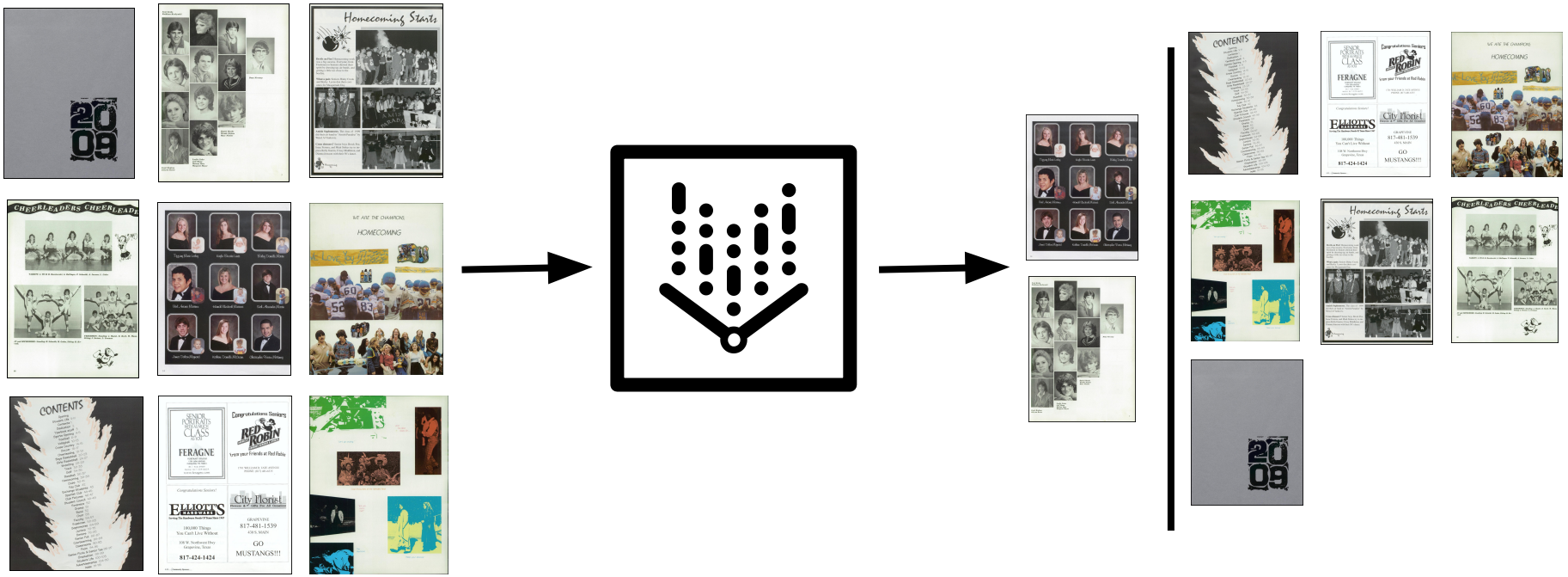
Google Vertex AI

Introduction to image classification

IMAGES - senior page classifier

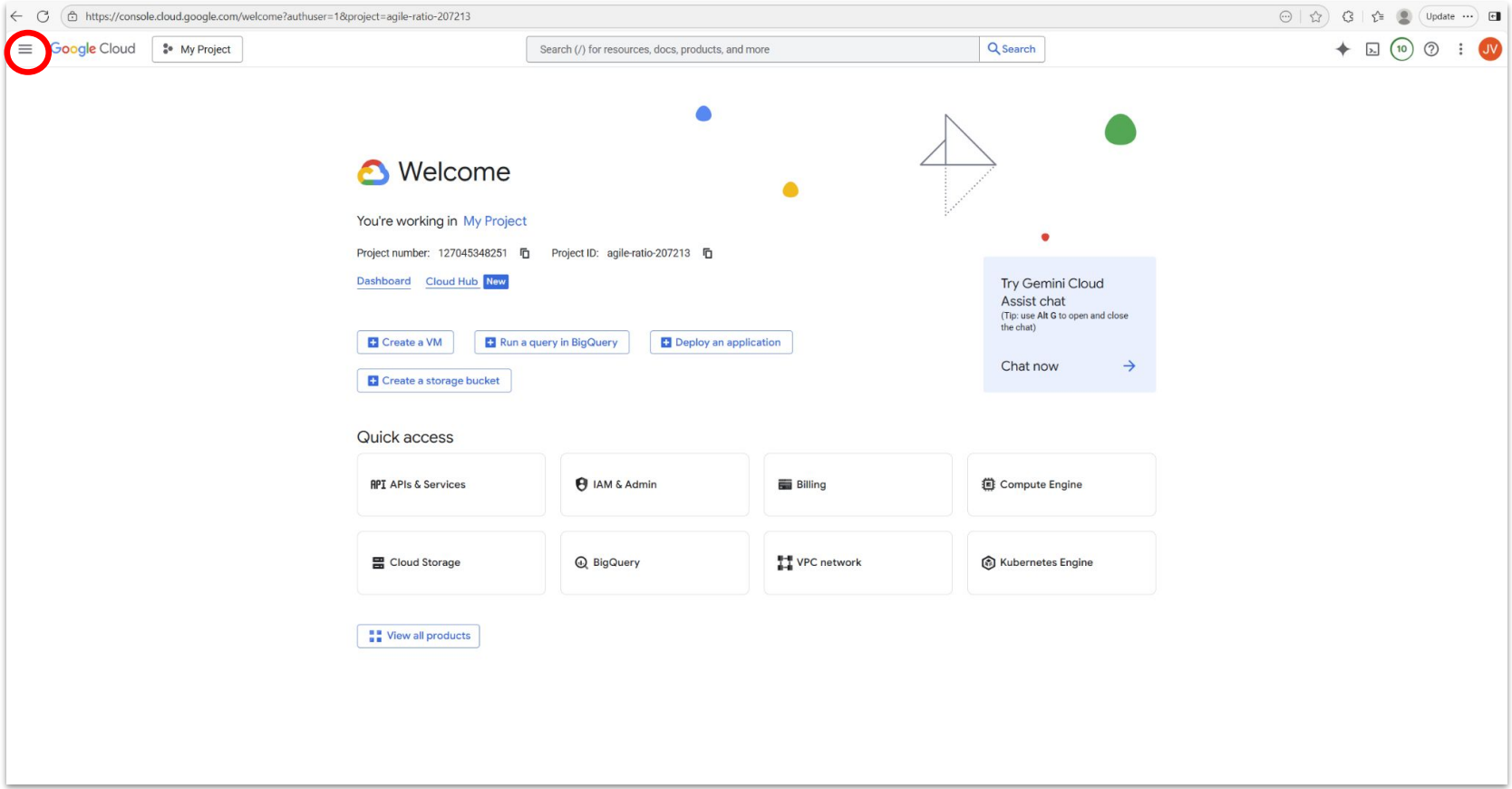
Goal: spot senior pages in high school yearbooks



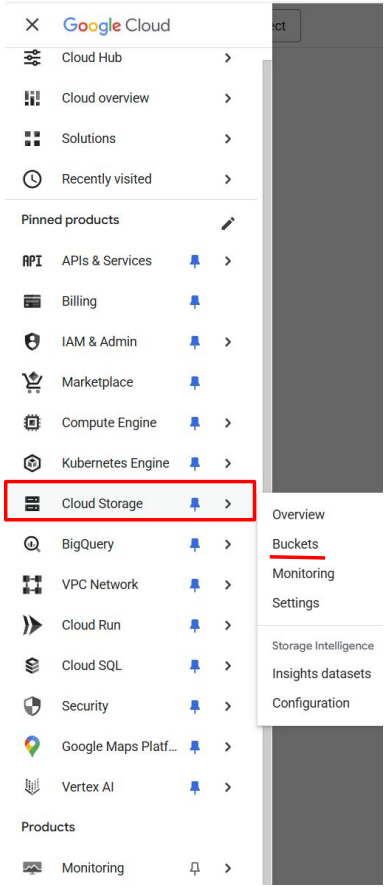
Create your AutoML Vertex model

1. Training your model
    1.1. Create a bucket in Cloud
    1.2. Create a dataset with labels
    1.3. Train your model
2. Deploying your model
    2.1. Export your model
    2.2. Download it from the bucket
    2.3. Example run

