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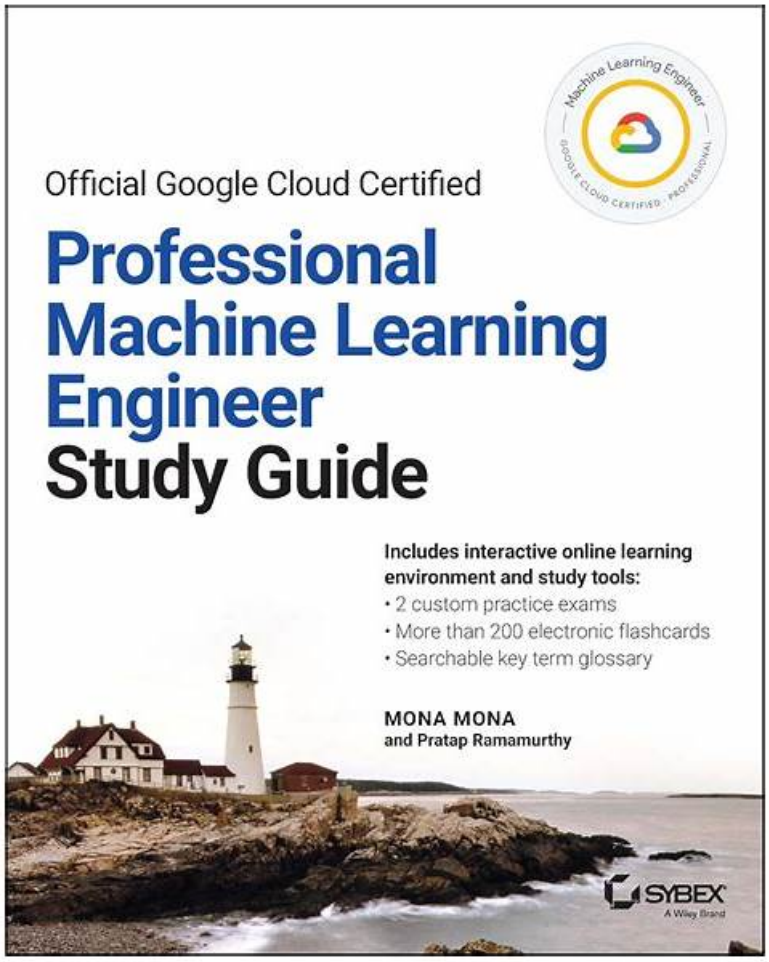

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Google Professional Machine Learning Engineer certification exam is designed to test individuals' proficiency in designing and developing scalable machine learning models on Google Cloud Platform. Professional-Machine-Learning-Engineer exam is intended for professionals with experience in implementing and managing machine learning models on the Google Cloud Platform. Google Professional Machine Learning Engineer certification exam focuses on assessing the individual's ability to design, develop, train, evaluate, and deploy machine learning models.

Google Professional Machine Learning Engineer Exam is a certification program offered by Google to individuals who possess the necessary skills and expertise in machine learning. Google Professional Machine Learning Engineer certification is designed to assess a candidate's ability to apply machine learning techniques to real-world problems and develop scalable, reliable, and efficient machine learning systems. Professional-Machine-Learning-Engineer Exam is intended for those who are already proficient in machine learning and are looking to validate their skills and knowledge in this field.

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To earn the Google Professional Machine Learning Engineer certification, candidates must pass a rigorous exam that tests their ability to design, implement, and optimize machine learning models using Google Cloud Platform. Professional-Machine-Learning-Engineer Exam covers a wide range of topics, including data preparation, model training, model evaluation, and deployment strategies. In addition, the exam also tests candidates' ability to optimize models for performance and scalability, as well as their knowledge of ethical and responsible AI practices.

Google Professional Machine Learning Engineer Sample Questions (Q47-Q52):

NEW QUESTION # 47
You have trained an XGBoost model that you plan to deploy on Vertex Al for online prediction. You are now uploading your model to Vertex Al Model Registry, and you need to configure the explanation method that will serve online prediction requests to be returned with minimal latency. You also want to be alerted when feature attributions of the model meaningfully change over time. What should you do?

- A. 1 Specify Integrated Gradients as the explanation method with a path count of 5.
  2 Deploy the model to Vertex Al Endpoints.
  3. Create a Model Monitoring job that uses prediction drift as the monitoring objective.
- B. 1 Specify Integrated Gradients as the explanation method with a path count of 50.
  2. Deploy the model to Vertex Al Endpoints.
  3 Create a Model Monitoring job that uses training-serving skew as the monitoring objective.
- C. 1 Specify sampled Shapley as the explanation method with a path count of 5.
  2 Deploy the model to Vertex Al Endpoints.
  3. Create a Model Monitoring job that uses prediction drift as the monitoring objective.
- D. 1. Specify sampled Shapley as the explanation method with a path count of 50.
  2. Deploy the model to Vertex Al Endpoints.
  3. Create a Model Monitoring job that uses training-serving skew as the monitoring objective.

