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Wireless Advanced Helmet and Accidental Free Transportation System

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Abstract: *Accidents are the major problem occurred in this busy life, that too two-wheeler. Due to this busy life, people used to ride their vehicles at high speed and some of them don't have the patience to wait for signals also. So Government made a rule of wearing a helmet while riding the two-wheeler vehicles and also bring some rules into action. But still, the problem is not yet solved because of carelessness. Again the problem arises that, people ride their bike by taking alcohol and they don't wear helmet and crossing signals etc. so to overcome this problem, we came up with this idea and hope this will be helpful for our security and safety of our life. In this project, the helmet is proposed which consists of several applications like it detects the drink and drive cases, it will detect the accidental places and sends messages to the respective persons. It also detects the signals and humpings present on road before they reach the place. So in this project, GPS and GSM technology is used to detect and send message. Arm microcontroller is used to control the overall system.*

Keywords: GPS, GSM, ARM7, Arduino Uno, Keil vision 4.

I. INTRODUCTION

In these days, wearing helmets while riding the two wheelers is compulsory. Helmet will save the life sometimes. Helmet acts as a protective shell for our head. It is made of thermoplastic and fiber. Its inner layer observes electrical shocks. So it will protect from everything. If the accident happen, then EPS of helmet will crush and it keep skull protected. So government bring many rules about wearing helmet but public still won't show interest to wear. So the idea of wireless smart helmet came my mind so that it may helpful for society.

In this proposed system, the arduino and arm microcontrollers are used to control the two units. This system detects the alcohol consumption and sends message and also speed of vehicle decreases. This system also consists of voice recognition unit which will recognize the voice of the rider. If rider wants to turn left or right, then he must say numerical values. If he says 1, 2, 3 and 4 then it will recognize and turn on the corresponding indicators of bike.

This system has the application of humping. If there is humping ahead then the IR sensor detects and inform to rider. If the traffic signal is red, green and yellow it will detects through RF module and send signal to rider. If the accident occurred for two wheeler, then the sensor detects and send a message to corresponding numbers.

II. BACK GROUND

Nowadays, two wheelers are increases and accident also increases. Due some carelessness of riders, this would happen. If the rider consumes alcohol then also it happens. To overcome this problem, many have tried and failed to solve. Some technological inventions came into exists but they have failed because of some reasons. In [1], they have invented the helmet which detects the accident and location also but they used to detect only the accident happens due to drunk and drive cases. And they used FSR sensor to check whether the rider wear helmet or not. But in this system, voice recognition unit is used.

Some of the technologies came up with different ideas like using microcontroller and other boards but they concentrated on one particular application. But in this proposed system, all the applications like accident detection, alcohol detection, traffic signal condition and hump detection are merged together and implemented single system.

III.METHODOLOGY

The purpose of the system is to avoid the accidents of two wheelers and to know the status about accidents. Nowadays, the number of two wheelers increases and number of accidents also increases. To avoid this problem, the proposed system is implemented. In this, the system is divided into two units. They are helmet and bike units. The helmet should compulsory to wear when we riding the two wheelers. So this helmet unit consists of recognition of voice and alcohol sensors.

