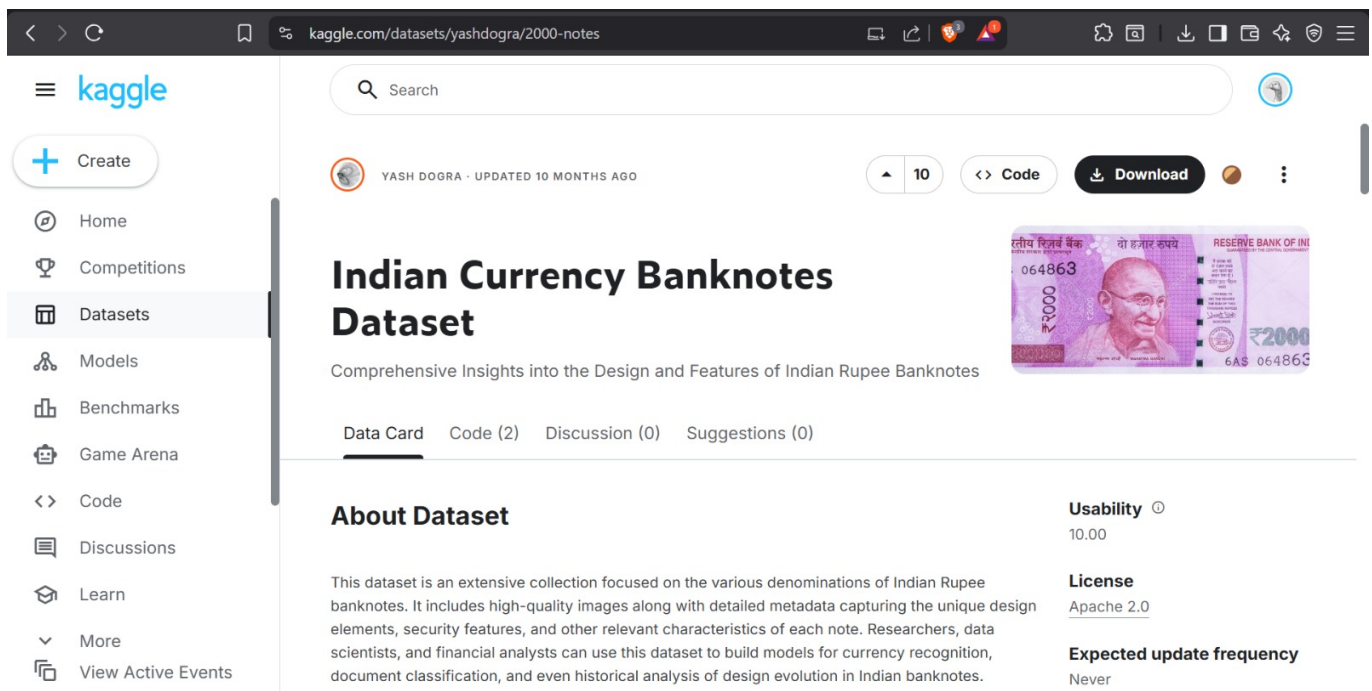


Currency Denomination Detection using YOLO

Step 1:- Gathering Data

- Gather images of the objects you want your model to detect
- In this Case we Used Indian Currencies of diffrent denominations (ie. 10,20,50,100,200,500,2000)
- For a smaller dataset, take about 30-40 images per object(If you are training on apples and oranges, for examples, find 30-40 different images of apples, and 30-40 for oranges)
- Look for images that have different angles, colors, etc. Regarding the apples and oranges, try to find a variety of shapes and colors.

You Can Obtain DataSets from This Website <https://www.kaggle.com/>



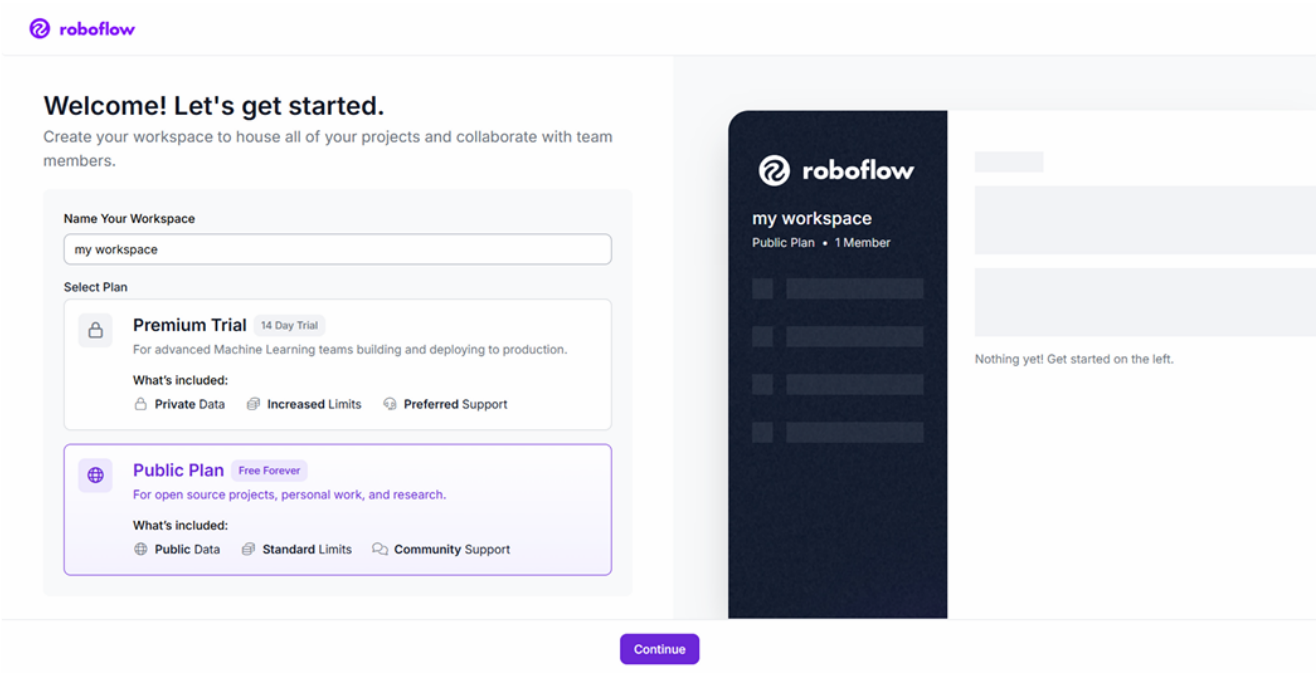
The screenshot shows the Kaggle website interface. On the left is a sidebar with navigation links: Home, Competitions, Datasets (highlighted), Models, Benchmarks, Game Arena, Code, Discussions, Learn, More, and View Active Events. The main content area displays the 'Indian Currency Banknotes Dataset' by Yash Dogra, updated 10 months ago. It features a search bar, a '10' rating, and buttons for 'Code', 'Download', and a menu. Below the title is a description: 'Comprehensive Insights into the Design and Features of Indian Rupee Banknotes'. There are tabs for 'Data Card', 'Code (2)', 'Discussion (0)', and 'Suggestions (0)'. The 'About Dataset' section describes the dataset as an extensive collection of Indian Rupee banknotes with high-quality images and detailed metadata. It also mentions the dataset's usability (10.00), license (Apache 2.0), and expected update frequency (Never). An image of a 2000 Indian Rupee banknote is shown on the right.

