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# Driver Assistance System

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**Abstract:** *Road signs are important to ensure smooth traffic flow without bottle necks or mishaps. Road symbols are the pictorial representations having different necessary information required to be understood by driver. Road signs in front of the vehicle are ignored by the drivers and this can lead to catastrophic accidents. This paper presents an overview of the traffic sign board detection and recognition and implements a procedure to extract the road sign from a natural complex image, processes it and alerts the driver using voice command It is implemented in such a way that it acts as a boon to drivers to make easy decisions.*

**Keywords:** Making Secure

## I. INTRODUCTION

Road signs give out a number of messages regarding the road and what you as a driver should expect on the road. They keep the traffic flowing freely by helping drivers reach their destinations and letting them know entry, exit and turn points in advance. Pre-informed drivers will naturally avoid committing mistakes or take abrupt turns causing bottlenecks. Road signs, indicating turns, directions and landmarks, also help to save time and fuel by providing information on the route to be taken to reach a particular destination. Road signs are placed in specific areas to ensure the safety of drivers. These markers let drivers know how fast to drive. They also tell drivers when and where to turn or not to turn. In order to be a terrific driver, you need to have an understanding of what the sign mean.

### MOTIVATION

The ultimate goal is to create a system that can be used to catalogue traffic signs. This method can help local or national governments maintain and update their road and traffic signs by automatically recognising and categorising one or more traffic signs from a complicated image (such as the one depicted in Figure 1.2) acquired by a vehicle's camera. The key approach is to identify the perfect colour combination in the scene so that one colour is inside the convex hull of another colour, and then combine that with the appropriate form. If a candidate is identified, the system attempts to categorise the item using the rim pictogram combination and returns the classification result.

### OBJECTIVE

1. To understand the properties of road and traffic signs and their implications for image processing for the recognition task.
2. To understand colour, colour spaces and colour space conversion.
3. To develop robust colour segmentation algorithms that can be used in a wide range of environmental conditions.
4. To develop a recogniser that is invariant to in-plane transformations such as translation, rotation, and scaling based on invariant shape measures.
5. To identify the most appropriate approach for feature extraction from road signs.
6. To develop an appropriate road sign classification algorithm.
7. To evaluate the performance of the aforementioned methods for robustness under different conditions of weather, lighting geometry, and sign.

### APPLICATIONS

Another direction for further research is to develop a real time traffic sign recognition system which captures a video by a camera mounted on the vehicle, detects and recognises the traffic signs in real time and gives the result to the driver within a sufficient time frame in order to take the right action. The crucial issue in real time applications is the time spent to recognise the traffic sign. This should be reduced to the 169 minimum by choosing the proper techniques for real time

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applications and by optimising the code. The methods presented in this thesis can be modified to fit the real time requirements. After detecting the border of the traffic sign and its interior, it can be tracked by a Kalman filter or by a suitable blob tracking algorithm which can be developed for this purpose. The main objective of this blob tracking algorithm is to minimize the search region from the whole image to an area which fits the traffic sign. Taking into consideration that the size of the traffic sign increases as the vehicle approaches the sign, the blob tracking algorithm should be able to match the traffic sign in the current frame with that in the next frame. The algorithm should be immune to the in-plane transformations. Tracking the traffic sign has an advantage that if the traffic sign is occluded in some frames or disappeared, it is still possible to follow that sign in the frames that follow. If such a system is integrated with a GPS, it can be used to provide the driver with useful information about the actual speed limit on a certain road. By comparing the signed limit with the GPS speed reading, the driver can be warned when the speed limit is exceeded or when the driver does not stop before a STOP sign.

**REQUIREMENTS**

RAM : 8 GB

As we are using Machine Learning Algorithm and Various High Level Libraries Laptop RAM minimum required is 8 GB.

Hard Disk : 40 GB

Data Set of CT Scan images is to be used hence minimum 40 GB Hard Disk memory is required. Processor : Intel i5 Processor

Spyder IDE that Integrated Development Environment is to be used and data loading should be fast hence Fast Processor is required

IDE : Spyder Best Integrated Development Environment as it gives possible suggestions at the time of typing code snippets that makes typing feasible and fast.