1. Train an AutoML Vertex model

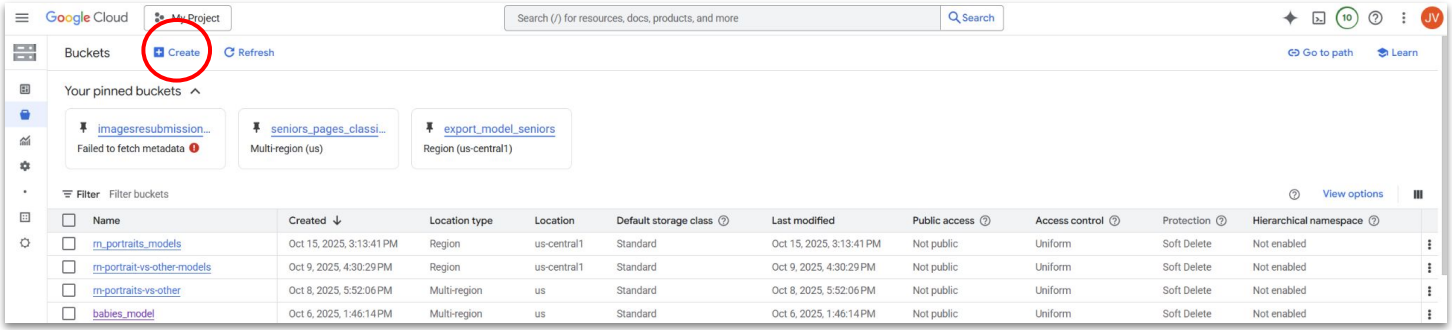


1.1. Create a bucket in Google Cloud Storage



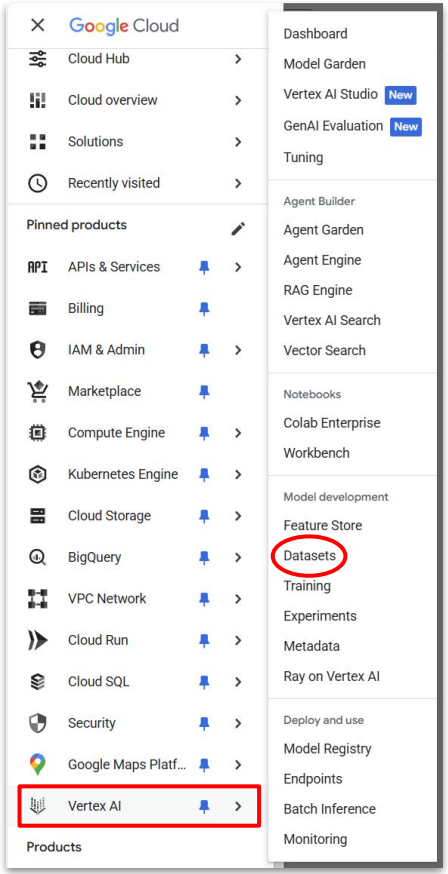
Bucket: top-level container in Google Cloud Storage where your files (objects) are stored.

➔ This is where you will store your data, labels, and models.

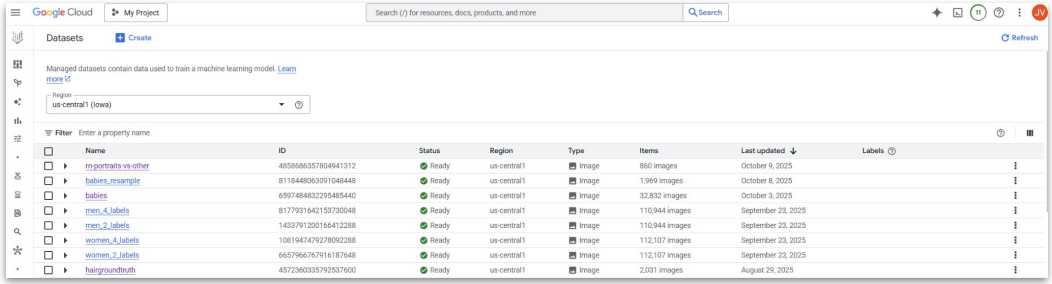


Leave the default settings when creating your bucket.

