

MINI PROJECT

SMART SURVEILLANCE SYSTEM USING YOLO ALGORITHM

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Content of the Presentation

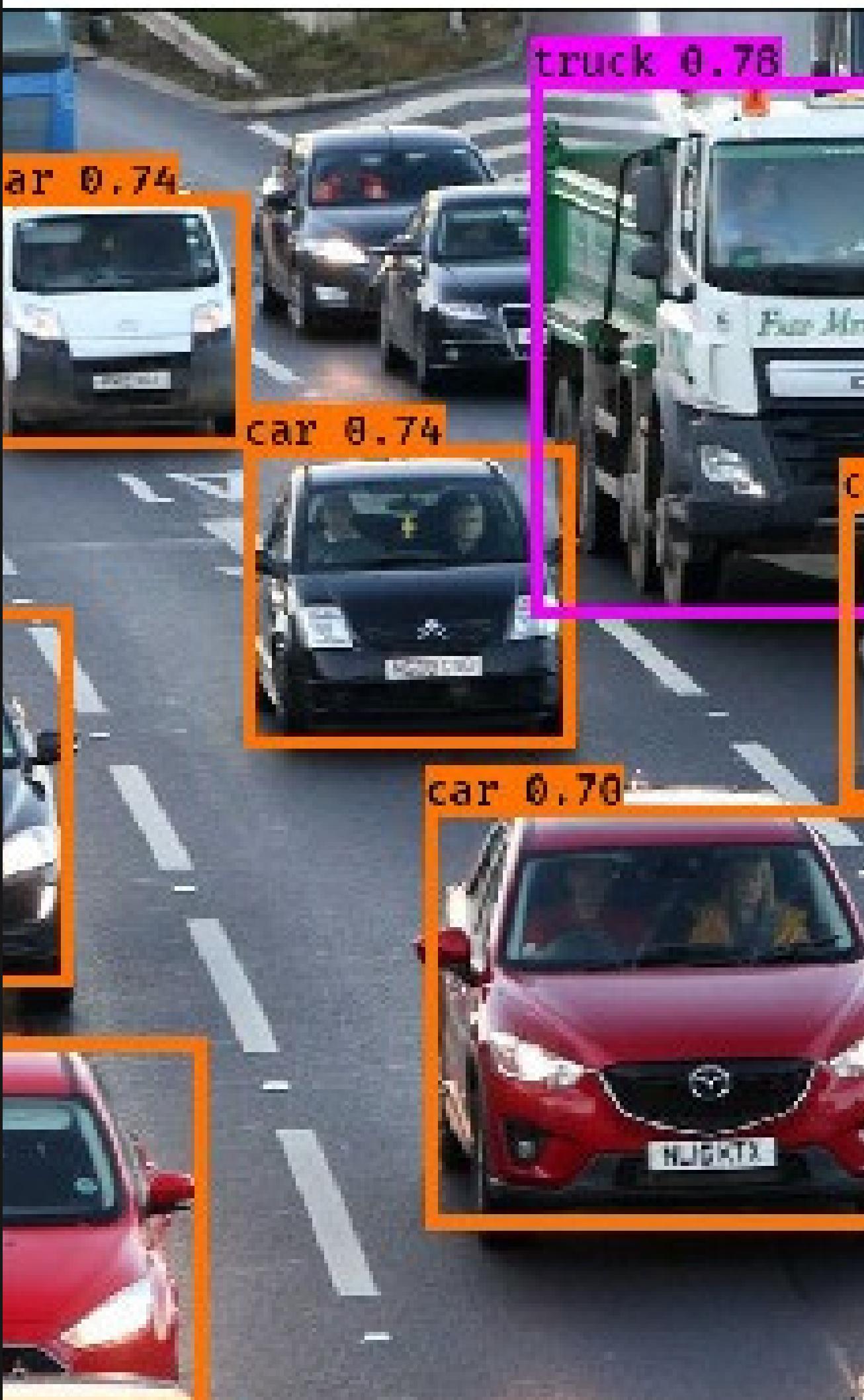
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INTRODUCTION

