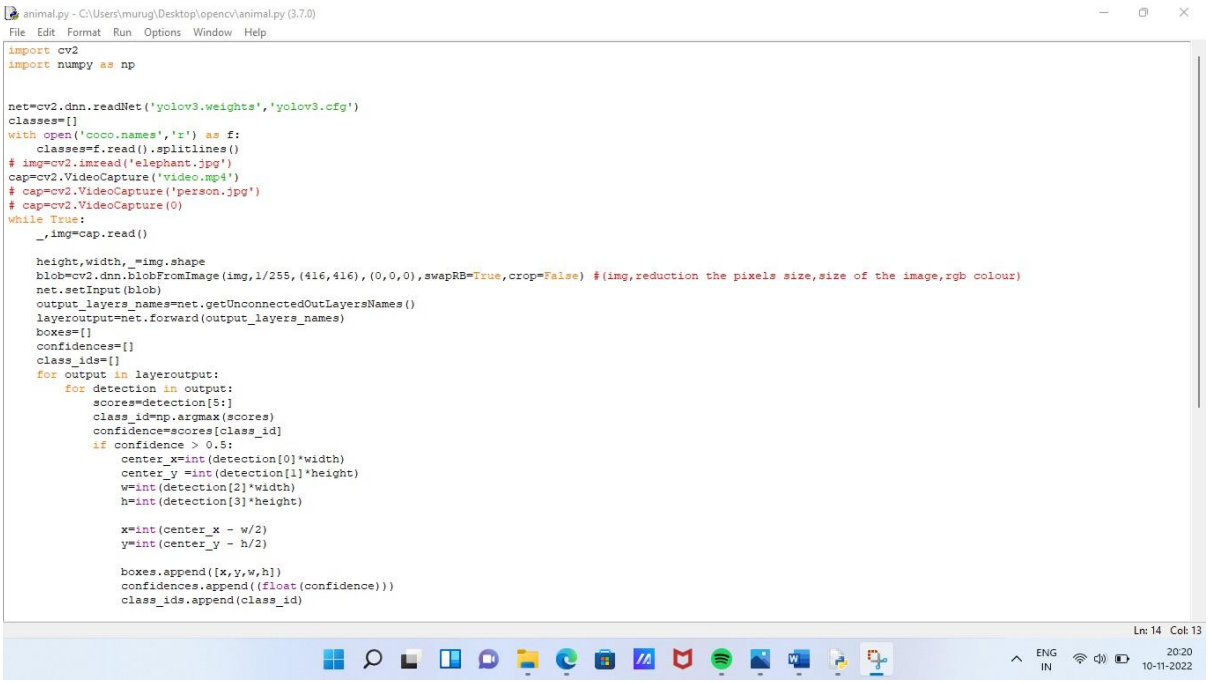
PROJECT DEVELOPMENT PHASE

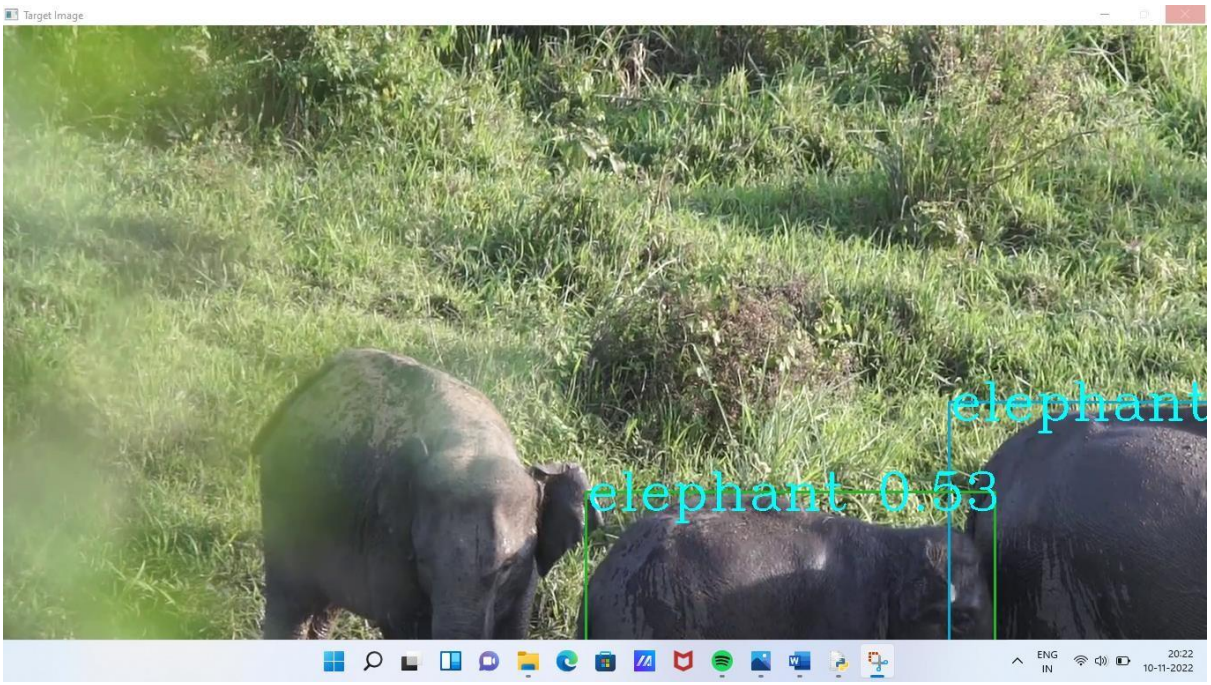
SPRINT 4

TEAM ID	PNT2022TMID144961
PROJECT NAME	**IOT BASED SMART CROP PROTECTION SYSTEM FOR AGRICULTURE**
DATE	**17-11-2022**

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])
            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()
```