

Professional-Machine-Learning-Engineer Latest Dumps Pdf - Professional-Machine-Learning-Engineer Valid Braindumps Pdf



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> Vendor: Google

> Exam Code: Professional-Machine-Learning-Engineer

> Exam Name: Google Professional Machine Learning Engineer

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QUESTION 172

You are an ML engineer at a manufacturing company. You are creating a classification model for a predictive maintenance use case. You need to predict whether a crucial machine will fail in the next three days so that the repair crew has enough time to fix the machine before it breaks. Regular maintenance of the machine is relatively inexpensive, but a failure would be very costly. You have trained several binary classifiers to predict whether the machine will fail, where a prediction of 1 means that the ML model predicts a failure. You are now evaluating each model on an evaluation dataset. You want to choose a model that prioritizes detection while ensuring that more than 50% of the maintenance jobs triggered by your model address an imminent machine failure. Which model should you choose?

- A. The model with the highest area under the receiver operating characteristic curve (AUC ROC) and precision greater than 0.5
- B. The model with the lowest root mean squared error (RMSE) and recall greater than 0.5.
- C. The model with the highest recall where precision is greater than 0.5.
- D. The model with the highest precision where recall is greater than 0.5.

Answer: C

Explanation:

Priority is to detect (Pointing to Recall) and correctly detect (more than 50% - pointing to Precision).

QUESTION 173

You built a custom ML model using scikit-learn. Training time is taking longer than expected. You decide to migrate your model to Vertex AI Training, and you want to improve the model's training time. What should you try out first?

- A. Train your model in a distributed mode using multiple Compute Engine VMs.
- B. Train your model using Vertex AI Training with CPUs.
- C. Migrate your model to TensorFlow, and train it using Vertex AI Training.
- D. Train your model using Vertex AI Training with GPUs.

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Google Professional Machine Learning Engineer certification is highly valued in the industry and can lead to excellent career opportunities for individuals with expertise in this field. Google Professional Machine Learning Engineer certification is a testament to a candidate's ability to design, develop, and deploy machine learning models, and it can be a valuable asset for anyone seeking a career in machine learning or data science. Additionally, the certification demonstrates a candidate's knowledge of Google Cloud technologies and their ability to use them effectively to solve real-world problems.

Google Professional Machine Learning Engineer Certification Exam is a highly sought-after certification that demonstrates a professional's proficiency in designing and deploying machine learning models on Google Cloud Platform. Google Professional Machine Learning Engineer certification is designed for professionals who have experience in machine learning and are looking to advance their career in this field. Professional-Machine-Learning-Engineer Exam is designed to test the candidate's knowledge and skills in various aspects of machine learning, such as data preparation, model training, model evaluation, and optimization.

Google Professional Machine Learning Engineer Certification Exam is a challenging exam that requires extensive preparation and study. Professional-Machine-Learning-Engineer exam consists of multiple-choice questions, coding exercises, and scenario-based questions. Professional-Machine-Learning-Engineer exam is designed to test the practical knowledge and skills of candidates in real-world scenarios. Candidates who pass the exam demonstrate their expertise in the field of machine learning and are recognized as certified professionals by Google Cloud.

Google Professional Machine Learning Engineer Sample Questions (Q253-Q258):

NEW QUESTION # 253

You are training a Resnet model on AI Platform using TPUs to visually categorize types of defects in automobile engines. You capture the training profile using the Cloud TPU profiler plugin and observe that it is highly input-bound. You want to reduce the bottleneck and speed up your model training process. Which modifications should you make to the `tf.data` dataset?

Choose 2 answers

- A. Use the **interleave option for reading data**
- B. Decrease the batch size argument in your transformation
- C. Reduce the value of the repeat parameter
- D. Increase the buffer size for the shuffle option.
- E. **Set the prefetch option equal to the training batch size**

Answer: A,E

NEW QUESTION # 254

You are training a Resnet model on AI Platform using TPUs to visually categorize types of defects in automobile engines. You capture the training profile using the Cloud TPU profiler plugin and observe that it is highly input-bound. You want to reduce the bottleneck and speed up your model training process. Which modifications should you make to the `tf.data` dataset?

Choose 2 answers

- A. Use the **interleave option for reading data**
- B. Decrease the batch size argument in your transformation
- C. Reduce the value of the repeat parameter
- D. Increase the buffer size for the shuffle option.
- E. **Set the prefetch option equal to the training batch size**

Answer: A,E

Explanation:

The `tf.data` dataset is a TensorFlow API that provides a way to create and manipulate data pipelines for machine learning. The `tf.data` dataset allows you to apply various transformations to the data, such as reading, shuffling, batching, prefetching, and interleaving. These transformations can affect the performance and efficiency of the model training process¹. One of the common performance issues in model training is input-bound, which means that the model is waiting for the input data to be ready and is not fully utilizing the computational resources. Input-bound can be caused by slow data loading, insufficient parallelism, or large data size. Input-bound can be detected by using the Cloud TPU profiler plugin, which is a tool that helps you analyze the performance of your model on Cloud TPUs. The Cloud TPU profiler plugin can show you the percentage of time that the TPU cores are idle, which indicates input-bound². To reduce the input-bound bottleneck and speed up the model training process, you can make some modifications to the `tf.data` dataset. Two of the modifications that can help are:

- * Use the `interleave` option for reading data. The `interleave` option allows you to read data from multiple files in parallel and interleave their records. This can improve the data loading speed and reduce the idle time of the TPU cores. The `interleave` option can be applied by using the `tf.data.Dataset.interleave` method, which takes a function that returns a dataset for each input element, and a number of parallel calls³.
- * Set the `prefetch` option equal to the training batch size. The `prefetch` option allows you to prefetch the next batch of data while the current batch is being processed by the model. This can reduce the latency between batches and improve the throughput of the model training. The `prefetch` option can be applied by using the `tf.data.Dataset.prefetch` method, which takes a buffer size argument. The buffer size should be equal to the training batch size, which is the number of examples per batch⁴. The other options are not effective or counterproductive. Reducing the value of the `repeat` parameter will reduce the number of epochs, which is the number of times the model sees the entire dataset. This can affect the model's accuracy and convergence. Increasing the buffer size for the `shuffle` option will increase the randomness of the data, but also increase the memory usage and the data loading time. Decreasing the batch size argument in your transformation will reduce the number of examples per batch, which can affect the model's stability and performance.

