

Lab6: Imaging tools (Roboflow)

3099704 AI for Digital Health (2025/2)



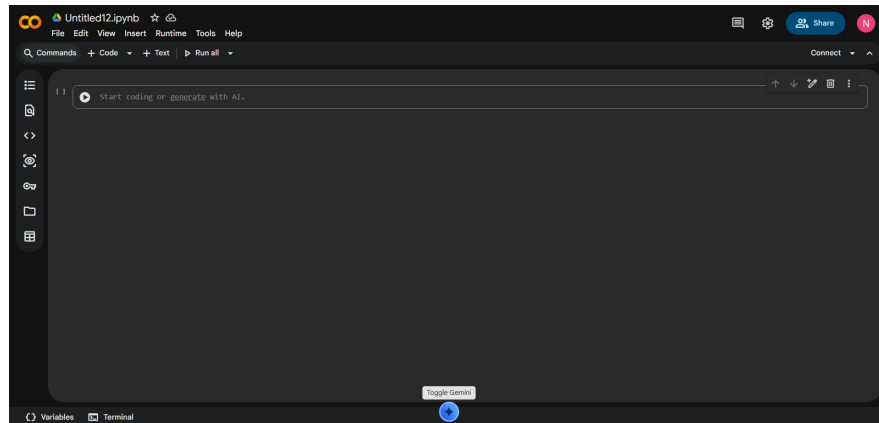
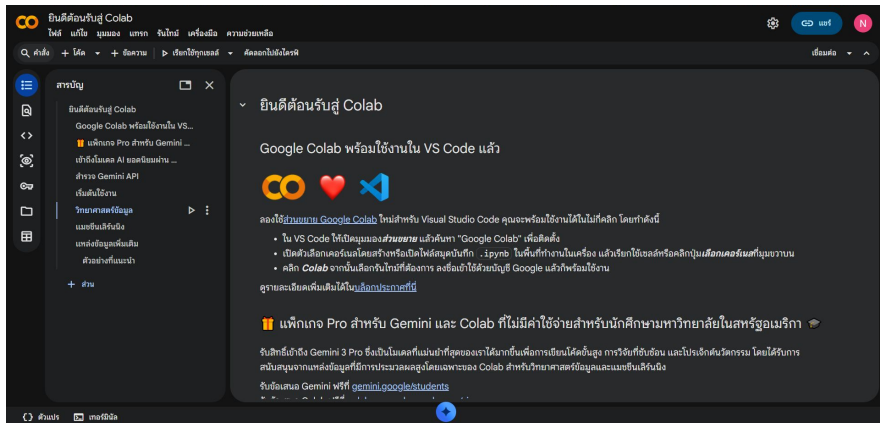
Objective

- Use the **Roboflow** to create Dataset
- Use created Dataset to train model (YOLO,UNet)



Material

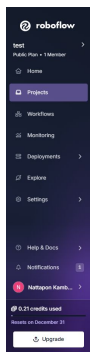
- With **Google Colab**, you don't need to install any software. All you need is a Google account, and you can start using it right away. Simply visit: <https://colab.research.google.com/> or select NEW NOTEBOOK to start a new file.



Roboflow



- **Roboflow** is a web-based platform that helps users easily prepare datasets. It can be accessed through a web browser at <https://roboflow.com/> by signing in with a Google or GitHub account.
- Users can upload images, annotate data, apply preprocessing and data augmentation, and export datasets in formats ready for training models such as YOLO.

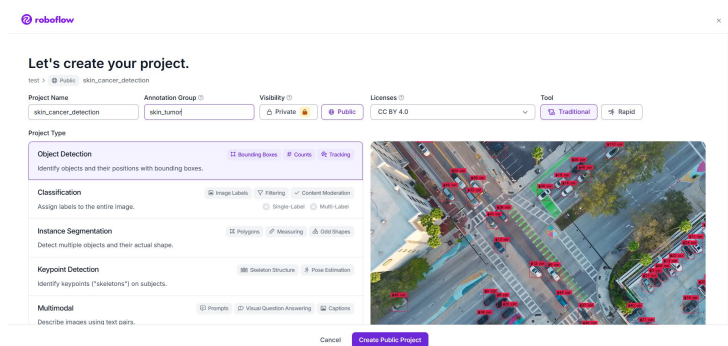
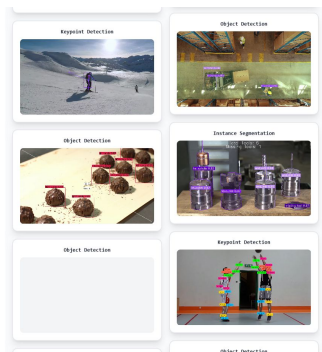


Build vision models to recognize anything

Upload your data, label it, and train vision models.