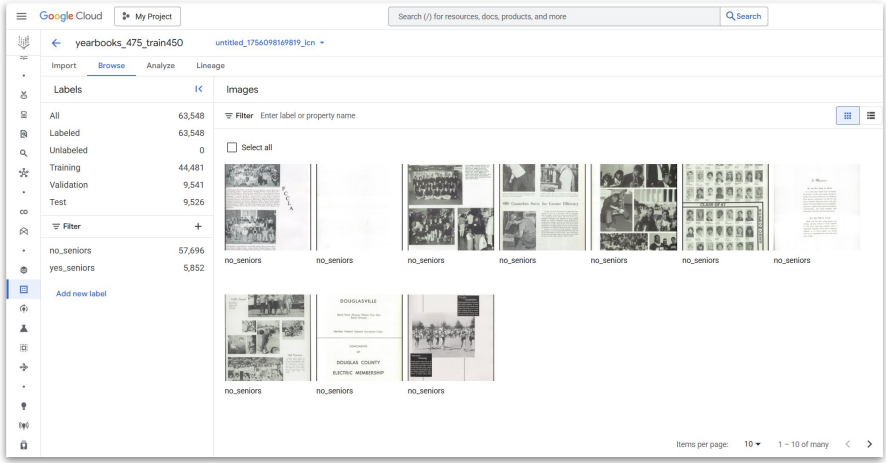
1.2. Create a dataset with labels



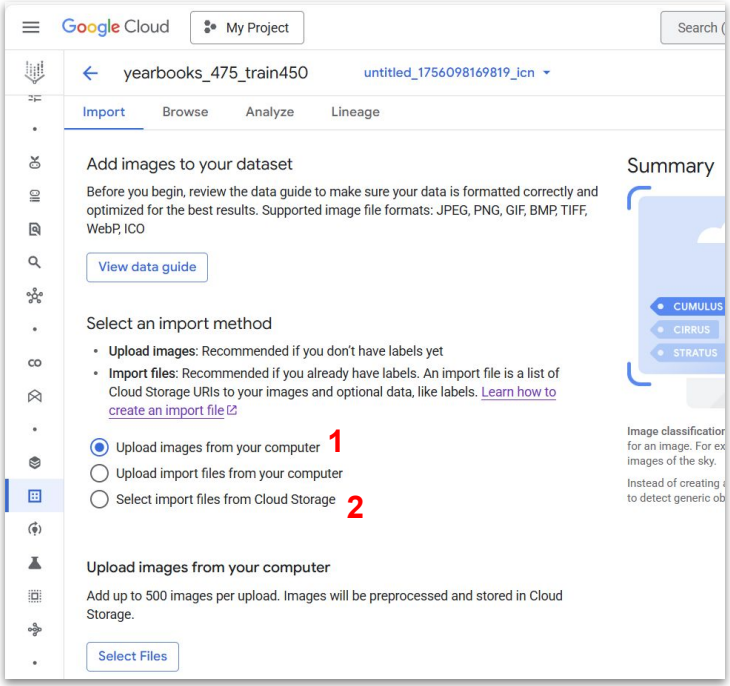
Dataset: managed data objects used for training and evaluating models.



This is what a dataset looks like:



1.2. Create a dataset with labels



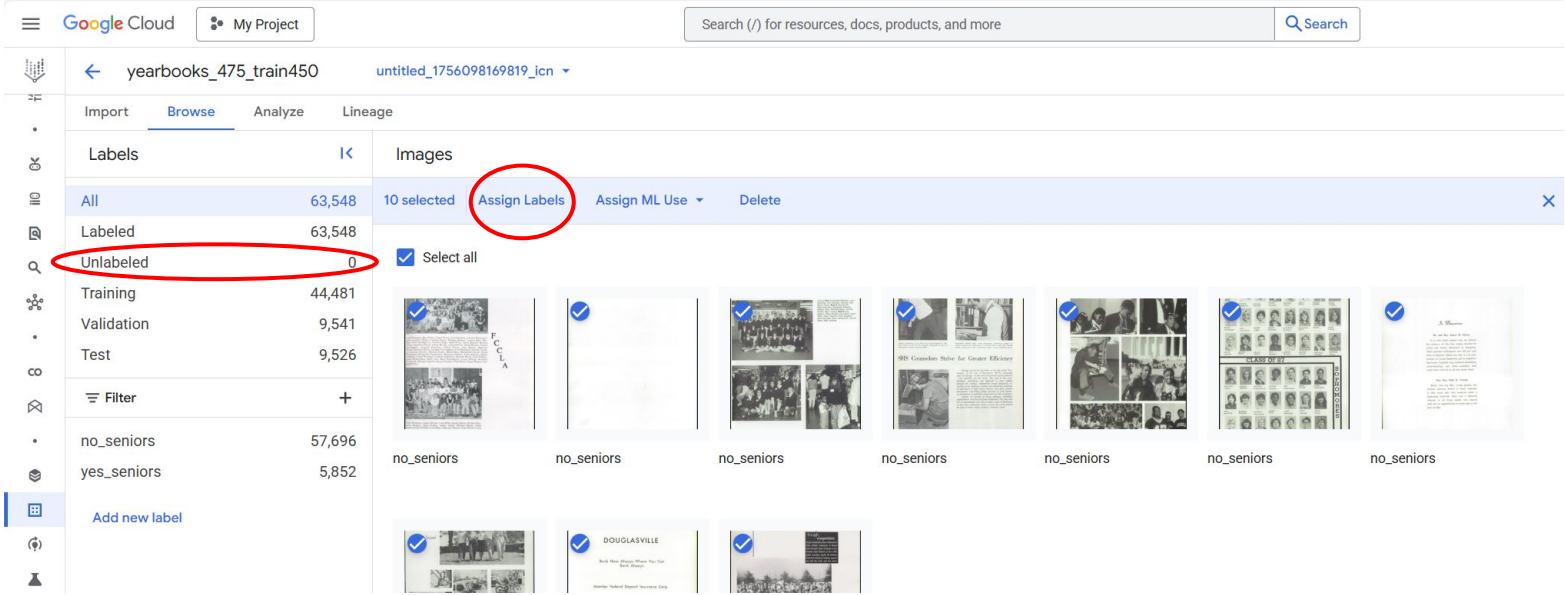
Option 1 (small dataset):

Upload images from your computer after pointing at the bucket you have created, then label directly from the Dataset “Browse” section. (For single-label classification, we recommend uploading by batches with the similar label.)

Option 2 (large dataset):

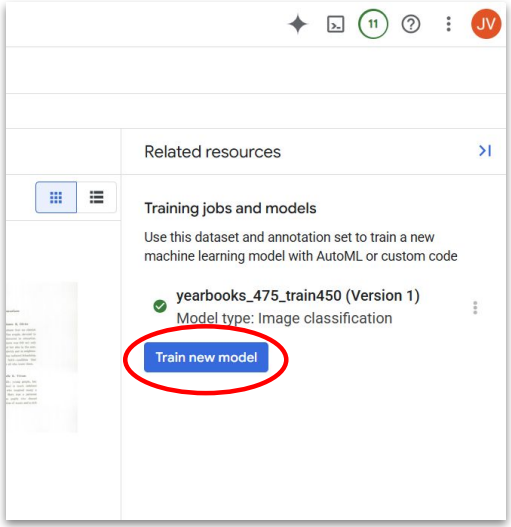
Uploading can take some time, for larger dataset we recommend uploading in the bucket from your terminal (using Google Cloud CLI and gsutil). You should import the data with an import file (that can include the labels).

1.2. Create a dataset with labels



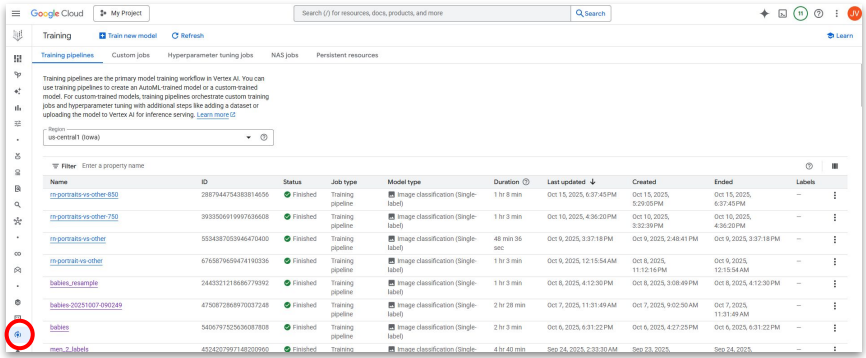
<u>Option 1:</u> Every time you are done uploading a batch of files from a category, go in the unlabel section, select all and assign a label.

