

Traffic Sign Detection and Alert System Along With Speed Controlling

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Abstract

Road traffic constitutes a major part in the problem of society. As the road traffic is increasing day by day there is a necessity of following the traffic rules with proper discipline. Traffic rules consist of traffic sign boards and traffic signals which are meant to be followed by everyone in the society. To provide a comprehensive assistance to the driver for following the traffic signs, Traffic Sign Board Detection and Voice Alert System along with Speed Control. The signboards are captured using camera installed in the vehicle. The captured image will undergo for image processing by YOLO algorithm in Python and identify the signboard. This gives the driver a sort of assistance which alerts the driver and reduces the work of the driver. The main goals of this project are detection, and recognition and gives voice alert to the driver. Speed will be controlled automatically according to the signboard.

Keywords—Traffic Sign Board, Image processing, YOLO Algorithm, Python, Voice Alert

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I. INTRODUCTION

Millions of people are injured every year in motor vehicle accidents. Many road accidents are the result of carelessness, lawlessness and neglect of road signs, both at each level by drivers and the general public. The magnitude of road accidents in India is alarming. This is evidenced by the fact that every hour there are about 56 accidents that happen in the same way, every hour more than 14 people die as a result of road accidents. If a person neglects to obey the traffic signs, he or she may endanger himself or herself and other drivers, their passengers, and pedestrians. All signs and symbols help maintain order in traffic and are designed to reduce the number and magnitude of road accidents. Some drivers believe that certain road signs are unnecessary.

All road signs are posted at certain locations to ensure the safety of all drivers. These signs let drivers know how fast they are driving. They help to create order on the roads and are hired to provide valuable information to drivers. Traffic signs include a lot of useful environmental information that can help drivers learn about forward road changes and driving requirements. Signs that are released in certain areas or that are not visible due to aging can cause unpleasant accidents for drivers. They also tell drivers when and where to turn or not to turn. To be an awesome driver, you need to understand what a sign means. Road signs are designed to ensure that every driver is kept safe.

Our system will be able to see, see and take road signs can be a great help to the driver. The purpose of the auto-recognition system is to detect and detect one or more road signs from inside the live coloured camera images.

In this foundation paper we provide driver information about the presence of a traffic sign board at a certain distance separately. The system provides the driver with real-time information from road signs, which includes the most important and challenging tasks. Next generate an acoustic warning to the driver before any accident. This warning allows the driver to make appropriate adjustment decisions to minimize or eliminate the event altogether. Sometimes, though, because of climate change or viewing angles, road signs are difficult to detect until it is too late. First, it is necessary to choose hardware to solve this problem. The second stage is based on colour processing, or a method of obtaining an object based on rapid colour change. Graphic processing technology is widely used in identifying sign boards. Driver alert is provided as sound output. If the driver does not follow the warning the automatic braking system will work and the speed of the vehicle will be controlled based on the signature board.

II. EXISTING METHOD

Road travel is a major part of the social crisis. Other options available for automatic acquisition and road sign recognition are a complex problem, with a few key application areas, including advanced driver assistance systems, road inspection, and private vehicles. Although most research is based on both automated and signal-based traffic detection, and text recognition in real scenes there is very little research that focuses on text recognition in road information signals. This may be due to the difficulty of the task caused by the problem, such light and shadow, dimming, and deterioration of symptoms. There are projects in getting traffic signals and a warning. This project works very well as a mobile app. The speed control system is not used on existing systems in conjunction with signal detection.

The driver gets information in advance about an impending obstacle. And expensive and not to put a transmitter on each signature board. Only after you enter the application and receive notifications. LCD is used for testing only. Bluetooth data transfer for android phone. Concerned neo-hippies and their global warming, i'll tell ya. As a future product, the embedded unit and the android app will be integrated into one unit. High accuracy and suffering from adverse weather conditions. Complete set of road signs used in our training and system-recognized data. Select road markers are selected as MSER. MSERs are regions that maintain their status at several levels if the image is limited. The acquisition method was chosen because of its robustness in contrast to light conditions. To find street sign candidates with boundary colour, the algorithm detects candidates based on the background colour of the road sign because they persist within the MSER process.

III. PROPOSED METHOD

A. OVERVIEW OF THE SYSTEM

We often see many road accidents happen. This can be due to the driver's ignorance of road signs and traffic signs. As traffic congestion increases day by day there is a need to follow traffic rules properly. The acquisition of the traffic sign board is an integral part of pilot auxiliary systems. The basic concept of the proposed system is to provide alert to the driver about the presence of a traffic sign board at a certain distance separately.