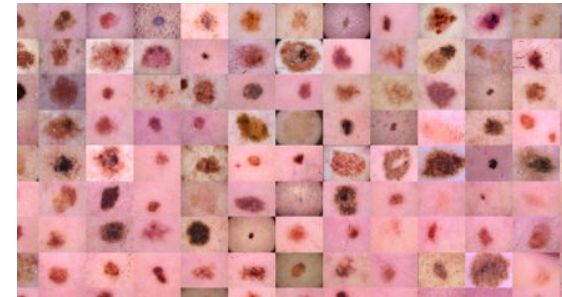
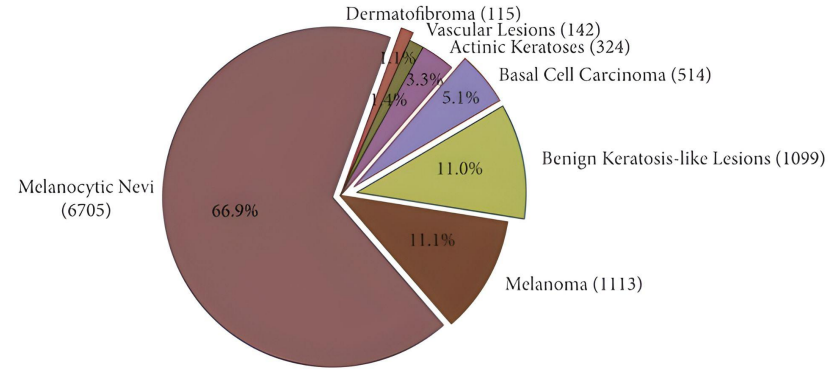
[New Project](#)

[View a Tutorial](#)



Dataset: Skin Cancer MNIST (HAM10000)

- The dataset consists of 10015 images with 10013 labeled objects belonging to 7 skin cancer classes.
- The data contains image in JPG format and documents in JSON format

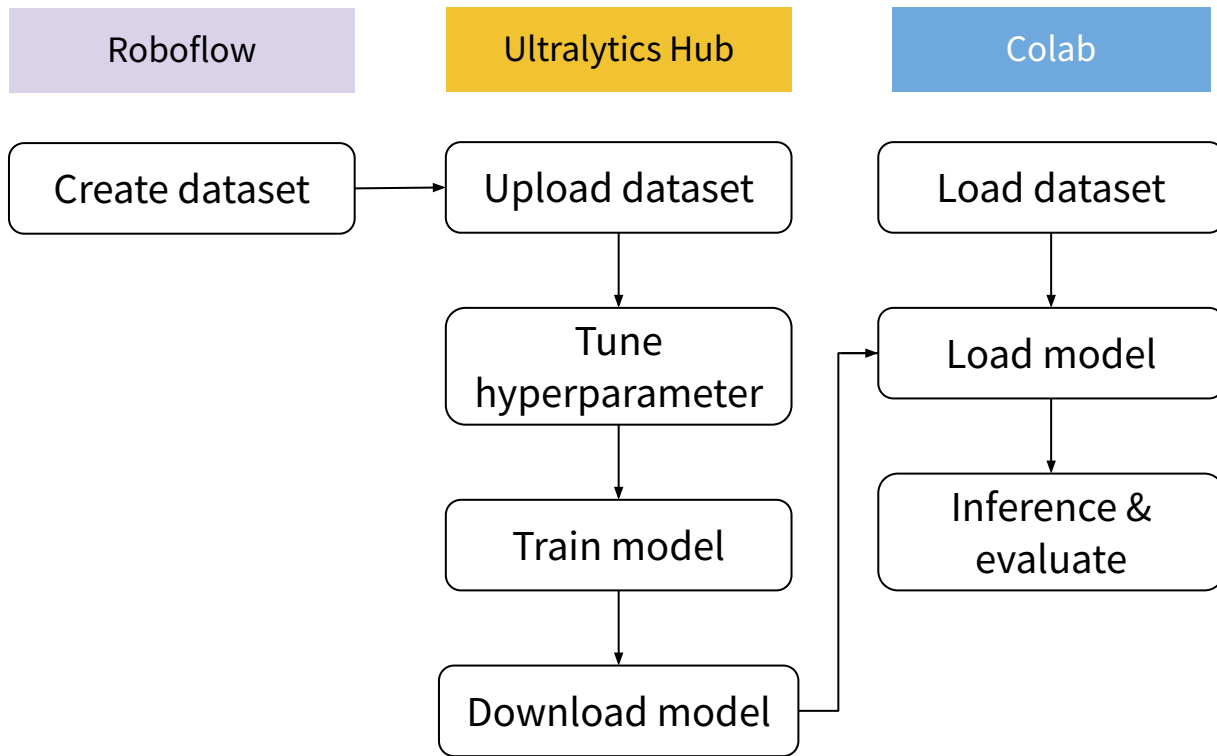


Lab6.1: Object detection dataset

In this lab, we will repeat the experiment from **Lab 4.1 (YOLOv8n)**, but the dataset will be created using Roboflow instead.