1.3. Train your model



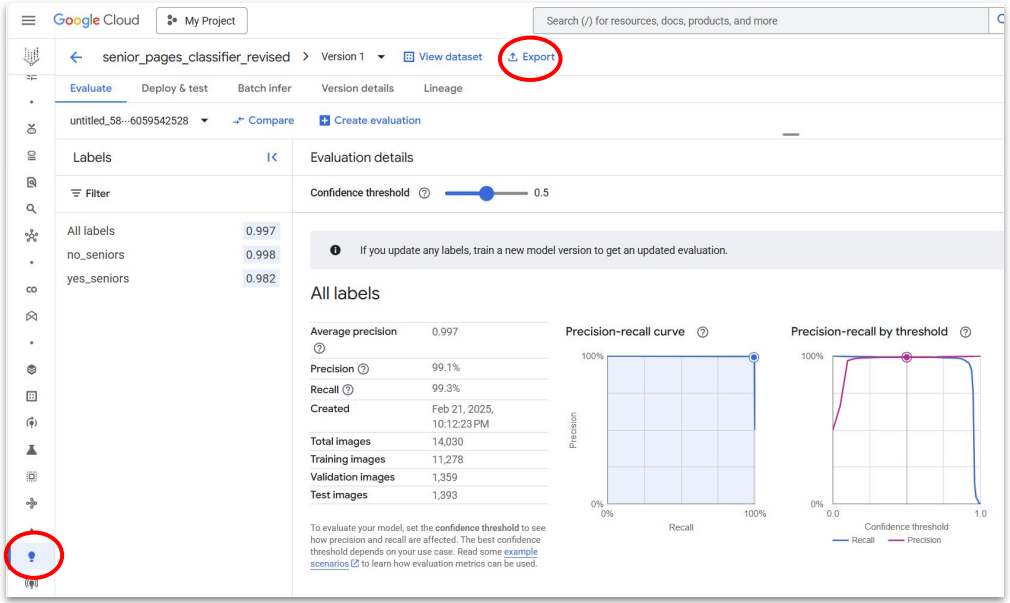
1. Training method:
   - AutoML
   - Edge (for exporting)
2. Model details
   - Advanced options: default settings
3. Explainability: optional
4. Training options: Higher accuracy
5. Compute and pricing
   - Budget: ~10
   - Enable early stopping

You can then check how the training is going in the “Training” section:

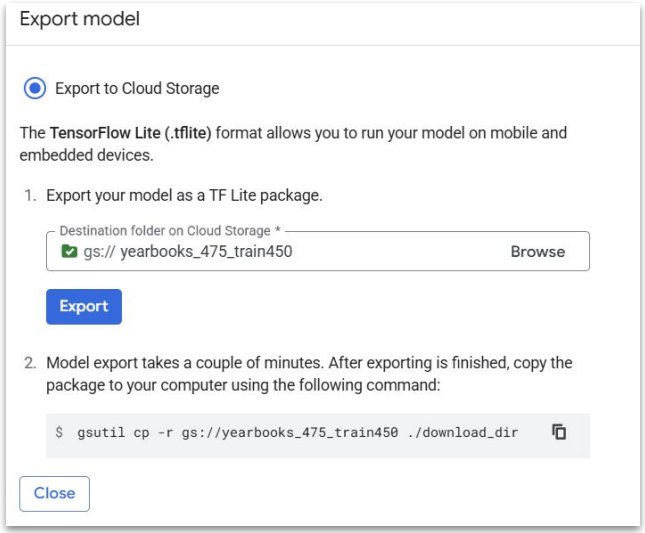


2.1. Export your model

You can find your model in “Model Registry” with statistics on performance.