Step 2:- Annotating

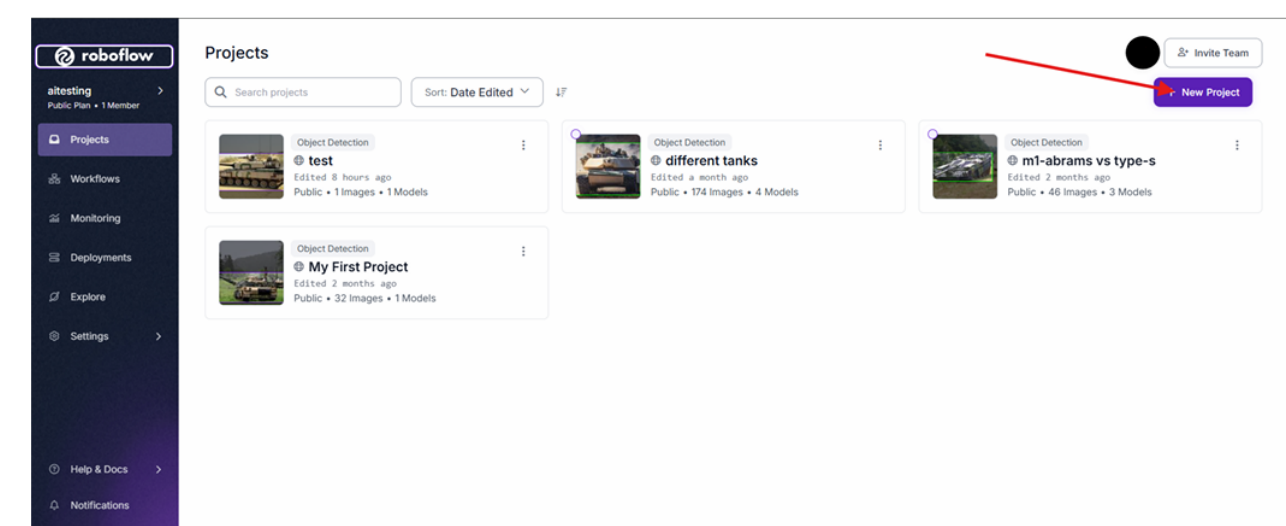
- Annotating is the process of drawing a box around the object in a photo, and giving it a name.
- This process tells the AI model that "This object is in this location, looks like this, and is called this"
- We will be using a free website called Roboflow to annotate, but there are others like it.

How to Annotate

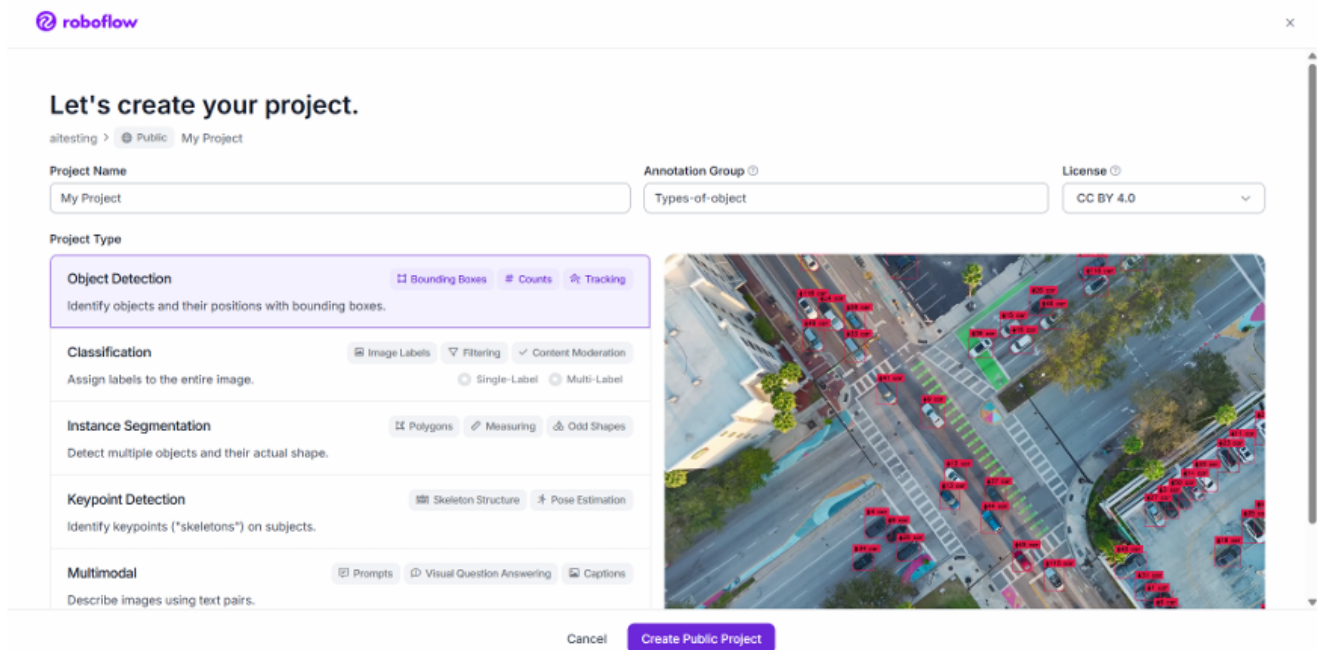
1. Open <https://roboflow.com/> and create an account
2. Create a workspace, Select public plan and continue.



