INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.542

Automotive Smart Car System

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ABSTRACT: In today's developing world, traveling from a place to another has become an unparalleled part of our day to day life. A substantial amount of resources as well as time on traveling which might not always be pleasurable as there are various problems such as accidents and the roadblocks caused due to these accidents, vehicle and various human errors. Also, the problem that haunts all the people is the possibility of theft of the parked vehicles. To overcome these challenges, there is a pressing need to develop automated car systems or smart cars. The designed system is based on IoT which is an "AUTOMATIC SMART CAR SYSTEM". This can be reached using the Internet of Things (IoT) based platforms and services. The automation in this system is used to monitor vehicles automatically using IoT. The genuine cars could not have the facilities with respect to expensive cars so the proposed system gives benefits to owners in low cost. For the driver safety and simplex to monitor the proposed system designed at low cost and it will be flexible to all genuine cars similar to expensive cars. The existing smart vehicles incur a huge amount of money and resources for development and require well-organized paths with all the road markings and signs visible very clearly. There is a need to improve the efficiency of vehicles. One of the main advantages of these systems is that the user can monitor and control their automobiles provided that the user has an active internet connection. Developing automated car systems will ensure security and comfort of the user. It will also reduce the accidents and the inconvenience caused due to various human errors.

KEYWORDS: Car automation, Smart car, Vehicle automation, IOT, LIDAR (Light Detection and Ranging), IR sensor, RF module.

I. INTRODUCTION

At present, many vehicles on the road are considered to be semi-autonomous due to safety features like assisted parking and braking systems, and a few have the capability to drive, steer, brake, and park themselves. Autonomous vehicle technology relies on GPS capabilities as well as advanced sensing systems that can detect lane boundaries, signs and signals, and unexpected obstacles. While the technology isn't yet perfect, it's expected to become more widespread as it improves, with some predicting that up to half of the automobiles rolling off of assembly lines worldwide will be autonomous by 2025. Dozens of states already have legislation on the books concerning the use of autonomous vehicles in preparation for when this technology is commonplace. This is the age of automation where human efforts are reducing to a great extent. Making lives simpler and smarter is the aim of Automation. With the smartness of Automation comes information and awareness of the technology around us.With the continuous progress and evolution in information technology and the rising demands of safe travel, it has become necessary to find better and innovative systems to aid human life and make it easier. Common cause of traffic accidents is the Driver error. With cell phones and other electronic media, in-car entertainment systems, the growing traffic, and complicated road systems, this problem has become bigger than ever. Car automation is a technology with the use of which we can control different things or we can keep a track of the vehicle for security, comfort and efficiency. Multiple applications have been developed so as to support the safety and security of the vehicle. There is a wide range of potential social, economic and environmental impacts on the concept of Autonomous driving. Automation can help reduce the number of crashes on our roads. Government data identifies driver behavior or error as a factor in 94 percent of crashes, smart automatic cars and vehiclescan help reduce driver error. Higher levels of autonomyhave the potential to reduce risky and dangerous driver behaviors.