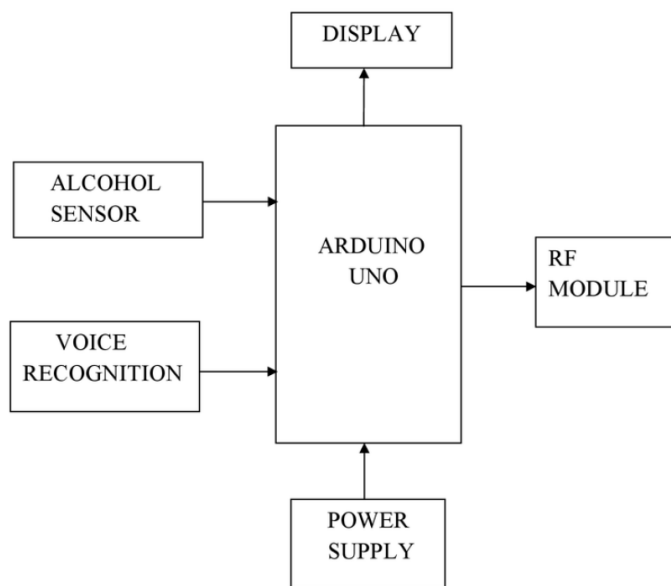


Fig 1: Unit of helmet

The helmet part consists of alcohol sensor and as well as voice recognition part. The controller used in this helmet part is, arduino uno. The arduino controller controls the overall unit of the system. It is easy to use and easy to learn. The first thing is to check the voice of the user. The user or the person who is going to ride the bike, must wear the helmet. If he/ she won't wear helmet then it won't be turn on.

The next step of this unit is to, check whether the rider consumes alcohol or not. If the person drinks alcohol, then the alcohol sensor senses and sends to the controller. The controller encodes the signal and sends the signal to the GSM. Then automatically, sends the message to the enlisted numbers.

This helmet unit have another application in it. If the rider wants to go left or right then the rider need not to turn on the indicators by manually. In this unit voice recognition unit is inserted so it will recognize the voice. If user tell to turn right or left then the module recognize that and turns on the indicators of corresponding side by automatically.

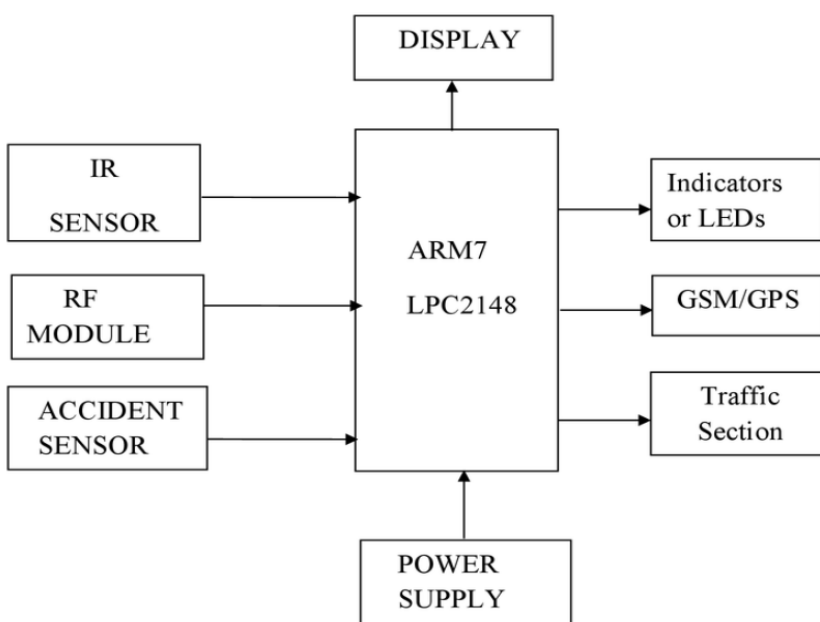


Fig 2: Bike unit

The system also consists of bike unit. In this unit the controller used is ARM7. This unit is fixed to bike and is consists of accident sensor, RF module and IR sensor. By using this unit, one can know the status of traffic, can know about hump and accidents. If any accidents happened to the vehicle, then the accident sensor sends the signal to the controller. The accident sensor has some frequency. If the more frequency is detected due to vibrations when the accidents happen then it will sends the signal and at the same time, through the GSM and GPS modems the message will send to the previously added numbers along with the location. GPS will send the current location of the vehicles. Then one can know the status of the vehicle and can take some precautions. This unit also consists of IR sensor which is fixed to humps and as well as for bike units. The riders don't know about the humps, whether there is a speed breaker or not. The sensor at hump, senses the speed breaker and send the message to the bike unit and it will be displayed on LCD display. So rider can take care about hump. The system can also be used to know about the traffic signals. The RF unit can be set at the signal and another unit at the bike. This unit will detect the signal condition and is displayed on LCD. If there is red signal, then it will blink the red at LCD display. Similarly, for other signals it will blink on LCD.

