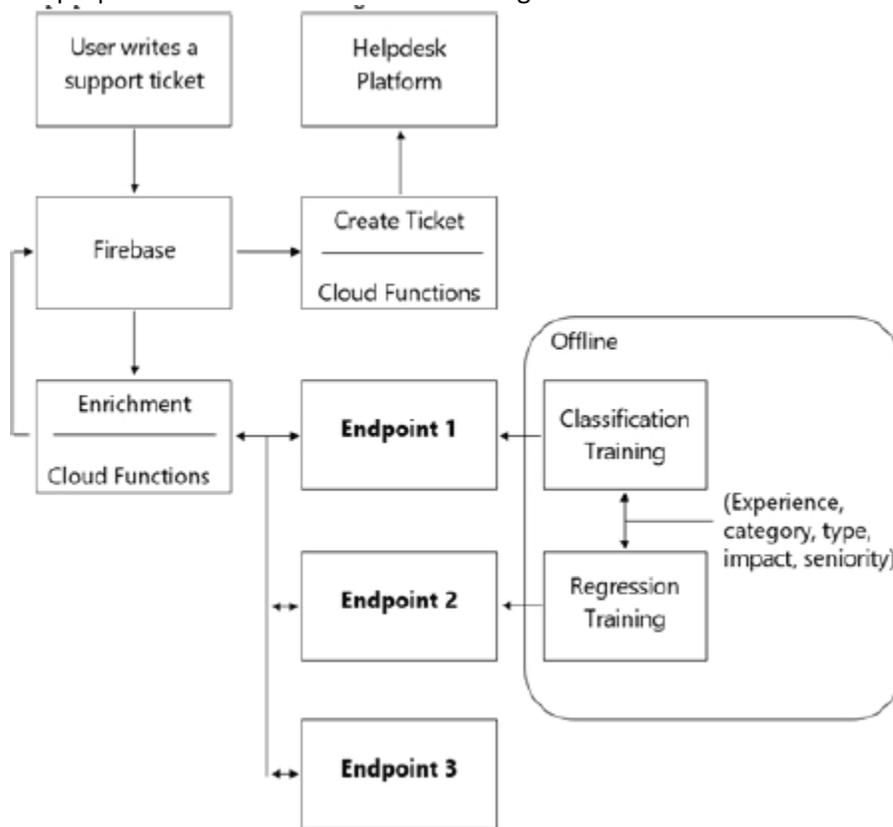
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Question: 1

You are designing an architecture with a serverless 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

Question: 2

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.

a. 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: D

Question: 3

You built and manage a production system that is responsible for predicting sales numbers. Model accuracy is crucial, because the production model is required to keep up with market changes. Since being deployed to production, the model hasn't changed; however the accuracy of the model has steadily deteriorated.

What issue is most likely causing the steady decline in model accuracy?

- A. Poor data quality
- B. Lack of model retraining
- C. Too few layers in the model for capturing information
- D. Incorrect data split ratio during model training, evaluation, validation, and test

Answer: D

Question: 4

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 `Dataset.from_tensor_slices()`.
- C. Convert the images to `tf.Tensor` objects, and then run `tf.data.Dataset.from_tensors()`.
- D. Convert the images into `TFRecords`, store the images in Cloud Storage, and then use the `tf.data` API to read the images for training.

Answer: B

Explanation:

https://www.tensorflow.org/api_docs/python/tf/data/Dataset

Question: 5

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 model's 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

Explanation:

<https://www.kdnuggets.com/2018/03/5-things-reinforcement-learning.html>

Question: 6

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 Cloud, 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. 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

Question: 7

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 20 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 appropriately. Choose 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 appropriate transformations. 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 sets from 30 days after your validation set.

Answer: D

Question: 8

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. Execute the unit tests using a Cloud Function that is triggered when messages are sent to the Pub/Sub topic.

Answer: B

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: C

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 over time. 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

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