Number Plate And Face Recognition For Non-Helmeted Motorcyclist And Sending Alert Messages

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Abstract- In India, most people are willing to buy two-wheelers as they are cheaper than any other vehicle. In the same way, accidents are also increasing day by day. Most of the two-wheeler travelers do not follow the traffic rules especially not wearing a helmet, the police officers take pictures of the bikes and punish them by giving fines these all are done manually. In our proposed system we are implementing an automatic fine Challan generating system that will send the Challans to the driver who drives without a helmet. We are using a yolo algorithm to detect the face of the driver, which is already in the traffic police database. And sends the Challan message to the driver to pay the fine.And also we are using number plate detection to identify the text by using the tesseract algorithm. By using this system we can find a maximum number of people who don't follow the traffic rules like not wearing a helmet.

Keywords- Helmet Detection, Number Plate Detection, Face Recognition, Challan, Machine Learning,
Yolo, Tesseract.

I. INTRODUCTION

The social situation in India is fundamentally extraordinary because of issues, for example,neediness, joblessness just as an extensively lower regard for rules. This makes it unfeasible to go for a totally programmed tollbooth. The business requires a programmed vehicle grouping framework in India not to decrease or wipe out human intercession or work, yet to guarantee that human mediation doesn't bring about any budgetary acts of neglect. The business requires a framework that runs out of sight and simplykeeps a cross-beware of the manual. The conventional OCR based methodology for number plate acknowledgment doesn't work for the varieties in painting style of the number plates. In this paper creators have exhibited a picture recovery basedstrategy to perceive the vehicle number plate caught utilizing an advanced cell to encourage the Car the executives arrangement of a Smart office premise. In the proposed strategy an advanced mobile phone is utilized to catch the pictures and concentrate highlights of the vehicle number plate. These highlights are coordinated against predefined set of same vehicle number plate pictures in the database. The character pictures are coordinated in a proficient way to make it a continuous arrangement.The social situation in India is fundamentally extraordinary because of issues for example,neediness, joblessness just as an extensively lower regard for rules. This makes it unfeasible to go for a totally programmed tollbooth. The business requires a programmed vehicle grouping framework in India not to decrease or wipe out human intercession or work, yet to guarantee that human mediation doesn't bring about any budgetary acts of neglect. The business requires a framework that runs out of sight and simplykeeps a cross-beware of the manual. The conventional OCR based methodology for number plate acknowledgment doesn't work for the varieties in painting style of the number plates. In this paper creators have exhibited a picture recovery basedstrategy to perceive the vehicle number plate caught utilizing an advanced cell to encourage the Car the executives arrangement of a Smart office premise. In the proposed strategy an advanced mobile phone is utilized to catch the pictures and concentrate highlights of the vehicle number plate. These highlights are coordinated against predefined set of same vehicle number plate pictures in the database. The character pictures are coordinated in a proficient way to make it a continuous arrangement.

II. LITERATURE REVIEW

In this Paper YOLO V2 is used for helmet detection which is givenaccuracy of 87%.In our project we are using YOLO v3 which gives more accuracy up to more than 91%[1].

In this paper, it said that the text and face is detected using OpenCV and the text is extracted by Tesseract OCR then the text is later converted to e-speak using Raspberry Pi. The text is extracted by using Tesseract algorithm from the given image.From this we are using this technique for number plate detection[2].

In this the author proposed that, Optical Character Recognition (OCR) is a process or technology inwhich text within a digital image is recognized. It is mainly used for converting the transcribed,handwritten or any printed text to the text data that can be edited and reused.From this also ,we canuse the technique for number plate recognition[3].

III. PROPOSED SYSTEM

In our proposed system we are implementing an automatic fine Challan generating system that will send the Challans to the driver who drives without a helmet. We are using a YOLO algorithm to detect the face of the driver, which is already in the traffic police database. And sends the Challan message to the driver to pay the fine.And also we are using number plate detection to identify the text by using the tesseract algorithm. By using this system we can find a maximum number of people who don't follow the traffic rules like not wearing a helmet.

IV. Machine learning algorithms

A. YOLO Algorithm:

YOLO is an abbreviation for the term 'You Only Look Once'. This is an algorithm that detects and recognizes various objects in a picture (in real-time). Object detection in YOLO is done as a regression problem and provides the class probabilities of the detected images. YOLO algorithm employs convolutional neural networks(CNN) to detect objects in real-time. As the name suggests, the algorithm requires only asingle forward propagation through a neural network to detect objects.

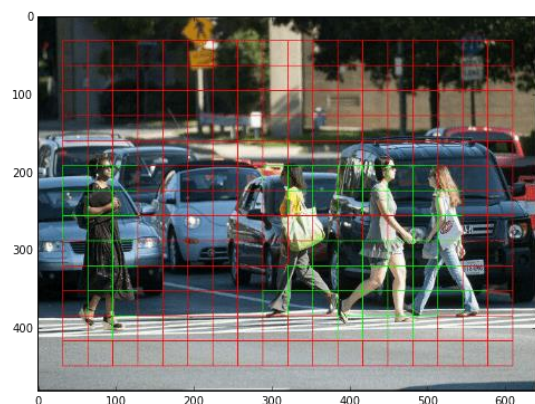YOLO algorithm is important because of the following reasons:

•**Speed:**This algorithm improves the speed of detection because it can predict objects in real-time.