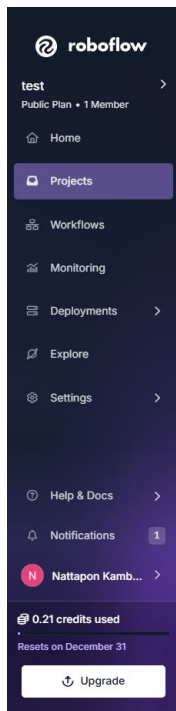
- 1) Load image from github
- 2) Create Object detection dataset in Roboflow
- 3) Train YOLO model in ultralytics hub
- 4) evaluate YOLO in

[Lab 6 1 ultralyricshub](#)



Lab6.1: Object detection dataset

1) Sign in [Roboflow](#)



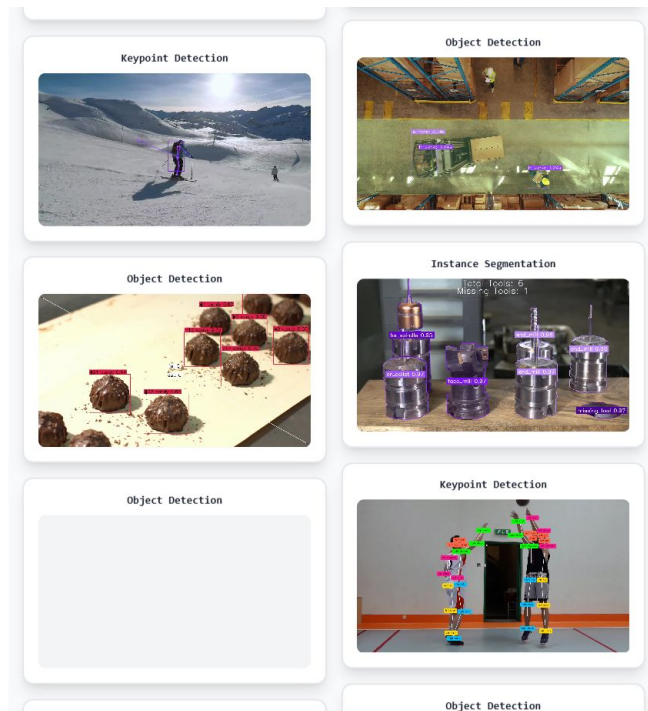
Projects

Build vision models to recognize anything

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+ New Project

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Lab6.1: Object detection dataset

2) Create new project (Object Detection)









Let's create your project.




test >  Public skin_cancer_detection



Project Name: skin_cancer_detection Annotation Group: skin_tumor Visibility:  Private  Public Licenses: CC BY 4.0 Tool:  Traditional  Rapid




Project Type

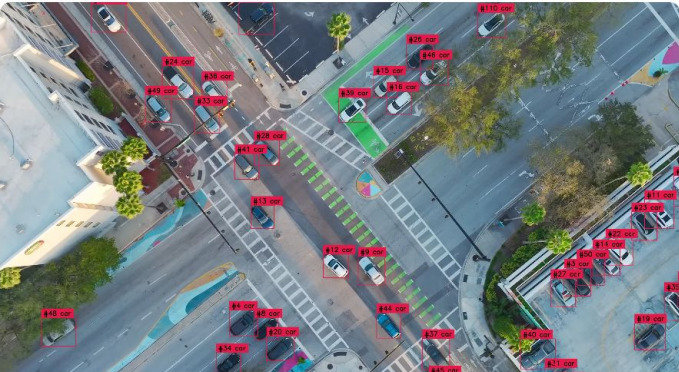
Object Detection  Bounding Boxes  Counts  Tracking
Identify objects and their positions with bounding boxes.

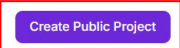
Classification  Image Labels  Filtering  Content Moderation
Assign labels to the entire image.
☐ Single-Label ☐ Multi-Label

Instance Segmentation  Polygons  Measuring  Odd Shapes
Detect multiple objects and their actual shape.

Keypoint Detection  Skeleton Structure  Pose Estimation
Identify keypoints ("skeletons") on subjects.

Multimodal  Prompts  Visual Question Answering  Captions
Describe images using text pairs.



Cancel 

Lab6.1: Object detection dataset

- 3) Download the dataset from [GitHub](#), then upload in **Roboflow**.