3. Create a project



4. Fill in name, Annotation group, select "Object Detection," and create project:



Let's create your project.

altesting > Public My Project

Project Name
My Project


Annotation Group
Types-of-object

License
CC BY 4.0

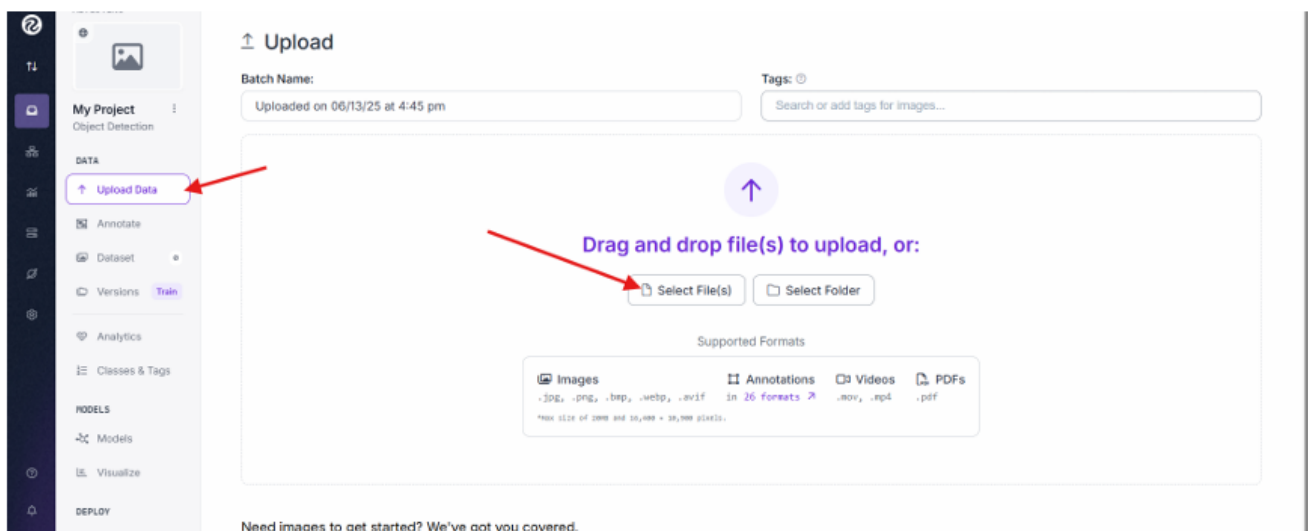
Project Type

- Object Detection** (Selected)
Identify objects and their positions with bounding boxes.
Bounding Boxes # Counts Tracking
- Classification**
Assign labels to the entire image.
Image Labels Filtering Content Moderation
Single-Label Multi-Label
- Instance Segmentation**
Detect multiple objects and their actual shape.
Polygons Measuring Odd Shapes
- Keypoint Detection**
Identify keypoints ("skeletons") on subjects.
Skeleton Structure Pose Estimation
- Multimodal**
Describe images using text pairs.
Prompts Visual Question Answering Captions

Cancel Create Public Project



5. Navigate to the "Upload Data" tab and upload your images



Upload

Batch Name: Uploaded on 06/13/25 at 4:45 pm

Tags: Search or add tags for images...

Drag and drop file(s) to upload, or:

