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Road Sign Intimation and Voice Alert Using Convolution Neural Network

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Abstract:

Road signs are essential for secure flow of traffic. A major cause of road accidents is negligence in viewing the Traffic signboards and interpreting them incorrectly. The suggested technology assists in identifying traffic signs and alerting the driver via speaker so that they may make the appropriate decisions. There have been a lot of technological advancements and cars with auto-pilot mode have come up. Autonomous vehicles have come into existence. However, these features are available only in some high-end cars which are not affordable to the masses. We wanted to devise a system which helps in easing the job of driving to some extent. The proposed system is trained using Convolutional Neural Network (CNN) which helps in traffic sign image recognition and classification.

I. INTRODUCTION

There were a lot of technological improvements and cars with auto-pilot mode have come up. Autonomous vehicles have come into existence. There has been a increase withinside the self using automobile industry. However, those capabilities are to be had simplest in a few excessive give up automobiles which aren't less expensive to the masses. We desired to plan a gadget which enables in easing the task of using to a few extent. On engaging in a survey we located that the danger of road accidents in India is alarming. Reports endorse that each hour there are approximately fifty three mishaps taking vicinity at the roads. Moreover, every hour more than 16 deaths occur due to these mishaps [18]. When a person neglects to obey traffic signs while driving, they are putting their life as well the life of the other drivers, their passengers and those on the road at risk. Hence, we came up with this system in which traffic signs are automatically detected using the live video stream and are read out aloud to the driver who may then take the required decision.

Another area of focus in our system is the idea of getting the location of the user using GPS. Also, all the traffic signs will be stored in a database along with their location so that the driver will be notified in advance regarding the next approaching road Sign.

II. EXISTING SYSTEM

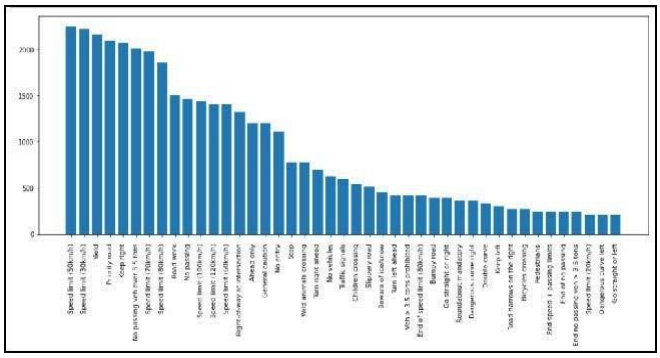
In this era of fast paced life, people generally tend to miss out on recognizingthe traffic sign and hence break the rules.

A lot of research has been done in this domain to reduce the number ofaccidents using many efficient algorithms.

III . PROPOSED SYSTEM

We propose the system to train using Convolution Neural network(CNN) Algorithm. CNN can take picture as input assign priority to different items in the picture and distuinguish them from one another by dividing the image into pixels. Our technique performs only one feature extraction through the detection and classification stage, which causes the feature sharing throughout the two stages. Comparision algorithms used in the different feature extraction methods, in the detection and classification stage, this saves a lot of processing time and makes it feasible for use in real time applications.

IV. RESULTS



V. CONCLUSION

The Road Sign Board Detection and Voice Alert System is implemented using Convolutional Neural Network. Various models under the CNN heading were studied and the one with highest accuracy on the GTSRB dataset was implemented. The creation of different classes for each Traffic sign has helped in increasing the accuracy of the model. A voice message is dispatched after the recognition of sign which alerts the driver. A map is displayed on which the signs in the vicinity of the driver are displayed thus helping him/her take appropriate decisions. This paper is a significant advancement in the area of driving as it would ease the job of the driver without compromising on the safety aspect. Also this system can effortlessly be carried out without the want of a whole lot hardware accordingly growing its reach.

The prototype may be accelerated to have a built in alert machine with the digital camera. Also, the feature of getting the estimated time for reaching that particular traffic sign can be added. This system can also be expanded for identification of traffic signals and hence prompt the user about the time to reach that particular signal and its status as well. The user can accordingly plan their trip start time and hence cross all signals without having to wait. Also the driver verification will be done with the help of an API providing the information about the license holder and the license number.

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