IV.FLOW CHART

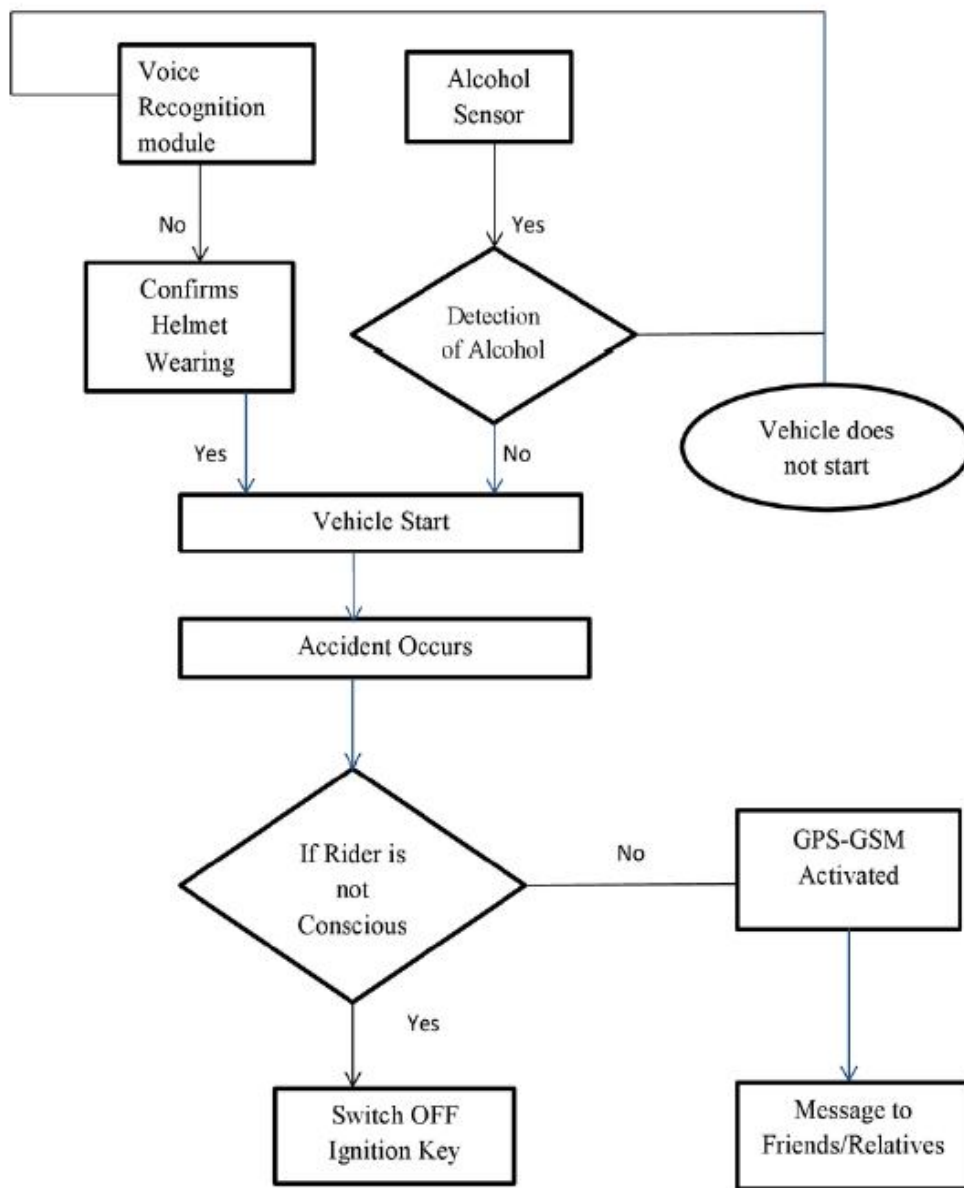


Figure 3: Flow Chart

V. RESULTS

If the person consumes alcohol, then the alcoholic sensor detects and sends the message to the pre added numbers and is displayed on LCD and also the vehicle speed will automatically decreases.