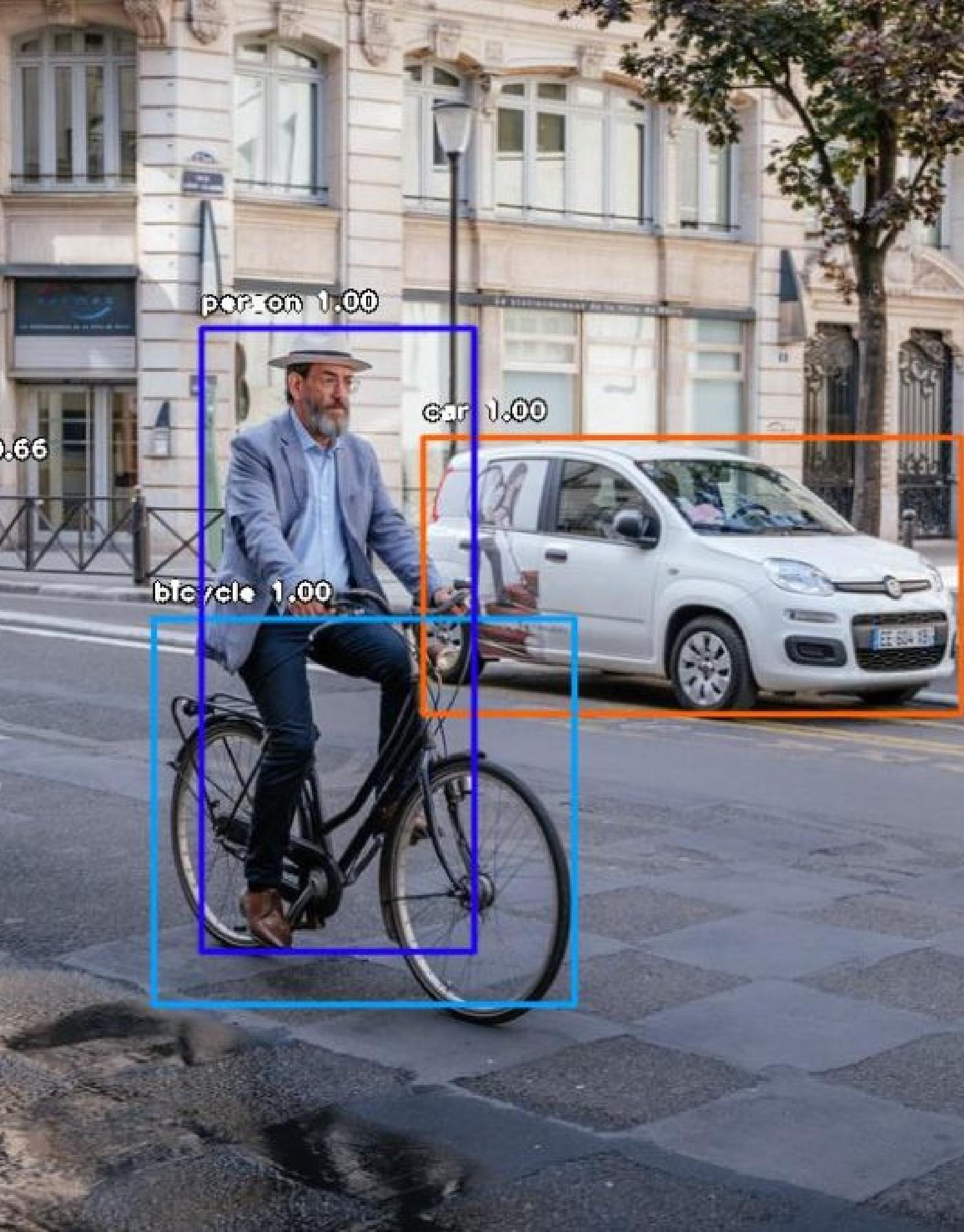
- Smart Video surveillance enables the monitoring of activity, behavioral patterns, or any other change in environmental conditions
- It provides automatic perimeter monitoring and secure area protection.
- The systems requirements for video surveillance include; storage, encoders, interfaces, and management software.
- The machine learning and advance image processing algorithms are playing dominant role in smart surveillances and security systems.

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MINI PROJECT

- There is a clear difference between object detection and image recognition.
- Object detection divided into two types
 - *Deep learning based approach.
 - *Machine learning based approach .
- One of the algorithm we are using is YOLO(You only look once) algorithm.
- The main object of our project is to improve the overall safety





What is YOLO Algorithm??