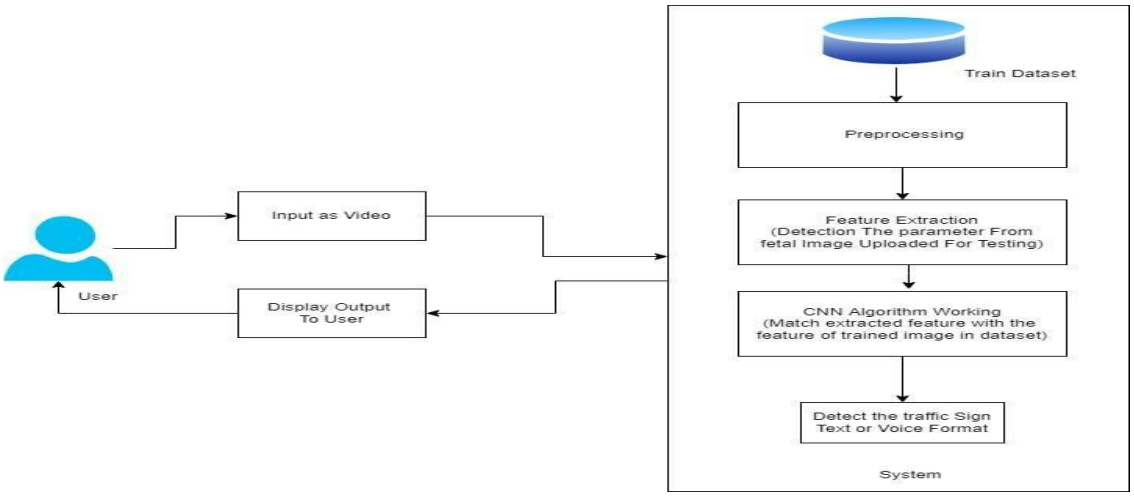
Coding Language : Python Version 3.5

Highly specified Programming Language for Machine Learning because of availability of High Performance Libraries.

Operating System : Windows 10 Latest Operating System that supports all type of installation and development Environment

## II. SYSTEM DESIGN

### 2.1 System Architecture



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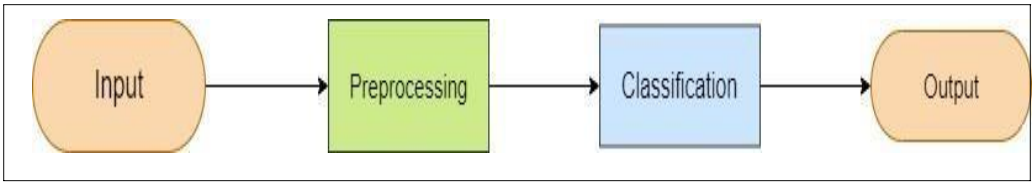
**System Architecture**

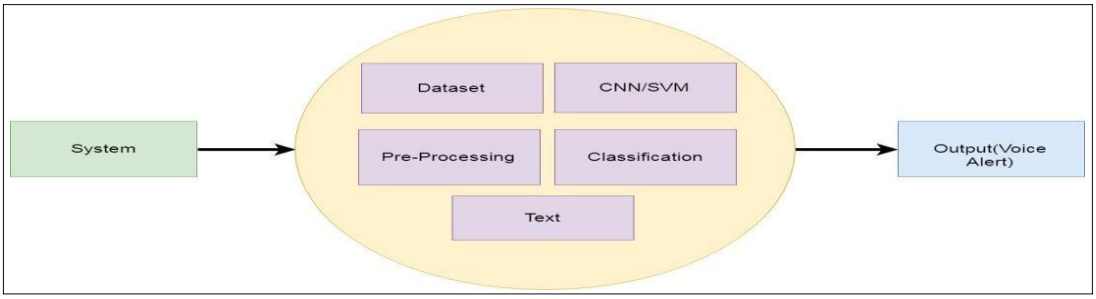
- Module 1: Press the button for voice input.
- Module 2: We need to give our question or query to system.
- Module 3: System will recognize the speech.
- Module 4: Recognize the query using Speech Recognition Module and convert to text using text Conversion.
- Module 5: Translate the query using translator.
- Module 6: Match the query in database (Use NLP).
- Module 7: Response to query by translating in quick way.

