

TRAFFIC SIGN BOARD RECOGNITION AND VOICEALERT SYSTEM USING CNN

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Abstract – Traffic signs showed on the streets assume a significant part in our lives while driving. They supply basic data for the street clients. This progressively expects them to manage their driving way of behaving and guarantee that they rigorously follow the street guidelines right now implemented without bringing any hardship to different drivers and people on foot. Traffic Sign Classification is utilized to distinguish and order traffic signs to illuminate and caution a driver in advance to keep away from infringement of rules. There are sure weaknesses of the current frameworks utilized for grouping as wrong expectations equipment cost and upkeep which are by and large settled by the proposed framework. The proposed approach executes a traffic signs characterization calculation utilizing a CNN. Additionally, it comprises of the element of recognition of the traffic sign. This will assist the driver with noticing the sign near his/her eyes on the presentation screen and consequently save his/her time in physically checking the traffic sign each time.

Key Words: Traffic Sign Recognition, Convolutional neural network, Voice alert, datasets, object detection, Traffic signs.

1. INTRODUCTION

Traffic Sign Recognition and grouping can be utilized to consequently recognize traffic signs. This is done consequently by the framework as the traffic sign is identified and the sign name(text message) is shown and also alert the driver with a voice message. Thus regardless of whether any sign is missed by the driver or has any slip by in fixation it will be recognized. This serves to as needs be caution the drivers and prohibit specific activities like over speeding. It additionally disburdens the driver and consequently expands his/her solace. In this manner guaranteeing and keeping a beware of the traffic signs and likewise following them. Traffic signs without a doubt give us a huge number of data and guide us as needs be so we can move securely. Traffic Sign Classification is exceptionally valuable in Automatic Driver Assistance Systems.

1.1 Objectives

The planned system is trained mistreatment Convolutional Neural Network (CNN) that helps in traffic sign image recognition and classification. a group of categories square measure outlined and trained on a selected dataset to form it additional correct. Following the detection of the sign by the system, a voice alert is shipped through the speaker that notifies the driving force. The planned system conjointly contains a neighborhood wherever the vehicle driver is alerted concerning the traffic signs within the close to proximity that helps them to remember of what rules to follow on the route. The aim of this technique is to make sure the security of the vehicle's driver, passengers, and pedestrians.

1.2 Scope

The inspiration for doing this project was essentially an enthusiasm for undertaking a difficult venture in a fascinating territory of research. Recognition of traffic sign is challenging problem. So the project helps the driver to identify the road sign, if he miss out any sign he can able toknow by this project.

2. Existing System:

In this day and age identification of traffic signs has turned into a significant part of our lives. Taking a gander at the rising traffic to guarantee security of all and for programmed driving from now on traffic sign order is most extreme essential. Impressive examination has been finished around acknowledgment of traffic and street signs. In 1987 the primary exploration on the point "Traffic Sign Recognition" was finished by Akatsuka and Imai where they attempted to construct a major framework that could perceive traffic signs and caution the drivers and guarantee his/her security. Yet this was utilized to give the programmed acknowledgment to just some particular traffic signs. Traffic sign acknowledgment at first showed up as just speed limit acknowledgment in 2008. These images could identify the round speed limit signs. Then again later frameworks were planned that performed discovery on surpassing signs. This innovation was accessible in the Volkswagen Phaeton and in the 2012 in Volvo S80 V70 and some more.

Disadvantages:

- The significant disadvantage of these frameworks was that they couldn't identify as far as possible signs as they were for the mostpart as bearing signs.
- It is very difficult to detect the traffic sign of extreme level of variation in appearance. There is a lot of different traffic-sign categories that don't seem to be enclosed within the existing assortment of datasets.

3.Planned system:

The In our proposed framework we foster the Road Sign Board Recognition and Voice Alert System utilizing Convolutional Neural Network. Our framework will ready to identify perceive and construe the street traffic signs would be a huge assistance to the driver. The goal of a programmed street signs acknowledgment framework is to recognize and characterize at least one street signs from inside live variety images. We give awareness of the driver about the sign utilizing voice of the distinguished sign board.

