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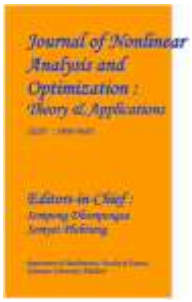

EMERGENCY VEHICLE DETECTING SYSTEM

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Abstract_ There are now more cars than there were a few days ago. It takes a lot of work to oversee this enormous fleet of cars. Traffic signals are used to regulate vehicle movement in a systematic way. An ambulance may occasionally have to wait a long time at a traffic signal, and if it does, the patient's life may be at danger. Traffic police are able to manually identify an ambulance and attempt to move traffic through a jam, but the large vehicles of today make this impossible. Computer vision and image processing are used in the detection of ambulances, allowing for the extraction of vehicle images and the detection of ambulances. CNN, TensorFlow, OpenCV, and Python are used in its implementation. With the use of a camera, it records the traffic in real time and extracts the automobiles. After that, it is categorised as a nonambulance vehicle or an ambulance. This procedure can be automated to make room for an ambulance that is waiting at a traffic signal..

1.INTRODUCTION

Crisis vehicles assume a significant part in each hazardous circumstance. Gridlock takes over 20% patient lives in an emergency vehicle however when the patient's condition is intense the level of patient passing is expanded. These are circumstances when a crisis patient requirements to go to the medical clinic right away and the emergency vehicle stalled out in the rush hour gridlock predicament. This situation is risky if there should be an occurrence of heart patients who should have been raced to clinic in time. In rush hour gridlock predicaments, many individuals try not to give pass-way for the crisis vehicle and furthermore traffic police can't see which path they should clear for the rescue vehicle. Accordingly, numerous patients lose their lives prior to arriving at clinics. . Gridlock circumstance is likewise quite difficult for the fireman groups. In the USA no less than 90% situations where a fireman group is required, individuals expect that contender group would answer in the span of four minutes [2]. In 2013 fireman group got calls more than 1.2 multiple times in the USA. However fireman answered that places rapidly, 3240 non military personnel passings and 15,925 wounds and more than $11.5 billion in property is lost during the year [3]. Consistently is entirely significant for the fireman group. Many people groups' lives and numerous properties are lost for deferring the crisis fireman administrations on the crisis circumstance.

We can diminish these issues by presenting a savvy computerized framework incorporated with a traffic light framework that will distinguish and give need to crisis vehicles. We really want to a form a framework to distinguish vehicles and group it as a crisis or customary vehicle. Profound learning engineering like profound convolutional brain networks have been applied in PC vision and they have delivered results similar to human as well as better than a human master. In this paper, the issue is settled by taking the CCTV film of the street and recognize the crisis vehicle. Pictures are required consistently with

the assistance of CCTV camera. In each picture, each vehicle is identified out and about. Subsequent to identifying each vehicle, they have characterized it into a crisis vehicle and standard vehicles. Assuming that a crisis vehicle is found, the PC can tell the traffic police or a mechanized framework to clear its direction.

A human mind can without much of a stretch distinguish any vehicle effectively and outwardly process it in a small part of time. Be that as it may, the cerebrum has some impediment, it can screen or support consideration not the greater part 60 minutes. So the future world requirements numerous counterfeit minds to accomplish the difficult work for aiding humankind. This paper contains 2 significant part. One is object recognition and arrangement of a picture as a crisis vehicle or not. For object recognition we use Consequences be damned V3 [4]. Consequences be damned V3 design is extremely quick and can handle 45 pictures each second in a PC with a decent processor. Consequences be damned V3 reevaluates the picture and partitions it in fixed frameworks. Then, at that point, it predicts numerous bouncing boxes and tracks down the likelihood of an article those crates. So it doesn't require complex pipelining and straightforwardly enhances location execution. In R-CNN [5] is a locale proposition based technique that creates boxes and runs grouping then, at that point, post-handling for bouncing boxes. RCNN pipeline is more slow than Just go for it identification. Consequences be damned makes less foundation mistake. Just go for it strategy is exceptionally generalizable of article discovery. More conversation about this is in meeting III.

Profound convolutional brain network [6] is the most cutting edge innovation for arrangement and recognition in the picture. In this days the article location and characterization capacities have decisively gotten to the next level. The convolutional brain network utilizes the idea of a bit to handle the picture. The upsides of these parts are gotten the hang of during preparing. A profound convolutional brain network is developed stacking a considerable lot of such convolutional layers. Yet, it has two disadvantages; it is difficult to prepare such organization and it requires a great deal of information to prepare it. To tackle this sort of issues move learning [7], [8] can be utilized. The thought is to utilize the information, for this situation, the heaviness of a brain organization, advanced by an organization in one application in other application. We have tried different things with few unique pre-prepared model including VGG-16 [9], commencement v3 [10] and xception

We can decrease these issues by presenting an insightful computerized framework incorporated with a traffic signal framework that will identify and give need to crisis vehicles. We want to a form a framework to recognize vehicles and characterize it as a crisis or normal vehicle. Subsequent to distinguishing each vehicle, they have grouped it into a crisis vehicle and customary vehicles. On the off chance that a crisis vehicle is found, the PC can advise the traffic police or a computerized framework to clear its direction.

2.LITERATURE SURVEY

[1] K Agrawal1, M K Nigam1, S Bhattacharya1 ,Sumathi G1 published a paper work in 2021, for Ambulance Detection using Image Processing and Neural Network which is a

vehicle detection and tracking system, that recognizes the vehicle (i.e., Ambulance in this case) amidst the traffic congestion.According to their work, The Ambulance tracking system is activated at the mapped junctions and that program detects the ambulance coming close to it and turns the traffic light to Green for the next 15 seconds. Geocoding is the practice of transforming addresses (like a physical address) to location information (like longitude and latitude) that can be used to locate a label on a map or to mark a grid. They plan to provide ambulances with this software to make it easy to transform addresses into a programmable format for review and retrieval. This data is converted to a system that shows all the crossings it must pass to meet the endpoint.