Answer: C

Explanation:
Sampled Shapley is a fast and scalable approximation of the Shapley value, which is a game-theoretic concept that measures the contribution of each feature to the model prediction. Sampled Shapley is suitable for online prediction requests, as it can return feature attributions with minimal latency. The path count parameter controls the number of samples used to estimate the Shapley value, and a lower value means faster computation. Integrated Gradients is another explanation method that computes the average gradient along the path from a baseline input to the actual input. Integrated Gradients is more accurate than Sampled Shapley, but also more computationally intensive. Therefore, it is not recommended for online prediction requests, especially with a high path count. Prediction drift is the change in the distribution of feature values or labels over time. It can affect the performance and accuracy of the model, and may require retraining or redeploying the model. Vertex AI Model Monitoring allows you to monitor prediction drift on your deployed models and endpoints, and set up alerts and notifications when the drift exceeds a certain threshold. You can specify an email address to receive the notifications, and use the information to retrigger the training pipeline and deploy an updated version of your model. This is the most direct and convenient way to achieve your goal.
Training-serving skew is the difference between the data used for training the model and the data used for serving the model. It can also affect the performance and accuracy of the model, and may indicate data quality issues or model staleness. Vertex AI Model Monitoring allows you to monitor training-serving skew on your deployed models and endpoints, and set up alerts and notifications when the skew exceeds a certain threshold.
However, this is not relevant to the question, as the question is about the feature attributions of the model, not the data distribution.
References:

* Vertex AI: Explanation methods
* Vertex AI: Configuring explanations
* Vertex AI: Monitoring prediction drift
* Vertex AI: Monitoring training-serving skew

NEW QUESTION # 48
You work on the data science team at a manufacturing company. You are reviewing the company's historical sales data, which has hundreds of millions of records. For your exploratory data analysis, you need to calculate descriptive statistics such as mean, median, and mode; conduct complex statistical tests for hypothesis testing; and plot variations of the features over time You want to use as much of the sales data as possible in your analyses while minimizing computational resources. What should you do?

- A. Use BigQuery to calculate the descriptive statistics. Use Vertex Al Workbench user-managed notebooks to visualize the time plots and run the statistical analyses.
- B. Spin up a Vertex Al Workbench user-managed notebooks instance and import the dataset Use this data to create statistical and visual analyses
- C. Visualize the time plots in Google Data Studio. Import the dataset into Vertex Al Workbench user-managed notebooks Use this data to calculate the descriptive statistics and run the statistical analyses

Answer: A

Explanation:
D Use BigQuery to calculate the descriptive statistics, and use Google Data Studio to visualize the time plots. Use Vertex Al Workbench user-managed notebooks to run the statistical analyses.
Explanation:
BigQuery is a powerful tool for analyzing large datasets and can be used to quickly calculate descriptive statistics, such as mean, median, and mode, on large amounts of data. By using BigQuery, you can analyze the entire dataset and minimize the computational resources required for your analyses.
Once you have calculated the descriptive statistics, you can use Vertex Al Workbench user-managed notebooks to visualize the time plots and run the statistical analyses. Vertex Al Workbench allows you to interactively explore the data, create visualizations, and perform advanced statistical analysis. It's also possible to run these notebooks on a powerful GPU which will help to increase the speed of the analysis.

NEW QUESTION # 49
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. Convert the speech to text and build a model based on the words
- B. Convert the speech to text and extract sentiments based on the sentences
- C. Extract sentiment directly from the voice recordings
- D. Convert the speech to text and extract sentiment using syntactical analysis

Answer: D

Explanation:
To ensure that 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, it is important to focus on the meaning and context of the conversation, rather than the characteristics of the speaker.
Converting the speech to text and then using syntactical analysis to extract sentiment will allow you to focus on the meaning and context of the conversation, rather than characteristics of the speaker. This approach will also give you more data to work with, as you can analyze the entire conversation, rather than just the voice recordings.

NEW QUESTION # 50
You are an ML engineer at a bank that has a mobile application. Management has asked you to build an ML-based biometric authentication for the app that verifies a customer's identity based on their fingerprint. Fingerprints are considered highly sensitive personal information and cannot be downloaded and stored into the bank databases. Which learning strategy should you

recommend to train and deploy this ML model?

- A. Differential privacy
- B. Data Loss Prevention API
- C. Federated learning
- D. MD5 to encrypt data

Answer: C

NEW QUESTION # 51
You received a training-serving skew alert from a Vertex Al Model Monitoring job running in production.
You retrained the model with more recent training data, and deployed it back to the Vertex Al endpoint but you are still receiving the same alert. What should you do?

