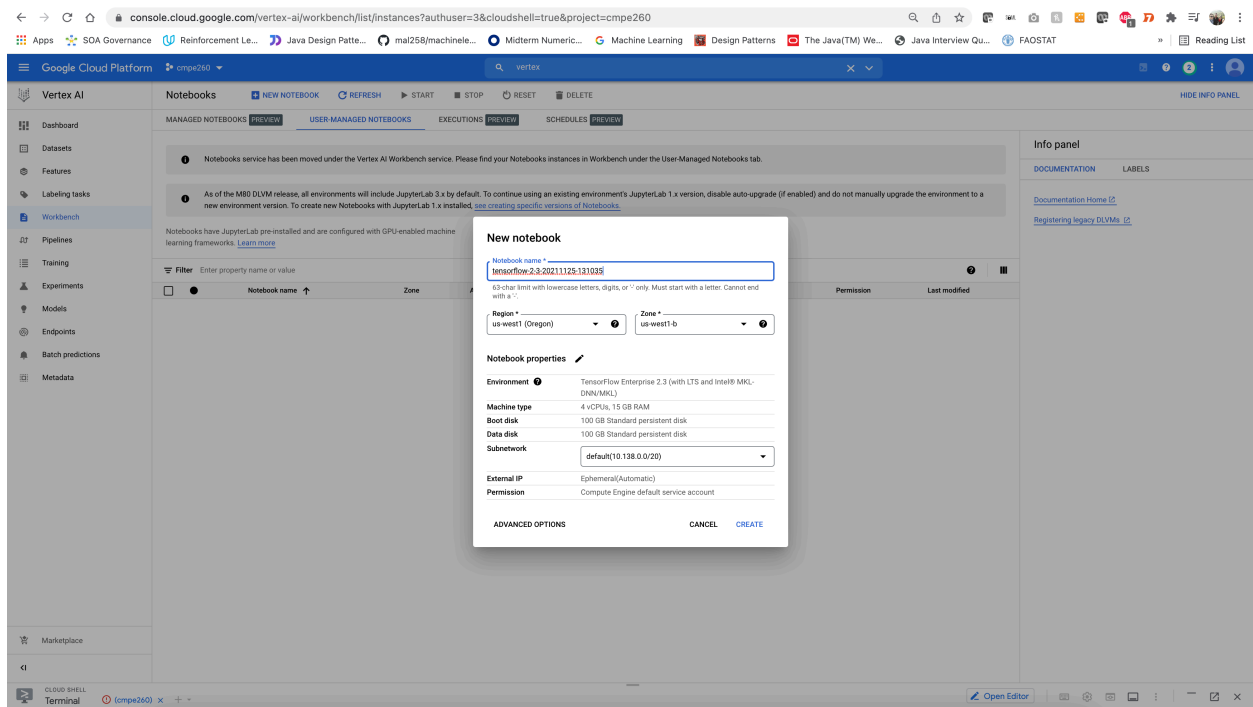


# Assignment 7 : optional catchup assignment 2 - VERTEX AI - for midterm and quiz - this will catch up midterm.

b) <https://codelabs.developers.google.com/vertex-automl-tabular#0>

## Building a fraud detection model with AutoML

Creating a workbench notebook environment:



Create a managed dataset

←

→

↺

🏠

console.cloud.google.com/vertex-ai/datasets/create?authuser=3&cloudshell=true&project=cmpe260

Apps

SOA Governance

Reinforcement Le...

Java Design Patte...

mal258/machinele...

Midterm Numeric...

Ma

Google Cloud Platform

cmpe260

vertex

Vertex AI

Dashboard

Datasets

Features

Labeling tasks

Workbench

Pipelines

Training

Experiments

Models

Endpoints

Batch predictions

Metadata

←

Create dataset

Dataset name \*

fraud\_detection

Can use up to 128 characters.

Select a data type and objective

First select the type of data your dataset will contain. Then select an objective, which is the outcome that you want to achieve with the train

IMAGE

TABULAR

TEXT

VIDEO

Regression/classification

Predict a target column's value. Supports tables with hundreds of columns and millions of rows.

Forecasting 

PREVIEW

Predict the likelihood of certain events or demand.

Region

us-central1 (Iowa)

?