•**Highaccuracy**:YOLO is a predictive technique that provides accurate results with minimal background errors.

•**Learning capabilities:**The algorithm has excellent learning capabilities that enable it to learn the representations of objects and apply them in object detection.

How the YOLO algorithm works:YOLO algorithm works using the following three techniques:

• Residual blocks

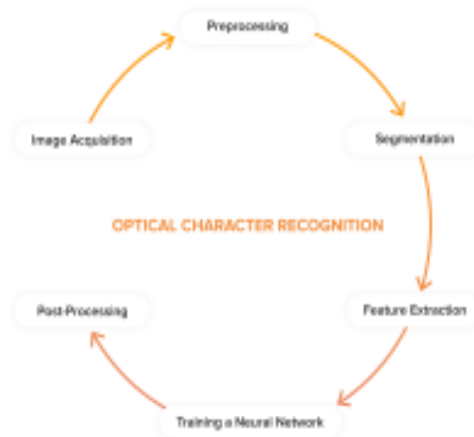• Bounding box regression

• Intersection Over Union (IOU)

Residual blocks

First, the image is divided into various grids. Each grid has a dimensions S. The following image shows how an input image is divided into grids.

B. OCR Algorithm

To acquire images of paper documents with the help of optical scanners. This way, an original image can be captured and stored.Most of the paper documents are black and white and an OCR scannershould be able to threshold images. In other words, it should replace eachpixel in an image with a black or a white pixel. It is a method of imagesegmentation.Optical character recognition (OCR) algorithms allow computers toanalyze printed or handwritten documents automatically and prepare textdata into editable formats for computers to efficiently process them. It isanother way to extract and leverage business-critical data. According to the International Institute of Analytics, businesses using data can getcompetitive advantage and see $430 billion in productivity benefits by the year 2020.

V. Modules

There are 4 modules we are using in this project
They are: 1) Number Plate Recogition
       2) Helmet Detection
       3) Face Recognition
       4) Sending Alert Messages

1) Number Plate Recognition

The number plate of a motorcycle is detected after that the data which is present in the image will be extracted in the text format by using the Tesseract algorithm. Tesseract is an open-source text recognition (OCR) Engine, available under the Apache 2.0 license. It can be used directly, or (for programmers) using an API to extract printed text from images. It supports a wide variety of languages.

2) Helmet Detection

Whether the person is wearing a helmet or not is

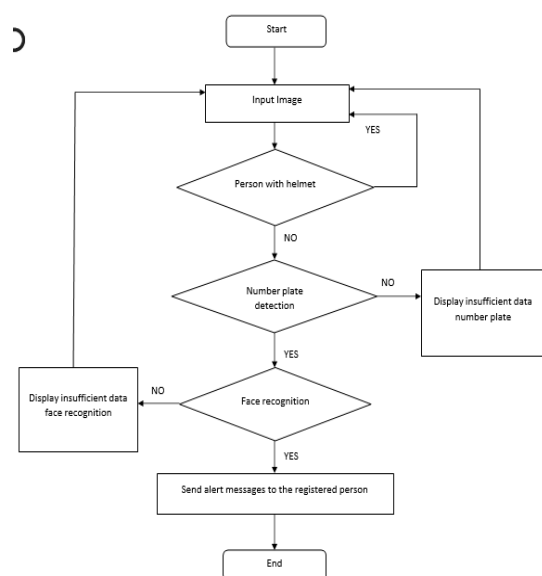recognized by using YOLO(You Only Look Once) algorithm.

3) Face Recognition

If the person Doesn't wear a helmet then the face of the person is recognized by using YOLO algorithm.

4) Sending Alert Messsage

If the person doesn't wear a helmet then alert messages are sent by using telegeram. With Telegram, you can send messages, photos, videos and files of any type (doc, zip, mp3, etc), as well as create groups for up to 200,000 people or channels for broadcasting to unlimited audiences. You can write to your phone contacts and find people by their usernames.

