

{ RAI Frontier 2025 }



DALL-E 2



{ AGENDA }

1

Overview Ai. – 5 min

2

Workshop#1 – 45 min
RoboFlow

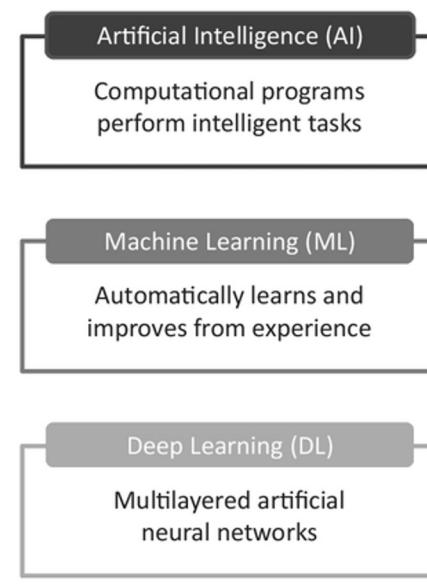
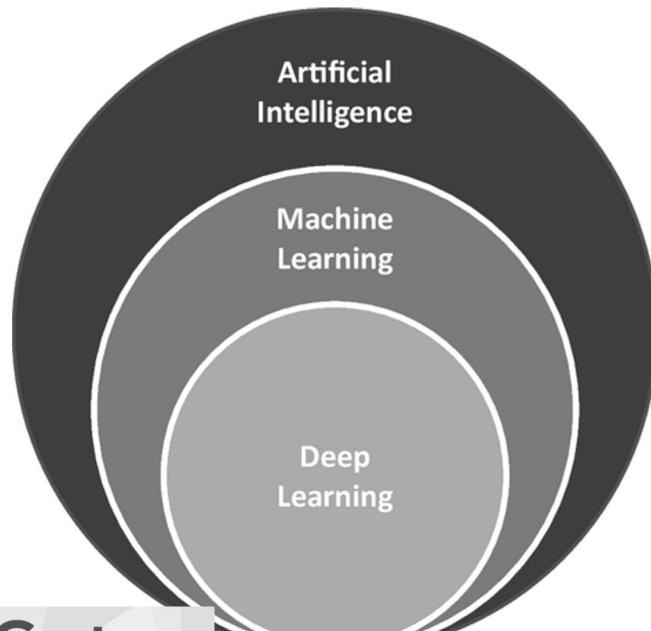
3

Workshop#2 – 35 min
YOLO v11

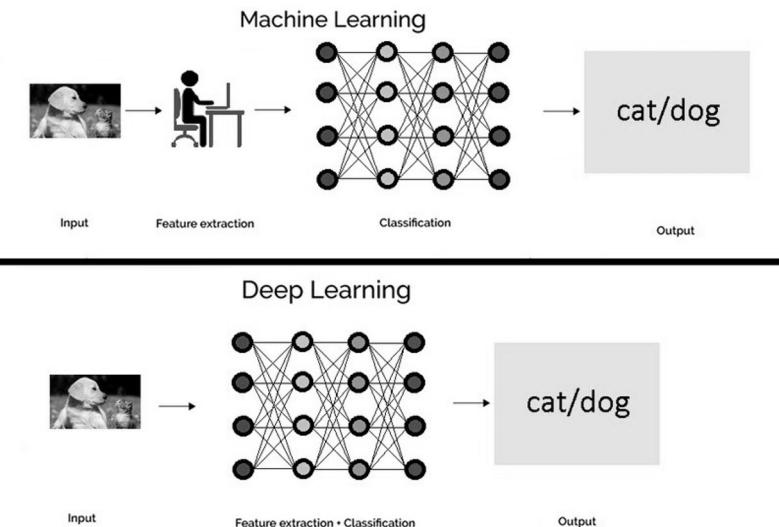
1

Overview Ai

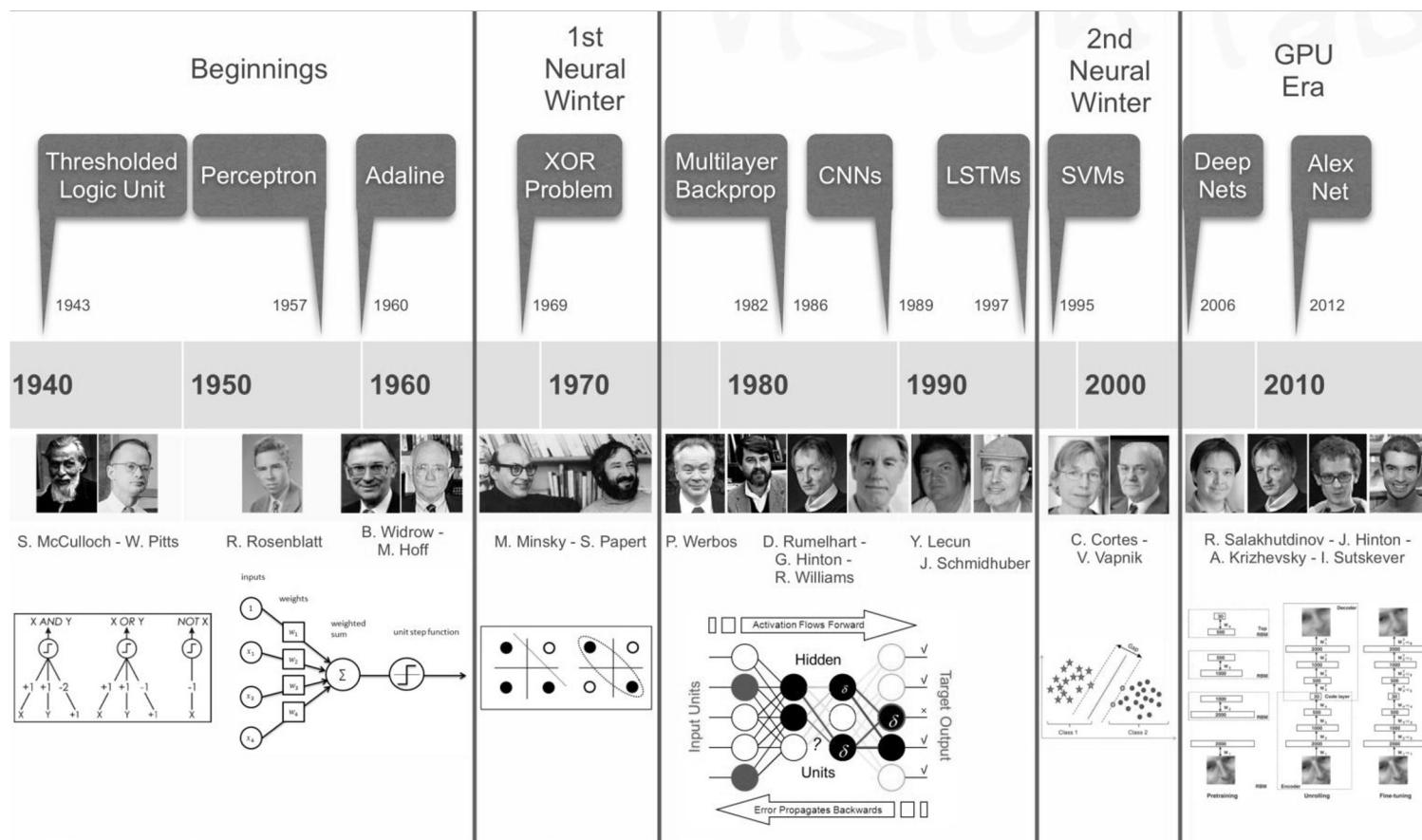
Ai คือ เทคโนโลยีที่เลียนแบบ การทำงานของมนุษย์จากการ เรียนรู้ สรุปผลการดำเนินงาน ด้วยตนเอง แสดงให้เห็นถึง ความเข้าใจบริบทที่มีความซับซ้อน สื่อสารกับมนุษย์อย่างเป็น ธรรมชาติ เสริมสร้างความสามารถ ทางด้านการรู้คิด (Cognitive Performance) ของมนุษย์หรือ ทำงานแทนมนุษย์ในงานที่ไม่เป็น กิจวัตร (Non-routine Task)



ML vs Deep Learning

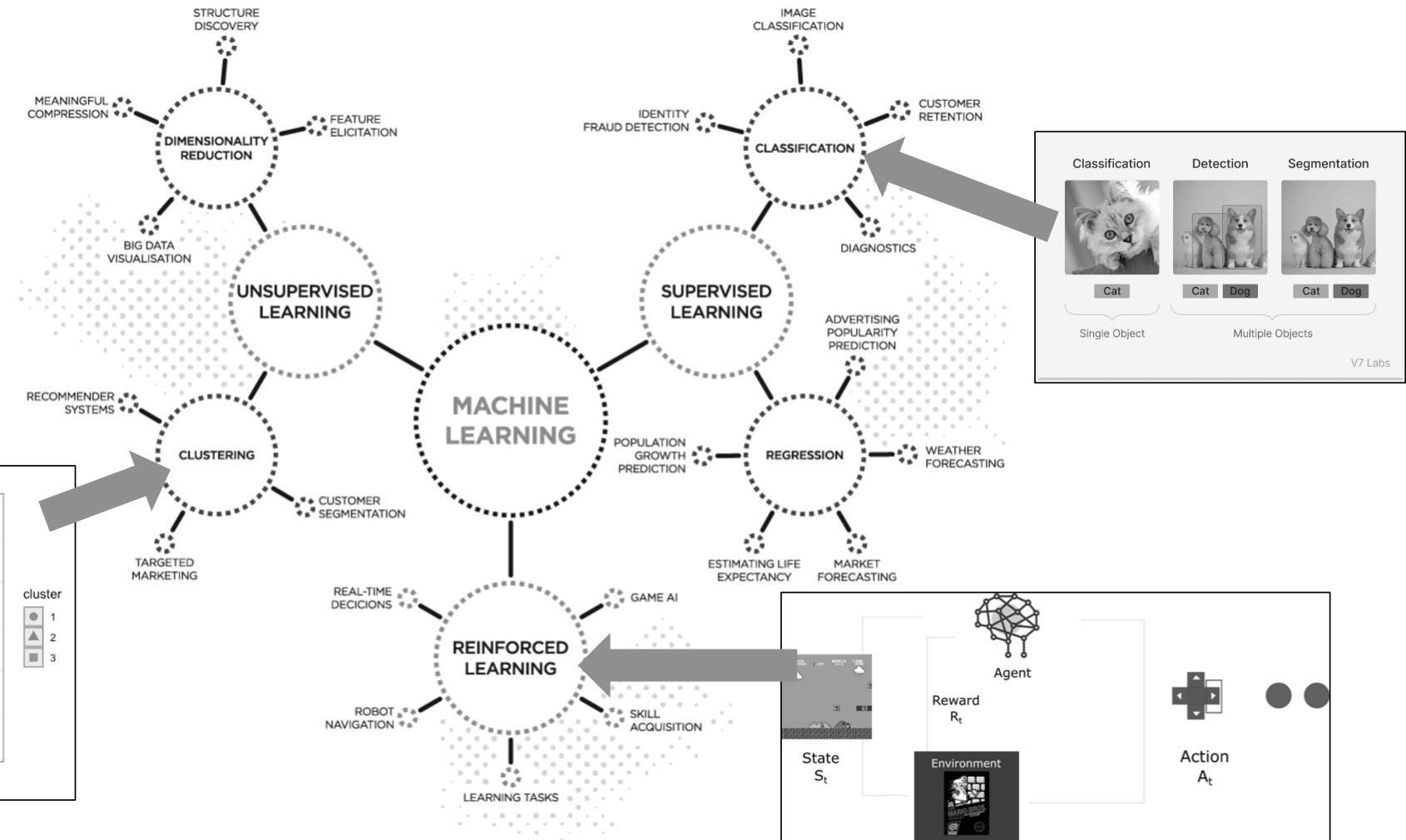
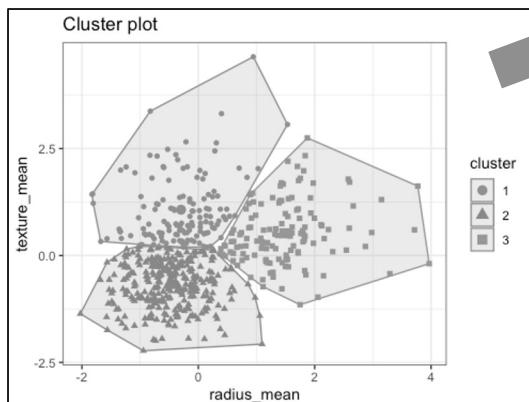