ADVANCED OPTIONS

CREATE

CANCEL

Model Training

console.cloud.google.com/vertex-ai/locations/us-central1/datasets/4192983194477264896/analyze?authuser=3&cloudshell=true&project=cme260

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Marketplace

Cloud Shell

Terminal

welcome to Cloud Shell! Type "help" for more information.  
Your Cloud Platform project is: cme260  
Use "gcloud config set project [PROJECT\_ID]" to set the project.  
cme260@cloudshell:~\$ gcloud config set project [PROJECT\_ID]  
cme260@cloudshell:~\$

**Train new model**

- Training method
- Model details
- Training options
- Compute and pricing

START TRAINING CANCEL

Feature name	Feature type	Feature scale	Feature distribution	Feature correlation	Feature importance
V21	Automatic	FLOAT	NULLABLE	-	-
V22	Automatic	FLOAT	NULLABLE	-	-
V23	Automatic	FLOAT	NULLABLE	-	-
V24	Automatic	FLOAT	NULLABLE	-	-
V25	Automatic	FLOAT	NULLABLE	-	-
V26	Automatic	FLOAT	NULLABLE	-	-
V27	Automatic	FLOAT	NULLABLE	-	-
V28	Automatic	FLOAT	NULLABLE	-	-
V3	Automatic	FLOAT	NULLABLE	-	-
V4	Automatic	FLOAT	NULLABLE	-	-
V5	Automatic	FLOAT	NULLABLE	-	-
V6	Automatic	FLOAT	NULLABLE	-	-
V7	Automatic	FLOAT	NULLABLE	-	-
V8	Automatic	FLOAT	NULLABLE	-	-
V9	Automatic	FLOAT	NULLABLE	-	-

Total 31 feature columns are included in the training

**Weight column**

Select a column

**Optimization objective**

☐ AUC ROC  
Distinguish between classes

☐ Log loss  
Keeps prediction probabilities as accurate as possible

☒ AUC PRC  
Maximize precision-recall for the less common class

☐ Precision  
At recall

☐ Recall  
At precision

SHOW LESS

CONTINUE

console.cloud.google.com/vertex-ai/locations/us-central1/datasets/4192983194477264896/analyze?authuser=3&cloudshell=true&project=cme260

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**Train new model**

- Training method
- Model details
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START TRAINING CANCEL

Enter the **maximum** number of node hours you want to spend training your model.

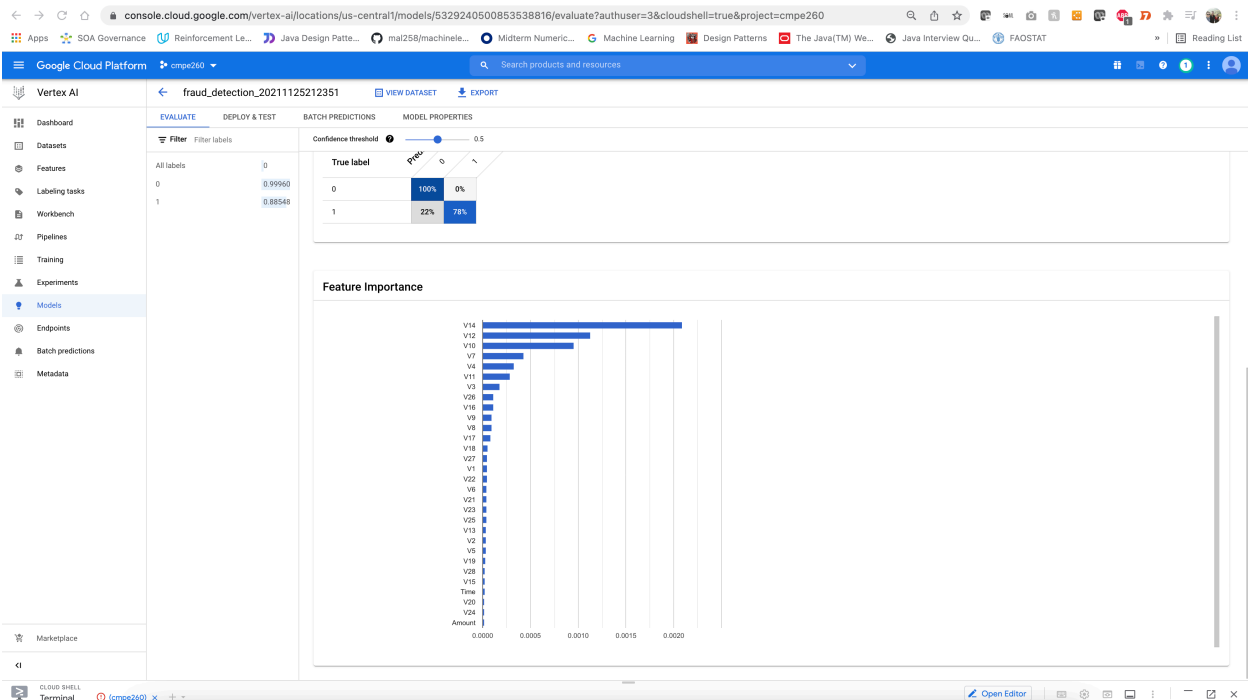
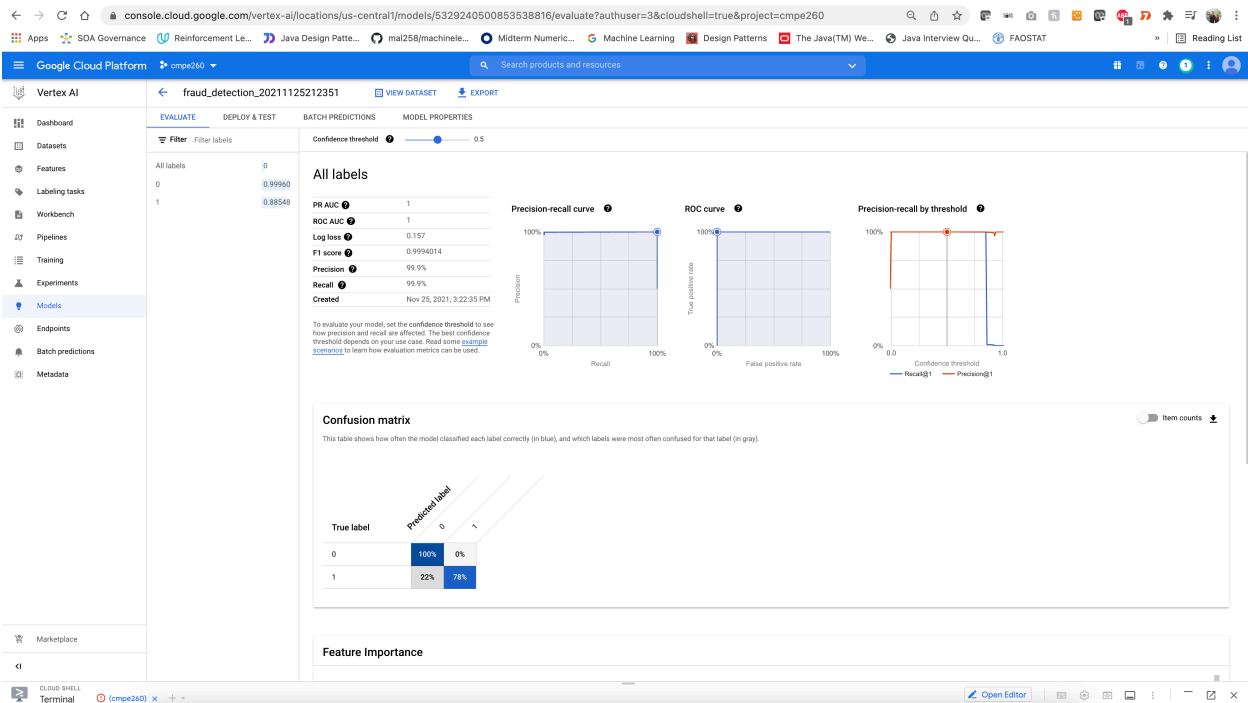
You can train for as little as 1 node hour. You may also be eligible to train with free node hours. [Pricing guide](#)

