Design of Autonomous Vehicle Control using IoT

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1 Introduction

With significant improvements in Technology as years go by,humans' natural inclination is towards the automation of tasks.The one automation which has taken over the world by storm is Autonomous Vehicle Control. This paper aims to shine some light on its working and how IOT plays an important role in it. This autonomous car model gains momentum during a time period when there are huge road accidents due to drunken driving,drowsiness,etc. Vehicle automation research was first conducted in 1920 and the first trial was conducted in 1950. The first known autonomous car was developed by Carnegie Mellon University. The Google driving car algorithm developed by a Stanford University Professor is by the most popular. There are 5 different levels of automation. Stage 5 refers to complete automation whereas stage 3 refers to fully conditional automation.

2 Existing Method

When looking at the automation systems, one must always have a sound knowledge of the various kinds of processes and steps that are involved in its functioning.
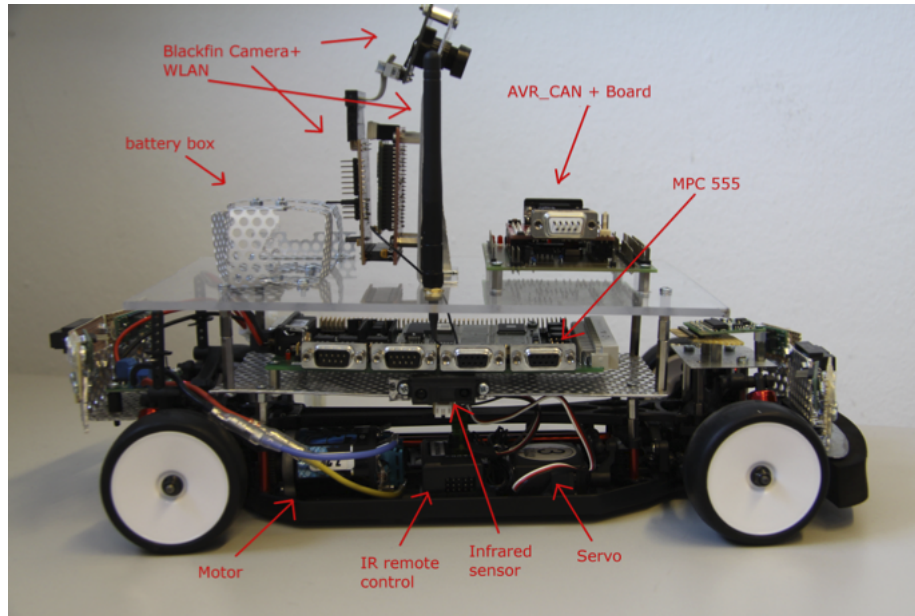
Figure 1: Autonomous Car Model

The main structure of idea behind these is to extract real time data and inform the status of vehicle and path in control in PCs,smartphones, laptops,etc. Engine Control Unit or ECU was invented to improve energy efficiency and reduce fuel usage.This automation is done to facilitate an integrated cloud computing system. The features enable the user to take decisions regarding the data captured using different sensor devices.The existing IOT based vehicle automation systems are used mainly to have access of different parameters associated with the vehicle during loco-motion shown in Figure 2. A variety of parameters such as speed, temperature, humidity, distance and car locking are generally monitored.d such as speed, temperature, humidity, distance and car locking are generally monitored.
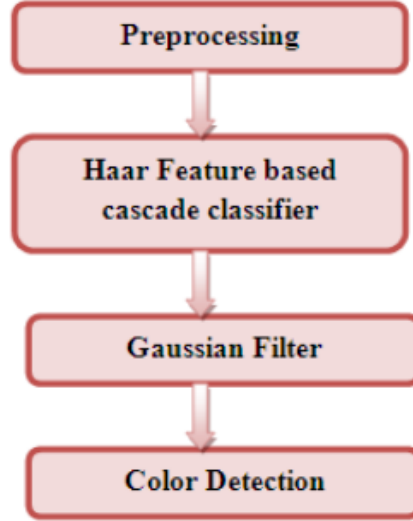
Figure 2: Process steps in Existing method

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3 Proposed Method

The proposed method indicates the use of vehicle auton-
omy and creating a computerized path detection which
requires an active internet connection. By using a web
browser the car is controlled. The system shown in Fig-
ure 3 makes use of raspberry pi, a camera module, a
motor and a driver circuit. The raspberry pi is stream-
ing videos on internet.It has a camera interface which is
used to record the live motion of the vehicle along its
route. An all-powerful web server like apache model is
generally pre-installed on the raspberry pi to various web
pages by using scripting languages. An additional sensor
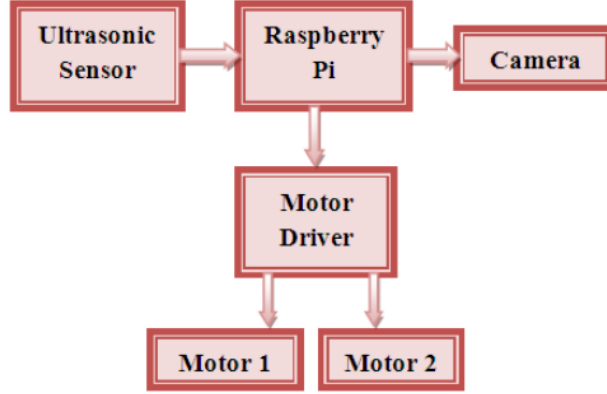is included in the system which is mostly of ultrasonic or

Figure 3: Block diagram of a proposed model

Figure 4: Block diagram of a proposed model

infrared sensor as the prototype is featured to work on low range on work. The wireless sensor acquires the obstruction that is prevailing along the path of movement of the vehicle and sends the information to the raspberry module. We can use this module to transfer digital parameters to cloud storage through internet. This data can be used for further analysation and for other monitoring purposes.

4 Conclusion

In this age of modern technology and rapid evolution in fields like IOT,AI,Visual communications, automated driverless cars will soon become the norm of the future society. These internet controlled models ensures faster compatibility and excellent user connnectivity. It also increases the safety of the passengers as the error rate present amongst human beings is higher than in machine operated models. But there is a huge risk involved in inter computer communications and solving those issues is going to be a big challenge for scientists and engineers.