History of Artificial intelligence



Type Machine Learning

1 Overview Ai

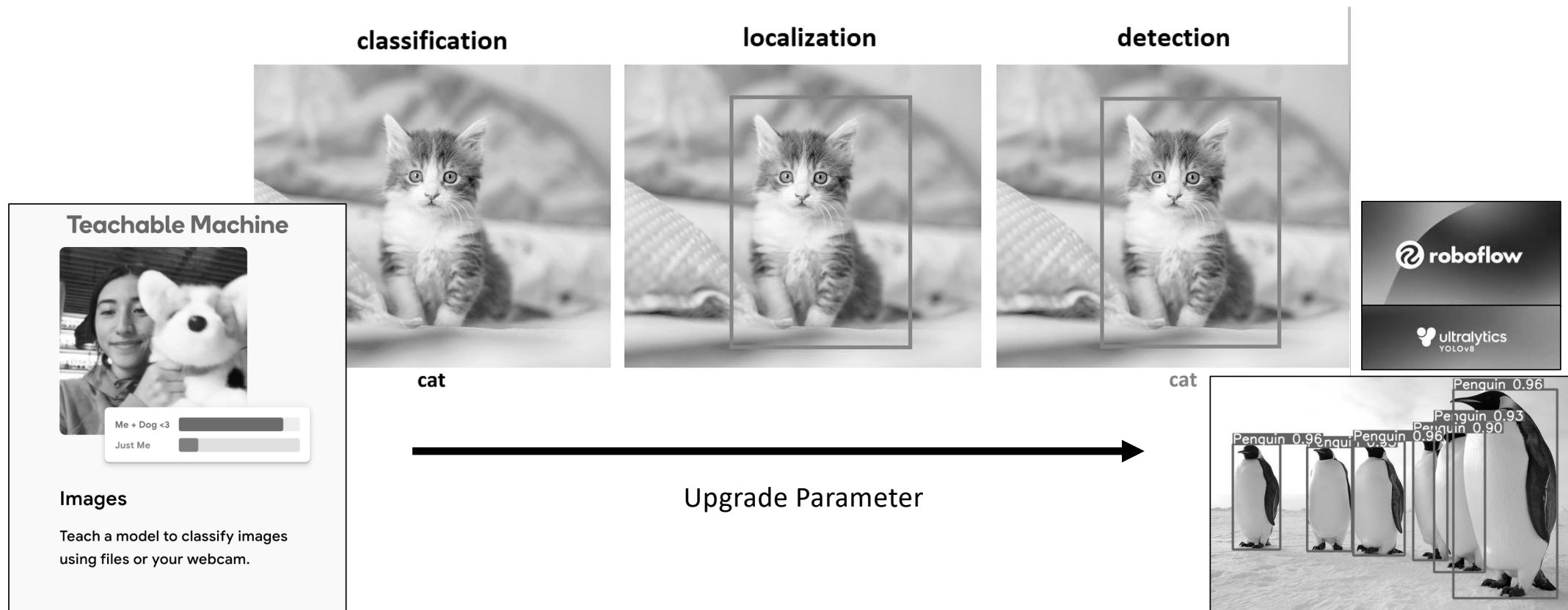


Workshop #1

RoboFlow

45 mins

UPGRADE Classification to Detection



2

Roboflow

Roboflow with Object Detection

roboflow Products Solutions Developers Pricing Docs Blog Sign In Book a demo Get Started

Everything you need to build and deploy computer vision applications.

Used by over 1 million engineers to create datasets, train models, and deploy to production.

Get Started Request a Demo

#32 candy 0.84
#28 candy 0.81
#26 candy 0.98
#21 candy 0.82
#24 candy 0.97
#12 candy 0.45
#17 candy 0.51
#5 candy 0.99

in: 5
out: 0

Detection Tracking Counting Analysis

<https://roboflow.com/>

2

Roboflow

Process Flow



Aufnahme_2_10_01_23_.mp4-0025.jpg



d862032a-3eeebebc.jpg



b6b8d50f-e8051d3d.jpg



bdac568b-36F0D2AB.jpg



b8d397a1-00000000.jpg



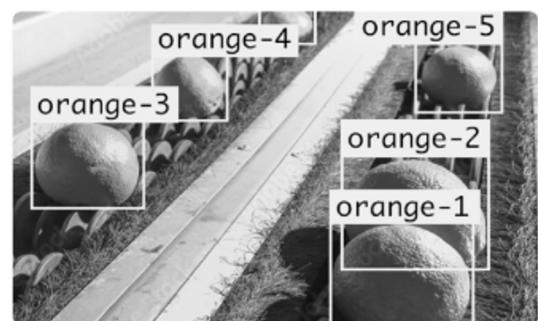
b6ed4cda-00000000.jpg



Input Data

Create Dataset Train,Test

Project Type



Object Detection

Identify objects and their positions with bounding boxes.

Best For

Counting Tracking



- Localization => Draw Bounding Box



- Label => Classification



Output Data

Workshop#1

- Download Dataset Video
- Register Google and Login Roboflow
- Import YouTube (link)
- Labeling
- Roboflow Settings used Default settings (training 70, testing 20, valid 10)
- Export Dataset (select Zip file)

2

Roboflow

1. Download Coin Data

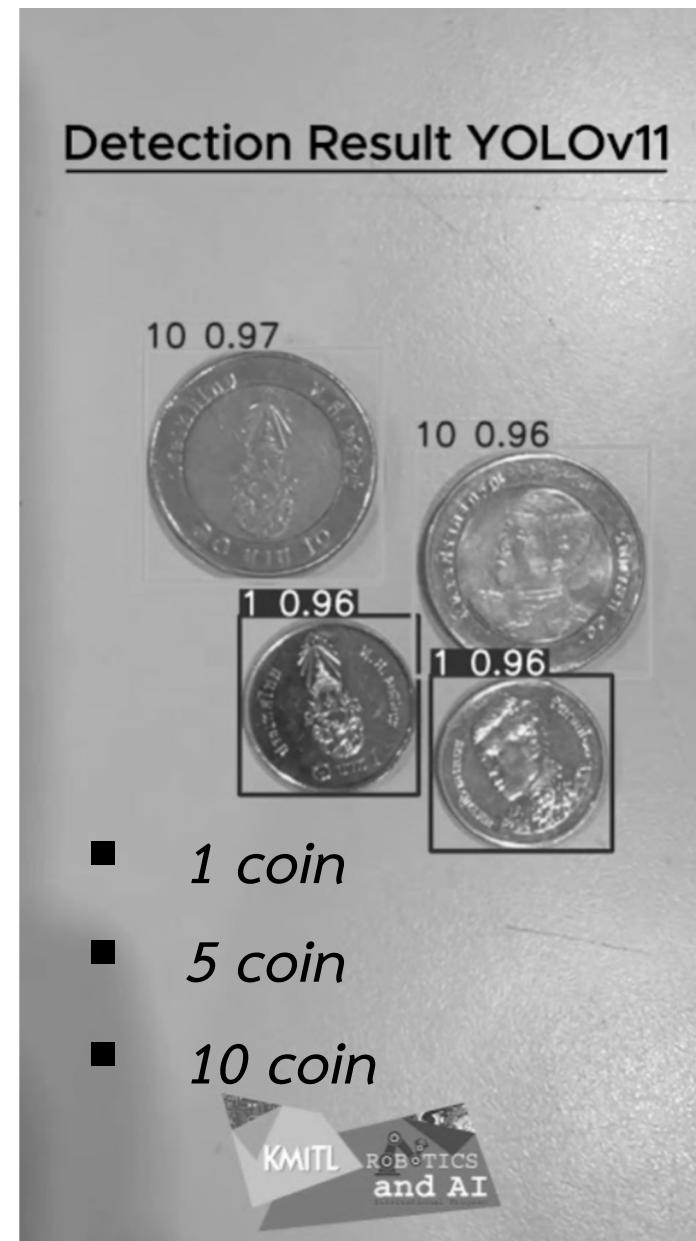
Sample dataset

YouTube DataSource

https://youtube.com/playlist?list=PLaxcXjGMYeO_zqn-p1h-7_ymZitmjXKrX&si=9GaQQ8M8awP1WzVw

Google Drive DataSource

<https://drive.google.com/drive/folders/1TzF5SuL4kWbCeFLAH4MYpUX1omHObywM?usp=sharing>



2

Roboflow

2. Sign in

Roboflow

วิธีการลงชื่อเข้าใช้ด้วย Google Account

2

Roboflow

1. ขั้นตอนการสมัคร Roboflow



2

Roboflow

ลงชื่อเข้าใช้ด้วย Gmail

G Sign in with Google

Sign in to roboflow.com

devkmitl@gmail.com

By continuing, Google will share your name, email address, language preference, and profile picture with roboflow.com. See roboflow.com's Privacy Policy and Terms of Service.

You can manage Sign in with Google in your Google Account.