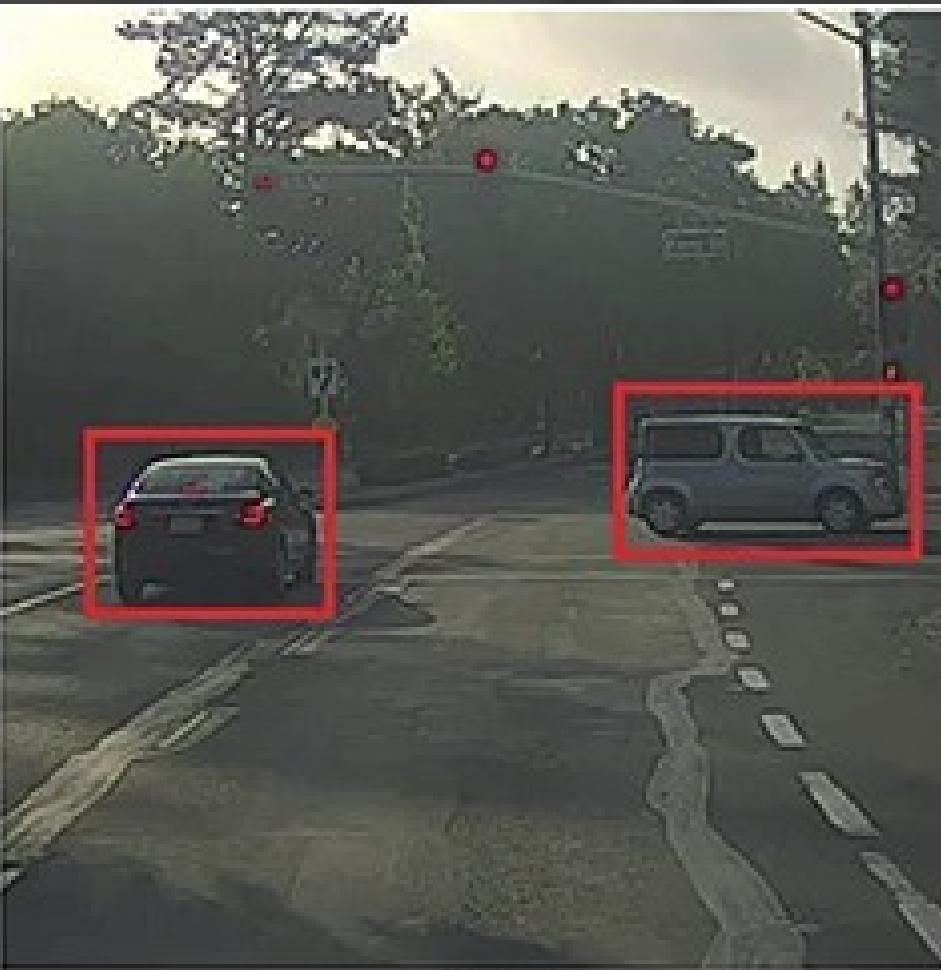


Fig1: YOLO first takes an input image

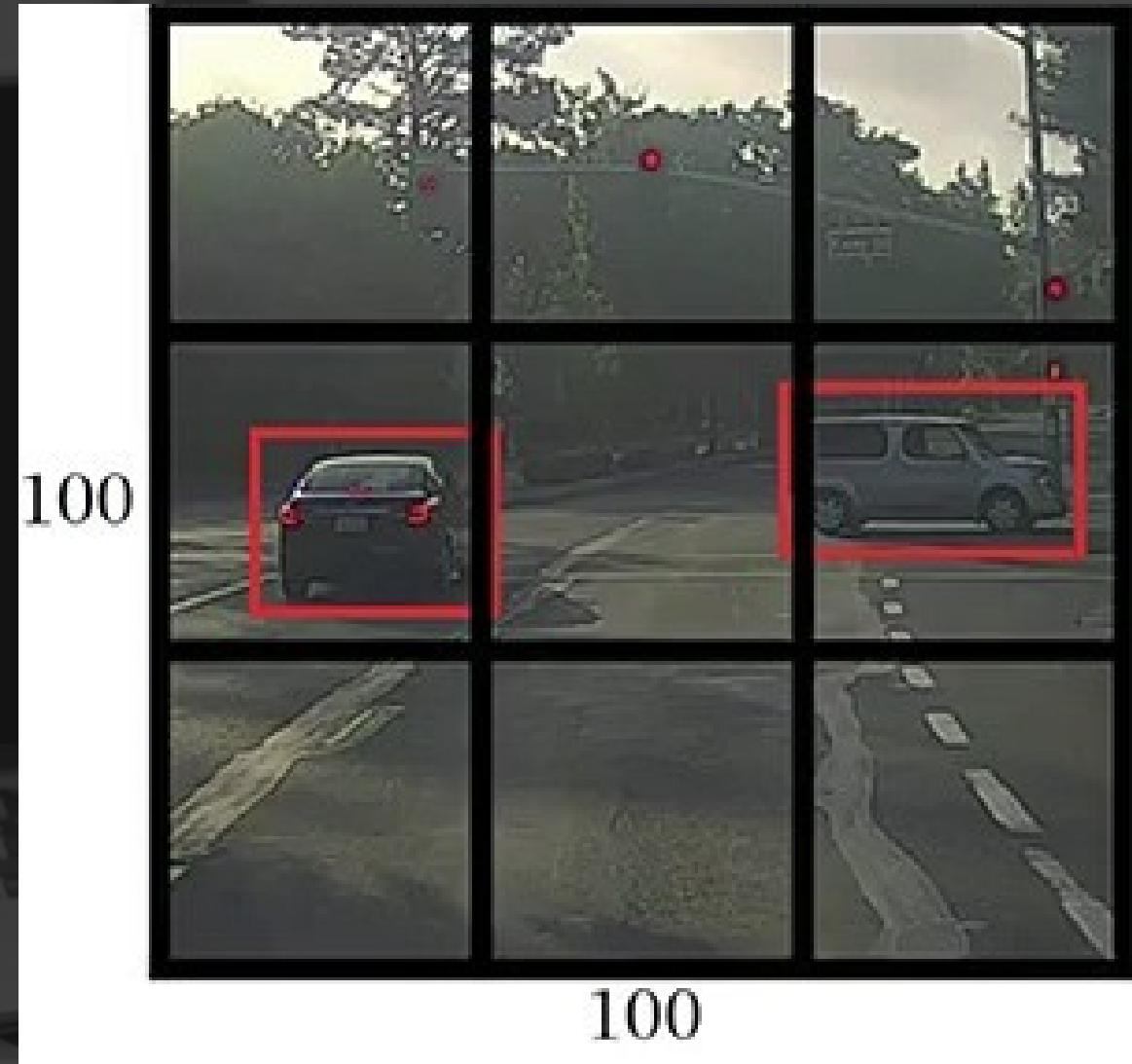


