TRAFFIC SIGN CLASSIFICATION WITH VOICE ALERT SYSTEM

ABSTRACT:

Road traffic plays a vital role in the management of societal problems. Due to the drastic increase of road traffic day by day, there is a necessity for proper management to avoid unforeseen situations. There are traffic rules that are to be followed by everyone in society. Traffic rules consist of traffic signboards and traffic signals. For supporting the society to follow the traffic signals, Traffic Sign Detection and Classification with Voice Alert System is produced (can be developed).

The images of signboards are captured using the camera installed in the vehicle and the image is classified using a Convolution Neural Network. This classified output text is fed to Google API known as gTTS API which converts the Text to Speech. The main goal of this project is to detect, classify and give voice alert to the driver to avoid any mishappening.

INTRODUCTION:

Millions of people got wounded and even lost their lives annually in vehicle accidents. Accidents are caused by inattention, dopiness, ignoring the rules and regulations, and neglecting traffic signboards by the society people. Traffic signboards help to direct people in the right direction and also reduces the number and severity of accidents.

Traffic signboards are used to create and maintain law and order on roads and provide essential information to drivers. Traffic sign acknowledgment assumes a significant job in Driver Assistance Systems and Automated Driving. Automatic detection and classification of traffic signs play a crucial role and could guarantee the safety of human life on the roads by giving feedbacks on-road information to the driver in time. Traffic sign recognition is important to transport systems on the highway or road. The most commonly used algorithm used in classification of traffic sign is The Convolutional Neural Network (CNN) which produces highly accurate results.

To make this model more efficacious, audio effects are added in the model. In this article, we provide a system to provide an alert signal to the driver about the presence of a traffic signboard at a particular distance apart. This warning allows the driver to take appropriate decisions to reduce the chances of road accidents.

BODY:

DETAILS OF TRAFFIC SIGN RECOGNITION SYSTEM

Traffic sign identification and acknowledgment are crucial parts of self-driving vehicles. For achieving accuracy in this technology, the vehicles should be able to interpret traffic signs and make decisions accordingly.

It has been observed that self-driving vehicles can depend on three main factors:

- Road detection
- Obstacle detection
- Sign recognition

Road traffic constitutes a major part of the problem of society. Some existing methods deal with the automatic detection and recognition of traffic sign is a challenging problem, with many important application areas, including advanced driver assistance systems, road surveying, and autonomous vehicles.

A special feature can be added to this existing recognition system, i.e., to use an alert system. The system could announce the name of the recognized traffic signal and the driver gets advance information about the upcoming hurdle. This could help the driver in case the driver is drowsy, then he/she could turn on the audio mode of recognition to pay special attention to traffic signals. Also, the new learners of driving can use this system to learn and identify the signboards.

Not only on self-driving cars but this could also be used in semi-automatic cars to assist the driver. Some special danger signs can be announced along with some alarming tone to enable the driver to be ready to deal with the upcoming hurdle.

Methodology

1. Explore the dataset by having pictures of different traffic signs.

2. Train and validate the model on the dataset.

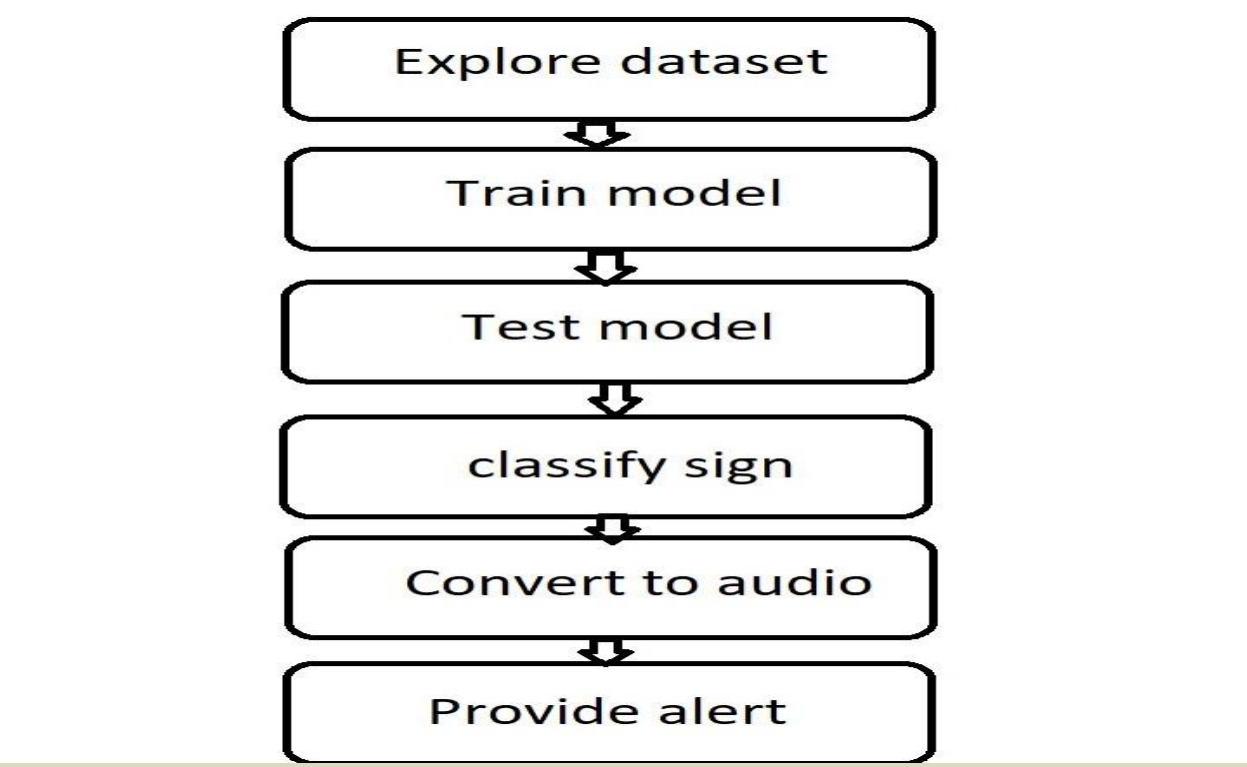
3. Test the model with the test dataset till sufficient accuracy is achieved.

4. Classify the data sign.

5. Convert the recognized sign to audio.

6. Alert the driver of the recognized sign.

FLOWCHART



FUTURE WORK/REFERENCES:

The main idea is to develop an efficient Traffic sign recognition and the alert system along with an efficient sign detection mechanism that could handle the proper capturing and preprocessing of images. It should handle the cases when images are blurred or weather conditions are bad.

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