Cancel Continue

Help Privacy Terms

English (United States) ▾

2

roboflow

Confirm Your Account Info

Dev Kmitl
devkmitl@gmail.com

I accept the Terms of Service and Privacy Policy

Cancel Continue

3

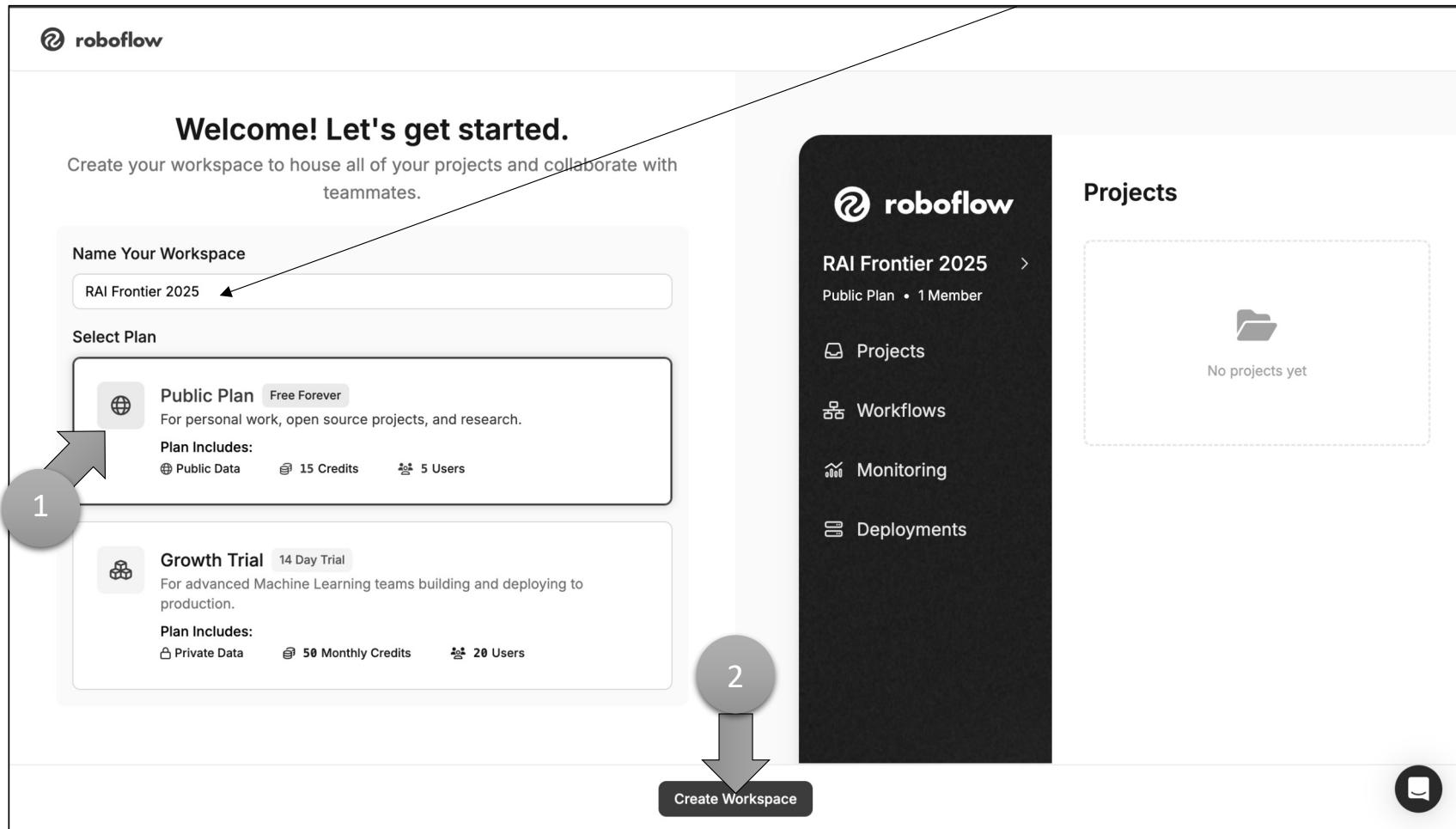
4

2

Roboflow

2.1 ขั้นตอนหลังจากสมัคร Roboflow

กรอกชื่อใน Name Your Workspace : RAI Frontier 2025





Invite teammates.

Add collaborators to help with labeling, upload data, train models, and more.

✉ 2 invites available

email@example.com	Admin
email@example.com	Admin
email@example.com	Admin

Or share an invite link:

<https://app.roboflow.com/join/eyJhbGciOiJIUzI1NiIsInR5cCI> Admin

3

Continue Without Adding Others

<https://app.roboflow.com>

The screenshot shows the Roboflow workspace interface. On the left is a sidebar with the following items:

- RAI Frontier 2025 > (Public Plan • 1 Member)
- Projects** (highlighted with a large gray arrow pointing to it)
- Workflows
- Monitoring
- Deployments
- Settings >
- Universe
- Help & Docs >
- Notifications
- demo3 demo3 >

Below the sidebar, there is a message: "0 credits used" followed by "Resets on February 28". At the bottom right of the sidebar is a "Upgrade" button.

4



There are no projects in this workspace.

Create a project and upload images to start labeling, training, and deploying your computer vision model.

5

+ New Project View a Tutorial

2

Roboflow

3. Create Project

Roboflow

“Count Coin”

2

Roboflow

3.1 Create New Project

กรอกชื่อใน Project Name

Project Name: CountCoin

Annotation Group: objects

License: CC BY 4.0

Let's create your project.

RAI Frontier 2025 > New Public Project

Project Type:

- Object Detection: Identify objects and their positions with bounding boxes.
- Classification: Assign labels to the entire image.
Image Labels: Single-Label (selected), Multi-Label
- Instance Segmentation: Detect multiple objects and their actual shape.
- Keypoint Detection: Identify keypoints ("skeletons") on subjects.
- Multimodal: Prompts, Visual Question Answering, Captions

“CountCoin”

“objects”

“ball”

“player”

1

Create Public Project

Cancel

2

Roboflow

3.2 Upload Data Video From YouTube

The screenshot shows the Roboflow web interface. On the left, a sidebar lists datasets: 'RAI FRONTIER 2025' (selected), 'CountCoin' (Object Detection), and others like 'DATA', 'MODELS', and 'DEPLOY'. The main area shows a dataset named 'CountCoin' with a status bar indicating it was uploaded on 02/14/25 at 3:13 pm. It includes fields for 'Batch Name' (set to 'Uploaded on 02/14/25 at 3:13 pm') and 'Tags' (with a placeholder 'Search or add tags for images...'). A central upload area features a large upward arrow icon and the text 'Drag and drop file(s) to upload, or:' followed by two buttons: 'Select File(s)' and 'Select Folder'. Below this is a section titled 'Need images to get started? We've got you covered.' with links: 'Search on Roboflow Universe: World's Largest Platform for Computer Vision Data' (with a search bar), 'Import YouTube Video' (with a URL input field containing 'https://www.youtube.com/watch?v=qCY8_SQ93O8&t=3s'), and 'Collect Images via the Upload API' and 'Import From Cloud Providers'. A large gray circle with the number '1' contains a circular arrow icon.

ກວດ Link Youtube Dataset:

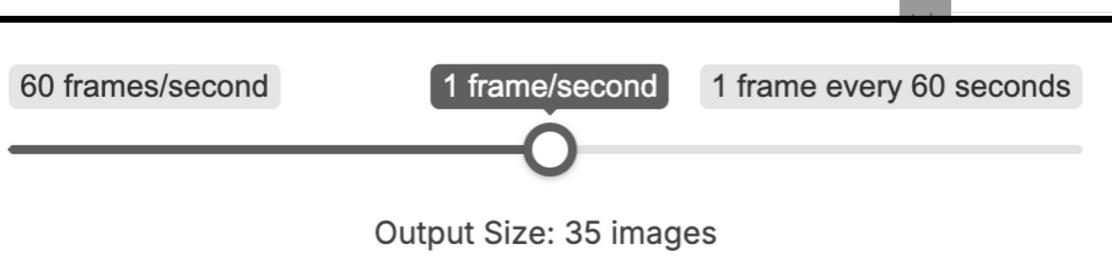
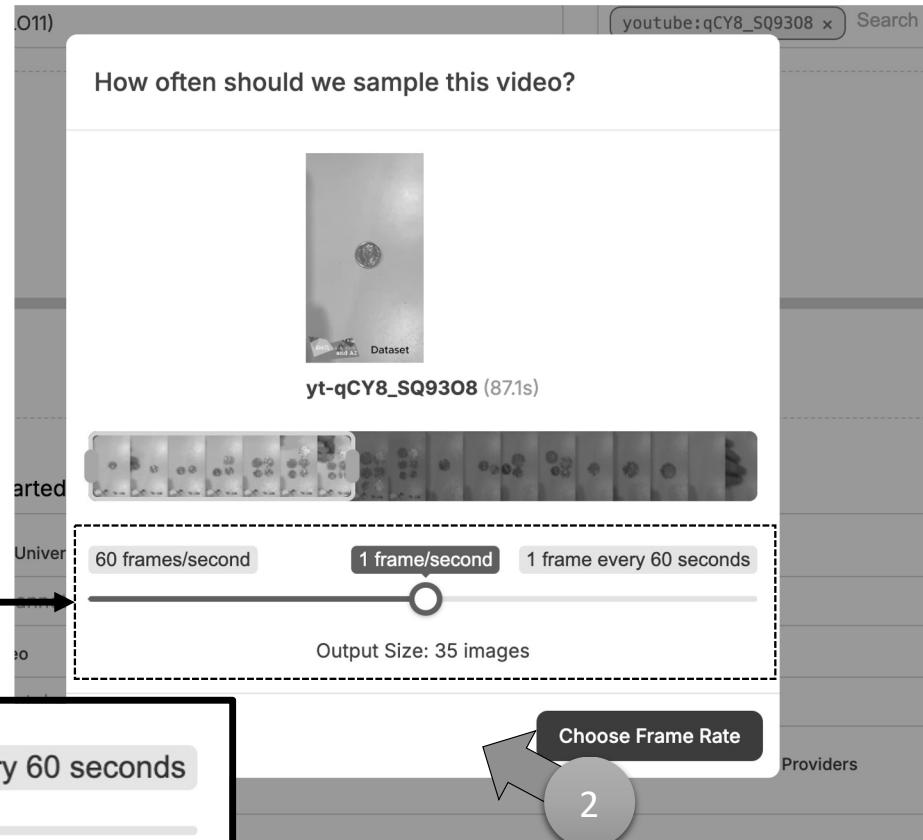
https://www.youtube.com/watch?v=qCY8_SQ93O8