Fig2:The framework then divides the input image into grids

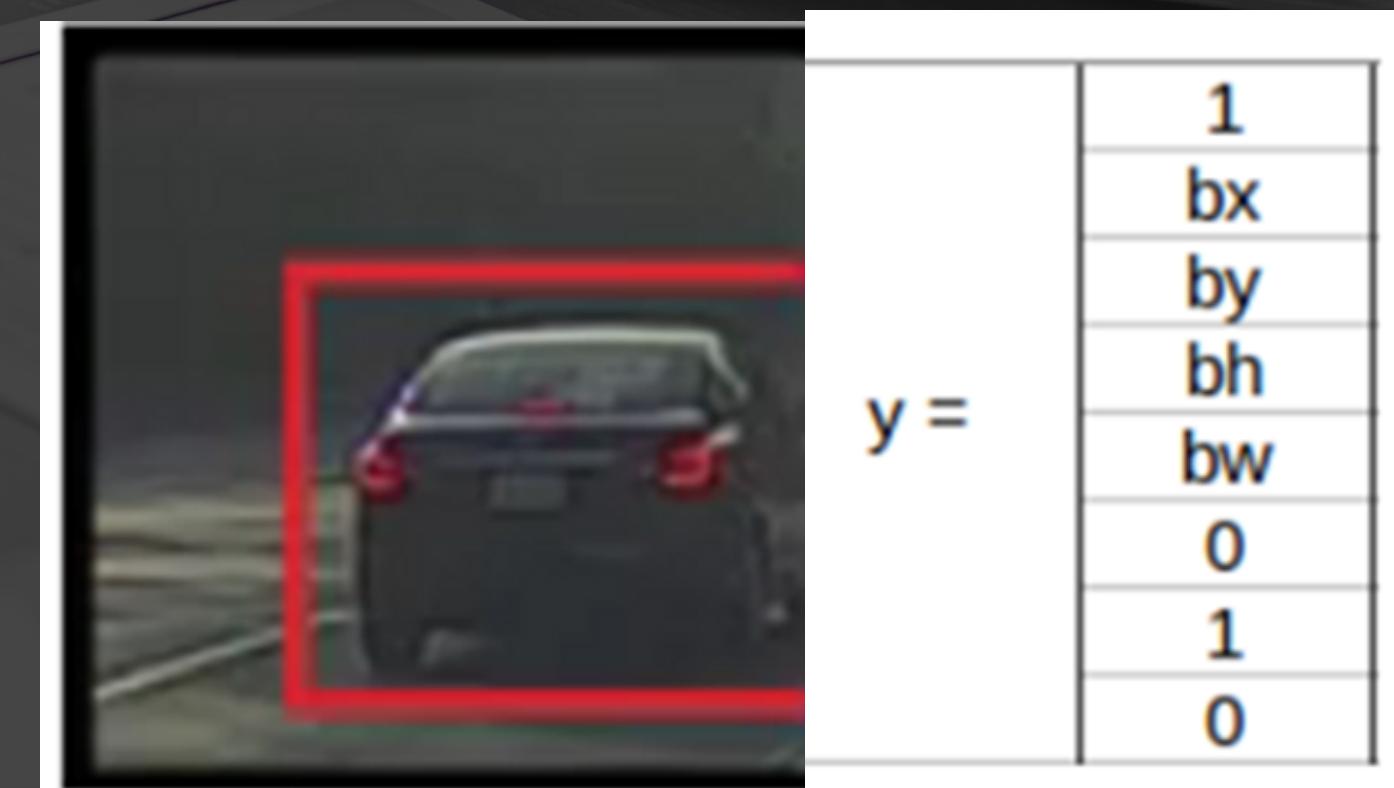
