to Detect objects.

EXP NO: 15 :- Implement a YOLO Model

Aim:-

To implement and understand the YOLO (You only Look once) model for real time object detection in images.

Objectives:-

1. To understand the working of YOLO architecture for object detection
2. To detect & localize multiple objects in an image simultaneously
3. To apply pre-trained YOLO weights on a sample dataset or image
4. To visualize bounding boxes & Confidence scores.

Algorithm:-

1. Import YOLO pre-trained model (YOLOV3)
2. Load test images for detection
3. preprocess image (resize, normalize)
4. perform object detection using YOLO model
5. Draw bounding boxes & labels on detected objects.
6. Display and analyze output.

Pseudo Code:

```
Load YOLO pre-trained model
Load class labels

For each image:
    preprocess (resize, normalize)
    pass through YOLO model
    Get bounding boxes, confidence, class ids
    Draw boxes & labels.
Display detected image
```

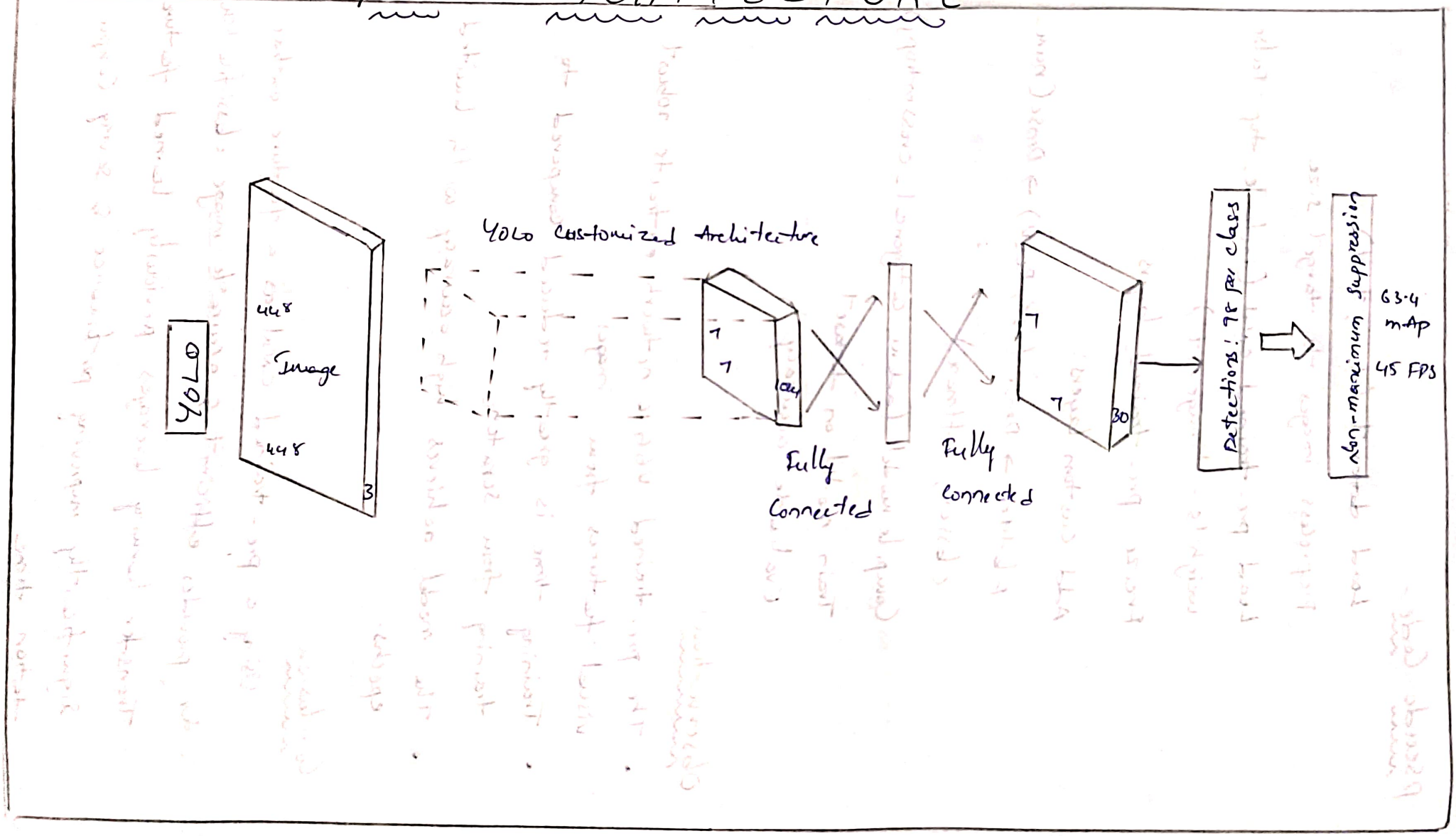
Observation:

- YOLO detects multiple objects with bounding boxes and confidence scores.
- Inference is fast and efficient, suitable for real time applications.
- Model accurately detects objects even in cluttered scenes.

Conclusion:

The YOLO model demonstrates powerful real time objects detection capabilities by simultaneously predicting class labels & bounding boxes. its speed and accuracy make it widely used in autonomous systems, surveillance, & robotics.

YOLO ARCHITECTURE



Output :-

448x640 (no detections), 68.1ms

Speed : 10.7ms preprocess, 68.1ms inference,

0.8ms postprocess per image at shape (1, 3, 448, 640)