2

Roboflow

3.2 Upload Data Video From YouTube

ปรับความยาววิดีโอที่จะใช้ให้
ได้รูปประมาณ 35 ภาพ

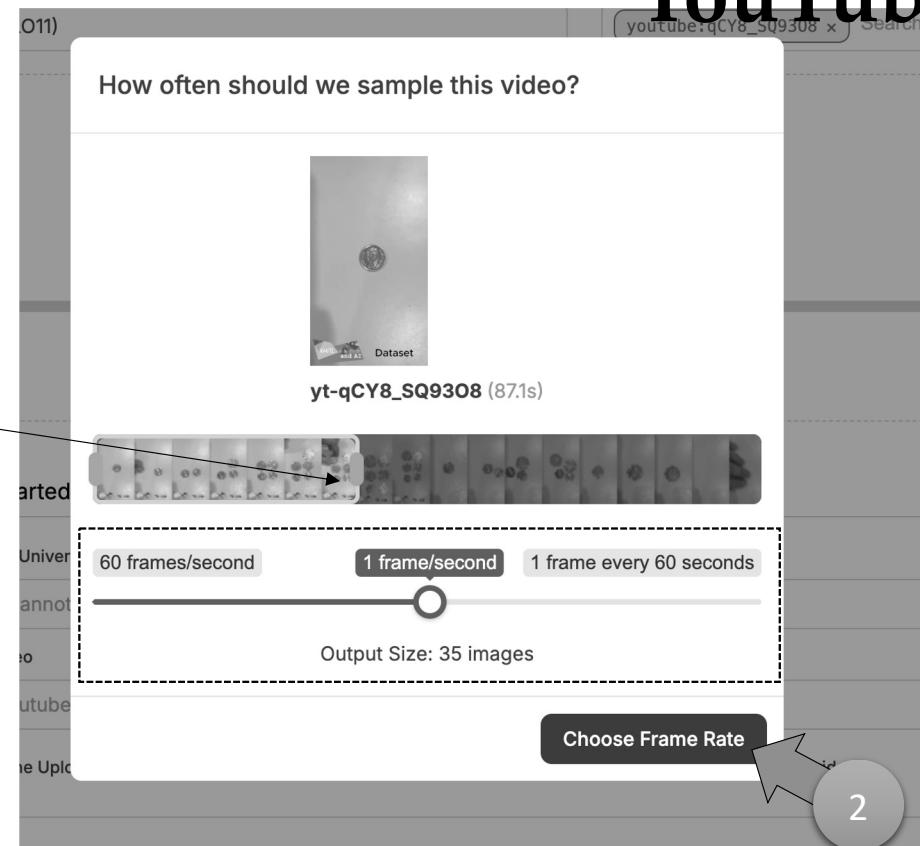


2

Roboflow

3.2 Upload Data Video From YouTube

ปรับความยาววีดิโອิที่จะใช้ให้ได้รูปประมาณ 35 ภาพ



2

Roboflow

3.3 Annotate

RAI FRONTIER 2025

CountCoin Object Detection

DATA

Upload Data

Annotate

Dataset 0

Versions Train

Analytics

Classes & Tags

Models

Visualize

Deploy

Deployments

Batch Name: YouTube: Dataset (YOLO11)

Uploaded On : February 14, 2025 3:15 PM

How do you want to label your images?

Auto Label Beta

Use your custom model or a zero-shot model to label an entire batch.

Start Auto Label

Manual Labeling

You and your team label your own images with help from our AI labeling tools.

Start Manual Labeling

Roboflow Labeling Service

Work with a professional team of human labelers.

Get Details

< Manual Labeling

Assign Images to Teammates

Choose teammates to label images. Images will be evenly divided between selected teammates.

Total Images to Assign: 20 / 20

Search for teammates...

thanakorn kraingudom
thanakorn.vsalab@gmail.com 20 images

Invite Teammate

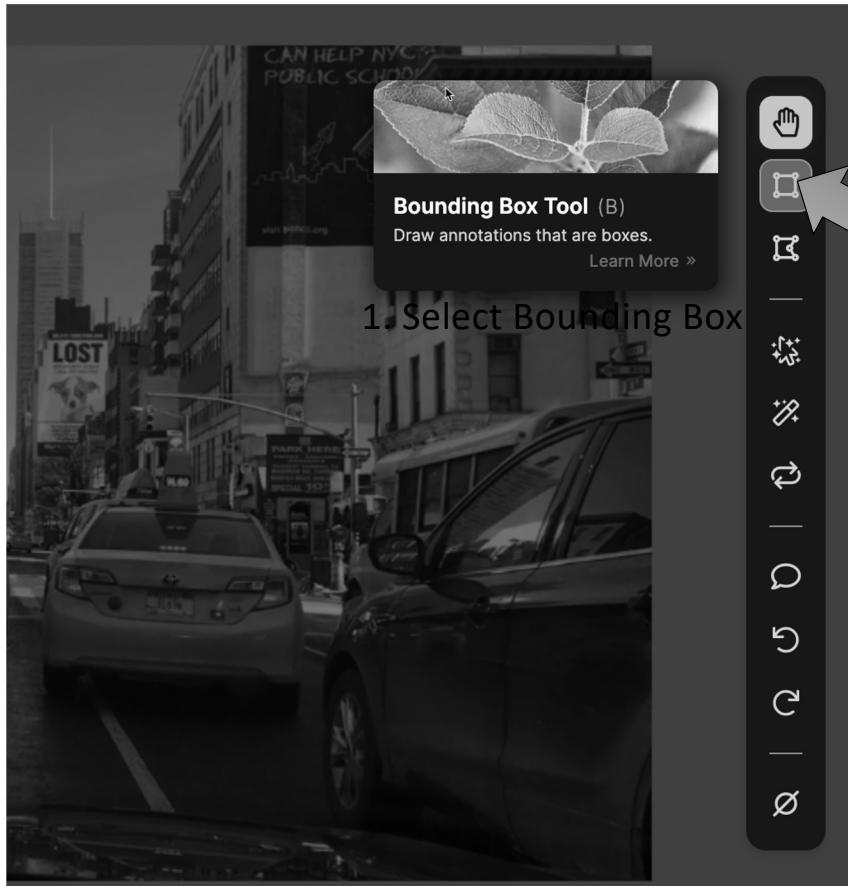
Assign Images Add Instructions

1

2

2

Roboflow



2

Roboflow

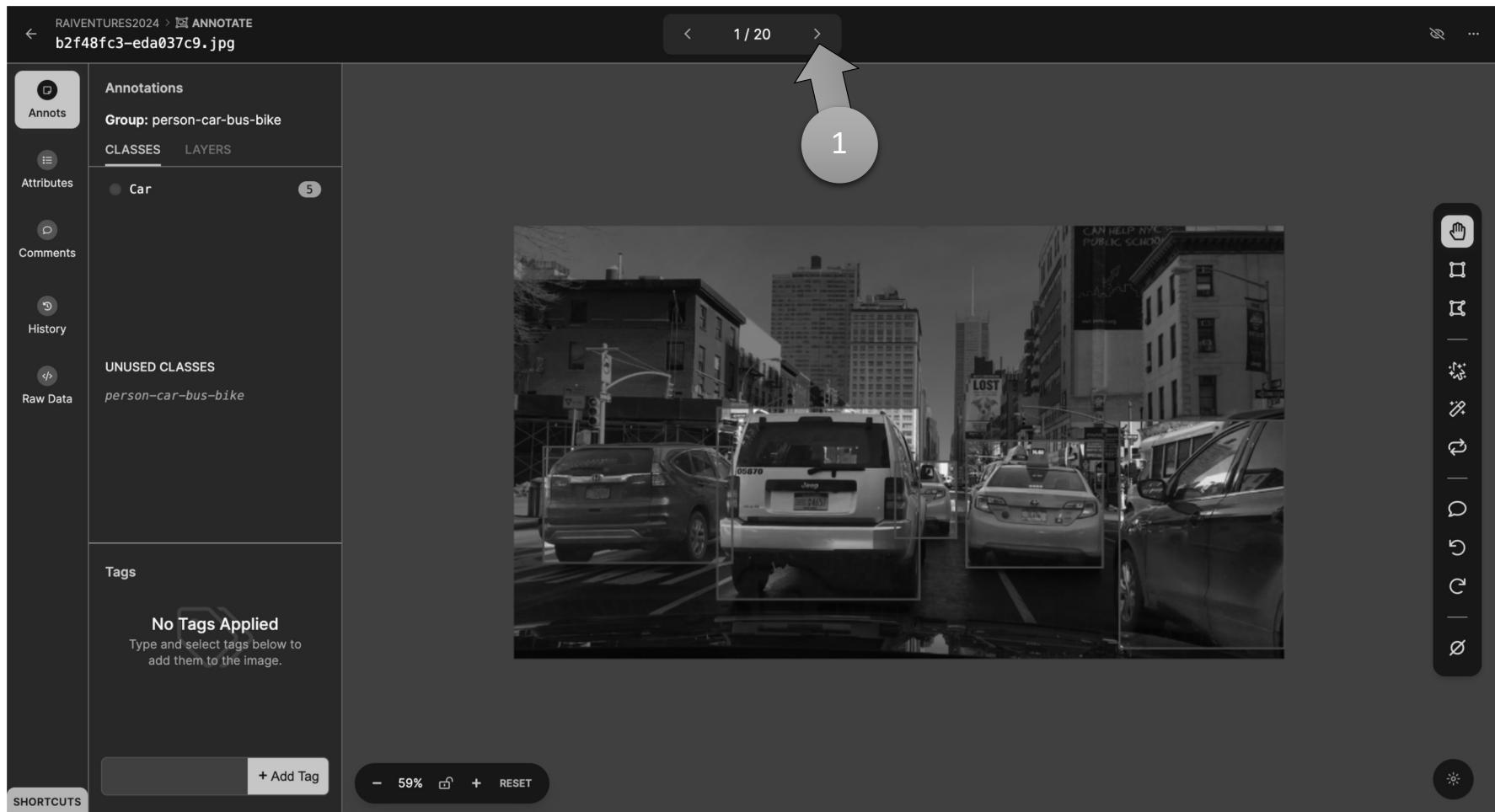
Annotations Sample



2

Roboflow

Next new image



2

Roboflow

THANAKORN KRAINGUDOM

 RAI Ventures20... : Object Detection

Data

- Classes 5
- Upload Data
- Assign Images

Annotate

- Dataset 0
- Health Check
- Generate
- Versions

Models

- Visualize

Deploy

Upgrade

Folder: Data 

Progress

Unannotated 0 Annotated 20

20 Images
● 20 Annotated
○ 0 Unannotated

Instructions 

No specific instructions were added when this job was assigned

Assignment

thanakorn kraingudom  Reassign Labeler

Timeline

B BlueBox Dev created this Job and assigned it to thanakorn.vsalab@gmail.com. 3/23/2024, 6:51:17 AM



Add 20 images to Dataset

1



2

Roboflow

3.4 Setting Ratio Training

Folder: Data

Progress

20 Images
● 20 Annotated
○ 0 Unannotated

Instructions

No specific instructions were added when this job was assigned

Assignment

thanakorn kraingudom Reassign Labeler

Timeline

B BlueBox Dev created this Job and assigned it to thanakorn.vsalab@gmail.com.
3/23/2024, 6:51:17 AM

Add Images To Dataset

Add 20 images to dataset

What's Train, Valid, Test?

