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📄 **EXAM PROFESSIONAL MACHINE LEARNING ENGINEER TOPIC 1 QUESTION 161 DISCUSSI...**

Actual exam question from Google's Professional Machine Learning Engineer
Question #: 161
Topic #: 1
[All Professional Machine Learning Engineer Questions]

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.

Show Suggested Answer

by 👤 **mlx** at *Dec. 10, 2023, 9:30 p.m.*

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⊟ 👤 **AzureDP900** 4 months ago

C. The model with the highest recall where precision is greater than 0.5.

In this predictive maintenance use case, you want to prioritize detection (i.e., detecting imminent failures) while ensuring that most of the maintenance jobs triggered by your model address actual machine failures (i.e., true positives). Recall measures the proportion of actual failures detected by the model, which aligns with your goal of prioritizing detection.

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⊟ 👤 **fitri001** 6 months ago

Selected Answer: C

Prioritizing Detection: Recall measures how well the model identifies true positives (correctly predicts failures). A high recall ensures most imminent failures are caught.
Balancing with Precision: Precision measures how many of the predicted failures are true positives (avoiding unnecessary maintenance). The requirement of a precision greater than 0.5 ensures a reasonable number of triggered maintenances actually address failures.

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⊟ 👤 **pinimichele01** 6 months, 2 weeks ago

Selected Answer: C

went with C

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⊟ 👤 **guilhermebutzke** 8 months, 2 weeks ago

Selected Answer: C

Early detection of potential failures is crucial, even if it leads to some unnecessary maintenance ("false positives").
Therefore, we prioritize recall, which measures the ability to correctly identify true failures.
While detection is important, we don't want to trigger too many unnecessary repairs ("false positives"). So, we set a minimum threshold of precision greater than 0.5, meaning at least 50% of triggered maintenance should address real failures.

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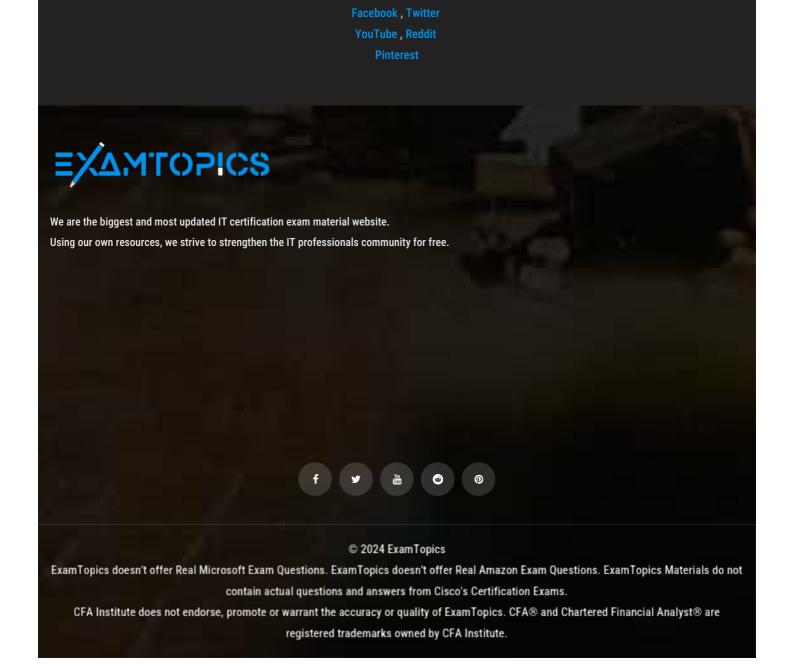
⊟ 👤 **vfg** 9 months, 4 weeks ago

Selected Answer: C

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

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