References: 1: `tf.data`: Build TensorFlow input pipelines 2: Cloud TPU Tools in TensorBoard 3: `tf.data.Dataset.interleave` 4: `tf.data.Dataset.prefetch` : [Better performance with the `tf.data` API]

NEW QUESTION # 255

You are working on a system log anomaly detection model for a cybersecurity organization. You have developed the model using TensorFlow, and you plan to use it for real-time prediction. You need to create a Dataflow pipeline to ingest data via Pub/Sub and write the results to BigQuery. You want to minimize the serving latency as much as possible. What should you do?

- A. Deploy the model in a TFServing container on Google Kubernetes Engine, and invoke it in the Dataflow job.
- B. Containerize the model prediction logic in Cloud Run, which is invoked by Dataflow.
- **C. Load the model directly into the Dataflow job as a dependency, and use it for prediction.**
- D. Deploy the model to a Vertex AI endpoint, and invoke this endpoint in the Dataflow job.

Answer: C

Explanation:

The best option for creating a Dataflow pipeline for real-time anomaly detection is to load the model directly into the Dataflow job as a dependency, and use it for prediction. This option has the following advantages:

- * It minimizes the serving latency, as the model prediction logic is executed within the same Dataflow pipeline that ingests and processes the data. There is no need to invoke external services or containers, which can introduce network overhead and latency.
- * It simplifies the deployment and management of the model, as the model is packaged with the Dataflow job and does not require a separate service or container. The model can be updated by redeploying the Dataflow job with a new model version.
- * It leverages the scalability and reliability of Dataflow, as the model prediction logic can scale up or down with the data volume and handle failures and retries automatically.

The other options are less optimal for the following reasons:

- * Option A: Containerizing the model prediction logic in Cloud Run, which is invoked by Dataflow, introduces additional latency and complexity. Cloud Run is a serverless platform that runs stateless containers, which means that the model prediction logic needs to be initialized and loaded every time a request is made. This can increase the cold start latency and reduce the throughput. Moreover, Cloud Run has a limit on the number of concurrent requests per container, which can affect the scalability of the model prediction logic. Additionally, this option requires managing two separate services: the Dataflow pipeline and the Cloud Run container.
- * Option C: Deploying the model to a Vertex AI endpoint, and invoking this endpoint in the Dataflow job, also introduces additional latency and complexity. Vertex AI is a managed service that provides various tools and features for machine learning, such as training, tuning, serving, and monitoring. However, invoking a Vertex AI endpoint from a Dataflow job requires making an HTTP request, which can incur network overhead and latency. Moreover, this option requires managing two separate services: the Dataflow pipeline and the Vertex AI endpoint.
- * Option D: Deploying the model in a TFServing container on Google Kubernetes Engine, and invoking it in the Dataflow job, also introduces additional latency and complexity. TFServing is a high-performance serving system for TensorFlow models, which can handle multiple versions and variants of a model.

However, invoking a TFServing container from a Dataflow job requires making a gRPC or REST request, which can incur network overhead and latency. Moreover, this option requires managing two separate services: the Dataflow pipeline and the Google Kubernetes Engine cluster.

References:

- * [Dataflow documentation]
- * [TensorFlow documentation]
- * [Cloud Run documentation]
- * [Vertex AI documentation]
- * [TFServing documentation]

NEW QUESTION # 256

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. Update your test dataset with images of the newer products when your evaluation metrics drop below a pre-decided threshold.
- B. Replace your test dataset with images of the newer products when they are introduced to retraining.
- C. Keep the original test dataset unchanged even if newer products are incorporated into retraining
- **D. Extend your test dataset with images of the newer products when they are introduced to retraining**

Answer: D

Explanation:

The test dataset is used to evaluate the performance of the ML model on unseen data. It should reflect the distribution of the data that the model will encounter in production. Therefore, if the retraining data includes new products, the test dataset should also be extended with images of those products to ensure that the model can generalize well to them. Keeping the original test dataset unchanged or replacing it entirely with images of the new products would not capture the diversity of the data that the model needs to handle. Updating the test dataset only when the evaluation metrics drop below a threshold would be reactive rather than proactive, and might result in poor user experience if the model fails to recognize the new products. Reference:

Continuous evaluation documentation

Preparing and using test sets

NEW QUESTION # 257

Your team frequently creates new ML models and runs experiments. Your team pushes code to a single repository hosted on Cloud Source Repositories. You want to create a continuous integration pipeline that automatically retrains the models whenever there is any modification of the code. What should be your first step to set up the CI pipeline?

- **A. Configure a Cloud Build trigger with the event set as "Push to a branch"**
- B. Configure a Cloud Function that builds the repository each time there is a code change.
- C. Configure a Cloud Function that builds the repository each time a new branch is created.
- D. Configure a Cloud Build trigger with the event set as "Pull Request"

Answer: A

NEW QUESTION # 258

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