Select File(s) Select Folder

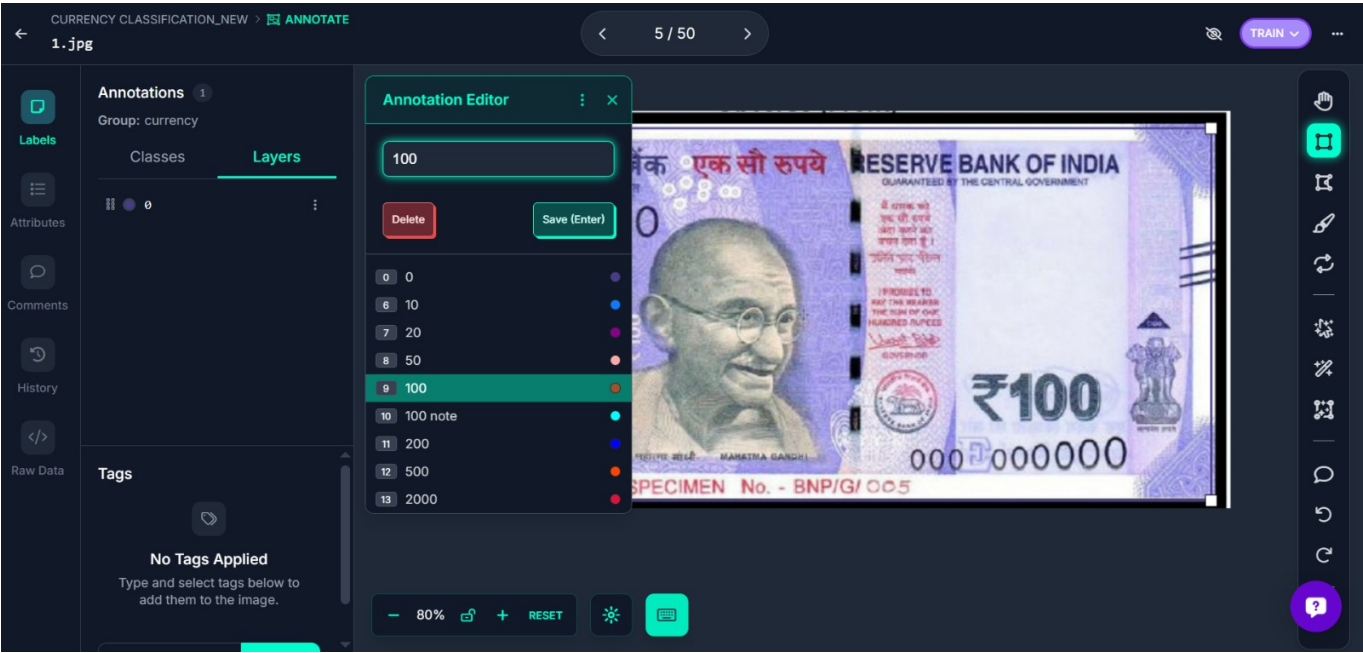
Supported Formats

- Images**
-jpg, -png, -bmp, -webp, -avif in 26 formats
*max size of 20MB and 10,000 x 10,000 pixels
- Annotations**
- Videos**
-mov, -mp4
- PDFs**
-pdf

Need images to get started? We've got you covered.

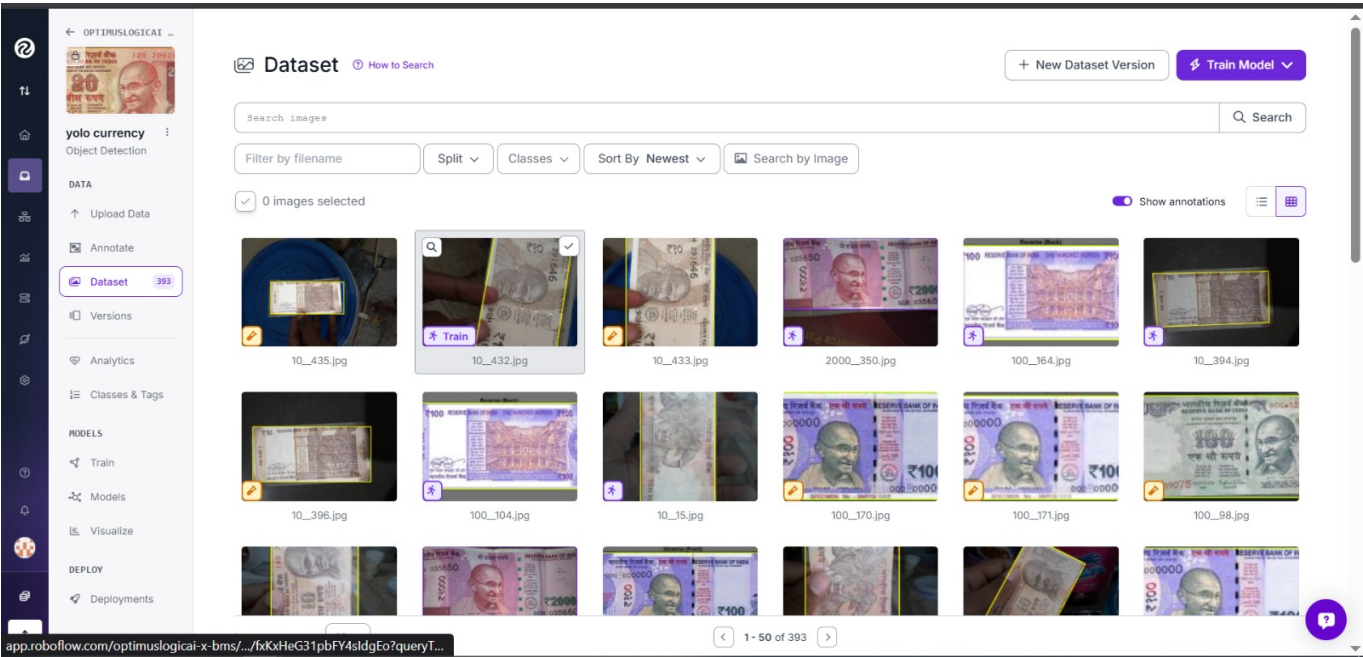
6. Click on "Start Labeling," "Assign to myself,"

7. To label the image, draw a box around the object and enter the name of the it



8. Once all images are annotated, Navigate to the "Annotated" tab on the left and click "Add to Dataset" on the top right.

9. After Annotating , you can preview your DataSet



10. Split images between a train, valid, and test set. This is necessary. The recommended split is good.

Add Images To Dataset

Total Images to Add: 1

Method What's Train, Valid, Test?

Split Images Between Train/Valid/Test

Train 70% Valid 20% Test 10%

Image Distribution

Train: 1 images
Valid: 0 images
Test: 0 images

You are about to add 1 images to the dataset.
0 images will be sent back as part of a new job.