II. METHODOLOGY

A] Biometric Sensor :The scanner uses a light-sensitive microchip (either a CCD, charge-coupled device, or a CMOS image **sensor**) to produce a digital image. The computer analyzes the image automatically, selecting just the **fingerprint**, and then uses sophisticated pattern-matching software to turn it into a code.
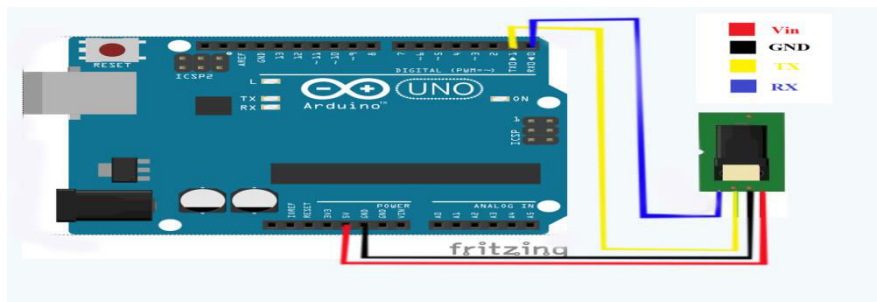
B] Alcohol Detector: Due to the rapid increase of vehicles on roads, the probability of road accidents is rising steeply. Drunk driving is considered to be a major cause of road accidents throughout the world. The main aim of this project is to develop a system that would detect the amount of alcohol that is consumed by the driver of the vehicle. The proposed system aims at preventing the user from driving when drunk and thereby intends to reduce the number of accidents occurring due to drunk driving. The proposed model is developed using Arduino Uno and alcohol detection sensor (MQ-3) as its major components. As a safety measure, when the level of alcohol crosses a permissible limit, the vehicle ignition system (DC Motor) will be turned off and the concerned authority will be alerted using the GSM module.
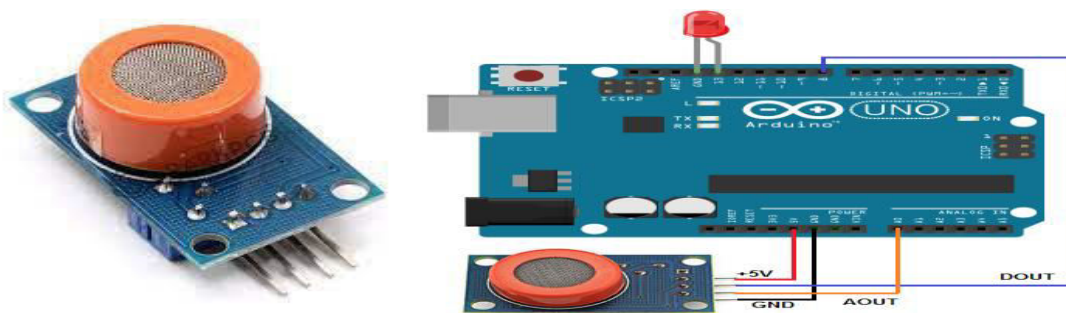
C] IC LM 7805: Voltage regulators are very common in electronic circuits. They provide a constant output voltage for a varied input voltage. In our case the 7805 IC is an iconic regulator IC that finds its application in most of the projects. The name 7805 signifies two meanings, "78" means that it is a positive voltage regulator and "05" means that it provides 5V as output. So, our 7805 will provide a +5V output voltage. The output current of this IC can go up to 1.5A. But the IC suffers from heavy heat loss hence a Heat sink is recommended for projects that consume more current. For example, if the input voltage is 12V and you are consuming 1A, then (12-5) * 1 = 7W. This 7 Watts will be dissipated as heat. This is a typical application circuit of the 7805 IC. We just need two capacitors of vale 33uf and 0.1uf to get this IC working.
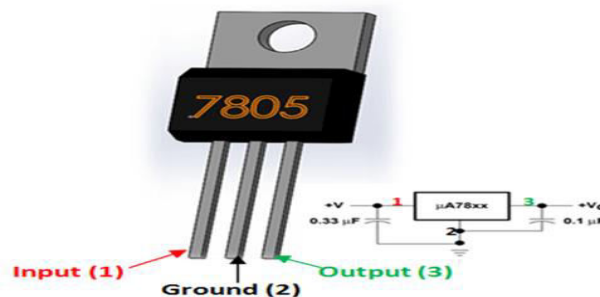
The input capacitor 0.33uF is a ceramic capacitor that deals with input inductance problems and the output capacitor 0.1uF is also a ceramic capacitor that adds to the stability of the circuit. These capacitors should be placed close to the terminals for them to work effectively. Also they should be of ceramic type, since ceramic capacitors are faster than electrolytic.

III.CONCLUSION

Currently, there are many different technologies available that can assist in creating autonomous vehicle systems. Items such as GPS, automated cruise control and lane keeping assistance are available to consumers on some luxury vehicles. The combination of these technologies and other systems such as video based analysis, steering and brake actuation systems and the programs necessary to control all of the components will become a fully autonomous system. The problem is winning the trust of the people to allow a computer to drive a vehicle for them, because of this , there must be research and testing done over and over again to assure a near proof final product. The product will not be accepted instantly, but overtime as the system becomes more widely used people will realize the benefit of it. The implementation of autonomous vehicles will bring up the problem of replacing humans with computers that can do the work for them. There will not be an instant change in society, but it will become more apparent over time as they are integrated in society. Human safety, infrastructure efficiency, quality of life and a ready customer base are just a few of the key factors that will help make automatic cars reality. Technology is covering rapidly, both incrementally from existing vendors and from new entrants. A car equipped with existing systems can take in more information quickly and reliably, and then process it to implement a correct decision about a complex situation. Yet to be solved are the complex issues associated with the legal and liability infrastructure. Gradual introduction of these features combined with strong economic motivators are sure to overcome such obstacles.

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