The screenshot displays the Roboflow web interface. On the left is a dark sidebar with navigation icons. The main content area is titled 'TEST' and shows a dataset named 'skin_cancer_d...' with 'Object Detection' as the task. Below this, there's a 'DATA' section with an 'Upload Data' button. The central part of the interface is the 'Upload' page, which includes a 'Batch Name' field (containing 'Uploaded on 12/26/25 at 12:57 pm') and a 'Tags' field (containing 'Search or add tags for images...'). There's a checkbox for 'Create batch instantly'. A large dashed box in the center contains an upward arrow and the text 'Drag and drop file(s) to upload, or:'. Below this are two buttons: 'Select File(s)' and 'Select Folder'. A 'Supported Formats' section lists 'Images' (with file extensions .jpg, .png, .bmp, .webp, .avif and a note about max size), 'Annotations' (in 26 formats), 'Videos' (.mov, .mp4), and 'PDFs' (.pdf). On the right side, there are three promotional cards: 'Need images to get started?' with a QR code for mobile uploads, 'Search on Roboflow Universe' with a search bar, and 'Bulk Upload Images' with a description of upload methods.

Lab6.1: Object detection dataset

3) Download the dataset from [GitHub](#), then upload in **Roboflow**.

The screenshot displays the Roboflow web application interface for uploading a dataset. On the left is a dark sidebar with navigation icons and labels: TEST, DATA, MODELS, and DEPLOY. The main content area is titled 'Upload' and includes a 'Batch Name' field containing 'Uploaded on 12/26/25 at 1:18 pm' and a 'Tags' field with the placeholder 'Search or add tags for images...'. Below these fields is a checkbox for 'Create batch instantly'. A summary bar shows 'All Images 18', 'Annotated 0', and 'Not Annotated 18'. The central section is titled 'Drag and drop images, annotations, and videos.' and contains buttons for 'Select Files', 'Select Folder', and 'Save and Continue' (highlighted with a red box). Below this is a grid of eight uploaded medical images, each with a unique ID and file name. At the bottom, a section titled 'Want to add similar images? Powered by Objects365' shows a row of related images and a '+ Add' button.

Lab6.1: Object detection dataset

4) Check “Label Myself”

The screenshot displays the Roboflow web interface for managing a dataset named "skin_cancer_d...". The left sidebar contains navigation options: TEST, DATA, Annotate (highlighted), Dataset, Versions, Analytics, Classes & Tags, MODELS, Visualize, and DEPLOY. The main area shows a batch of 10 images uploaded on 12/26/25 at 1:18 pm. Below the images is a panel titled "How do you want to label your images?" with three options: "Auto-Label Entire Batch" (purple), "Label Myself" (red border, selected), and "Label With My Team" (grey). The "Label Myself" option includes the text "Label images with our AI labeling tools." and an "Upgrade" button. The "Hire Outsourced Labelers" option also includes an "Upgrade" button.

← TEST

skin_cancer_d...
Object Detection

DATA

↑ Upload Data

Annotate

Dataset

Versions Train

Analytics

Classes & Tags

MODELS

Models

Visualize

DEPLOY

Deployments

Annotate > Batch

Uploaded on 12/26/25 at 1:18 pm

Uploaded Dec 26, 2025 (1:18 PM)

cju2hw5gjl1r5h0988so2q...

cju2hx006vid107991gm01...

cju2i03ptvkiu0799xbdd4...

cju2htabevq9100015qje1...

cju2hqt33lra0988fr51j...

cju213hzc1u3o0988rrgh9...

cju216acqv0610799u20f1...

cju2hugv9yete0799hhk7k...

cju2hl19vjf8001o69qn...

cju2hos5711xm08359g92p...

How do you want to label your images?

Auto-Label Entire Batch
Use your own custom model or a zero-shot model to automatically label your entire batch.
Try with SAM3