11. On the versions tab(left), follow the steps to create a version.

a. Augmentation could prove useful for you, because it duplicates images and introduces imperfections, which could strengthen the accuracy of your model in imperfect situations.

12. Create the version. We will get back to this later.

The screenshot shows the Roboflow web interface. On the left sidebar, the 'Versions' tab is selected for the dataset 'yolo currency'. The main panel displays a list of versions on the left and details for the selected version (v8) on the right. The version details indicate it was generated on Feb 4, 2026, by S Pranav Krishna. A message states 'This version doesn't have a model.' and provides instructions on how to train a model or upload custom weights. At the bottom, a gallery of 393 total images is visible, showing various Indian currency notes.

Step 3:- Training The Yolo Model

1. Open A Colab File ([Colab])(<https://colab.research.google.com/github/roboflow-ai/notebooks/blob/main/notebooks/train-yolo11-object-detection-on-custom-dataset.ipynb>)

NOTE: To make it easier for us to manage datasets, images and models we create a `HOME` constant.

```
[ ]
import os
HOME = os.getcwd()
print(HOME)

... /content
```

Install YOLO11 via Ultralytics

```
[ ]
%pip install "ultralytics<=8.3.40" supervision roboflow
# prevent ultralytics from tracking your activity
!yolo settings sync=False
import ultralytics
ultralytics.checks()

Ultralytics 8.3.2 Python-3.10.12 torch-2.4.1+cu121 CUDA:0 (Tesla T4, 15102MiB)
Setup complete (2 CPUs, 12.7 GB RAM, 41.2/112.6 GB disk)
```

2. Run everything before "Inference with model pre-trained on COCO dataset"(this is not necessary for building the model, but you can run it if you want)

3. Scroll down to "Fine-tune YOLO11 on custom dataset"

NOTE: When training YOLOv11, make sure your data is located in `datasets`. If you'd like to change the default location of the data you want to use for fine-tuning, you can do so through Ultralytics' `settings.json`. In this tutorial, we will use one of the [datasets](#) available on [Roboflow Universe](#). When downloading, make sure to select the `yolov11` export format.

```
[ ]
mkdir {HOME}/datasets
%cd {HOME}/datasets

from google.colab import userdata
from roboflow import Roboflow

ROBOFLOW_API_KEY = userdata.get('ROBOFLOW_API_KEY')
rf = Roboflow(api_key=ROBOFLOW_API_KEY)

workspace = rf.workspace("liangdianzhong")
project = workspace.project("-qvdaw")
version = project.version(3)
dataset = version.download("yolov11")
```

4. Fill in name, Annotation group, select "Object Detection," and create project:

Versions + Create New Version

Versions

2026-02-04 3:15pm
v9 393
s.saaswath@gmail.c...

2026-02-04 12:22pm
v8 393 S Pranav Krishna

2026-02-04 11:39am ☒
v6 393 Notes
s.saaswath@gmail.c...

2026-02-04 11:23am
v5 393 S Pranav Krishna

2026-02-03 5:17pm
v3 393
s.saaswath@gmail.c...

v9 2026-02-04 3:15pm
Generated on Feb 4, 2026 by s.saaswath@gmail.com


[Download Dataset](#) [Edit](#)

This version doesn't have a model.
Train an optimized, state of the art model with Roboflow or upload a custom trained model to use features like Label Assist and Model Evaluation and deployment options like our auto-scaling API and edge device support.

[Train Model](#)
Uses Roboflow Credits [View usage](#)

[How to Upload Custom Weights](#)

393 Total Images [View All Images →](#)



cai-x-bms/yolo-currency/9/export

5. Click on "Download Dataset"

Download ×

Image and Annotation Format

YOLOv11 ▼

TXT annotations and YAML config used with YOLOv11.

Download Options

☐ Download zip to computer
Downloads all images, annotations, and classes.

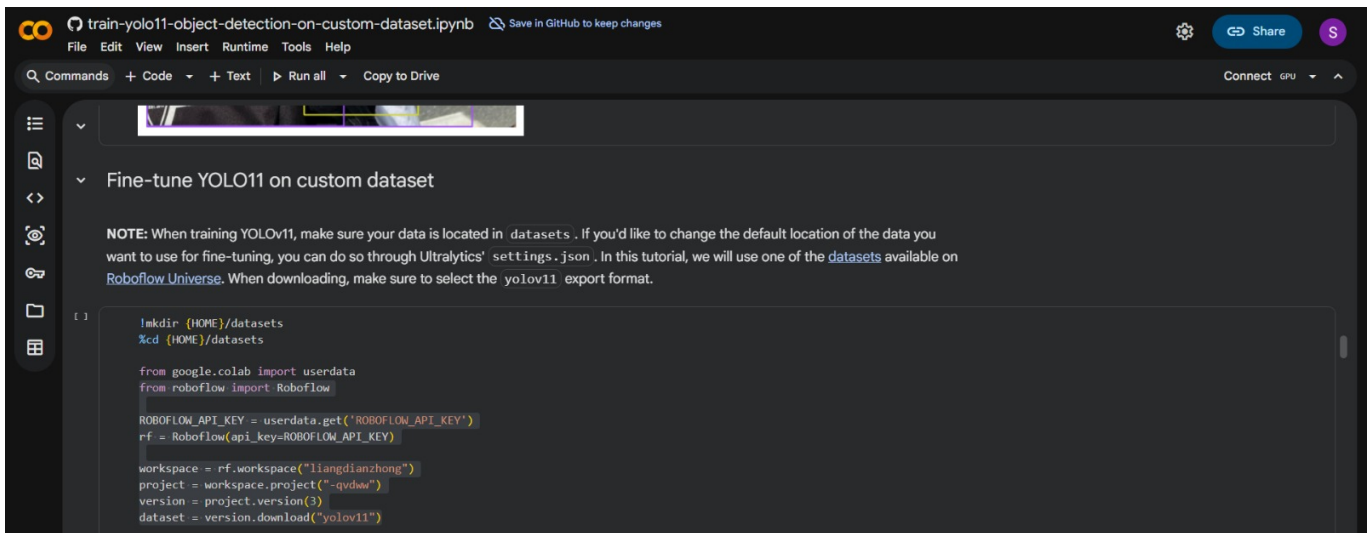
☒ Show download code
Custom train this dataset using the provided code snippet in a notebook.