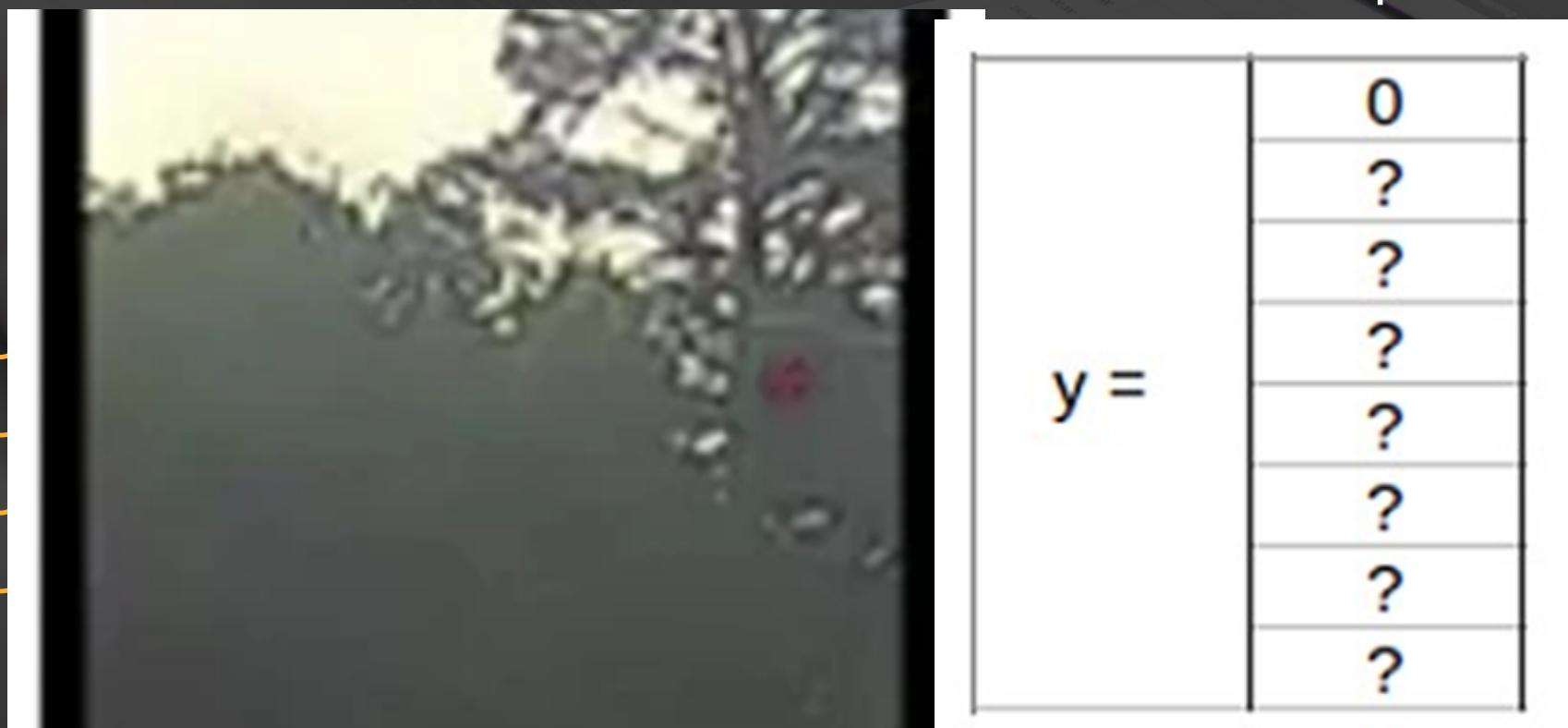
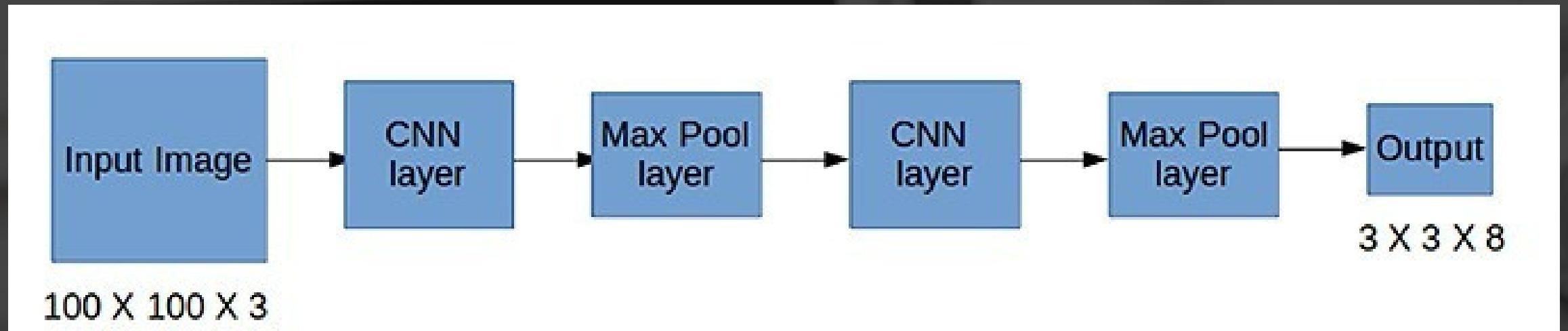
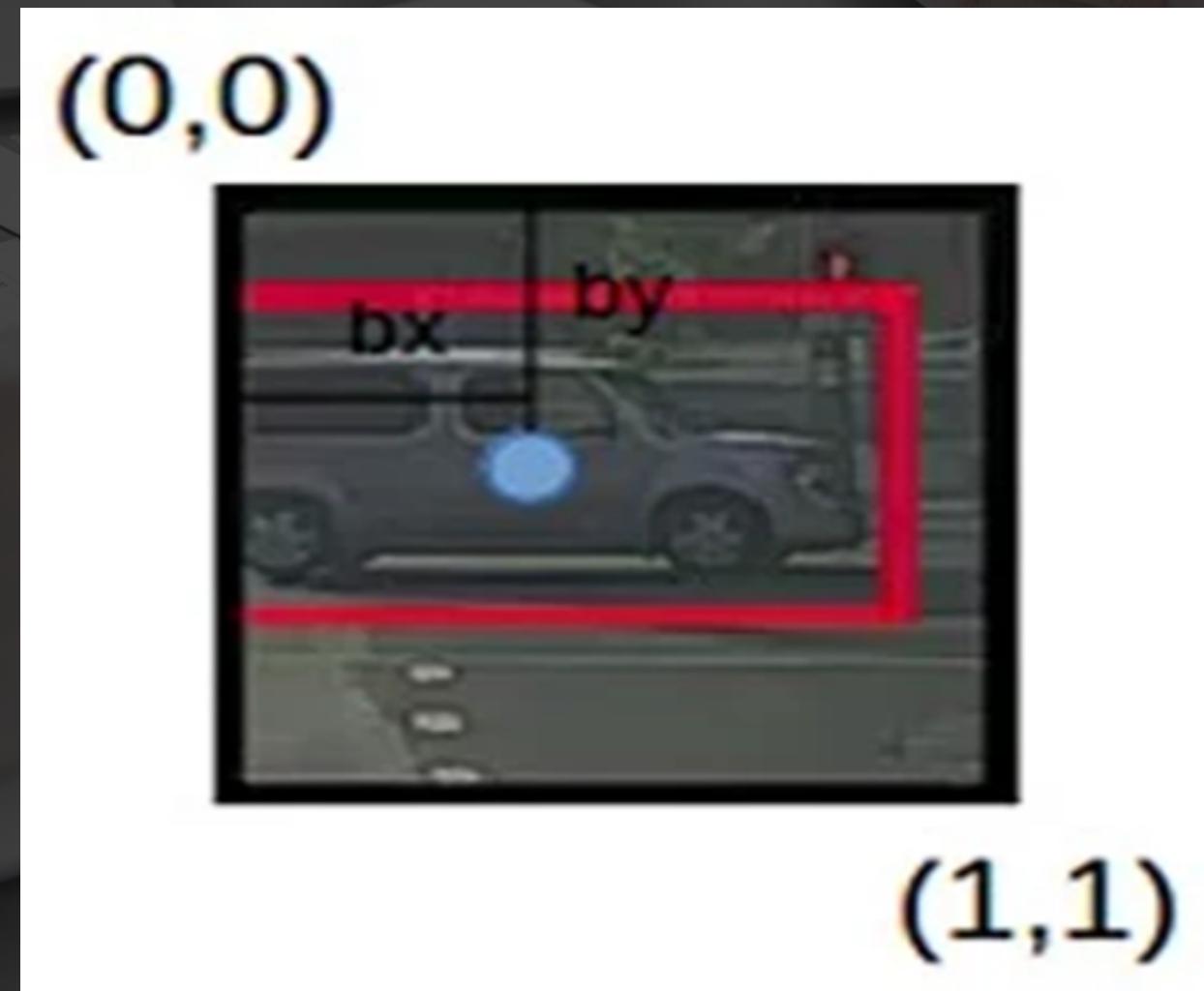