Method

Split Images Between Train/Valid/Test

Train 70%	Valid 20%	Test 10%
---------------------	---------------------	--------------------

Image Distribution

Train: 14 images
Valid: 4 images
Test: 2 images

You are about to add 20 images to the dataset
0 images will be sent back as part of a new job

Add Images



2

Roboflow

THANAKORN KRAINGUDOM

The screenshot shows the Roboflow web interface. On the left is a sidebar with navigation links: RAI Ventures 20... (Object Detection), Data (Classes 5, Upload Data, Assign Images), Annotate (selected), Dataset (20, Health Check, Generate, Versions), Models (Visualize), Deploy, and Upgrade. The main area has tabs for Annotate, Roboflow Labeling, and Review. Under Annotate, there are sections for Unassigned (0 Batches) and Annotating (0 Jobs). Under Review, there's a link to Enable Review Mode. A dataset card on the right shows 1 Job, 20 Images, and details for Folder: Data, Labeler: thanakorn kraingudom. A callout with a circled '1' and an arrow points to the '+ Create New Version' button.

RAIVentures20... : Object Detection

Data

Classes 5

Upload Data

Assign Images

Annotate

Dataset 20

Health Check

Generate

Versions

Models

Visualize

Deploy

Upgrade

Unassigned 0 Batches

Annotating 0 Jobs

Review

+ Create New Version

Dataset 1 Job

See all 0 images

Folder: Data

Labeler: thanakorn kraingudom

20 Images

2

Roboflow

THANAKORN KRAINGUDOM



RAIVentures20... :

Object Detection

Data

Classes 5

Upload Data

Assign Images

Annotate

Dataset 20

Health Check

Generate

Versions

Models

Visualize

Deploy

RAIVentures2024 Dataset

Create New Version

Versions

To train a model, you must first create a new version of your dataset.

Choose your dataset settings to get started.

1

Creating New Version

Prepare your images and data for training by compiling them into a version. Experiment with different configurations to achieve better training results.

Source Images	Images: 20 Classes: 5 Unannotated: 0									
Train/Test Split	Training Set: 14 images Validation Set: 4 images Testing Set: 2 images									
3 Preprocessing	<p>① What can preprocessing do?</p> <p>Decrease training time and increase performance by applying image transformations to all images in this dataset.</p> <table border="0"> <tr> <td> Auto-Orient</td> <td>Edit</td> <td>x</td> </tr> <tr> <td> Resize Stretch to 640x640</td> <td>Edit</td> <td>x</td> </tr> <tr> <td colspan="3"> Add Preprocessing Step</td> </tr> </table>	Auto-Orient	Edit	x	Resize Stretch to 640x640	Edit	x	Add Preprocessing Step		
Auto-Orient	Edit	x								
Resize Stretch to 640x640	Edit	x								
Add Preprocessing Step										
<p> Continue</p> <p>4 Augmentation</p> <p>5 Create</p>										

Creating New Version

Prepare your images and data for training by compiling them into a version. Experiment with different configurations to achieve better training results.

Source Images	Images: 20 Classes: 5 Unannotated: 0
Train/Test Split	Training Set: 14 images Validation Set: 4 images Testing Set: 2 images
Preprocessing	Auto-Orient: Applied Resize: Stretch to 640x640
Augmentation	Turned Off
5 Create	<p>Review your selections then click "Create" to create a moment-in-time snapshot of your dataset with the applied preprocessing steps.</p> <p>Maximum Version Size: 20 See how this is calculated ></p> <p> Create</p>

2

2 Roboflow

3.5 Export Dataset

Dataset Versions

[Create New Version](#)

VERSIONS
2025-02-13 6:45pm v1 · 21 hours ago 70 640x640

1



v1 2025-02-13 6:45pm
Generated on Feb 13, 2025

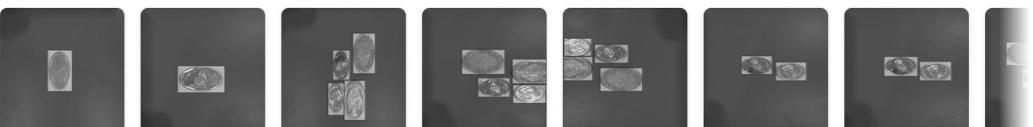
This version doesn't have a model.

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.

Custom Train
Available Credits: 1

How to Upload Custom Weights

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



2

Roboflow

The image shows a composite view of a computer screen. On the left, a web browser displays the Roboflow Dataset Versions page. A modal window is open, prompting the user to "Select :YOLO v11". The "Download" button is highlighted with a large gray circle labeled "1". Below it, the "Download Options" section shows "Download zip to computer" selected, with an arrow pointing up to the "Download" button. A second arrow points down to the "Available Credits" link. At the bottom of the modal, there is a "Continue" button. On the right side of the image, a file explorer window titled "Downloads" shows three files: "Object Detection Dataset-20240323T011927Z-001", "Object Detection Dataset-20240323T011927Z-001", and "RAIVentures2024.v1i.yolov8". The last file is highlighted with a dashed box and a "Success" message below it.

Dataset Versions

Create New Version

v1 2025-02-13 6:45pm
Generated on Feb 13, 2025

Download

1

Format

YOLOv11

Select :YOLO v11

TXT annotations and YAML config used with YOLOv11.

Download Options

Download zip to computer

Show download code

Train a model for Label Assist with Roboflow Train.

Available Credits

Cancel

Continue

View All Images →

Object Detection Dataset-20240323T011927Z-001

Object Detection Dataset-20240323T011927Z-001

RAIVentures2024.v1i.yolov8

Success

2

Roboflow

โจทย์

สร้าง Annotation บน Roboflow
ดังนี้ ตามตัวอย่าง Dataset YouTube

* สำหรับใช้เทวนิมเดลในครั้งถัดไป

Workshop #2

YOLO v11

35 mins

3

YOLO v11

How to open Colab Yolo V11 from GitHub

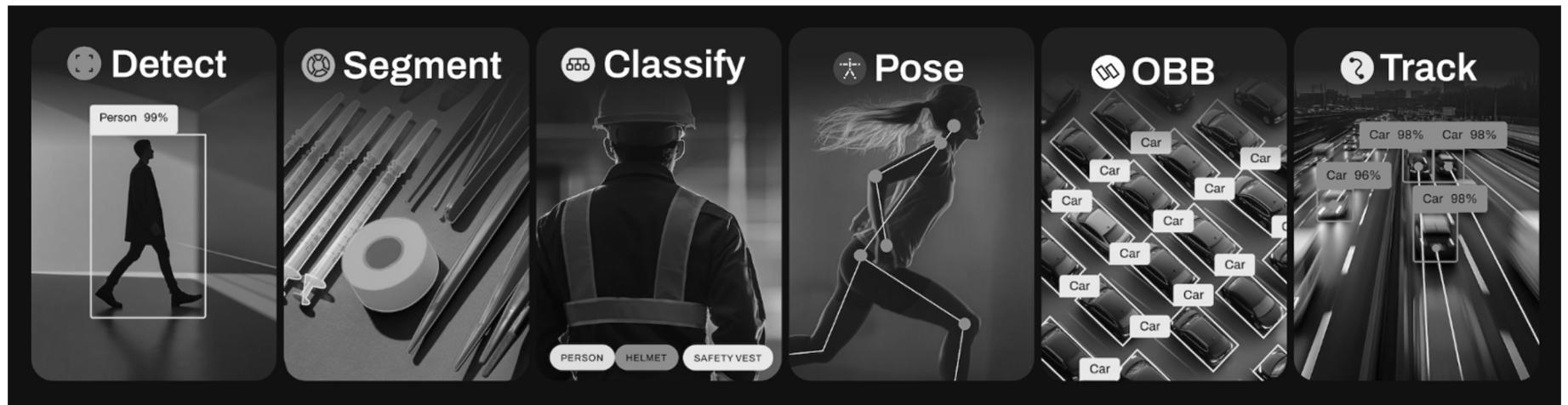


3

YOLO v11

What YoloV11 ?

YOLO: You Only Look Once

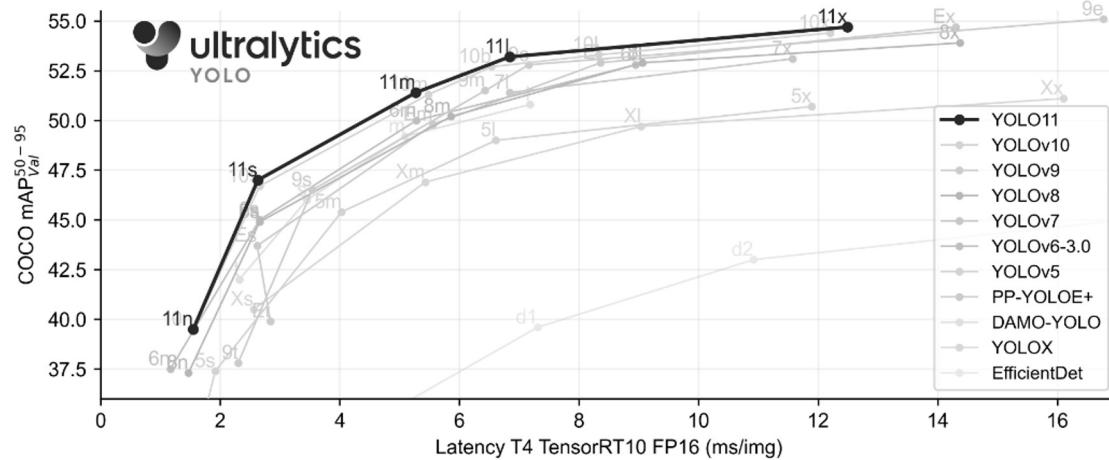


Ultralytics YOLO11 is a cutting-edge, state-of-the-art (SOTA) model that builds upon the success of previous YOLO versions and introduces new features and improvements to further boost performance and flexibility. YOLO11 is designed to be fast, accurate, and easy to use, making it an excellent choice for a wide range of object detection and tracking, instance segmentation, image classification and pose estimation tasks.

3

YOLO v11

Why YoloV11 ?
 Comparison of
 Performance Model
 Object Detection
 Performance by
 Yolo All Models



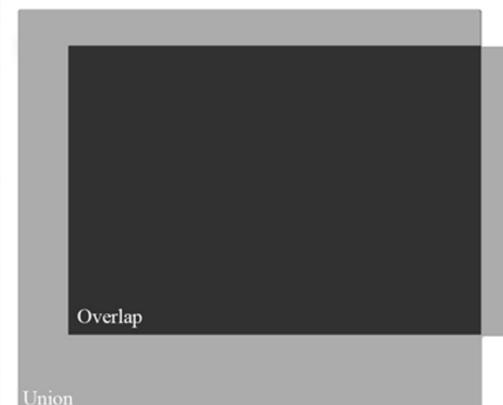
Model	size (pixels)	mAP ^{val} 50-95	Speed CPU ONNX (ms)	Speed T4 TensorRT10 (ms)	params (M)	FLOPs (B)
YOLO11n	640	39.5	56.1 ± 0.8	1.5 ± 0.0	2.6	6.5
YOLO11s	640	47.0	90.0 ± 1.2	2.5 ± 0.0	9.4	21.5
YOLO11m	640	51.5	183.2 ± 2.0	4.7 ± 0.1	20.1	68.0
YOLO11l	640	53.4	238.6 ± 1.4	6.2 ± 0.1	25.3	86.9
YOLO11x	640	54.7	462.8 ± 6.7	11.3 ± 0.2	56.9	194.9

IoU (Intersection over union)

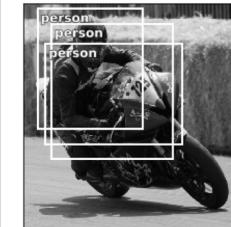


- Ground truth
- Prediction

$$IoU = \frac{\text{area of overlap}}{\text{area of union}}$$



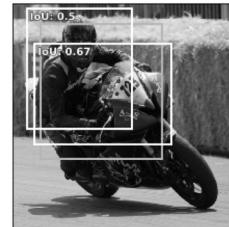
For each class...