[Cancel](#) [Continue](#)

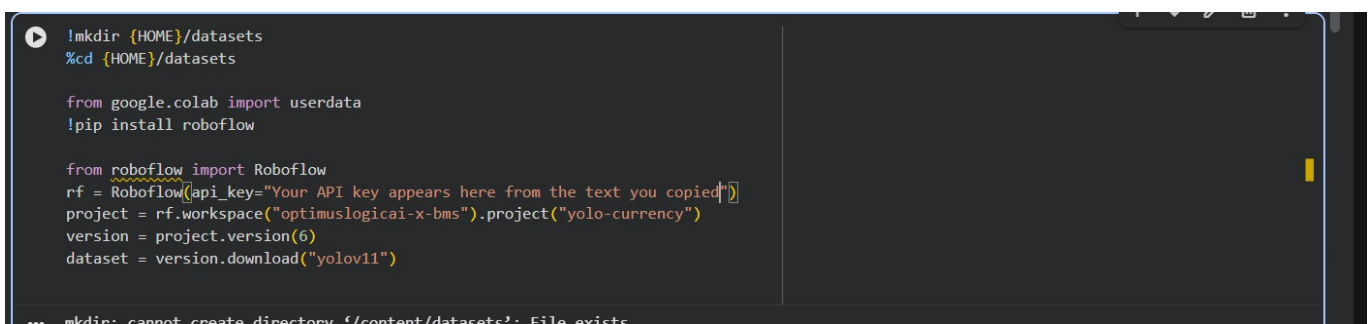
6. Select YOLOv11 and Show download code.

7. Copy the Snippet

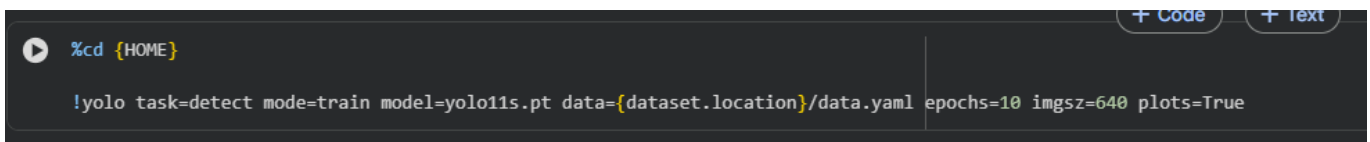
8. Navigate back to the Collab Document, select the text highlighted below and paste the text from roboflow website



9. updated snippet looks something like this



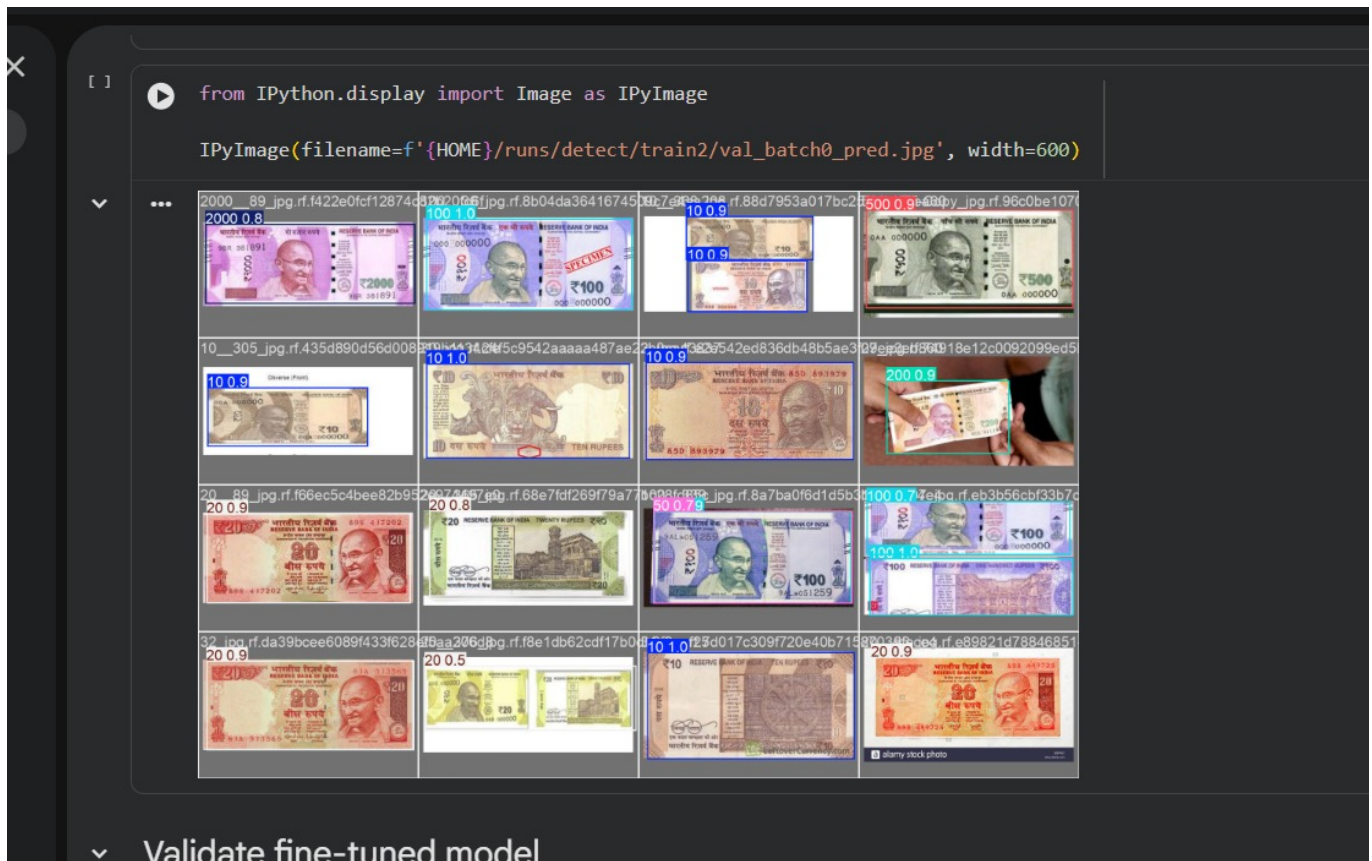
10. Next to the "model=", you can change the size of the model you want to train. Yolo11n is the smallest, yolo11l and x are the largest. For now, its fine to use yolo11n.