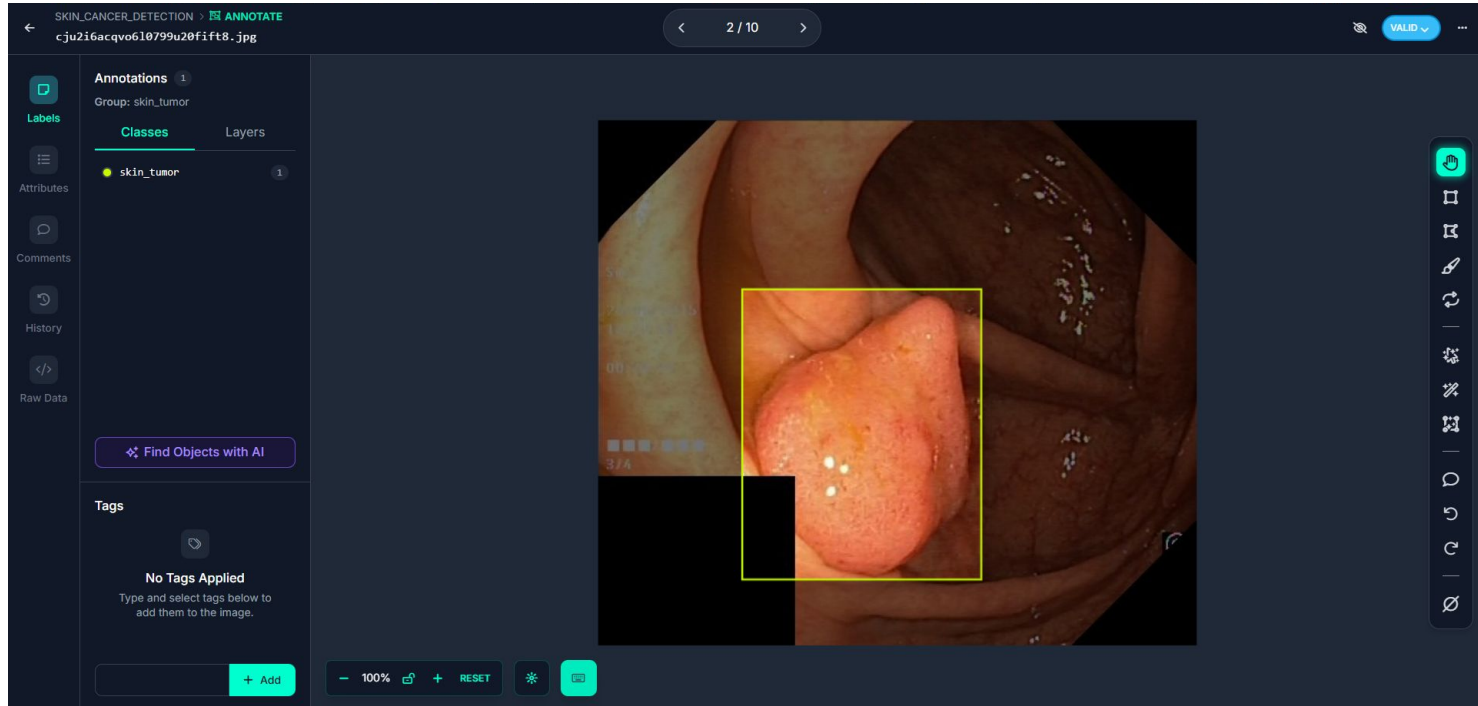
Label Myself
Label images with our AI labeling tools.

Label With My Team
Split up the labeling work across your team.

Hire Outsourced Labelers
Work with an professional labeling team vetted by Roboflow.