Fig 3



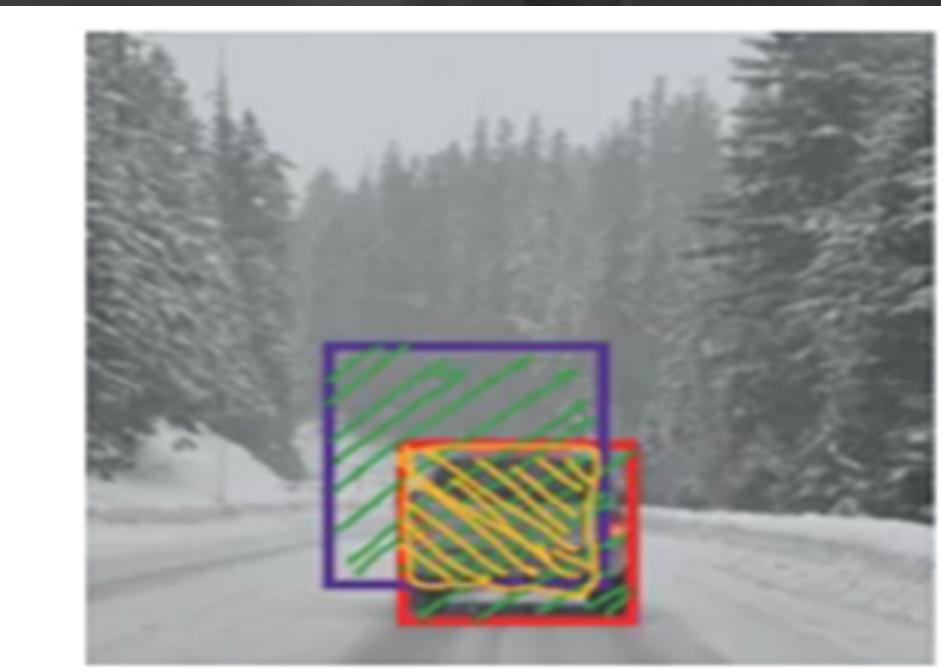
Encoding Bounding Boxes :-

$y =$	1
	bx
	by
	bh
	bw
	0
	1
	0