[2] In 2018, Shuvendu Roy1, Md. Sakif Rahman2 have proposed an automated system to detect emergency cars from CCTV footage using the deep convolutional neural network.

Their method has shown good result in detecting and classifying emergency cars.

[3] Huansheng Song,Haoxiang Liang,Huaiyu Li,Zhe Dai Xu Yun in 2019 , published their work that discusses the challenges that directly affects the accuracy of vehicle counts, due to the different sizes of vehicles. To address this,they have proposed a visionbased vehicle detection and counting system. A new high definition highway vehicle dataset with a total of 57,290 annotated instances in11,129 images is published in this study. Compared with the existing public datasets, the proposed dataset contains annotated tiny objects in the image, which provides the complete data foundation for vehicle detection based on deep learning. The experimental results verify that using the proposed segmentation method can provide higher detection accuracy, especially for the detection of small vehicle objects. Moreover, the novel strategy described in this article performs notably well in judging driving direction and counting vehicles. This paper has general practical significance of the management and control of highway scenes.

[4] In 2019, K.Rubini, M.Vidhya, S.R Yeshawini, A.Gowthami proposed their idea that focuses on controlling the speed of the surrounding vehicles near ambulance, and hence the ambulance can reach the hospital on time. It can be done by using RSSI (Received Signal strength Indication) which works based on Message Queuing Telemetry Transport algorithm. Node MCU acts as transmitter and server acts as receiver. Node MCU has the inbuilt Wi-Fi module (EP8266). It receives the signal from server and identifies that signals strength which is used to reduce the speed of other vehicles within the particular limit. An APR voice module is used to provide intimation to the surrounding vehicles about the arrival of ambulance. Also the traffic signals are made automated for ambulance so that the signals will go green thus providing a clear path for the ambulance to reach without time lag. The original signal is again restored once the ambulance moves over a particular distance from the signal that has been fixed earlier.

3.PROPOSED SYSTEM

The surveillance camera itself is the sole piece of hardware we suggest using in our operation. Rather than employing electrical sensors placed in the pavement, the system will identify vehicles based on photographs. A camera that records vehicle footage on a regular basis will be mounted at specific distances from the traffic light. The vehicles are then extracted using the YOLO technique once the recorded video has been converted to frames. Our CNN model then analyses the retrieved images to determine whether or not it is an ambulance..

ARCHITECTURAL DESIGN

The Architecture Diagram depicts the overall structure of the software application or model that is to be created or already created architectural diagram. It uses information flow characteristics and maps them into the program structure. Fig 3.1 displays how the images are going to the YOLO program, then it is detecting whether the vehicle is a truck or not. Since we are using CNN, it helps us to generate our dataset, where in the filtered data from the YOLO program comes as input(i.e, trucks).With dataset generated, using CNN, we detect whether the detected truck as an ambulance or not.

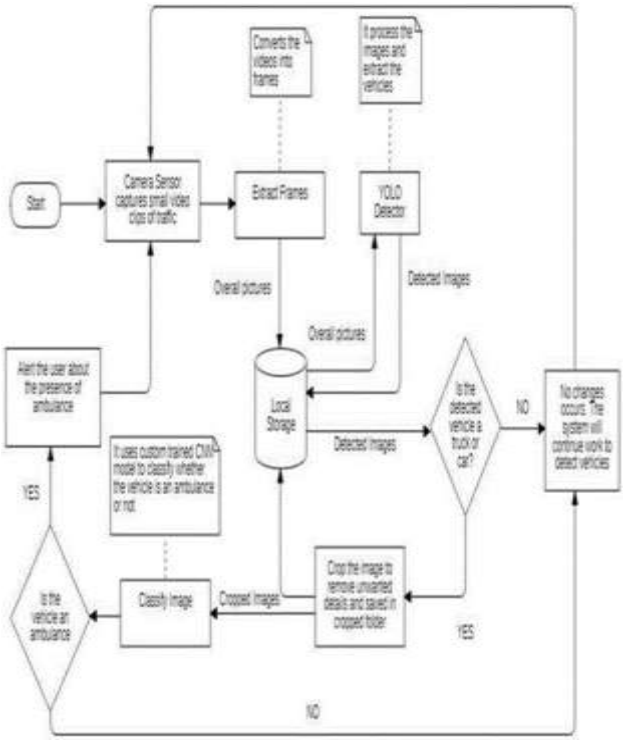

Fig 1:Architecture

4.RESULTS AND DISCUSSION

```
D:\ambulance-detection-opencv>python main.py ./videos/video_1.mp4
Frame Saved
Frame Saved
Frame Saved
Frame Saved
Frame Saved
Frame Saved
frame_0.jpg
frame_1.jpg
Detecting vehicles...
frame_2.jpg
Detecting vehicles...
frame_3.jpg
Detecting vehicles...
frame_4.jpg
Detecting vehicles...
frame_5.jpg
Detecting vehicles...
Detecting vehicles...
Detecting vehicles...
----------------------------
There is an ambulance!
----------------------------
```

5.CONCLUSION

This research proposes an approach for automating the detection of ambulances at traffic signals. It detects automobiles more consistently because it uses real-world traffic photos. According to the experimental results, the system works properly and achieves the desired effects, such as: Extracting frames from the captured video. Detecting automobiles at a specific frame in the feed Classifying the vehicle as an ambulance or not. All of these operating advantages ensure that the programme is widely useable and makes it a reliable alternative to the present ambulance detection system.

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