

13	27/10/25	Architecture of pre-trained models	
14	27/10/25	Pre-trained CNN model as a Feature Extractor using Transfer learning	Ex 1
15	27/10/25	Yolo model to Detect the objects.	Ex 2

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## Lab 15: Implement a YOLO model to Detect Objects

Aim:

To implement the YOLO (You only look once) object detection model for identifying and locating multiple objects in images.

Objectives:

- 1) To understand the YOLO architecture and its real-time detection capability.
- 2) To perform object detection on sample images or video frames.
- 3) To visualize detected objects with bounding boxes.

Observation:

- 1) YOLO divides the image into grids and predicts bounding boxes with class probabilities.
- 2) The model detects multiple objects in one forward pass, enabling real-time performance.
- 3) Accuracy depends on dataset and hyperparameter settings.

Do not use the transfer of  
data without help (as the  
system will be confused and  
not work properly)

image111 | context | IMG-20250523-VA0017.jpg  
640x480

3 persons, 7.3ms  
Speed: 3.0ms per frame, 7.3ms per frame, 2.5ms  
postprocess per image & time

img\_size (1, 3, 640, 480)

has been no change in the  
system

Pseudocode:

- 1) Import Yolo model
- 2) Load pre-trained weights
- 3) Load input image or video
- 4) Perform detection using model.predict
- 5) Display bounding boxes and labels
- 6) Save or visualize the detected image

Output:

~~Detected objects:~~

person  
person  
person

Result:

Successfully implemented the Yolo  
model to detect objects.

!pip install ultralytics opencv-python

```
collecting ultralytics
  Downloading ultralytics-8.3.221-py3-none-any.whl.metadata (17 kB)
Requirement already satisfied: opencv-python in /usr/local/lib/python3.12/dist-packages (4.12.0.88)
Requirement already satisfied: numpy>=1.21.0 in /usr/local/lib/python3.12/dist-packages (from ultralytics) (2.0.2)
Requirement already satisfied: matplotlib>=3.8.0 in /usr/local/lib/python3.12/dist-packages (from ultralytics) (3.10.0)
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Requirement already satisfied: markupsafe>=2.0 in /usr/local/lib/python3.12/dist-packages (from jinja2->torch>=1.8.0->ultralytics) (3.0.2)
Downloading ultralytics-8.3.221-py3-none-any.whl (1.1 MB)
  1.1/1.1 MB 41.5 MB/s eta 0:00:00
Installing collected packages: ultralytics-thop, ultralytics
Successfully installed ultralytics-8.3.221 ultralytics-thop-2.0.17
```

```
from ultralytics import YOLO
import cv2

# Step 1: Load a pre-trained YOLO model (v8 nano - fast and small)
model = YOLO('yolov8n.pt')

# Step 2: Load your image (you must have an image in the same folder)
img_path = 'content/IMG-20250523-000017.jpg' # <- replace this with your image filename

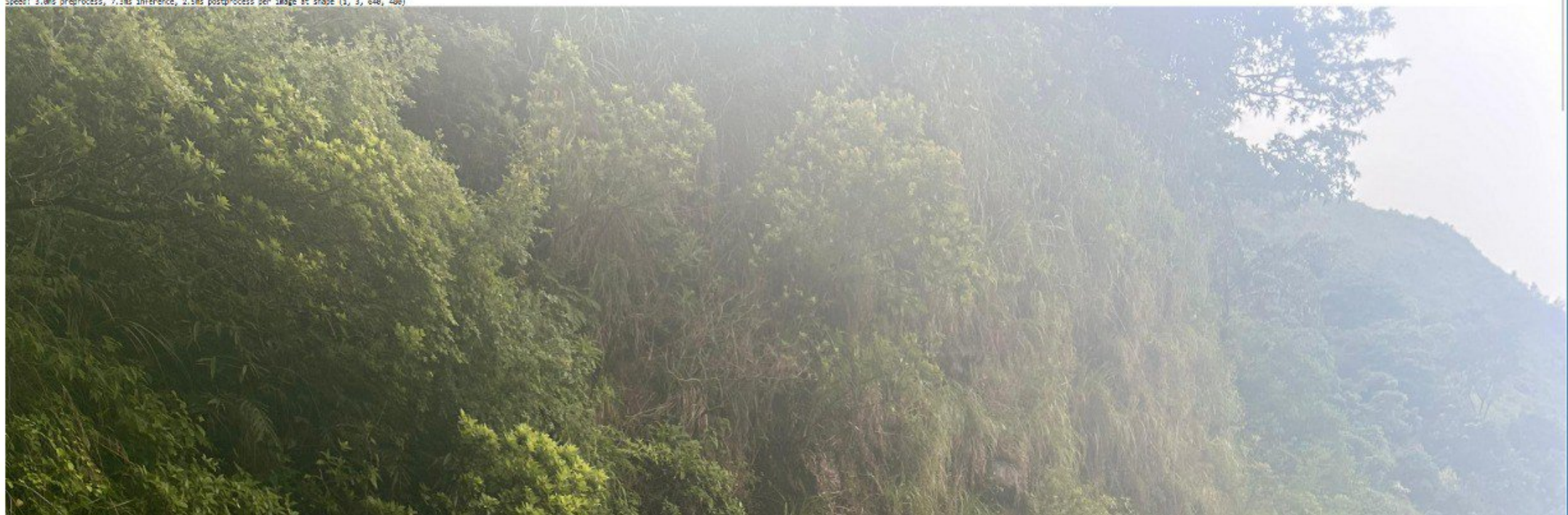
# Step 3: Perform object detection
results = model(img_path)

# Step 4: Display detected objects
# Iterate through the results list and show each result
for r in results:
    r.show() # Opens a window with bounding boxes

# Step 5: Print detected class names in console
print("\ndetected objects:")
```

```
[ ]  
for c in r.jacobs.c15:  
    print(model.names[inf(c)])
```

Image 1/1 /content/ins-zouzevitz-hares7.jpg: 640x480 3 persons, 7.1ms  
speed: 3.1ms preprocess, 7.1ms inference, 2.1ms postprocess per image at shape (1, 3, 640, 480)



```
for c in P_IMAGES_CLS:  
    print(model.names[1](c))
```

person 0.82 person 0.87



```
for c in P_IMAGES.CLS:  
    print(model.names[0](c))
```



```
print(model.names[int(c)])
```



detected objects:  
person  
person  
person