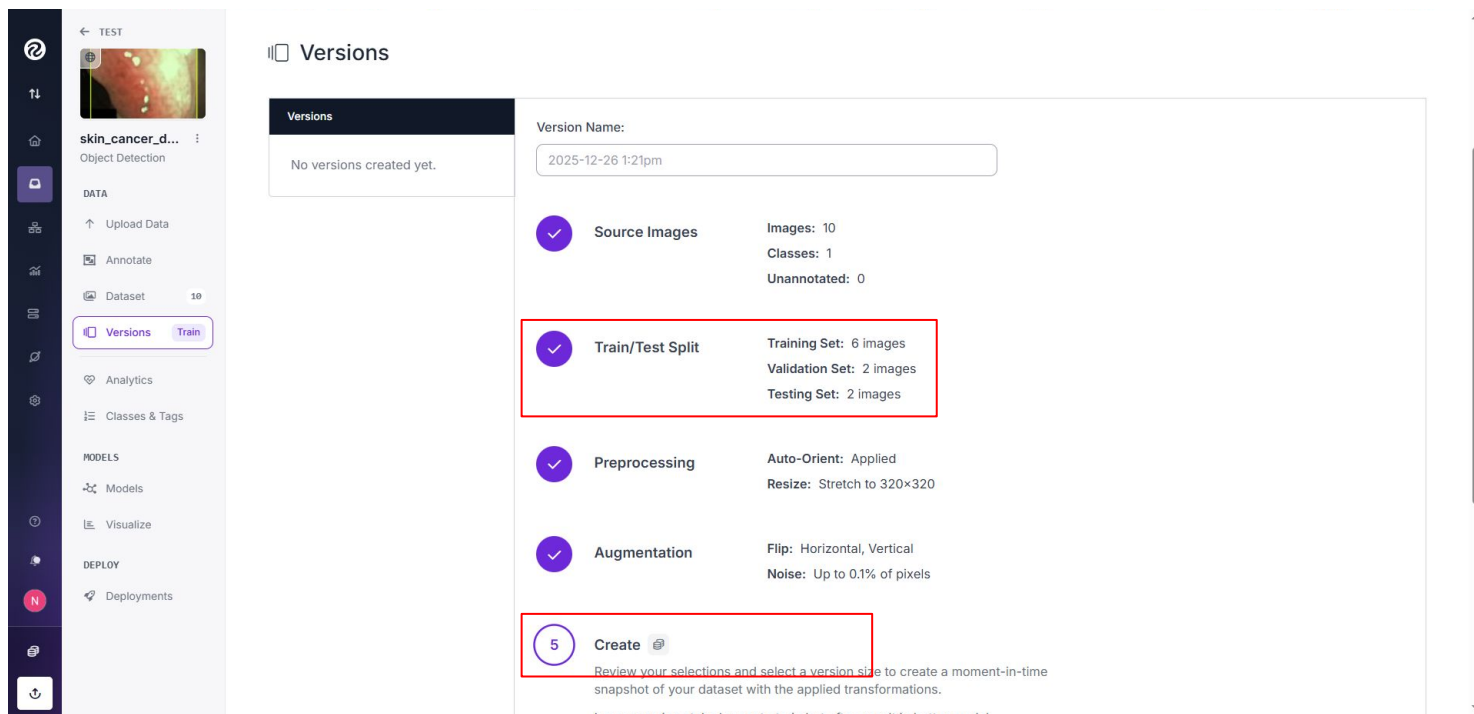
Lab6.1: Object detection dataset

5) Label polyp



Lab6.1: Object detection dataset

6) Split Train:60%, Validation:20%, Test:20%



TEST

skin_cancer_d...
Object Detection

DATA

Upload Data

Annotate

Dataset 10

Versions Train

Analytics

Classes & Tags

MODELS

Models

Visualize

DEPLOY

Deployments

Versions

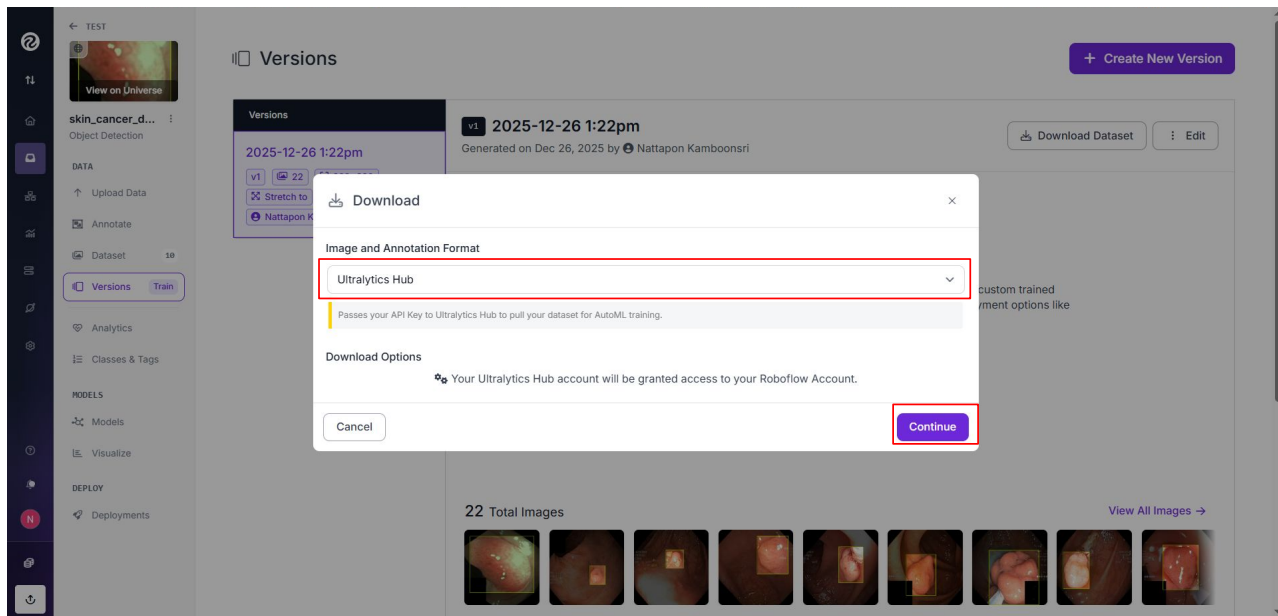
No versions created yet.

Version Name:
2025-12-26 1:21pm

- ✓ **Source Images**
Images: 10
Classes: 1
Unannotated: 0
- ✓ **Train/Test Split**
Training Set: 6 images
Validation Set: 2 images
Testing Set: 2 images
- ✓ **Preprocessing**
Auto-Orient: Applied
Resize: Stretch to 320x320
- ✓ **Augmentation**
Flip: Horizontal, Vertical
Noise: Up to 0.1% of pixels
- 5 **Create**
Review your selections and select a version size to create a moment-in-time snapshot of your dataset with the applied transformations.

