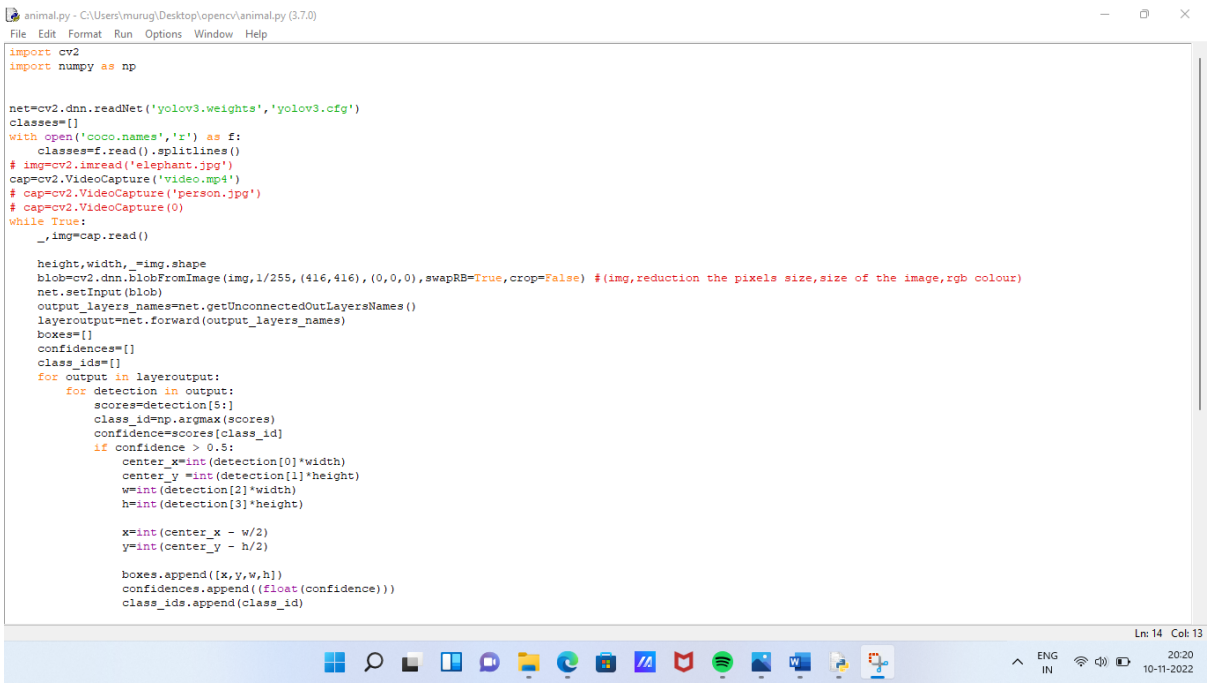
PROJECT DEVELOPMENT PHASE

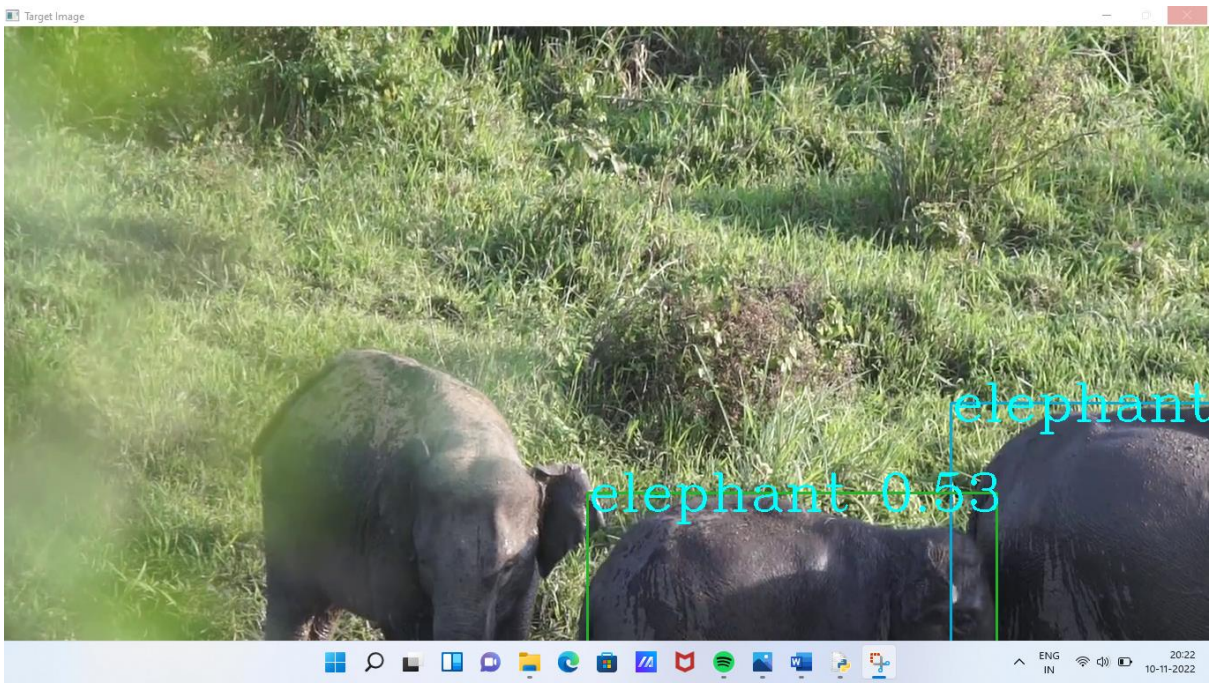
SPRING 4

TEAM ID	**PNT2022TMID08369**
PROJECT NAME	**IOT BASED SMART CROP PROTECTION SYSTEM FOR AGRICULTURE**

STEP 1: First open python code and run code, this capture the image in video and identify which animal or object are captured.



STEP 2: It shows the detected animal or object name which is represented by square with the name of the animal or object.



PYTHON CODE:

```
import cv2
import numpy as np



net=cv2.dnn.readNet('yolov3.weights','yolov3.cfg')
classes=[]
with open('coco.names','r') as f:
    classes=f.read().splitlines()
# img=cv2.imread('elephant.jpg')
cap=cv2.VideoCapture('video.mp4')
# cap=cv2.VideoCapture('person.jpg')
# cap=cv2.VideoCapture(0)
```

```
while True:
    _,img=cap.read()


    height,width,_=img.shape

blob=cv2.dnn.blobFromImage(img,1/255,(416,416),(0,0,0),swapRB=True,crop
=False) #(img,reduction the pixels size,size of the image,rgb colour)
    net.setInput(blob)
    output_layers_names=net.getUnconnectedOutLayersNames()
    layeroutput=net.forward(output_layers_names)
    boxes=[]
    confidences=[]
    class_ids=[]
    for output in layeroutput:
        for detection in output:
            scores=detection[5:]
            class_id=np.argmax(scores)
            confidence=scores[class_id]
            if confidence > 0.5:
                center_x=int(detection[0]*width)
                center_y =int(detection[1]*height)
                w=int(detection[2]*width)
                h=int(detection[3]*height)


                x=int(center_x - w/2)
                y=int(center_y - h/2)


                boxes.append([x,y,w,h])
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                confidences.append((float(confidence)))
                class_ids.append(class_id)

    indexes=cv2.dnn.NMSBoxes(boxes,confidences,0.5,0.4)
    font=cv2.FONT_HERSHEY_COMPLEX
    colors=np.random.uniform(0,255,size=(len(boxes),3))
    for i in indexes.flatten():
        x,y,w,h=boxes[i]
        label=str(classes[class_ids[i]])
        confidence=str(round(confidences[i],2))
        color=colors[i]
        cv2.rectangle(img,(x,y),(x+w ,y+h),color,2)
        cv2.putText(img,label + " "+confidence,(x,y+20),font,2,(255,255,0),2)




    cv2.imshow('Target Image',img)


    key=cv2.waitKey(1)
    if key ==ord('q'):
        break
cap.release()
# cv2.waitKey(0)
cv2.destroyAllWindows()
```