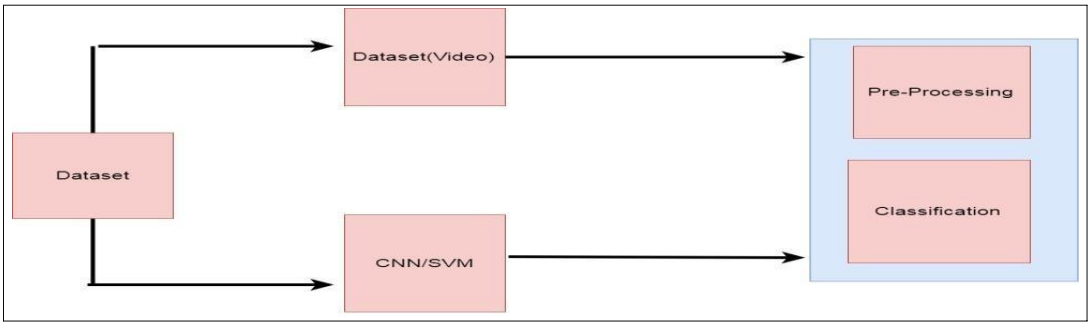
4.2 Data Flow Diagram


Data Flow diagram




Data Flow diagram




Data Flow diagram

In Data Flow Diagram,we Show that flow of data in our system in DFD0 we show that base DFD in which rectangle present input as well as output and circle show our system,In DFD1 we show actual input and actual output of system input of our system is text or image and output is rumor detected like wise in DFD 2 we present operation of user as well as admin.

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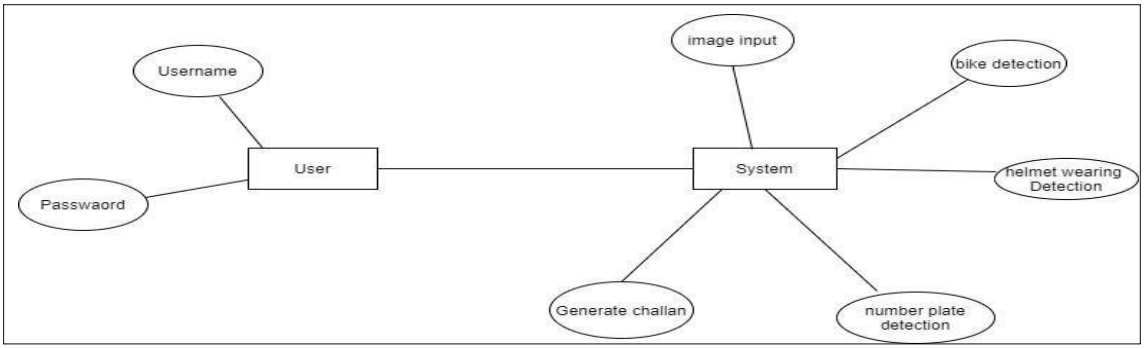
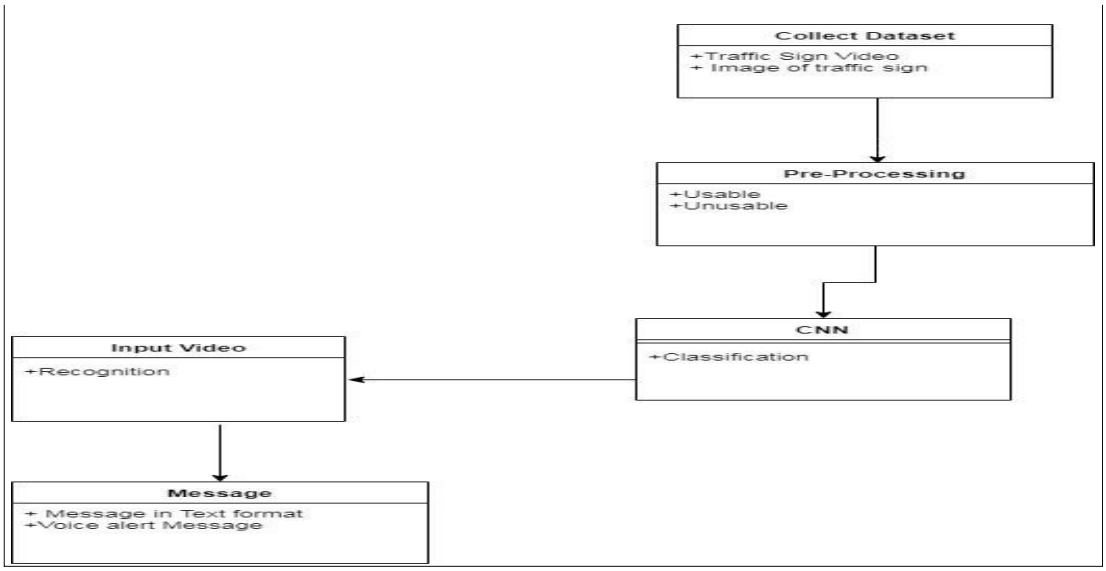
**ENTITY DIAGRAM**