After filtering out low confidence predictions, we may still be left with **redundant detections**



Select the bounding box prediction with the **highest confidence**



Calculate the IoU between the **selected box** and all remaining predictions

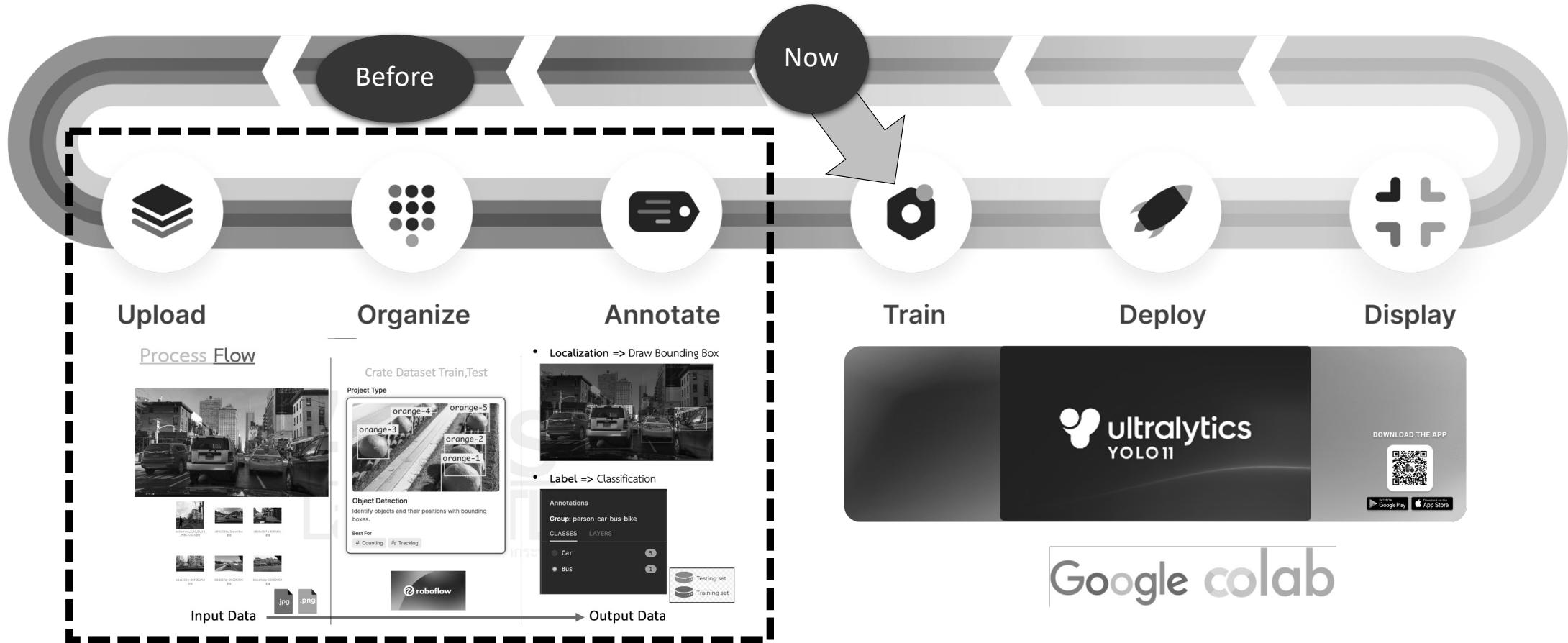


Remove any boxes which have an IoU score above some defined threshold

Repeat with next highest confidence prediction until no more boxes are being suppressed

3

YOLO v11

Overview Flow

3

YOLO v11

1. ขั้นตอนเปิด Project Colab จาก GitHub



เข้าเว็บไซต์ Project WorkShop Colab

<https://colab.research.google.com/github/bluebox-dev/Workshop-YOLO11/blob/main/YOLO11.ipynb>

3

YOLO v11

หลังจากเข้าลิงค์สำเร็จ **YOLO11.ipynb** จะปรากฏหน้าต่างแบบนี้ขึ้นมา

ตรวจสอบไฟล์จะวี 5 Step ตามภาพที่ปรากฏ

▼ Setup YOLO11

```
[ ] %pip install ultralytics and dependencies and check software and hardware.
```

[] %pip install ultralytics
import ultralytics
ultralytics.checks()

▼ 1. Predict (Test Setup YOLO11)

YOLOv8 may be used directly in the Command Line Interface (CLI) with a `yolo` command for a variety of tasks and modes and accepts additional arguments, i.e. `imgsz=640`. See a full list of available `yolo` arguments and other details in the [YOLO11 Predict Docs](#).

```
[ ] # Run inference on an image with YOLOv11  
!yolo predict model=yolo11n.pt source='https://ultralytics.com/images/bus.jpg'
```

▼ 2. Add Zip Data Export YOLO11 for Roboflow

```
[ ] import zipfile  
from google.colab import files  
  
%cd /content  
uploaded = files.upload()  
for filename in uploaded.keys():  
    pass  
  
zip_ref = zipfile.ZipFile(filename, 'r')  
zip_ref.extractall("/content/")
```

▼ 3. Train Data Roboflow

```
[ ] # Validate YOLOv8n  
!yolo train model=yolo11n.pt data=data.yaml epochs=1000 imgsz=640
```

▼ 4. Test Model Training

```
[ ] !yolo detect predict model=/content/runs/detect/train/weights/best.pt source='/content/test/images/yt-qCY8_5Q9308-0003.jpg.rf.a98a31693ceb338e930f10b1206a3b92.jpg'
```

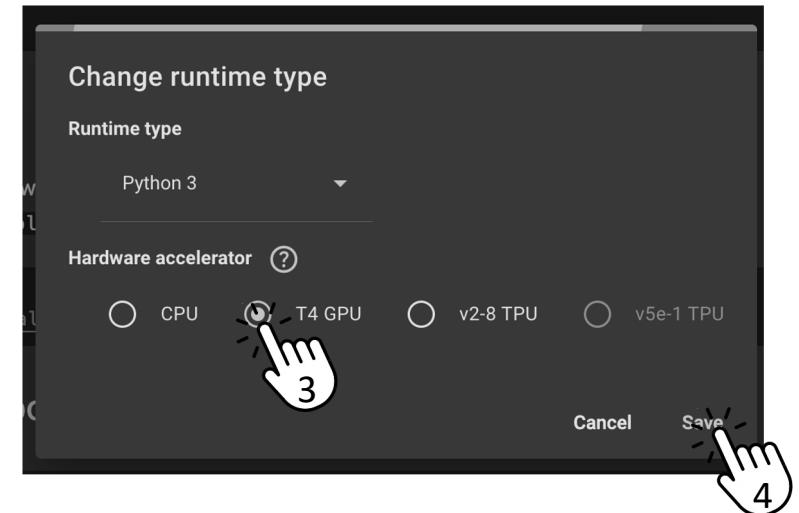
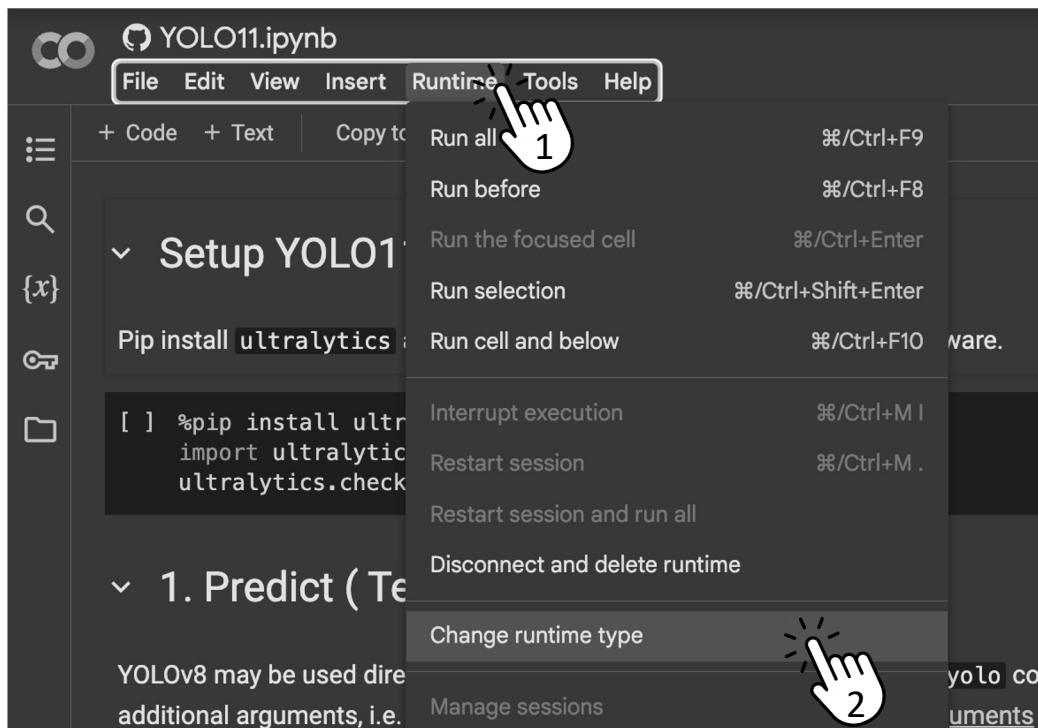
▼ 5. Test Video for Model Ai

```
[ ] !yolo detect predict model=/content/runs/detect/train/weights/best.pt conf=0.8 source='/content/drive/MyDrive/1A/DataTestENV2.mp4'
```

3

YOLO v11

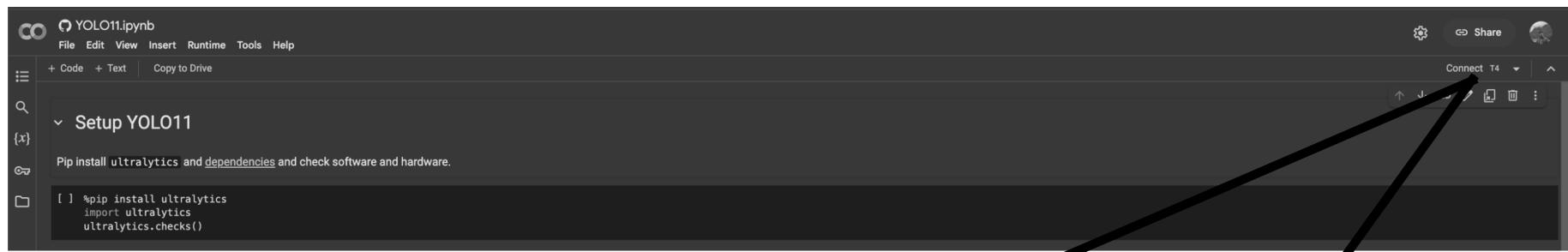
กดเลือก Runtime -> Change runtime type และเลือก T4 GPU -> Save