11. Next to "epochs=", this determines the amount of cycles your model is trained for. For a final model, 100-300 epochs are usually a good amount. For now, choose anywhere from 10-50 epochs. If you're unsure, use 10.

12. Run the snippet and wait for it to finish. This may take a while.

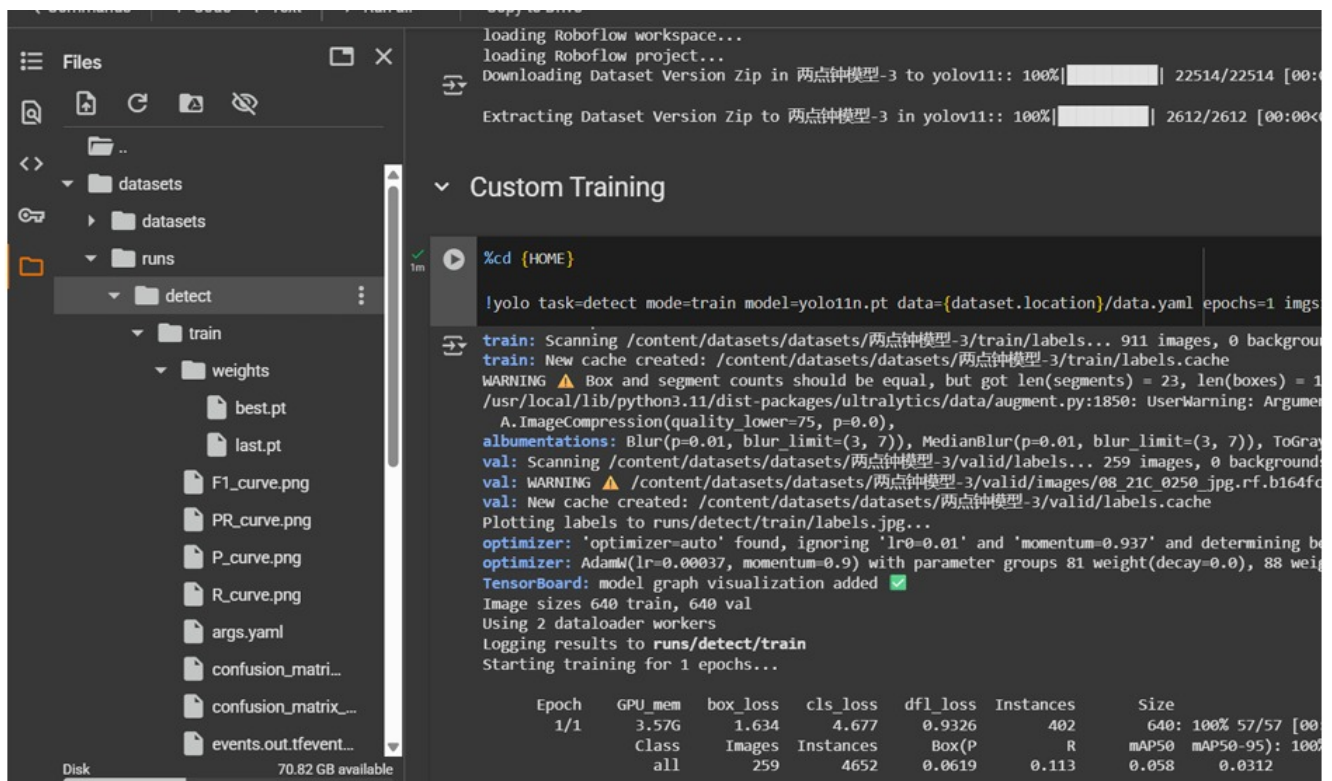
13. After Running All the Code Snippets you will see different images and their IDs



13. Congrats! You now have a fully trained model.

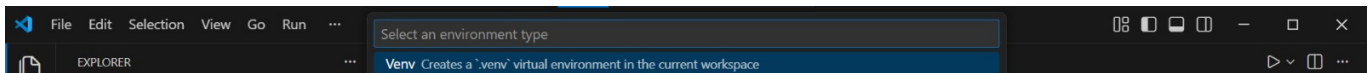
Step 4:- Local Deployment

1. In order to download the trained model onto your computer, open the file browser tab on the left
2. Navigate to datasets → runs → detect → train → weights → look for a file called "best.pt" and download it to your computer.

