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DRUNKEN DRIVE PROTECTION SYSTEM

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ABSTRACT

Nowadays almost most of the countries are forcing the motor riders to wear the helmet and not to use the vehicles when the person is in drunken condition. But still in many places, the rules are being violated by the users. In order to overcome this problem, an intelligent system has been embedded in the helmet itself. The signal detected by IR sensor from the earlobe region and an alcohol sensor will be transmitted to the vehicle control circuit. It will not turn on the vehicle, when the user is without helmet or in drunken condition. The system containing the GPS receiver will provide the geometric coordinates to the control unit. Based on this coordinates the user cannot drive the vehicle into no entry or no parking areas. If he enters into the restricted area, buzzer will get activated and vehicle speed also gets controlled. In addition to the above, when an accident occurs the system will start alarm and if the user tries to suppress the warning alarm then SMS will not be sent else it will be sent to the user's relatives/friends. This contact information coded in the system can also be modified as per the users need. During the theft, the current location of the vehicle can be identified by sending the message from the user to the intelligent incorporated system. By this way the recovery of the vehicle is also possible by GPS-GSM communication.

KEYWORDS: P89V51RD2 microcontroller, alcohol sensor-MQ3, Passive Infra Red (PIR).

INTRODUCTION

Driving without a helmet is just walking on a sharp blade without knowing that when we will fall some time knowingly or unknowingly accident will happen first part to get impact is the head which caused more no of death and now a day's most of metropolitan city's police have made strict rule that rider must wear helmet some people wear helmet to avoid fines .Drunk driving is very dangerous. Alcohol causes one not to be aware. It also slows one's reflexes. This is a real problem when one is driving. Drunk drivers get into accidents because they cannot tell what is happening around them or they cannot react fast enough. When one rides a two wheeler while under the influence of alcohol they put themselves in danger. Because one cannot react as fast to actions happening around them and their automobile accidents happen and people may get killed. The rider obviously, is not the only person affected by drunk driving. When a drunken rider kills someone the family and friends of the victim gets affected. The recent report says that annual average of 700,000 road accidents, 10 percentages occur in India which has overtaken China. The latest annual statistics revealed by the World Health Organization (WHO) in its first Global status report on road safety, 80,000 people are killed on Indian roads due to speeding, drunken driving, less usage of helmets, seat belts and child restraints in vehicles. Another latest report of National Crime Records Bureau or NCRB says that 40 people under the age of 25 die in road accidents all around the world. It states that the drunken driving is a major factor for the rising of death on roads.

So here is an idea to avoid these problems by developing a system which is located in the helmet which detects the alcohol in breath and switch off the ignition system of the vehicle and also a system which detects rider is wearing helmet or not depending on that it starts the vehicle. This system is equipped with over speed detector. The main aim is to design and develop safety management systems for two wheelers for applications in the real time environment for the avoidance of the accidents due to the vehicle or rider's fault. Generally the faults are drunk driver, over speed driving and many other environmental conditions.

A safety system can be defined as a system that comprises awareness and decision making functionality and can adapt its operation in an autonomous manner, taking into account context, policies, goals and knowledge. Results show that the safety system can increase the reliability of network selections. This leads to a reduction of the number of changes of the operating network and thus contributes to making service provision more seamless and stable. Safety theory suggests that comprehension of the flow of events is an active process, constrained by the dynamics and modularity of attention and memory.

Considering the hardware unit, the technology used here is the Philips (RD2 MACHINE) system. PHILIPS controller is suitable for low power applications. As a result, they have become dominant in the mobile and embedded electronics market, as relatively low-cost, small microprocessors and microcontrollers.

The PHILIPS technology has numerous classifications. The type of the control core used is P89V51RD2 microcontroller. The P89V51RD2 microcontroller is based on a 8 bit CPU support, together with 64 kilobytes (KB) of embedded high speed flash memory. The project focuses on many applications. The implementation of these applications includes variety of devices and sensors. A sensor or detector is a device that measures a physical quantity and converts it into a signal which can be read by an observer or by an instrument. Varieties of sensors that are used are alcohol sensor-MQ3 and Passive Infra Red (PIR). Also infrared is used to detect the rider is wearing helmet or not. The alcohol sensor is suitable for detecting alcohol concentration on your breath.

EXISTING METHODOLOGIES

Sweat sensors, Saab Alco Key, straw like tube on the driver seat are used to check drunken condition of the drivers in cars. But these devices lead to misreading; inaccurate testing and circuit complexity is high. HongjieLeng and Yingzi Lin developed a novel carbon nanotube (CNT)-based alcohol sensor with a particular focus on the response delay problem presented in CNT based sensors. William R. Reagen developed a system for locating missing vehicles. Shegeyuki Kojima et al designed a new algorithm to distinguish between the normal and intoxicated state of a person which is proposed as the basic theory of the sensing system. The entire solution requires only a mobile phone placed in vehicle and with accelerometer and orientation sensor. A program installed on the mobile phone computes accelerations based on sensor readings, and compares them with typical drunk driving patterns extracted from real driving tests. Jiangpeng Dai et al focused on drunken driving, or officially driving under the Influence (DUI) of alcohol, which is a major cause of traffic accidents throughout the world. Lei Wang et al suggested that the integrity of PPG signal and accuracy of heart rate detection were evaluated and the results showed that with adequate optical shielding and the proposed passive motion cancellation, the device was able to reliably detect heart rate both during rest and moderate exercise. Aditya et al suggested that biometrics can be used in the security mechanism for the motor vehicles, as an anti-theft device. Darnell et al invention comprises a

portable locating unit to provide location information signals. Heng et al suggested compulsory helmet laws for bicyclists and expanding anti-drunk driving campaigns to target alcohol-intoxicated bicyclists. Alex Tay et al presented a path-planning algorithm and a novel global navigation strategy for autonomous unmanned ground vehicles in an unstructured terrain. It is able to chart a path along roadways and off-road terrain. From this review, each and every paper gives only a particular application to provide a safety to the drivers.

