Exam Professional Machine Learning Engineer All Questions

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EXAM PROFESSIONAL MACHINE LEARNING ENGINEER TOPIC 1 QUESTION 207 DISCUSSI...

Actual exam question from Google's Professional Machine Learning Engineer
Question #: 207
Topic #: 1
[All Professional Machine Learning Engineer Questions]

You work for a hospital that wants to optimize how it schedules operations. You need to create a model that uses the relationship between the number of surgeries scheduled and beds used. You want to predict how many beds will be needed for patients each day in advance based on the scheduled surgeries. You have one year of data for the hospital organized in 365 rows.

The data includes the following variables for each day:
• Number of scheduled surgeries
• Number of beds occupied
• Date

You want to maximize the speed of model development and testing. What should you do?

A. Create a BigQuery table. Use BigQuery ML to build a regression model, with number of beds as the target variable, and number of scheduled surgeries and date features (such as day of week) as the predictors.

B. Create a BigQuery table. Use BigQuery ML to build an ARIMA model, with number of beds as the target variable, and date as the time variable.

C. Create a Vertex AI tabular dataset. Train an AutoML regression model, with number of beds as the target variable, and number of scheduled minor surgeries and date features (such as day of the week) as the predictors.

D. Create a Vertex AI tabular dataset. Train a Vertex AI AutoML Forecasting model, with number of beds as the target variable, number of scheduled surgeries as a covariate and date as the time variable.

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Show Suggested Answer

by kalle_balle at *Jan. 8, 2024, 4:08 a.m.*

Comments

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forport 2 months, 3 weeks ago

Selected Answer: D

'Vertex AI AutoML Forecasting' == for forecasting time series data

upvoted 2 times

VinaoSilva 3 months, 3 weeks ago

Selected Answer: D

"You want to predict how many beds will be needed for patients each day" = Forecasting

upvoted 1 times

dija123 3 months, 3 weeks ago

Selected Answer: D

Train a Vertex AI AutoML Forecasting model

upvoted 1 times

info_appsatori 4 months, 1 week ago

Selected Answer: A

IDK, i going with A, because its maximize the speed of development and testing. Also in question it says: You need to create a model that uses the """relationship"" between the number of surgeries scheduled and beds used. = linear regression problem.

upvoted 1 times

b2aaace 5 months, 4 weeks ago

Selected Answer: C

I don't think this is a time series forecasting problem. The question clearly states that we should predict the number of beds based on the number of scheduled surgeries. this is a simple linear regression problem.

upvoted 1 times

pinimichele01 5 months, 3 weeks ago

"You want to predict how many beds will be needed for patients each day in advance based on the scheduled surgeries."

upvoted 1 times

fitri001 6 months ago

Selected Answer: D

Vertex AI AutoML Forecasting: This option leverages Vertex AI's AutoML capabilities for time series forecasting. It automatically explores different model types and hyperparameters to find the best fit for your data. This can significantly speed up model development compared to building a model from scratch.
Date as time variable, surgeries as covariate: This approach acknowledges the time-series nature of bed occupancy with "date" as the time series variable. It also incorporates the "number of scheduled surgeries" as a covariate, allowing the model to learn the relationship between surgeries and bed usage.

upvoted 2 times

fitri001 6 months ago

A. BigQuery ML regression: While BigQuery ML offers quick model building, a regression model might not capture the time-series aspect of daily bed occupancy. Daily bed occupancy might have trends or seasonality which a plain regression model wouldn't capture.
B. BigQuery ML ARIMA: ARIMA models are specifically for stationary time series data, and hospital bed occupancy might not always be stationary (e.g., holiday season might lead to higher occupancy). Additionally, ARIMA models typically don't incorporate additional features like the number of scheduled surgeries.
C. Vertex AI AutoML Regression: Similar to option A, a regression model might not capture the time series aspect. While Vertex AI offers AutoML regression, using a solution designed for time series forecasting is more suitable here.

upvoted 2 times

pinimichele01 6 months, 2 weeks ago

Selected Answer: D

best suited

upvoted 1 times

pinimichele01 6 months, 1 week ago

not b: ARIMA does not use number of scheduled surgeries, and it is stated that the prediction must be based on that variable

upvoted 1 times

CHARLIE2108 7 months, 2 weeks ago

Selected Answer: B

I went with B.

upvoted 1 times

sonicclasps 8 months, 3 weeks ago

Selected Answer: D

best suited, and treats the input as a time series, unlike A

upvoted 1 times

Yan_X 8 months, 4 weeks ago

Selected Answer: D

D, as B doesn't mention the 'number of scheduled surgeries'.

upvoted 2 times

shadz10 9 months, 1 week ago

Selected Answer: D

D is correct I believe

upvoted 2 times

shadz10 9 months, 1 week ago

https://cloud.google.com/vertex-ai/docs/tabular-data/forecasting/overview

upvoted 1 times

b1a8fae 9 months, 1 week ago

Selected Answer: A

A.
Using BigQuery to comply requirement of speed of development.
ARIMA does not use number of scheduled surgeries, and it is stated that the prediction must be based on that variable. So it must be A. LR model on BQ using scheduled surgeries, day of the week, etc, as predictors.

upvoted 3 times

shadz10 9 months, 2 weeks ago

365 days of data may be insufficient for big query I'm going with C

upvoted 3 times

shadz10 9 months, 2 weeks ago

D* not C Forecasting models are well-suited for predicting future values based on past trends, making them ideal for the goal of predicting bed occupancy for upcoming days. Dataset is too small for bigquery.

upvoted 2 times

kalle_balle 9 months, 2 weeks ago

Selected Answer: B

Using B instead of D as it requires speed of development.

upvoted 1 times

shadz10 9 months, 1 week ago

While ARIMA models are commonly used for time series forecasting, they are more suitable for univariate time series data and might require additional manual intervention for feature engineering.

In this case, we have multiple variables such as the number of scheduled surgeries, the number of beds occupied, and the date. AutoML Forecasting in option D is designed to handle multivariate time series data, and it automates much of the modeling process, including feature selection and hyperparameter tuning. This can potentially result in a faster and more efficient development and testing process compared to manually implementing and tuning an ARIMA model.

upvoted 2 times

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