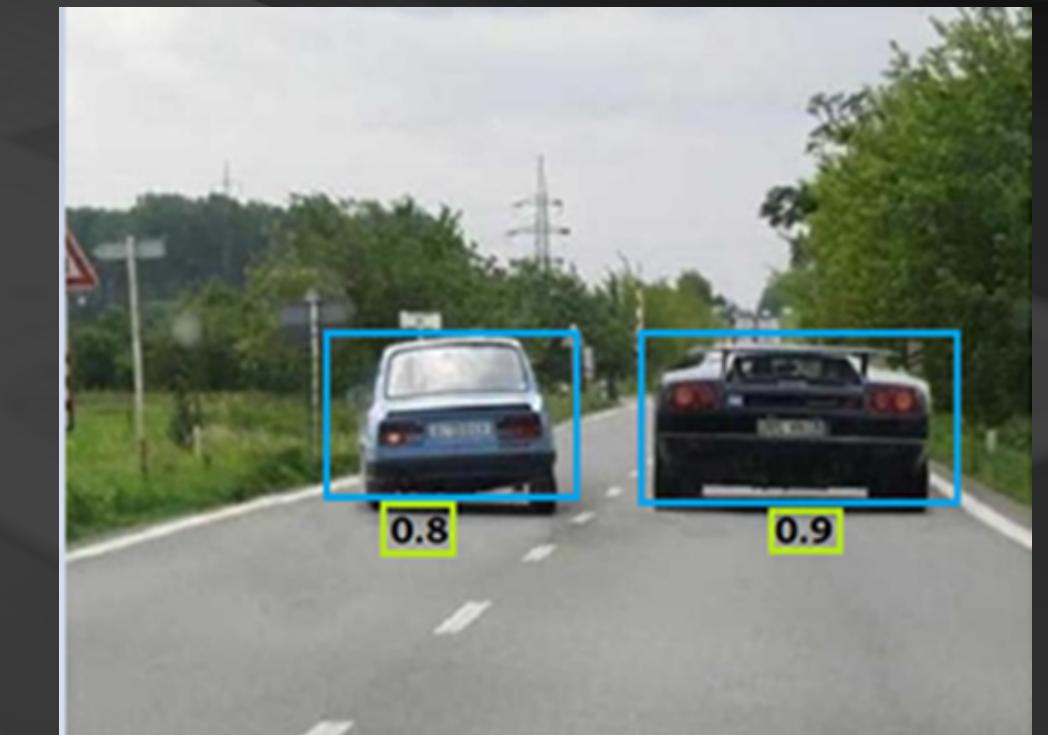
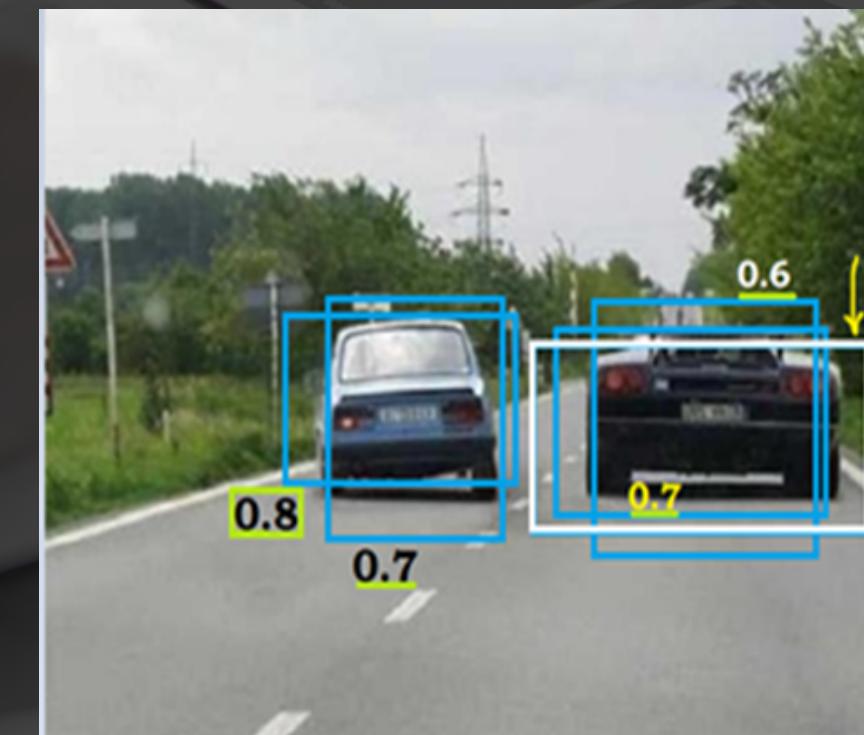
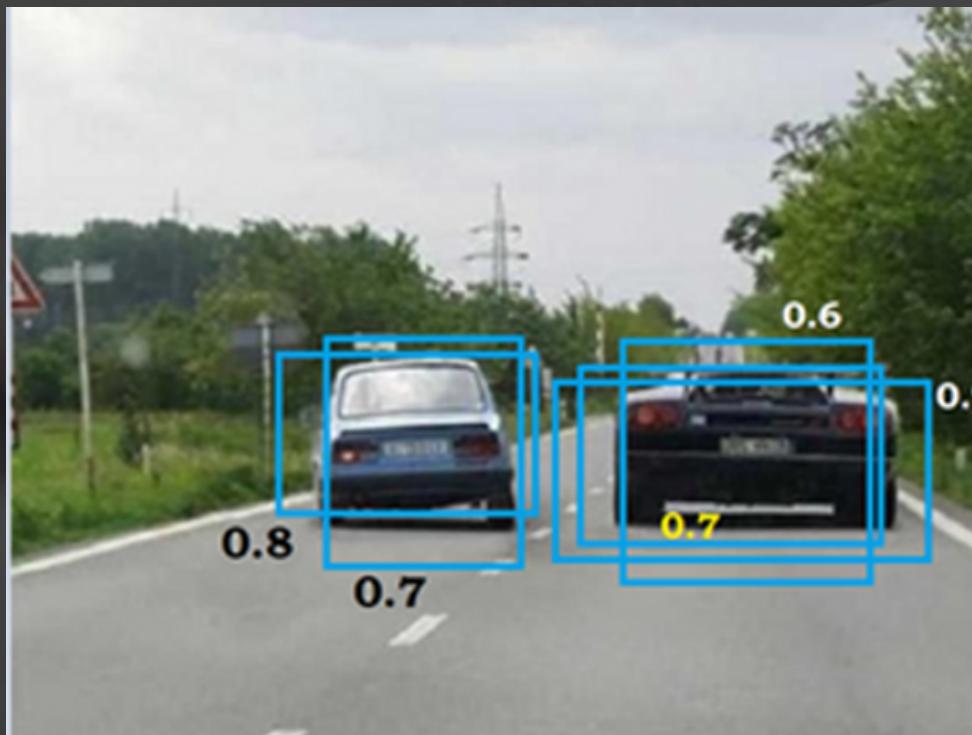