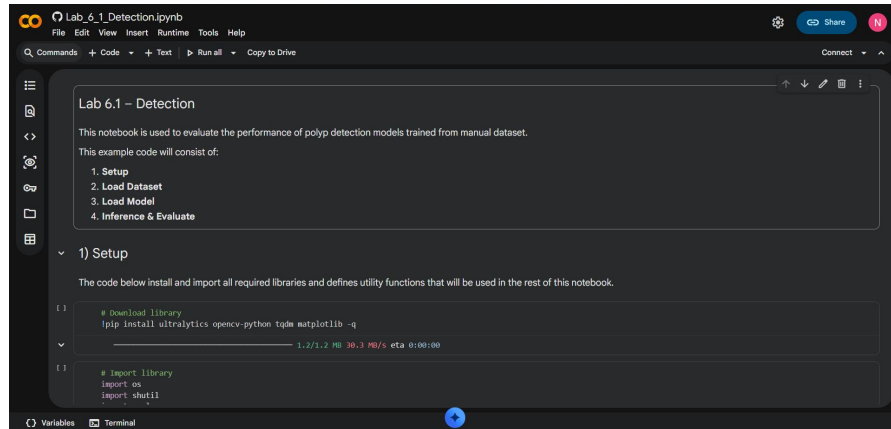
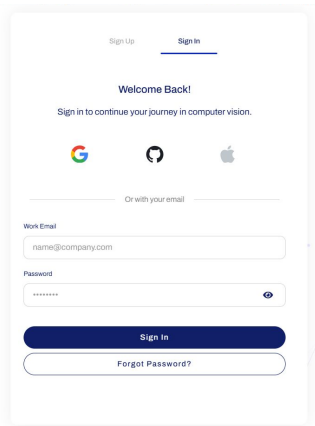
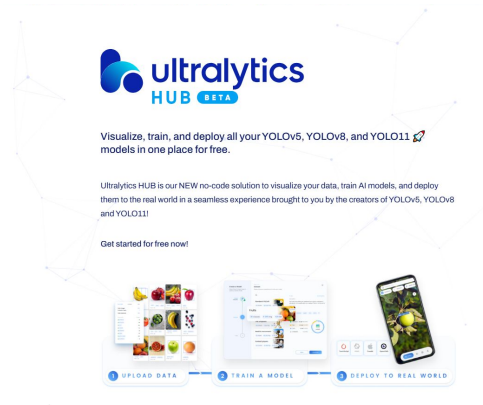
Lab6.1: Object detection dataset

- 7) Download the dataset in two formats: (1) Ultralytics HUB format for training the model, and (2) YOLOv8 format for evaluation using a Google Colab notebook.