Advantages:

- The framework furnishes the driver with constant data from street signs which comprise the most significant and testing assignments.
- Next produce an acoustic admonition to the driver ahead of any risk. This cautioning then permits the driver to take fitting restorative choices to alleviate or totally keep away from the occation.

4. System Design

Each and each system has its own design style. Before beginning each model style we've got to style the templet design of the model. Building the design for machine learning ideas is characterised supported the important time functions. This project design follows the following steps.

Initially user have to register for the system application or registered user will directly login with the assistance of user name and passwords. Then insert the image from the gathering of datasets. then the image process technique can helps to shows or predict the given traffic sign. within the development aspect the model undergoes the extraction of CNN options and classify the photographs into traffic signs. Then it undergoes labelling of image. Finally, model show the traffic sign name and alert the with voice command.

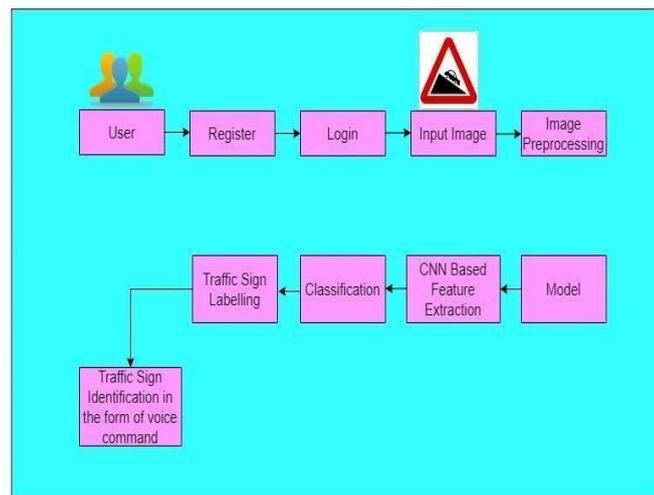


Fig: 4.2.1Architecture Design

5. Detailed design

By outlining the specifics of how the application should be constructed, the software design will be utilised to assist in the software development of an android application. Use case models, sequence diagrams, and other supplementary requirement data are included in the software design specifications, which are narrative and graphical documentation of the software design

5.1 Diagram of Use Cases:

An example of a behavioural diagram in the Unified Modelling Language (UML) is a use case diagram, which is based on and defined by use case studies. A use case unified modeling language Language (UML) might even be a specific kind of activity diagram that was created using a use-case study and made available to the general public. Its objective is to provide a graphical illustration of the utility of a system in terms of the actors, their goals (represented as use cases), and any interdependencies between those use cases. The main purpose of a use case diagram is to show the system actions that an actor performed. The roles that the actors in the system played might perhaps be imaginable.

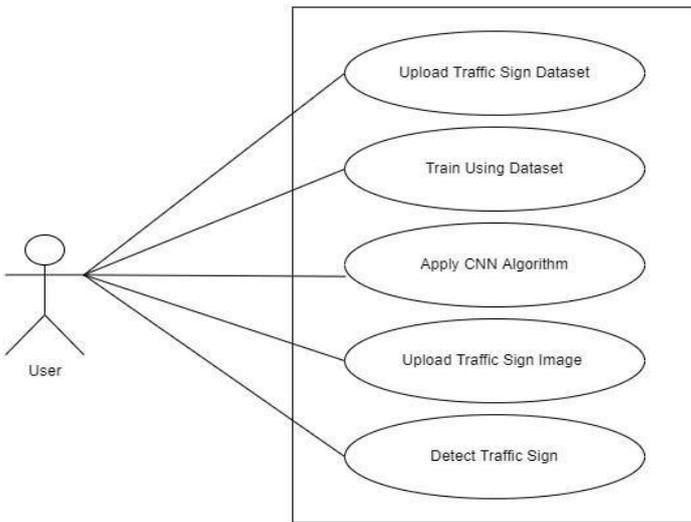
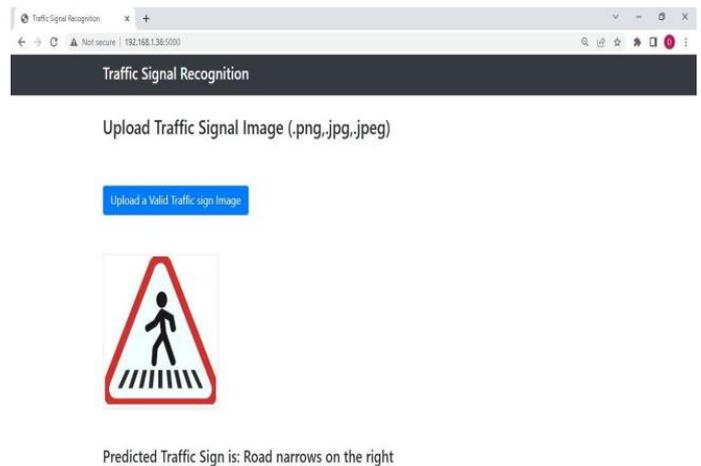


