Smart Car Assistant

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***Abstract*- In the beginning of 21st century advanced features such as warning and accident avoidance system were introduced into autonomous cars. However, there are many issues that need to be addressed before driving assistance system can be widely introduced in the future vehicles. The theoretical and experimental research on control issues is in a well-developed stage. The main challenge in driver assistance system is the sensory issues. Today's technology has addressed many of the sensory issues with many still to be solved. Research on human factor is very important and demands a lot more work. Legal aspects of automated vehicles are very important concern. In the late 1980s and beginning of 1990s, state and private funded programs started more focused research in United States, Europe and Japan, to bring the idea of automated vehicles closer to reality. The main initiative was to improve the safety along with automation. The very well organized research in this era, along with the rapid advancements in electronics and sensor technology, contributed to a more understanding of the difficulties and potentials of such systems. Our project looks into the current research in vehicle automation and their impact on comfort and safety of the passengers. Accident avoidance and parameters warning are the main focus of our project.**

***Index terms*- Autonomous cars, Sensory issues, Parameters warning, Driving assistance system**

I.INTRODUCTION

In past few years, Driving the car in crowd or on highways environments increasing lot of difficulties. Due to the drivers restless driving or some silly mistake serious accidents happened, it causes human lives. While driving, the person is to drive must be relax, comfortable, no confusions in mind, compatible with all car features.

Human life effected mostly due to in proper driving or not following traffic rules. Manual car driving also make person tired on long route. Smart Car innovation overcomes all such types of difficulties and makes driving smart, safe and efficient. Smart car have such features which minimizes human efforts and make traveling comfortable. Smart car made driving and traveling on long route with ease and safe. There are various research is going on to overcome all these driving related issues. The smart car concept is innovated by Google named "Google Self-Driving car". It is fully automated smart car which is driven automatically. Rider just needs to give functioning order through their mobile phone software design for these systems only and the car itself came and pick and drop driver to their requested destination. This is now in service in Europe, USA and many other foreign countries. This smart car includes fully customized functionalities which follows all the rules and regulation of traffic system and all driving safety measure.

II. LITERATURE SURVEY

With reference of following papers to get an idea about the technology. So, the knowledge we have extracted is:

1 In this paper, the recent trends of research of development of driving assistant system was reviewed The main focus was on collision warning and collision avoidance system and their impact on driver's comfort, safety and traffic flow. The vehicle based assist systems have few barriers to pass before they can be used widespread. The benefits and deficits of such system are not completely understood yet. [1]

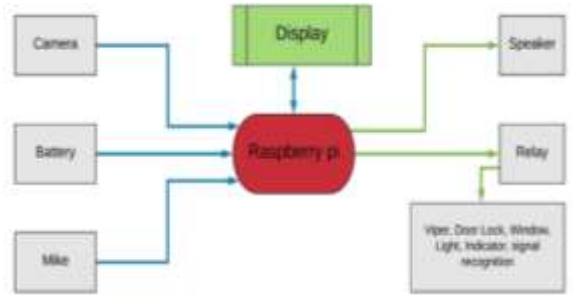
2 In this paper, this study investigates the challenges and opportunities pertaining to transportation policies that may arise as a result of emerging autonomous vehicle (AV) technologies. AV technologies can decrease the transportation cost and increase accessibility to low-income households and persons with mobility issues. This emerging technology also

has far-reaching applications and implications beyond all current expectations. [2]

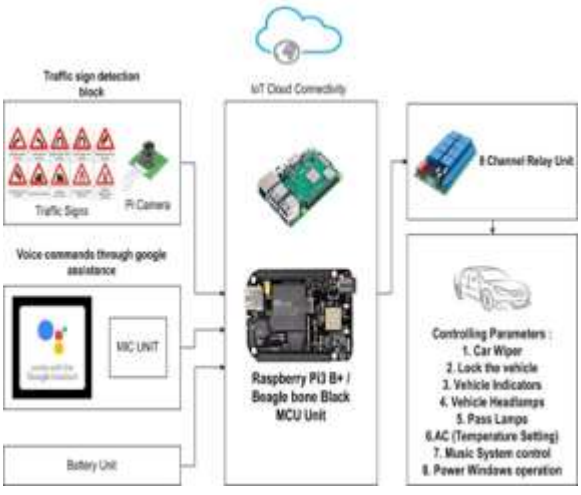
3 The study was conducted to identify the major causes of road traffic accident specifically focusing on Addis-Adama expressway, to project causes of traffic accident on the expressway and propose possible counter measures, and to provide empirical evidence on the feasibility of an existing solution to a problem.. Both descriptive and inferential statistical analyses were used to identify causes of road accident. Multinomial probit regression model and accident severity value were used to assess the causes of traffic accident and identify the black spot region of expressway. The study used secondary data collected from Ethiopian Toll Road Enterprise [3]

III. PROPOSED SYSTEM

A. Basis outline



B. System Architecture



First camera will capture the images of traffic signal by detecting traffic boards; these captured images will be pre-processed and stored into the database. These stored images will be used for further processes like Feature extraction, IOT cloud connectivity. Once the image is verified the program of particular signal will be processed.

