

Exam Questions Professional-Machine-Learning-Engineer

Google Professional Machine Learning Engineer

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NEW QUESTION 1

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 2

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 3

You work with a data engineering team that has developed a pipeline to clean your dataset and save it in a Cloud Storage bucket. You have created an ML model and want to use the data to refresh your model as soon as new data is available. As part of your CI/CD workflow, you want to automatically run a Kubeflow Pipelines training job on Google Kubernetes Engine (GKE). How should you architect this workflow?

- A. Configure your pipeline with Dataflow, which saves the files in Cloud Storage After the file is saved, start the training job on a GKE cluster
- B. Use App Engine to create a lightweight python client that continuously polls Cloud Storage for new files As soon as a file arrives, initiate the training job
- C. Configure a Cloud Storage trigger to send a message to a Pub/Sub topic when a new file is available in a storage bucket
- D. Use a Pub/Sub-triggered Cloud Function to start the training job on a GKE cluster
- E. Use Cloud Scheduler to schedule jobs at a regular interval
- F. For the first step of the job
- G. check the timestamp of objects in your Cloud Storage bucket If there are no new files since the last run, abort the job.

Answer: A

NEW QUESTION 4

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 5

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 6

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 7

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 8

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 9

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 10

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 10

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 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 20

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 21

You work on a growing team of more than 50 data scientists who all use AI Platform. You are designing a strategy to organize your jobs, models, and versions in a clean and scalable way. Which strategy should you choose?

- A. Set up restrictive IAM permissions on the AI Platform notebooks so that only a single user or group can access a given instance.
- B. Separate each data scientist's work into a different project to ensure that the jobs, models, and versions created by each data scientist are accessible only to that user.
- C. Use labels to organize resources into descriptive categorie
- D. Apply a label to each created resource so that users can filter the results by label when viewing or monitoring the resources
- E. Set up a BigQuery sink for Cloud Logging logs that is appropriately filtered to capture information about AI Platform resource usage In BigQuery create a SQL view that maps users to the resources they are using.

Answer: B

NEW QUESTION 24

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: ['driversjicense', '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

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