Export: TF Lite and Tensorflow.js in your bucket

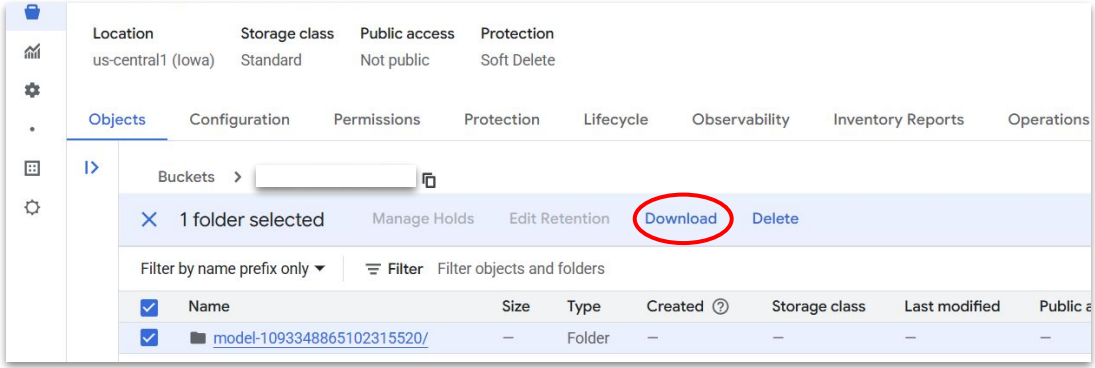


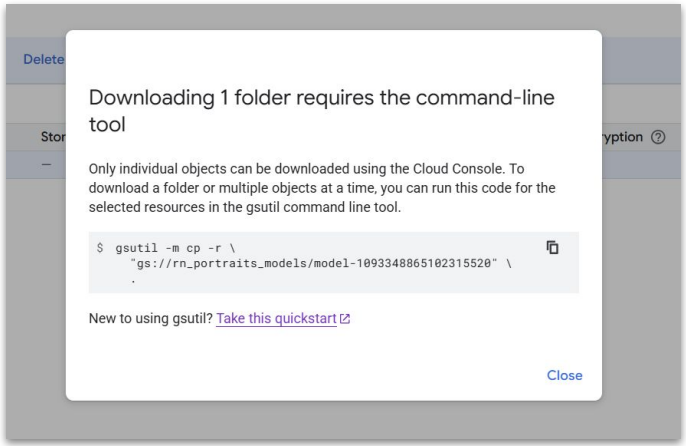
TF Lite: your model

Tensorflow.js: your model dictionary (important to interprete correctly the model outpyut)