Image Acquisition:

Images can be acquired by scanning technology from camera that captures images of better quality and resolution.

1 Pre-processing:
First Image is cropped from acquired image. Then cropped images are resized to some pixels for signal recognition.

2 Signal Recognition:
For signal recognition or detection is done by comparing particular signal aspects from the image and database, it identifies or recognizes a traffic board in an image.

C. System Overview

The important blocks of the architecture and their explanation are as below:

1 Pi camera:
The Raspberry Pi camera module can be used to take high-definition video, as well as stills photographs. It's easy to use for beginners, but has plenty to offer advanced users if you're looking to expand your knowledge. There are lots of examples online of people using it for time-lapse, slow-motion and other video cleverness. You can also use the libraries we bundle with the camera to create effects. The camera module is very popular in home security applications, and in wildlife camera traps.

2 Google Assistant :
Google Assistant is an artificial intelligence–powered virtual assistant developed by Google that is primarily available on mobile and smart home devices. Unlike the company's previous virtual assistant, Google Now, the Google Assistant can engage in two-way conversations.
Assistant initially debuted in May 2016 as part of Google's messaging app Allo, and its voice-activated speaker Google Home. After a period of exclusivity on the Pixel and Pixel XL smartphones, it began to be deployed on other Android devices in February 2017, including third-party smartphones and Android Wear (now

Wear OS), and was released as a standalone app on the iOS operating system in May 2017. Alongside the announcement of a software development kit in April 2017, the Assistant has been further extended to support a large variety of devices, including cars and third party smart home appliances. The functionality of the Assistant can also be enhanced by third-party developers.

3 Battery unit:
The battery unit is used to give power to all the system components.

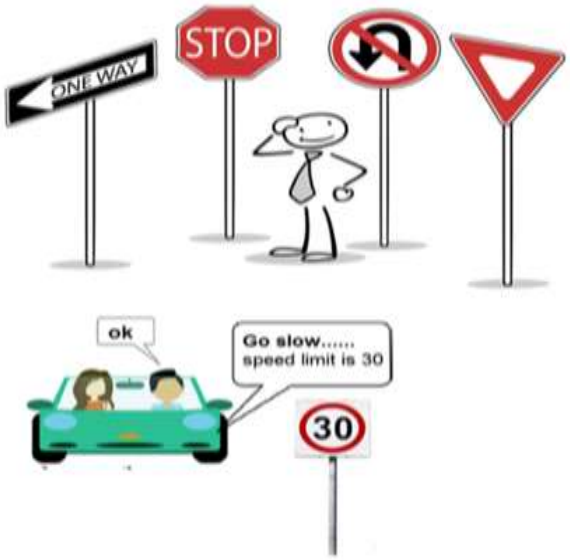
4 Raspberry pi:
The important part or we can say backbone of the system is Raspberry pi where all the data is updated and stored for the various operations. We sensing various parameters with the help of sensors and according to which a waring signal is produced as a output of speaker. Also the message can be displayed on display with the raspberry pi.

5 Relay:
Working of relay is used as switch. The main operation of relay is to do all the operations automatically as per the voice commands. The operations are in the form of start viper, door lock, window sliding, indicator etc.

D. Methodology

The working of our system is given below with the help of some pictures of and explanation in brief manner:

In this project we are going to use high resolution camera which will detect traffic rule boards using image processing. To implement this project we are going to use MCU unit i.e. Raspberry pi boards. Through the image processing the traffic rules board fixed on the sides of roads is decoded by the microcontroller, after decoding meaning of boards MCU unit will tell this decoded meaning to car driver in the form of speech using speaker. For this purpose we are going to use Google assistant. This will reduce the road accidents in huge numbers. Along with this innovation our project helps to run all the activities such as door lock, viper start, viper stop, close the window, ON the head lights, pass lights etc. according to voice commands given by the client.



III. SOCIETY BENEFITS

1] Reduction in traffic rule. 2] Reduction in road accidents. 3] Reduction in manual work. 4] Give safety to passenger. 4] Give comfort and security to passenger.

IV. CONCLUSION

So to avoid these we made a car which providing driver customized features, security, comfortable and luxurious traveling by using some functionalities and by this driver will follow the rules and get relax and it will being easy, safe and efficient driving. In past already there are various research going on to overcome all these driving related issues. So by taking some ideas from research papers and by using some our ideas we implemented our system functions. For making car the equipment which we used in these are costly but from these we get something new and new technology always comes a bit costly.

V. ACKNOWLEDGMEN.

The mega project is the unique course which provides us a vista seep into the society and understand the needs of the people thoroughly. The course has immensely helped us in the bringing out the best in us. We are glad to have been a part of the course which really give us this golden opportunity to help the society in our best way. The journey so far

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