**Entity Diagram**

**UML DIAGRAMS**

Unified Modeling Language is a standard language for writing software blueprints. The UML may be used to visualize, specify, construct and document the artifacts of a soft- ware intensive system. UML is process independent, although optimally it should be used in process that is use case driven, architecture centric, iterative, and incremental. The Number of UML Diagram is available

Here, the control of flow starts with the registration of user into the portal. If registration is already done, the portal asks for password and username for login. If a new user is about to use the login, he has to register filling up the necessary credentials and then re-login. After the login is done, camera that is connected, detects the person /rider and if he is wearing helmet or not. If the person is wearing helmet, the control flow is terminated else, the control flow is continued further. The number plate of the bike rider who has not worn helmet is detected and the characters of the plate are extracted using OCR algorithm. Here, there are 2 sides: user side and system side. User side is used for taking input and system side is used for processing and showing output. If the person is wearing helmet, the control flow is terminated else, the number is detected and text extraction for the number is done.

The flow of control takes place in the following manner:

The system transfers the control flow to the user for input through video/camera.

This input returns the control to the system for bike detection and helmet detection.

If the user side input gives the answer as not worn, the number plate of the bike rider is captured, and characters are extracted.

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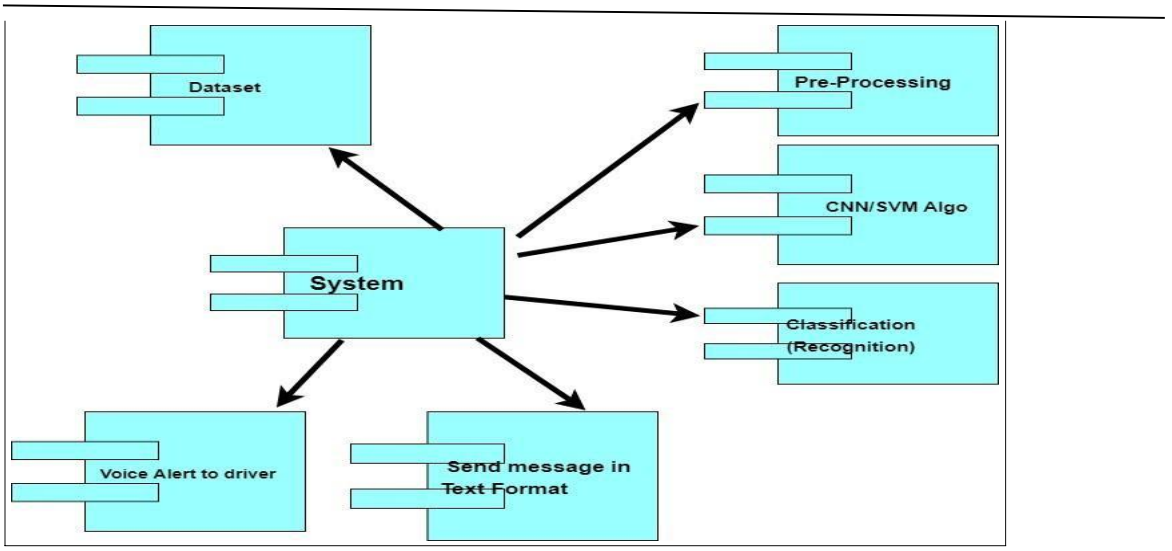
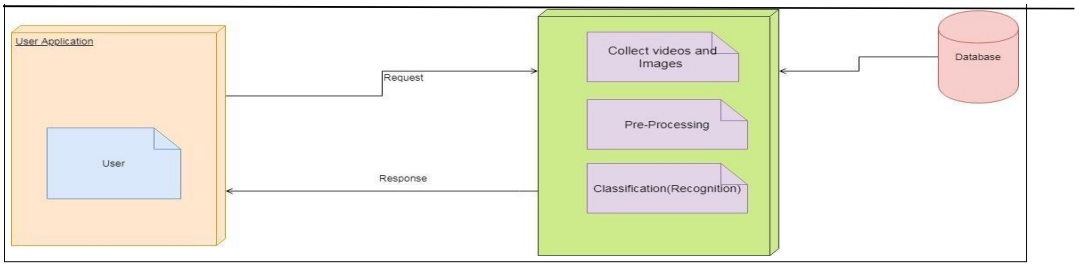
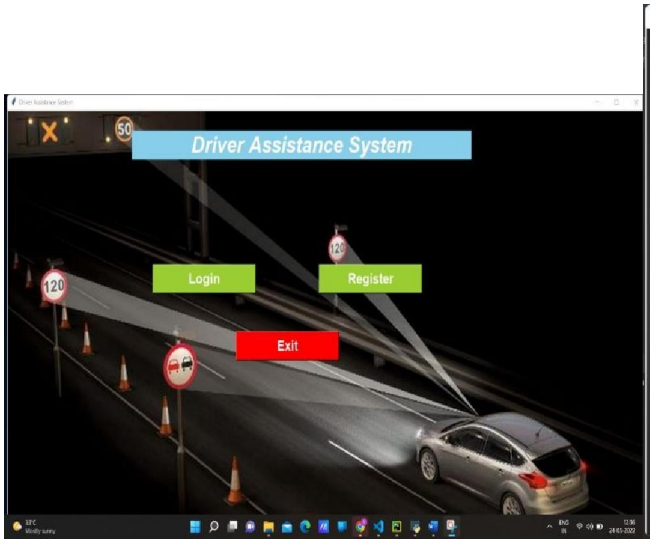
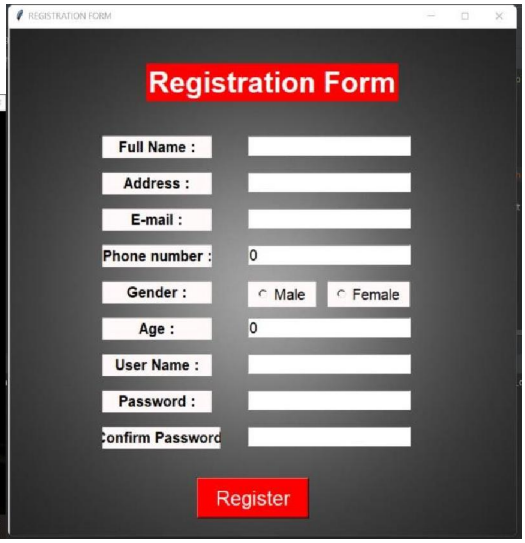