To overcome the major problems on road accidents and drunken driving, we designed an intelligent system in the vehicle to avoid drunken driving.

PROPOSED METHODOLOGY

The system consists of two major parts. They are
1) Helmet unit
2) Vehicle unit

When the conditions are under risk, while driving, the driver is unable to control the vehicle all of a sudden. The purpose of the safety system for automotives is to provide enhanced methods for the control of the vehicle under various conditions. We have obtained precautionary measures to avoid road accidents with the help of hardware and software technologies. The hardware technology is based on the PHILIPS microcontrollers along with many sensor devices. The software technology includes the programs developed in Keil Micro vision 3 which are written using embedded C. They are designed using Proteus lab software. The program is then loaded to the PHILIPS P89V51RD2 controller using Flash Magic software developed by PHILIPS.

The Transmitter unit consists of the following components: AT89C2051 Microcontroller, Passive Infrared Sensor, Infrared Sensor, Limit Switch, Zigbee Module, MAX-232 Serial communication, Alcohol Sensor. The Receiver unit consists of P89V51RD2 Microcontroller, Zigbee Module, H-Bridge Motor Driver, Motor, MAX-232, LCD Display.

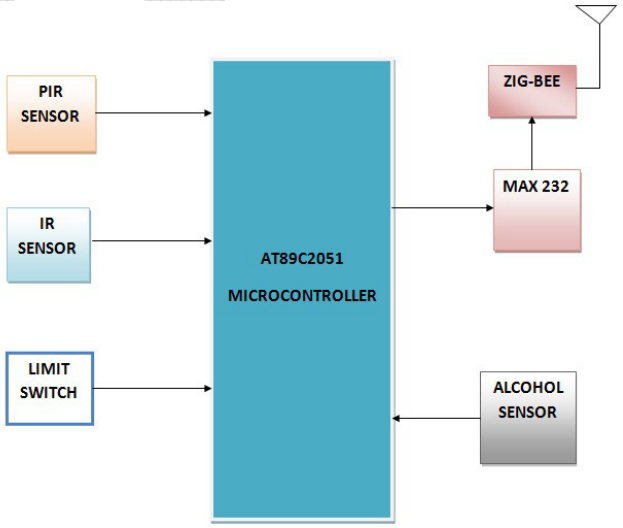

Fig.l: Block diagram of Helmet side.

The Alcohol sensor detects the alcohol content in the breath and switch off the ignition system of the vehicle and also a system detects if the rider is wearing helmet or not with the help of PIR, Limit Switch and IR sensor and depending on that it starts the vehicle. This system is equipped with over speed detector.

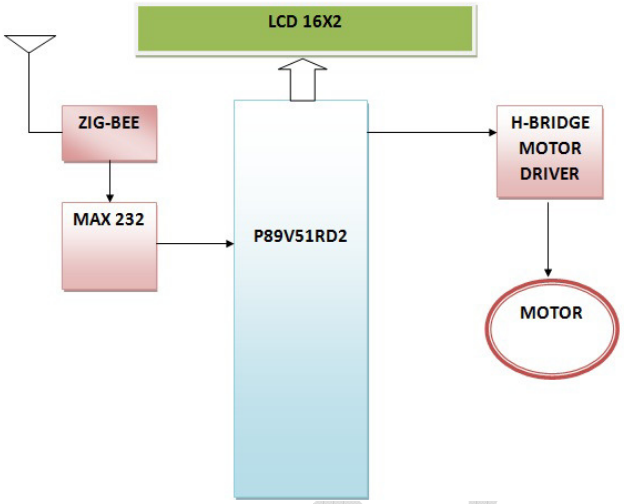

Fig.2: Block diagram of Vehicle side.

HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirements

1. Philips microcontroller
2. Max 232
3. Breath analyzer
4. Passive infrared sensor
5. Limit switch
6. Zig-bee wireless
7. LCD Display unit
8. Power supply unit
9. Electro mechanical Relays
10. H bridge Motor Driver
11. D C Motor
12. Voltage regulator
13. Infrared Sensor

Software Requirements:

1. Keil micro vision 3

CONCLUSION

The system efficiently checks the wearing of helmet and drunken driving. By implementing this system a safe two wheeler journey is possible which would decrease the head injuries during accidents and also reduce the accident rate due to drunken driving. An intelligent system has been embedded in the helmet itself. The signal detected by IR sensor from the earlobe region and an alcohol sensor will be transmitted to the vehicle control circuit. It will not turn on the vehicle, when the user is without helmet or in drunken condition.

Advantages:

1. Safety and convenience
2. Crash avoidance
3. Better fuel economy
4. Improved diagnostics
5. Fault tolerance

Disadvantages:

1. Complexity in building
2. Maintenance of sensors is hard.

FUTURE ENHANCEMENTS

In future, this module can be upgraded as the system containing Smart card Scanner to check if the Rider has his driver's licence.

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