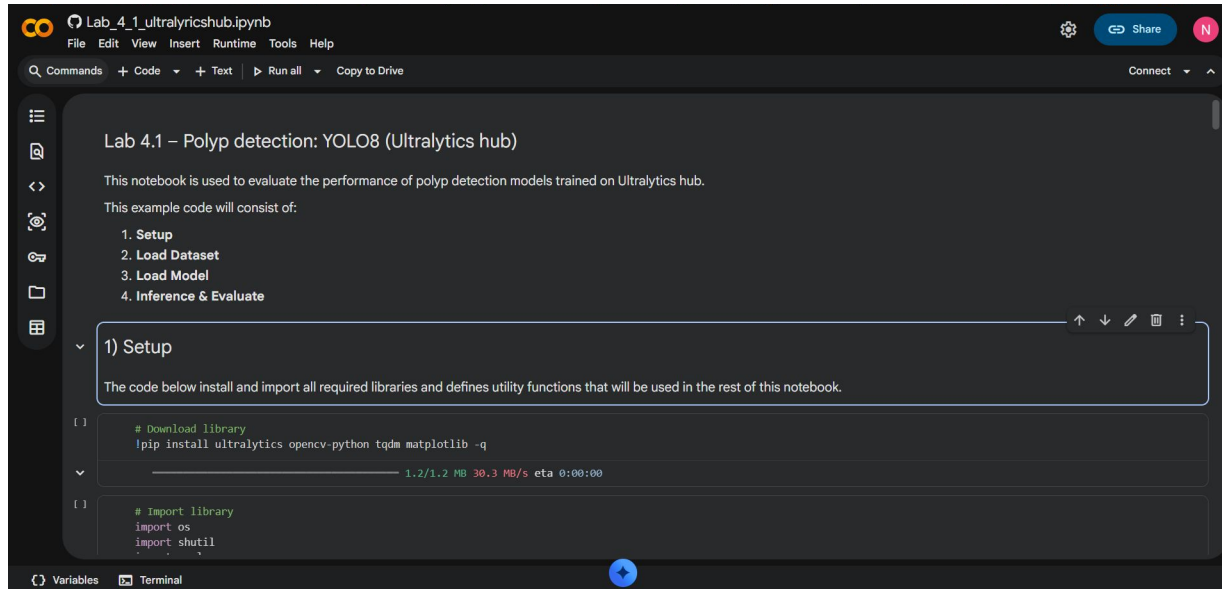
Lab6.1: Object detection dataset

- 8) Train YOLOv8n in Ultralytics Hub
- 9) Load model to run in [Lab 6 1 Detection](#) (in **colab**)



Lab6.1: Object detection dataset

5) Open [Lab 4 1 ultralyricshub](#) (in **colab**)

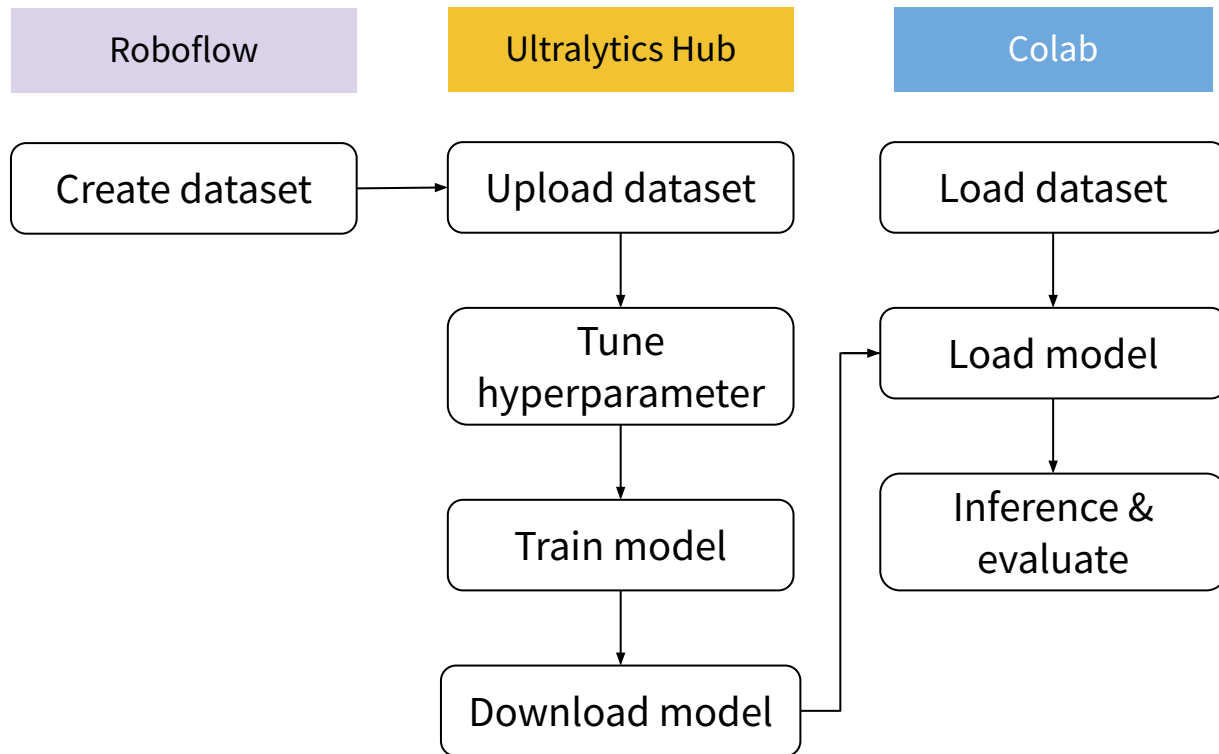


Lab6.1: Object detection dataset

In this lab, we will repeat the experiment from **Lab 4.1 (YOLOv8n)**, but the dataset will be created using Roboflow instead.

- 1) Load image from github
- 2) Create Object detection dataset in Roboflow
- 3) Train YOLO model in ultralytics hub
- 4) evaluate YOLO in

[Lab 6 1 ultralyricshub](#)



Lab6.2: Segmentation dataset

In this lab, we will repeat the experiment from **Lab 5.1 (2DUNet)**, but the dataset will be created using Roboflow instead.

- 1) Load image from [GitHub](#)
- 2) Create segmentation dataset in Roboflow
- 3) Download the dataset in segment formats
- 4) Upload the dataset to the [Lab 6 2 Segmentation](#), then train and evaluate the model.