The project can be entirely divided in to two sections

1. Sign Detection and Alert
2. Speed Control

The system provides the driver with real time information from road signs, which consist the most important and challenging tasks. It generates an acoustic warning to the driver in advance of any danger. This warning allows the driver to take appropriate actions in order to avoid the accident. Image processing technology is mostly used for the identification of the signboards. The alertness to the driver is given as an audio output. Automatic braking system gets activated and the speed of the vehicle gets regulated based on the signboard.

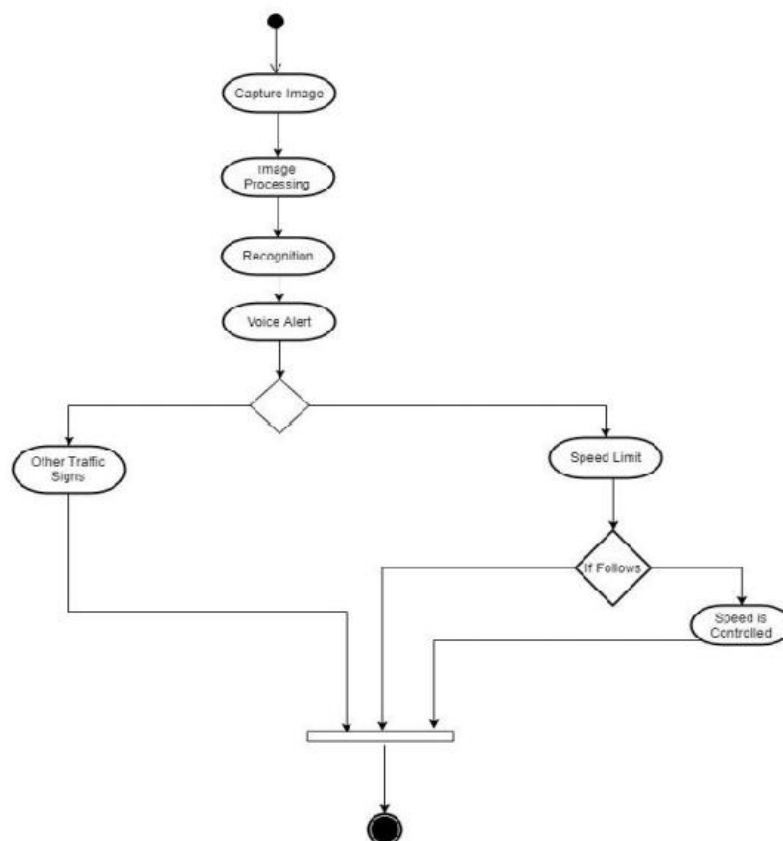


Figure 1: Flow chart of the System

B. WORKING OF THE SYSTEM

A camera placed in the front of the car will capture a traffic sign board .Then the data is sent to the MATLAB system in the system where it is compared and detects a road sign from the site using the SURF algorithm. It also provides a voice warning to the driver using the tts command with the speaker .After identifying the road sign there will be a compatible command display on the LCD. When the system identifies speed limit signs, stops, turns, humps, and speed bumps, the speed decreases as the car's speed increases. At this point if the driver tries to accelerate the speed of the vehicle beyond the limit it will not be limited to a certain distance of time.

C. YOLO ALGORITHM

YOLO (You Only Look Once) is an algorithm that uses neural networks to provide real time object detection.This algorithm is popular because of its speed and accuracy. It has been used in various applications to detect traffic signals, people, parking meters, and animals.

YOLO is a state-of-the-art object detection algorithm that is incredibly fast and accurate.

IV. RESULT

The proposed system can operate at the speed of multiple vehicles and be tested under a variety of conditions. And our proposed system will save significant lives by preventing accidents due to negligence of road signs. The program is very focused on the regular traffic community especially night travelers and also helps traffic police to reduce traffic problems. The main idea of the project is to focus on road accidents that occur due to drivers not knowing road signs. People die in these road accidents which is a great loss to the family. It offers high efficiency and is easy to use. The speed of the car gradually decreases thus reducing the risk. If the car slows down suddenly there is a risk of a collision with the returning car. We also consider this situation. Sometimes when traveling at night the driver may not be able to see the hump before, so with this program we can slow down the car if the driver does not know about the hump again.

V. FUTURE WORK

The system would include recognizing the image more faster. This system provides more priority to the speed of processing and accuracy. In future we should try to increase the speed and accuracy of the system. The faster the process, the more efficient the system will be.

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