## III. RESULTS




THIS IS THE INTERFACE OF OS




THIS IS REGISTRATION

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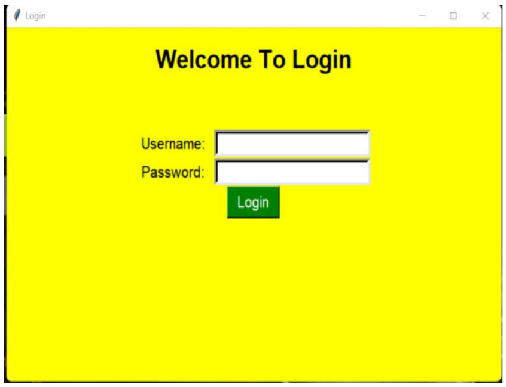


THIS IS LOGIN PAGE


THIS IS THE OPERATINAL OS

## IV. CONCLUSION

In this thesis a road and traffic sign recognition system which can help in creating a road sign inventory was developed, implemented and evaluated. This system, which involves a mixture of computer vision and pattern recognition problems, was able to extract road signs from still images of complex scenes subject to uncontrollable illumination. In the computer vision part, algorithms were developed to segment the image by using colours and to recognise the sign by colour-shape combinations as a priori knowledge. In the pattern recognition part, two SVM classifiers were invoked to put the unknown sign in one of the traffic sign categories depending on the sign rim and interior. This goal has now been reached and the system shows high robustness according to the experiments illustrated in sections . The following sections summarise the main findings and the contribution made by this research, which could be the beginning of a new approach to traffic sign recognition pointing to new directions for further research

## ACKNOWLEDGMENT

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In the end our special thanks to Dr.S.D.Lokhande for providing various resources such as laboratory with all needed software platforms, continuous Internet connection, for Our Project. Sejal Tawade.Atharva Deshmukh .Mohammed Chhawniwala ,Aditya Kalpande (B.E. Computer Engg.)

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