3

YOLO v11

เริ่มการใช้งาน Colab ให้ไปกด Connect T4



YOLO11.ipynb

File Edit View Insert Runtime Tools Help

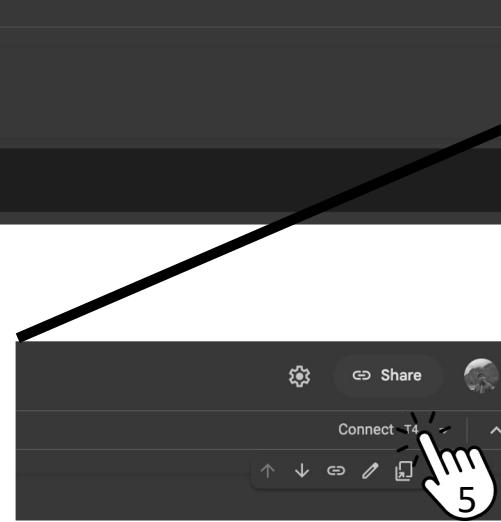
+ Code + Text Copy to Drive

Setup YOLO11

Pip install ultralytics and dependencies and check software and hardware.

```
[ ] %pip install ultralytics
import ultralytics
ultralytics.checks()
```

Connect T4



3

YOLO v11

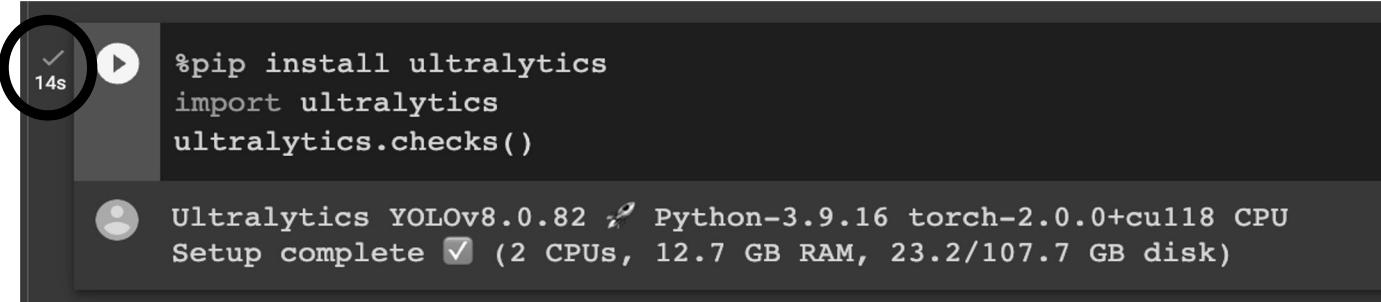
2. ขั้นตอนการติดตั้ง Library YoloV11

Setup YOLO11

Pip install `ultralytics` and `dependencies` and check software and hardware.

```
[ ] %pip install ultralytics  
[ ] import ultralytics  
[ ] ultralytics.checks()  
1
```

หลังกดให้รอเครื่องหมายตีกถูก



```
✓ 14s [ ] %pip install ultralytics  
[ ] import ultralytics  
[ ] ultralytics.checks()  
  
[ ] Ultralytics YOLOv8.0.82 🚀 Python-3.9.16 torch-2.0.0+cu118 CPU  
[ ] Setup complete ✓ (2 CPUs, 12.7 GB RAM, 23.2/107.7 GB disk)
```

3. ขั้นตอนตรวจสอบการติดตั้ง Library YoloV11

▼ 1. Predict (Test Setup YOLO11)

YOLOv8 may be used directly in the Command Line Interface (CLI) with a `yolo` command for a variety of tasks and modes and accepts additional arguments, i.e. `imgsz=640`. See a full list of available `yolo` arguments and other details in the [YOLO11 Predict Docs](#).

```
✓ 1s # Run inference on an image with YOL0v11n
yolo predict model=yolo11n.pt source='https://ultralytics.com/images/bus.jpg'
→ Downloading https://github.com/ultralytics/assets/releases/download/v8.3.0/yolo11n.pt to 'yolo11n.pt'...
100% 5.35M/5.35M [00:00<00:00, 43.6MB/s]
Ultralytics 8.3.75 Python-3.11.11 torch-2.5.1+cu124 CPU (Intel Xeon 2.20GHz)
YOL011n summary (fused): 238 layers, 2,616,248 parameters, 0 gradients, 6.5 GFLOPs

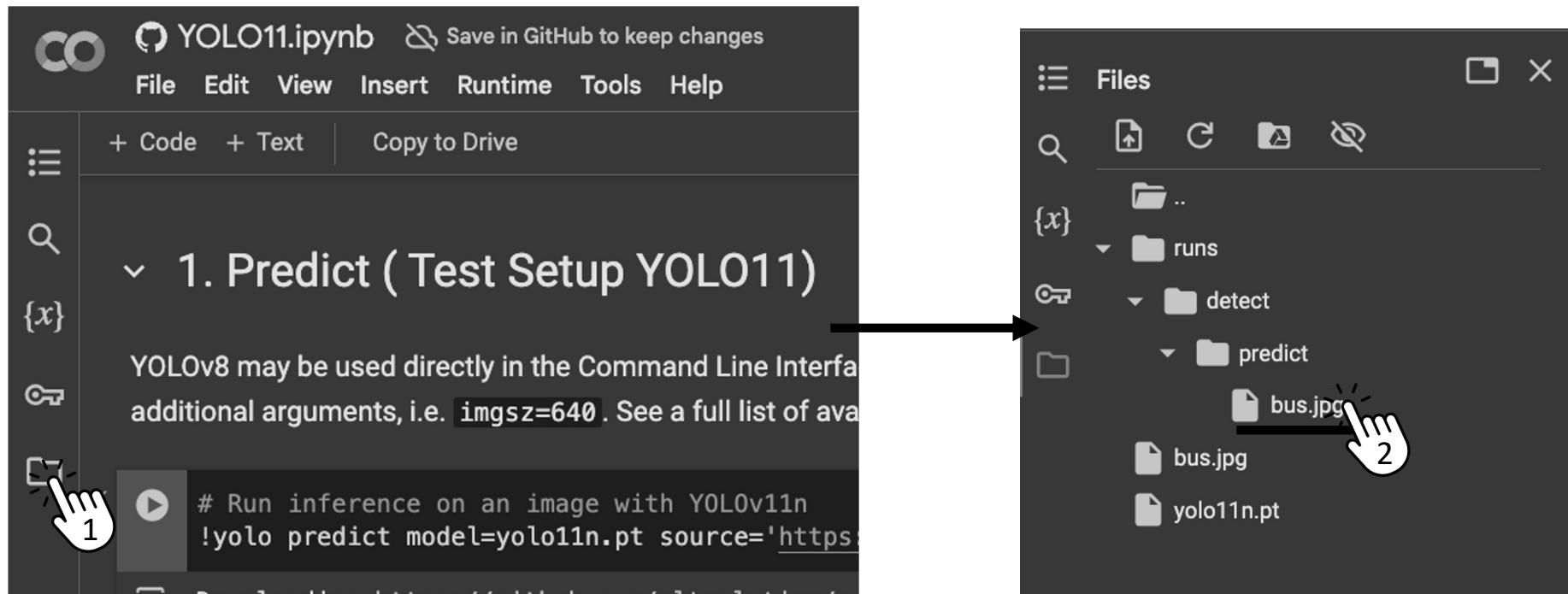
Downloading https://ultralytics.com/images/bus.jpg to 'bus.jpg'...
100% 134k/134k [00:00<00:00, 3.05MB/s]
image 1/1 /content/bus.jpg: 640x480 4 persons, 1 bus, 166.1ms
Speed: 10.0ms preprocess, 166.1ms inference, 19.9ms postprocess per image at shape (1, 3, 640, 480)
Results saved to runs/detect/predict
💡 Learn more at https://docs.ultralytics.com/modes/predict
```

ผลลัพธ์ที่อยู่ของไฟล์รูปที่ Predict แล้ว

3

YOLO v11

วิธีการตรวจสอบผลลัพธ์ Prediction หลังการติดตั้ง



3

YOLO v11

ผลลัพธ์ Prediction ของรูปตัวอย่าง bus.jpg



ตัวเลขด้านหลัง “0.94”
แสดงผลลัพธ์ความแม่นยำ
ในที่นี่คือ bus

Output ที่ได้จากการรัน Model ตัวอย่าง

3

YOLO v11

4. ขั้นตอนนำข้อมูลที่ทำไว้จาก Roboflow มาใส่

ไฟล์ที่นำเข้าจะเป็น .Zip ที่ได้จาก Export



▼ 2. Add Zip Data Export YOLO11 for Roboflow

```
import zipfile  
from google.colab import files  
1  
%cd /content  
uploaded = files.upload()  
for filename in uploaded.keys():  
    pass  
  
zip_ref = zipfile.ZipFile(filename, 'r')  
zip_ref.extractall("/content/")  
  
... /content  
2 Choose File No file chosen Cancel upload
```

The image shows a code editor window with a dark theme. The code is written in Python and performs the following steps:

- Imports the `zipfile` and `files` module from Google Colab.
- Changes the current directory to `/content`.
- Uploads a file from the user's local machine.
- Extracts all files from the uploaded ZIP archive into the `/content` directory.