- A. Update the model monitoring job to use the more recent training data that was used to retrain the model.
- B. Temporarily disable the alert until the model can be retrained again on newer training data Retrain the model again after a sufficient amount of new production traffic has passed through the Vertex Al endpoint
- C. Update the model monitoring job to use a lower sampling rate.
- D. Temporarily disable the alert Enable the alert again after a sufficient amount of new production traffic has passed through the Vertex Al endpoint.

Answer: A

Explanation:
The best option for resolving the training-serving skew alert is to update the model monitoring job to use the more recent training data that was used to retrain the model. This option can help align the baseline distribution of the model monitoring job with the current distribution of the production data, and eliminate the false positive alerts. Model Monitoring is a service that can track and compare the results of multiple machine learning runs. Model Monitoring can monitor the model's prediction input data for feature skew and drift.
Training-serving skew occurs when the feature data distribution in production deviates from the feature data distribution used to train the model. If the original training data is available, you can enable skew detection to monitor your models for training-serving skew. Model Monitoring uses TensorFlow Data Validation (TFDV) to calculate the distributions and distance scores for each feature, and compares them with a baseline distribution. The baseline distribution is the statistical distribution of the feature's values in the training data.
If the distance score for a feature exceeds an alerting threshold that you set, Model Monitoring sends you an email alert. However, if you retrain the model with more recent training data, and deploy it back to the Vertex AI endpoint, the baseline distribution of the model monitoring job may become outdated and inconsistent with the current distribution of the production data. This can cause the model monitoring job to generate false positive alerts, even if the model performance is not deteriorated. To avoid this problem, you need to update the model monitoring job to use the more recent training data that was used to retrain the model. This can help the model monitoring job to recalculate the baseline distribution and the distance scores, and compare them with the current distribution of the production data. This can also help the model monitoring job to detect any true positive alerts, such as a sudden change in the production data that causes the model performance to degrade1.
The other options are not as good as option B, for the following reasons:
* Option A: Updating the model monitoring job to use a lower sampling rate would not resolve the training-serving skew alert, and could reduce the accuracy and reliability of the model monitoring job.
The sampling rate is a parameter that determines the percentage of prediction requests that are logged and analyzed by the model monitoring job. Using a lower sampling rate can reduce the storage and computation costs of the model monitoring job, but also the quality and validity of the data. Using a lower sampling rate can introduce sampling bias and noise into the data, and make the model monitoring job miss some important features or patterns of the data. Moreover, using a lower sampling rate would not address the root cause of the training-serving skew alert, which is the mismatch between the baseline distribution and the current distribution of the production data2.
* Option C: Temporarily disabling the alert, and enabling the alert again after a sufficient amount of new production traffic has passed through the Vertex AI endpoint, would not resolve the training-serving skew alert, and could expose the model to potential risks and errors. Disabling the alert would stop the model monitoring job from sending email notifications when the distance score for a feature exceeds the alerting threshold, but it would not stop the model monitoring job from calculating and comparing the distributions and distance scores. Therefore, disabling the alert would not address the root cause of the training-serving skew alert, which is the mismatch between the baseline distribution and the current distribution of the production data. Moreover, disabling the alert would prevent the model monitoring job from detecting any true positive alerts, such as a sudden change in the production data that causes the model performance to degrade. This can expose the model to potential risks and errors, and affect the user satisfaction and trust1.

* Option D: Temporarily disabling the alert until the model can be retrained again on newer training data, and retraining the model again after a sufficient amount of new production traffic has passed through the Vertex AI endpoint, would not resolve the training-serving skew alert, and could cause unnecessary costs and efforts. Disabling the alert would stop the model monitoring job from sending email notifications when the distance score for a feature exceeds the alerting threshold, but it would not stop the model monitoring job from calculating and comparing the distributions and distance scores.
Therefore, disabling the alert would not address the root cause of the training-serving skew alert, which is the mismatch between the baseline distribution and the current distribution of the production data.
Moreover, disabling the alert would prevent the model monitoring job from detecting any true positive alerts, such as a sudden change in the production data that causes the model performance to degrade.
This can expose the model to potential risks and errors, and affect the user satisfaction and trust.
Retraining the model again on newer training data would create a new model version, but it would not update the model monitoring job to use the newer training data as the baseline distribution. Therefore, retraining the model again on newer training data would not resolve the training-serving skew alert, and could cause unnecessary costs and efforts1.
References:
* Preparing for Google Cloud Certification: Machine Learning Engineer, Course 3: Production ML Systems, Week 4: Evaluation
* Google Cloud Professional Machine Learning Engineer Exam Guide, Section 3: Scaling ML models in production, 3.3 Monitoring ML models in production
* Official Google Cloud Certified Professional Machine Learning Engineer Study Guide, Chapter 6:
Production ML Systems, Section 6.3: Monitoring ML Models
* Using Model Monitoring
* Understanding the score threshold slider
* Sampling rate

NEW QUESTION # 52
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