**Budget \*** 1 Maximum node hours ?

**Estimated completion date:** Nov 25, 2021 3 PM GMT-8

☒ **Enable early stopping**  
Ends model training when no more improvements can be made and refunds leftover training budget. If early stopping is disabled, training continues until the budget is exhausted.

## Modal evaluation and metrics



Deploying model and end point testing

The screenshot shows the Google Cloud Platform Vertex AI console. The main panel displays the 'fraud\_detection\_20211125212351' model. The 'Deploy to endpoint' button is visible. The right sidebar shows the 'Model settings' tab, which includes options for 'Traffic split' (set to 100%), 'Compute resources' (Autoscaling), and 'Logging' (Enabled). The 'Model settings' tab also shows the 'Machine type' as 'n1-standard-8' and '30 GiB memory'.

## Model predictions with the Vertex AI API

The screenshot shows a Jupyter Notebook with the following code:

```
[5]: from google.cloud import aiplatform

endpoint = aiplatform.Endpoint(
    endpoint_name="projects/714833773523/locations/us-central1/endpoints/5273020272302096384"
)

[6]: test_instance={
    'Time': 80422,
    'Amount': 17.99,
    'V1': -0.24,
    'V2': -0.027,
    'V3': 0.064,
    'V4': -0.16,
    'V5': -0.152,
    'V6': -0.3,
    'V7': -0.03,
    'V8': -0.01,
    'V9': -0.13,
    'V10': -0.18,
    'V11': -0.16,
    'V12': 0.06,
    'V13': -0.11,
    'V14': 2.1,
    'V15': -0.07,
    'V16': -0.033,
    'V17': -0.14,
    'V18': -0.08,
    'V19': -0.062,
    'V20': -0.08,
    'V21': -0.06,
    'V22': -0.088,
    'V23': -0.03,
    'V24': 0.01,
    'V25': -0.04,
    'V26': -0.99,
    'V27': -0.13,
    'V28': 0.003
}

response = endpoint.predict([test_instance])

print('API response: ', response)

API response: Prediction(predictions=[{'scores': [0.8579820500183105, 0.1420979797840118], 'classes': ['0', '1']}], deployed_model_id='8936733753540083712', explanations=None)
```

