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## EXAM PROFESSIONAL MACHINE LEARNING ENGINEER TOPIC 1 QUESTION 206 DISCUSSI...

Actual exam question from Google's Professional Machine Learning Engineer

Question #: 206

Topic #: 1

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You are building a predictive maintenance model to preemptively detect part defects in bridges. You plan to use high definition images of the bridges as model inputs. You need to explain the output of the model to the relevant stakeholders so they can take appropriate action. How should you build the model?

- A. Use scikit-learn to build a tree-based model, and use SHAP values to explain the model output.
- B. Use scikit-learn to build a tree-based model, and use partial dependence plots (PDP) to explain the model output.
- C. Use TensorFlow to create a deep learning-based model, and use Integrated Gradients to explain the model output.
- D. Use TensorFlow to create a deep learning-based model, and use the sampled Shapley method to explain the model output.

Show Suggested Answer

by [pikachu007](#) at Jan. 13, 2024, 4:43 a.m.

### Comments

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[dija123](#) 3 months, 3 weeks ago

**Selected Answer: C**

Use Integrated Gradients to explain the model output


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  **pinimichele01** 6 months, 2 weeks ago

**Selected Answer: C**

<https://cloud.google.com/vertex-ai/docs/explainable-ai/overview>

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  **Shark0** 6 months, 2 weeks ago

**Selected Answer: C**

Given the scenario of using high definition images as inputs for predictive maintenance on bridges, and the need to explain the model output to stakeholders, the most appropriate choice would be:

C. Use TensorFlow to create a deep learning-based model, and use Integrated Gradients to explain the model output.

Integrated Gradients is a method used to explain the predictions of deep learning models by attributing the contribution of each pixel in the input image to the final prediction. This would provide insights into which parts of the bridge images are most influential in the model's decision-making process, helping stakeholders understand why a particular prediction was made and allowing them to take appropriate action.

   upvoted 2 times

  **BlehMaks** 9 months, 1 week ago

**Selected Answer: C**

<https://cloud.google.com/ai-platform/prediction/docs/ai-explanations/overview#compare-methods>



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  **pinimichele01** 6 months, 2 weeks ago

<https://cloud.google.com/vertex-ai/docs/explainable-ai/overview>

this is right, your is deprecated!

   upvoted 1 times



  **pikachu007** 9 months, 1 week ago

**Selected Answer: C**

Handling image input: Deep learning models excel in processing complex visual data like high-definition images, making them ideal for extracting relevant features from bridge images for defect detection.

Explainability with Integrated Gradients: Integrated Gradients is a powerful technique specifically designed to explain the predictions of deep learning models. It attributes model output to specific input features, providing insights into how the model makes decisions.

Visualization: Integrated Gradients can generate visual explanations, such as heatmaps, that highlight image regions most influential to predictions, aiding in understanding and trust for stakeholders.

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