$y =$	1
	0.4
	0.3
	0.9
	0.5
	0
	1
	0

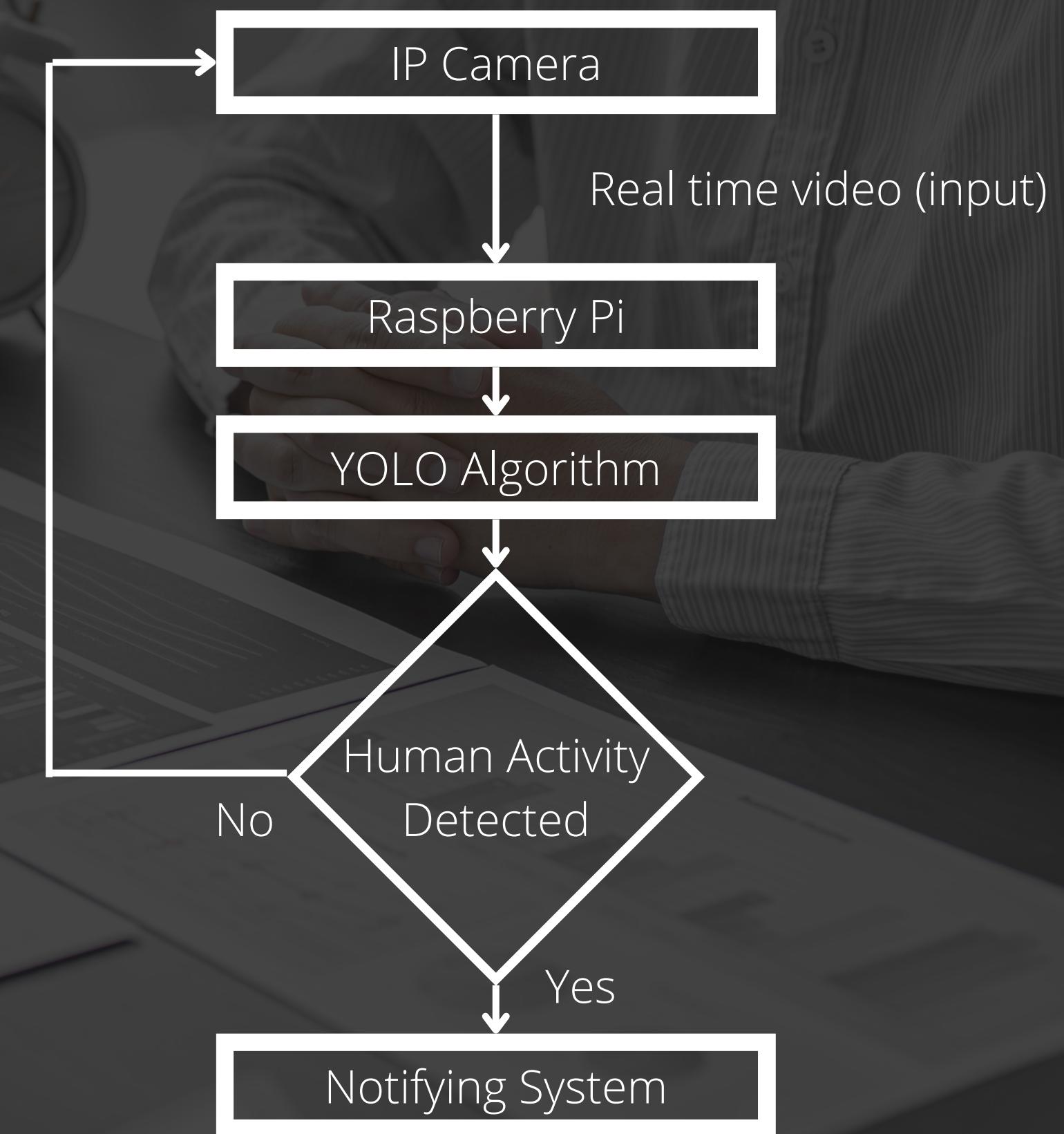
INTERSECTION OVER UNION :



INTERSECTION OVER NON-MAX SUPPRESSION



Flowchart:



Methodology :

- Real time video captured through IP camera is given to Raspberry pi
- The live video is processed by the YOLO Algorithm
- The YOLO Algorithm classifies the object by using bounding boxes around the object and labels the object (if present in training data) with certain level of confidence
- There are two cases :
 - * Human activity is detected - Notifying system is ON (either SMS or email)
 - * No activity detected - Notifying system is OFF

Expected Outcome :

- Remote monitoring
- Lesser efforts on surveillance
- Compact and effective human activity detecting system
- Instant notifying system (through email or SMS)
- Better video infrastructure and processing technique
- Lesser physical security breaches

Applications:

- Preventing the unauthorized access
- Verifying the identification and authorization of persons/vehicles seeking entry
- Altering the security system on time
- Could be used in domestic purposes and as well as in industries



Thank You