VI.Flow for the proposed method

STEP-1: Start
STEP-2: input is taken in the form of images.
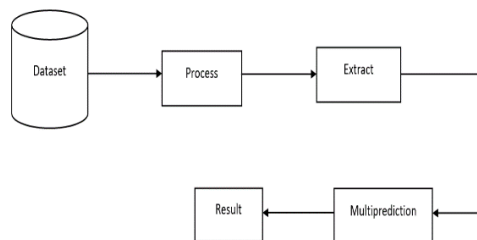STEP-3: Detecting a person,with or without a helmet by using YOLO algorithm.
STEP-4: By using tesseract algorithm the number plate is detected.
STEP-5: In this step face recognition is done by using YOLO algorithm.
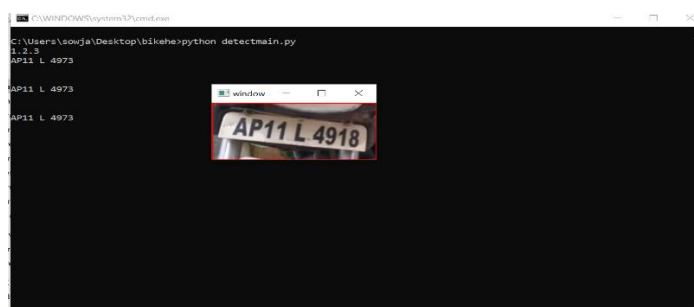STEP-6: Finally sending the alert messages to the persons who are not wearing the helmet.
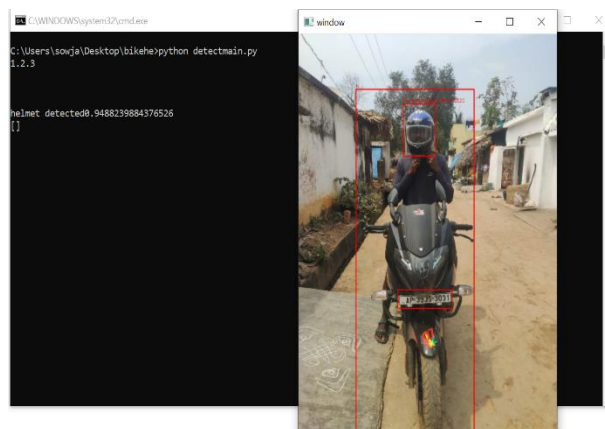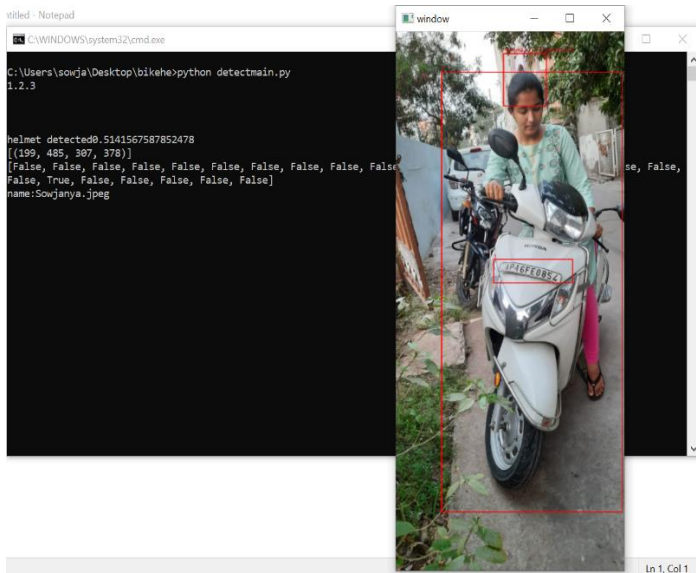STEP-7:End

VII.Architecuture

VIII.EXPERIMENTAL RESULTS
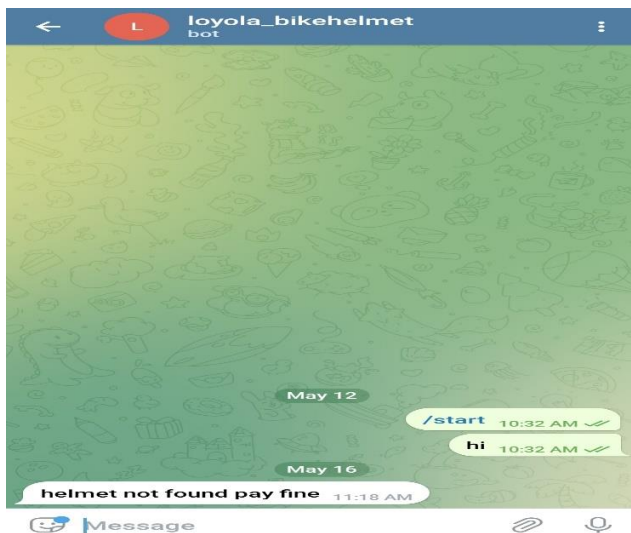
1} Number Plate Detection

2) Helmet Detection

3) Face Detection

4) Sending Alert Messages

CONCLUSION

The increase of road accidents due to not wearing helmet is purely based on the discipline of people. So in order to reduce this we are implementing detection of number plate , face recognition of the person through our project. in our paper we detecting the number plate and helmet by using yolo and extracting text of number plate using tesseract, after this we automatically generating the challans. Challans are given to people who are driving without wearing helmet automatically instead of manual work. The identification of drivers after detection can be done by searching through the traffic police database. In this way people are disciplined for driving without wearing helmet thereby reducing the accidents .

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