2.2. Download your model from your bucket

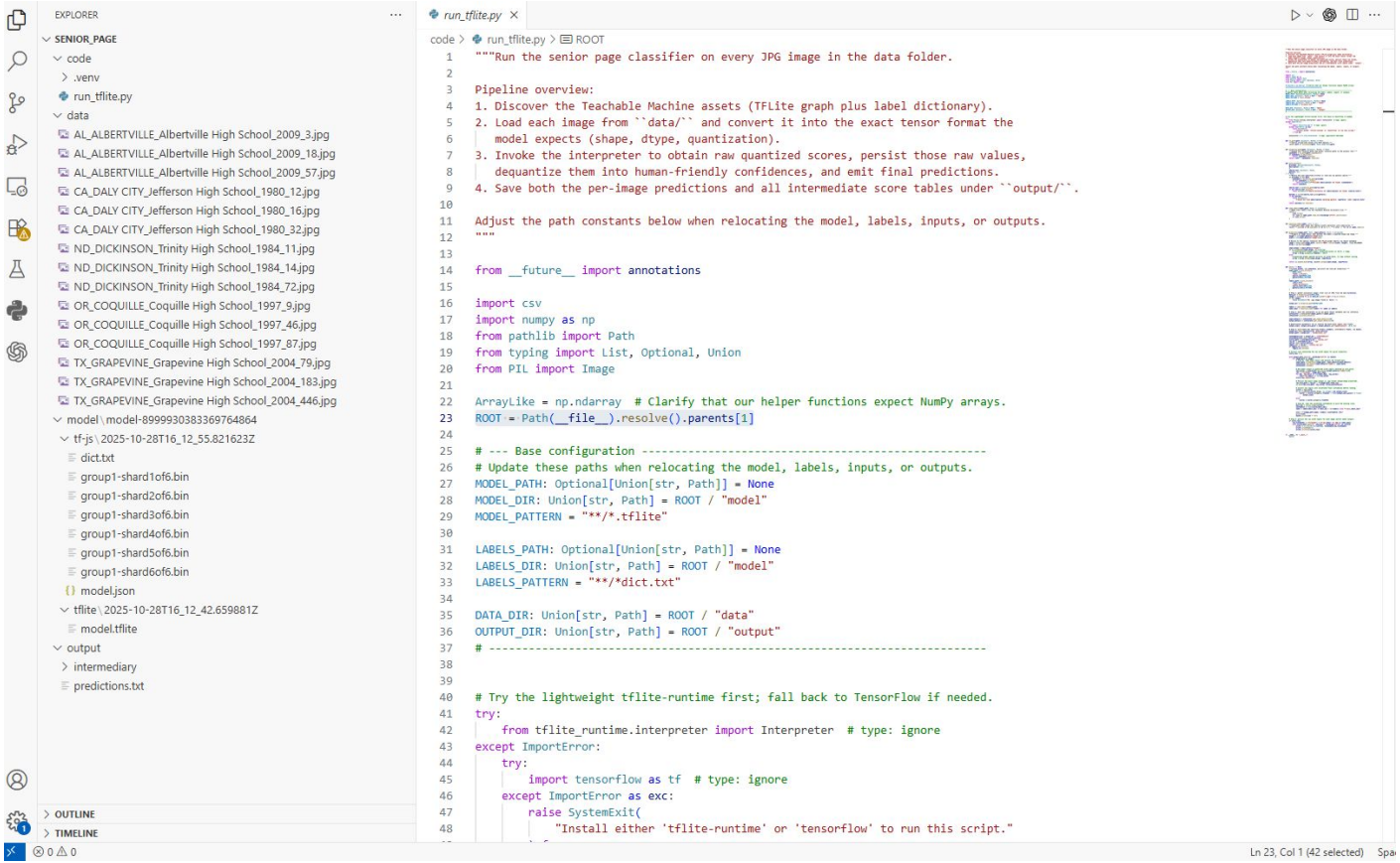
Go back to the bucket and download





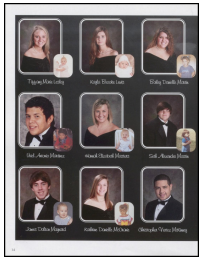
Copypaste this command, run it in the Cloud Console (Cloud Shell Editor), then download the model folder from the explorer.

2.3. Example run

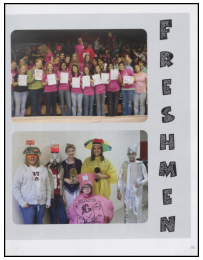


2.3. Example run

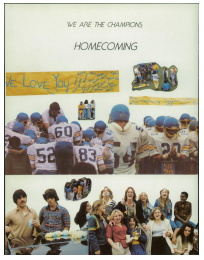
no_seniors (0.949)



yes_seniors (0.992)



no_seniors (0.945)

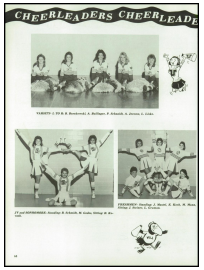


no_seniors (0.949)

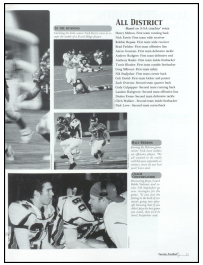
no_seniors (0.918)

yes_seniors (0.988)

no_seniors (0.949)



no_seniors (0.949)



no_seniors (0.953)

no_seniors (0.945)

no_seniors (0.992)

no_seniors (0.953)

AutoML Tips

A few rules to respect with your training sample:

1) Include enough labeled examples of each category (aim for 1,000, minimum 100)
2) Distribute examples equally across categories (even if the true distribution is unbalanced)
3) Capture the variation in your problem space (examples should capture the diversity of cases for each category)

Resource

AutoML beginner's guide by Google