EXAM PROFESSIONAL MACHINE LEARNING ENGINEER TOPIC 1 QUESTION 178 DISCUSSI...

Actual exam question from Google's Professional Machine Learning Engineer
Question #: 178
Topic #: 1
[All Professional Machine Learning Engineer Questions]

You work for a bank. You have created a custom model to predict whether a loan application should be flagged for human review. The input features are stored in a BigQuery table. The model is performing well, and you plan to deploy it to production. Due to compliance requirements the model must provide explanations for each prediction. You want to add this functionality to your model code with minimal effort and provide explanations that are as accurate as possible. What should you do?

A. Create an AutoML tabular model by using the BigQuery data with integrated Vertex Explainable AI.

B. Create a BigQuery ML deep neural network model and use the ML.EXPLAIN_PREDICT method with the num_integral_steps parameter.

C. Upload the custom model to Vertex AI Model Registry and configure feature-based attribution by using sampled Shapley with input baselines.

D. Update the custom serving container to include sampled Shapley-based explanations in the prediction outputs.

Show Suggested Answer

by pikachu007 at *Jan. 11, 2024, 11:30 a.m.*

Comments

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fitri001 6 months, 2 weeks ago

Selected Answer: C

Existing Custom Model: This approach leverages your already-developed, well-performing model. There's no need to rebuild it using AutoML or BigQuery ML, which might require significant code changes.
Vertex Explainable AI (XAI): Vertex AI offers XAI integration with custom models through feature-based attribution methods like sampled Shapley. This provides explanations for each prediction without requiring major modifications to your model code.
Sampled Shapley with Baselines: Sampled Shapley is a robust attribution method for explaining model predictions. Using input baselines (like zero values) helps improve the interpretability of explanations, especially for features with large ranges.

upvoted 1 times

guilhermebutzke 8 months, 3 weeks ago

Selected Answer: C

According to the documentation at https://cloud.google.com/vertex-ai/docs/explainable-ai/overview, we can utilize both feature-based attribution and sampled Shapley-based explanations. Therefore, for providing explanations for each prediction in a loan classification problem, I believe that feature-based attribution is the optimal approach. Furthermore, updating the custom serving container to include sampled Shapley-based explanations, as suggested in option D, might require more effort, considering that the custom model deployed on Vertex AI already provides this option for explanations.

upvoted 3 times

sonicclasps 9 months ago

Selected Answer: C

"minimal effort and provide explanations that are as accurate as possible"
this makes the answer C, based on this:
https://cloud.google.com/vertex-ai/docs/explainable-ai/improving-explanations

upvoted 2 times

daidai75 9 months, 1 week ago

Selected Answer: C

Feature attribution is supported for all types of models (both AutoML and custom-trained), frameworks (TensorFlow, scikit, XGBoost), BigQuery ML models, and modalities (images, text, tabular, video).
https://cloud.google.com/vertex-ai/docs/explainable-ai/overview

upvoted 3 times

36bdc1e 9 months, 3 weeks ago

C
you find the answer here https://cloud.google.com/vertex-ai/docs/explainable-ai/overview

upvoted 2 times

b1a8fae 9 months, 4 weeks ago

Selected Answer: D

pikachu007 answer made me reconsider

upvoted 1 times

daidai75 9 months, 1 week ago

https://cloud.google.com/vertex-ai/docs/explainable-ai/overview. According to this web link, Feature attribution is supported for all types of models (both AutoML and custom-trained), frameworks (TensorFlow, scikit, XGBoost), BigQuery ML models, and modalities (images, text, tabular, video).

upvoted 1 times

b1a8fae 9 months, 4 weeks ago

Selected Answer: A

Not a deep neural network for sure (B). Out of the remaining 3, A is the simplest approach.

upvoted 1 times

pikachu007 9 months, 4 weeks ago

Selected Answer: D

A and B is out because you already have a model, C does not provide an explanation for each prediction. Therefore D meets all the criteria.

upvoted 1 times

BlehMaks 9 months, 2 weeks ago

Why does not C provide an explanation for each prediction? As for me both C and D options provide an explanation for each prediction, the difference is only in the amount of effort required to configure explanations

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