Fig 5.1 Use Case diagram



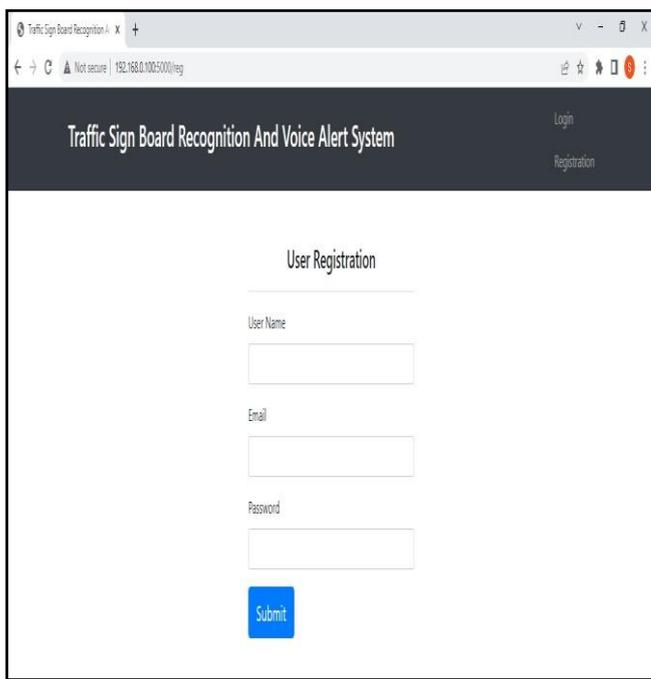
6.2 Registration Page

6. Implementation

Implementation is that the method during which theoretical idea becomes a functioning device number of pictures per category within the dataset. The burden of resistance and the effect on current procedures is moving to the consumer department at this point. If the implementation process is not planned and managed, will lead to confusion the most crucial stage in the development of a new system and the user should trust that the new system will work and be affective.

7. Testing

This chapter gives the various test cases performed to check for the effective execution of the venture. Testing is a procedure of cross verification of the designed system model under active state and various inputs. There are several ways to carry out this approach. The main objective of software development life cycle is to produce a product with no errors or very few errors. In the processes of achieving hassle free software we plan testing and test cases. Software testing is done for the success of the application. The testing is done mainly to check whether the product meet the requirement of the user properly. It is used to check the bugs and errors in the system or to find out the defects of the system.



6.1 Registration Page

7.1 Test Scenario

TC No	Positive scenario	Required Input	Expectd output	Actualoutput	Test Result[
1	Registration	Enter avalid detail	Registeredd successfully	Registeredd successfully	Pass
2	Login	Loginwith valid user name/e mail and password	Shouldd cluster r successfully	Login successfulul	Pass [
3	Test for Upload trafficsig Image	Insert the traffic sign image	Traffic sign Image uploaded successfully	Traffic sign Imageuploaded successfully	Pass [
4	Train the data	Train button is clicked	Training successful	Training successful	Pass

8. Conclusion

The voice Alert and Traffic Sign Board Detection are controlled by the Convolutional Neural Network. Only the CNN model that performed the best on the dataset was being used after comparing the other CNN models. The model's accuracy has increased as a result of the addition of new categories for each traffic sign. When the signal is identified, a voice message is delivered to the driver to inform them and assist them in making informed judgments.

Because it would make driving simpler without compromising safety, this study could also constitute a significant advancement in the realm of driving. This strategy will also be simple to implement without requiring a lot of hardware, broadening its applicability.

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