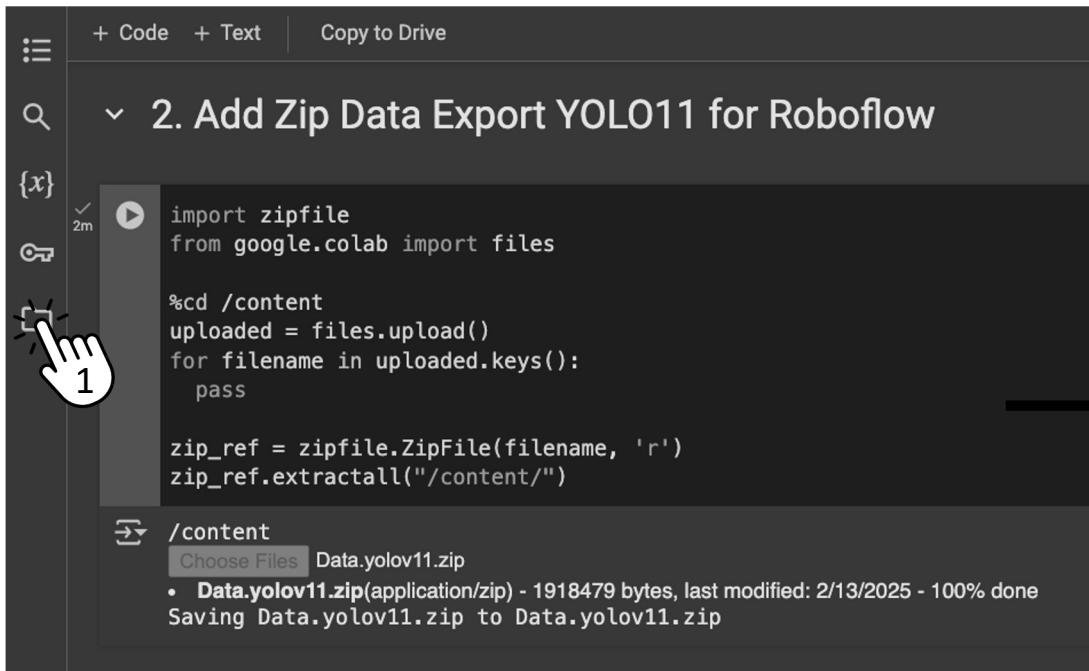
Hand icons with numbers 1 and 2 point to specific parts of the interface: icon 1 points to the upload button in the code editor, and icon 2 points to the "Choose File" button in the file selection dialog at the bottom.

3

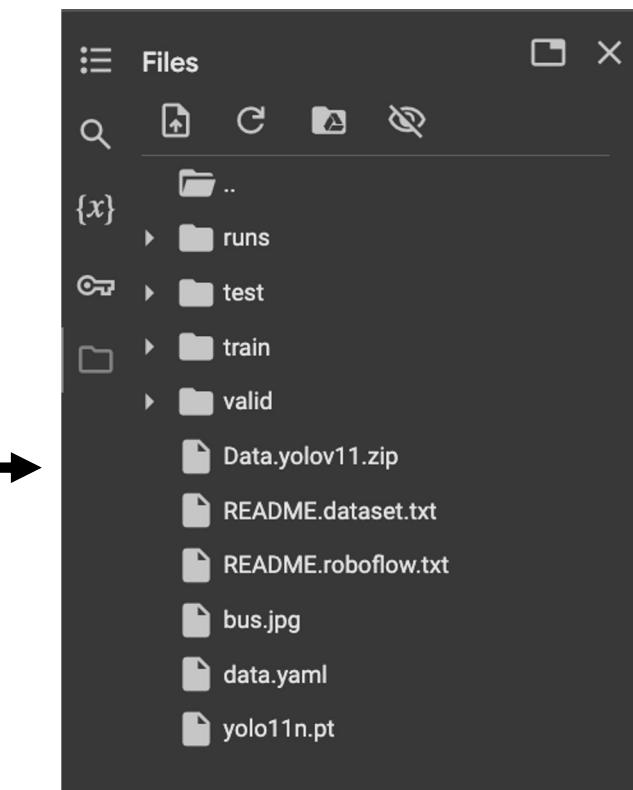
YOLO v11

วิธีการตรวจสอบไฟล์ที่นำเข้ามาจาก Roboflow

ต้องมีไฟล์ดังนี้



```
+ Code + Text Copy to Drive  
2. Add Zip Data Export YOLOv11 for Roboflow  
{x} 2m {x} 1  
import zipfile  
from google.colab import files  
  
%cd /content  
uploaded = files.upload()  
for filename in uploaded.keys():  
    pass  
  
zip_ref = zipfile.ZipFile(filename, 'r')  
zip_ref.extractall("/content/")  
  
/content  
Choose Files Data.yolov11.zip  
• Data.yolov11.zip(application/zip) - 1918479 bytes, last modified: 2/13/2025 - 100% done  
Saving Data.yolov11.zip to Data.yolov11.zip
```



5. ขั้นตอนทำการฝึกสอน Model Yolo V11

3. Train Data Roboflow

```
# Validate YOLOv8n
yolo train model=yolo11n.pt data=data.yaml epochs=200 imgsz=640
1 New cache created: /content/valid/labels.cache
  Writing labels to runs/detect/train/labels.jpg...
optimizer: 'optimizer=auto' found, ignoring 'lr0=0.01' and 'momentum=0.937' and determining best 'optimizer', 'lr0' and 'momentum' automatically...
optimizer: AdamW(lr=0.001429, momentum=0.9) with parameter groups 81 weight(decay=0.0), 88 weight(decay=0.0005), 87 bias(decay=0.0)
TensorBoard: model graph visualization added
Image sizes 640 train, 640 val
Using 2 dataloader workers
Logging results to runs/detect/train
Starting training for 200 epochs...
```

ผลลัพธ์หลังกด

```
200 epochs completed in 0.104 hours.
Optimizer stripped from runs/detect/train/weights/last.pt, 5.5MB
Optimizer stripped from runs/detect/train/weights/best.pt, 5.5MB

Validating runs/detect/train/weights/best.pt...
Ultralytics 8.3.75 ✨ Python-3.11.11 torch-2.5.1+cu124 CUDA:0 (Tesla T4, 15095MiB)
YOLO11n summary (fused): 238 layers, 2,582,737 parameters, 0 gradients, 6.3 GFLOPs
      Class   Images  Instances    Box(P)      R      mAP50  mAP50-95): 100% 1/1 [00:00<00:00, 14.83]
        all       6       14     0.991      1     0.995     0.939
          1       6       10     0.996      1     0.995     0.92
         10       2        4     0.987      1     0.995     0.958
Speed: 0.2ms preprocess, 2.9ms inference, 0.0ms loss, 1.5ms postprocess per image
Results saved to runs/detect/train
💡 Learn more at https://ultralytics.com/yolov8
```

Path ที่อยู่ของไฟล์ Model ที่ฝึกสอนเสร็จแล้ว

3

YOLO v11

6. ขั้นตอนทดสอบการฝึกสอน Model Yolo V11

4. Test Model Training

```
✓ 6s !yolo detect predict model=/content/runs/detect/train/weights/best.pt source='/content/test/images/'

→ Ultralytics 8.3.75 ✨ Python-3.11.11 torch-2.5.1+cu124 CUDA:0 (Tesla T4, 15095MiB)
YOLOv11n summary (fused): 238 layers, 2,582,737 parameters, 0 gradients, 6.3 GFLOPs

image 1/3 /content/test/images/yt-qCY8_SQ9308-0003.jpg.rf.a98a31693ceb338e930f10b1206a3b92.jpg: 640x640 2 1s, 21.9ms
image 2/3 /content/test/images/yt-qCY8_SQ9308-0013.jpg.rf.aab489e05e4710800f0e614480d676c1.jpg: 640x640 2 1s, 2 10s, 11.5ms
image 3/3 /content/test/images/yt-qCY8_SQ9308-0039.jpg.rf.697dc3373c961d2330933912099c34d3.jpg: 640x640 1 1, 10.4ms
Speed: 4.4ms preprocess, 14.6ms inferen
Results saved to runs/detect/predict2
👉 Learn more at https://docs.ultralytics.com
```

ที่อยู่ของไฟล์รูปผลลัพธ์

การใช้ command สามารถปรับค่าของการตรวจจับได้
โดยใช้ command ดังนี้ imgsz=640 conf=0.25

4. Test Model Training

```
✓ 8s [6] !yolo detect predict imgsz=640 conf=0.25 model=/content/runs/detect/train/weights/best.pt source='/content/test/images/IMG_8760.JPG.jpg.rf.cc2a55dd53109ebd84331'

Ultralytics YOLOv8.0.83 ✨ Python-3.9.16 torch-2.0.0+cu118 CUDA:0 (Tesla T4, 15102MiB)
Model summary (fused): 168 layers, 3006818 parameters, 0 gradients, 8.1 GFLOPs

image 1/1 /content/test/images/IMG_8760.JPG.jpg.rf.cc2a55dd53109ebd8433fa93dee34113.jpg: 640x640 4 blues, 1 brown, 1 green, 3 reds, 1 white, 5 yellows, 8.6ms
Speed: 0.7ms preprocess, 8.6ms inference, 83.2ms postprocess per image at shape (1, 3, 640, 640)
Results saved to runs/detect/predict3
```

3

YOLO v11

▼ 4. Test Model Training

```
✓ [6] !yolo detect predict imgsz=640 conf=0.25 model=/content/runs/detect/train/weights/best.pt source='/content/test/images/IMG_8760.JPG.jpg.rf.cc2a55dd53109ebd8433fa93dee34113.jpg'  
8s  
Ultralytics YOLOv8.0.83 🚀 Python-3.9.16 torch-2.0.0+cu118 CUDA:0 (Tesla T4, 15102MiB)  
Model summary (fused): 168 layers, 3006818 parameters, 0 gradients, 8.1 GFLOPs  
  
image 1/1 /content/test/images/IMG_8760.JPG.jpg.rf.cc2a55dd53109ebd8433fa93dee34113.jpg: 640x640 4 blues, 1 brown, 1 green, 3 reds, 1 white, 5 yellows, 8.6ms  
Speed: 0.7ms preprocess, 8.6ms inference, 83.2ms postprocess per image at shape (1, 3, 640, 640)  
Results saved to runs/detect/predict3
```

model คือไฟล์ Model ที่สร้างขึ้นเป็นไฟล์ **best.pt** ซึ่งสามารถนำไปใช้งานต่อได้

imgsz=640 คือรูปที่นำมาจะทำการปรับ scale เป็น 640x640

conf=0.25 คือ ค่าที่ระบุความแม่นยำในการแสดงผลว่าต้องมีค่ามากกว่า 0.25

ตัวอย่างเป็น 0.25 ดังนั้น ภาพที่ออกมา 0.54 จะแสดงผลได้ว่าวัตถุ

source คือ ข้อมูลที่จะสามารถนำเข้ามาประมวลผลได้

3

YOLO v11

วิธีการตรวจสอบผลลัพธ์ Prediction

+ Code + Text | Copy to Drive

2. Add Data Roboflow

```
[3] import zipfile  
from google.colab import files  
  
%cd /content  
uploaded = files.upload()  
for filename in uploaded.keys():
```



3

YOLO v11

ผลลัพธ์ Prediction ของรูปตัวอย่างจาก Data Test

Before



After



Detection Result YOLOv11

Homework

ໂມເດລກັບຫຼຸດຂໍ້ມູນລວິດໂອ ດັ່ງຕ່ອໄປນີ້ ໂດຍໃຊ້ Yolo v11

Class (ກລຸ່ມຂໍ້ມູນ):

https://drive.google.com/drive/folders/1TzF5SuL4kWbCeFLAH4MYpUX1omHObywM?usp=drive_link

ຜລັພ໌ Realtime Video:

<https://youtu.be/9gVnaUIFT90?si=h3YDIPViJS0h4KGs>



@blueboxdev4442

Result Detect YOLOv11

KMITL
ROBOTICS
and AI
International Program