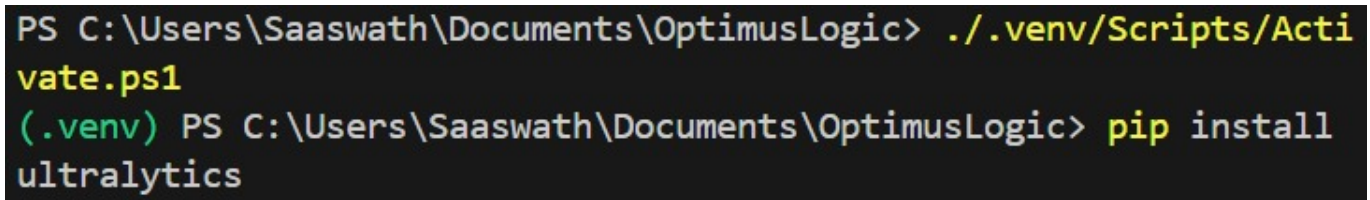


3. Open a code editor like Visual Studio Code and create a new python file.

4. In Visual Studio Code or any other IDE, Create a Virtual Environment (.venv)



5. Activate the venv and install ultralytics, OpenCV, Numpy using command given below



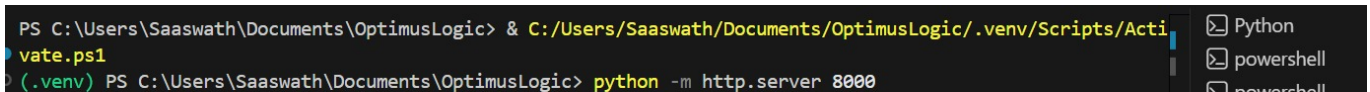
6. Make sure that the best.pt file, and Python file that you are going to create now are both in the same directory

7. Use the code `oldeploy1.py` given to run the program to test the model and save result to notepad file

8. `source = "0"` - change this line from zero to "file path" to give any test images to the model instead of taking it from the webcam

9. Open a new terminal on VS Code in the same venv

10. Enter the command
`python -m http.server 8000`

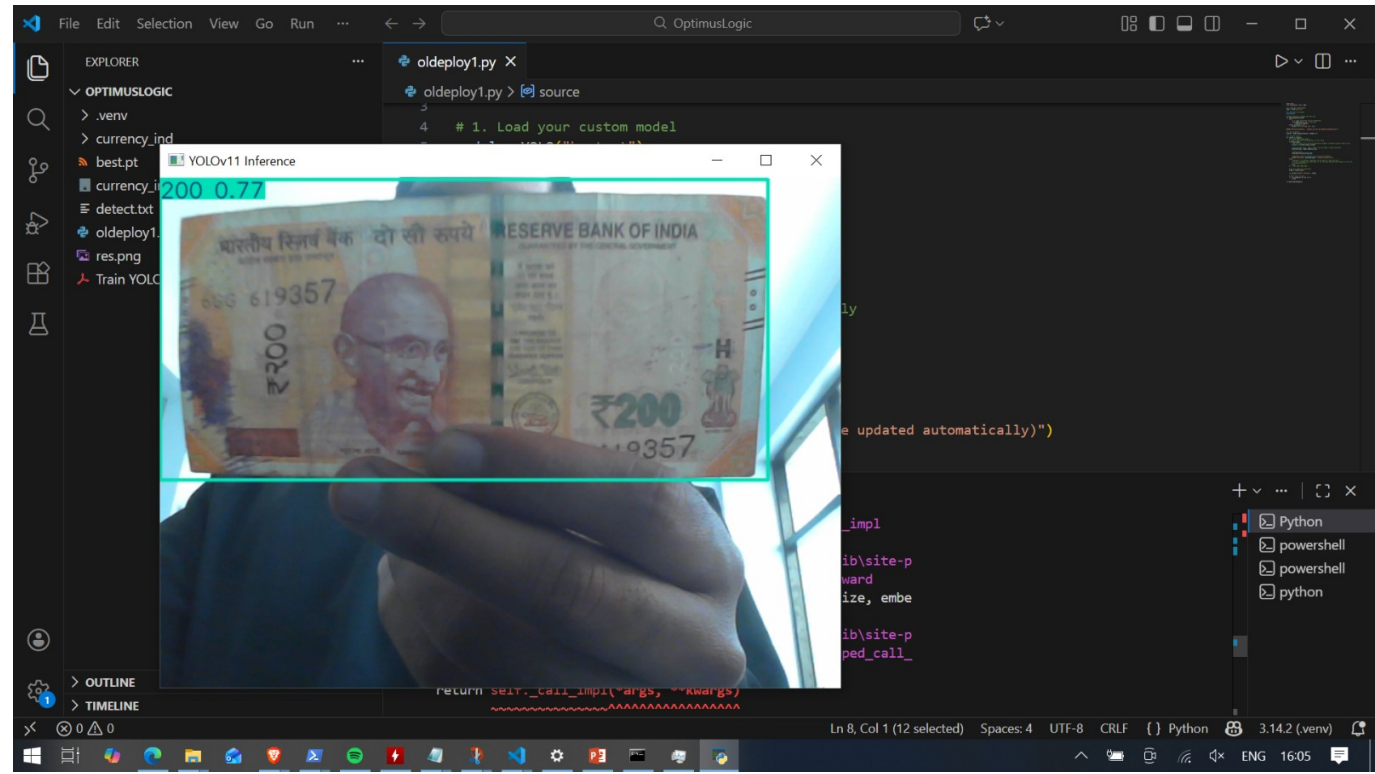


11. This creates a server using port 8000 and the computer acts as server with access granted thru IPv4 address of the computer

12. The txt file can be accessed using
`https://:8000/detect.txt`

Final Results

1. On running the Python Program ,your Computers WebCam will turn on and there will be a live feed on your display as shown below.



2. After Running the Server ,you can open your web browser (Chrome,FireFox,Brave,Edge,Internet Explorer and so on), paste in the Ip Address as mentioned before.You will get the following shown on your web browser.