Fig 4: Detection of alcohol

In this project there is voice recognition unit to recognize the user voice. Some numerical values are assigned to the particular indication. If the user wants turn on head light then he must say number 1 automatically it will detect and turns on the head light. Similarly the tail light also turns on by recognizing the number 2. And same will be displayed on LCD as shown below.

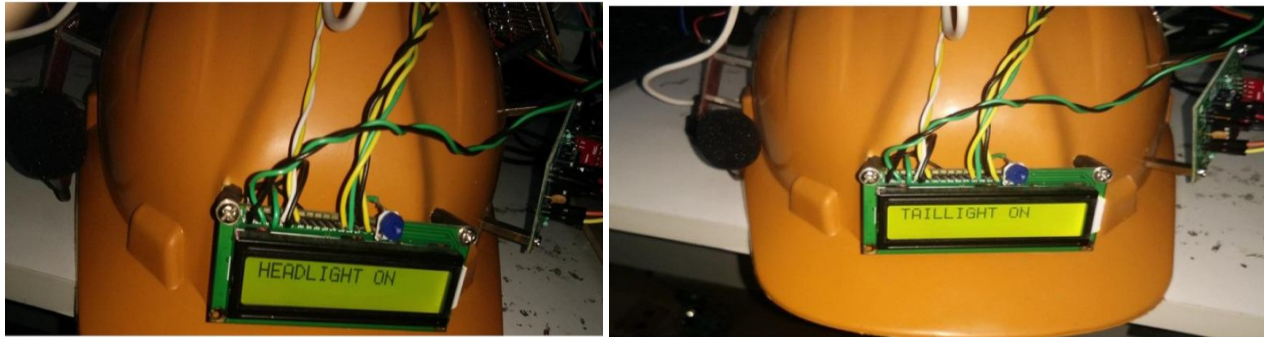


Fig 5: Head and tail lights on

If the rider wants go left or right the he must say 3 and 4. The voice will be recognized and the corresponding indicators will be turn on automatically. And the same will be displayed on LCD.

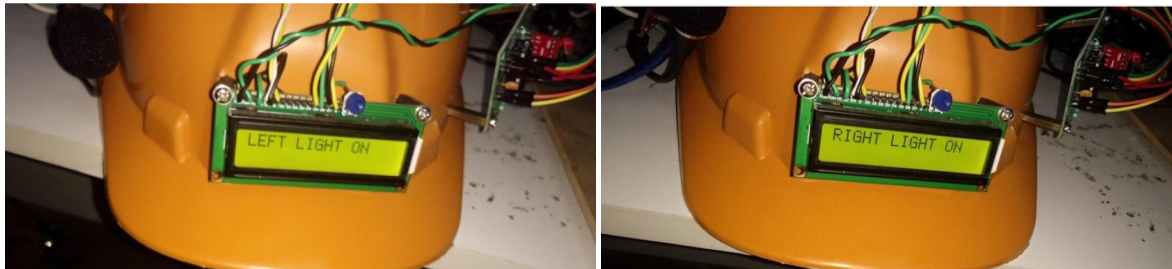


Fig 6: left and right indicators on

If accidents happen for two wheeler then the accident sensor senses the high frequency and sends the messages through GSM along with location through GPS. And the same will be displayed on LCD display.



Fig 7: Detection of accident.

If there is hump ahead then the IR sensor sends the signal to the bike unit and the same will be displayed on LCD display.



Fig 8: Detection of hump.

If the traffic signal is red, then the RF module detects and sends the indication that there is red signal on and the same will be displayed on LCD as shown below. Similarly green signal indication.



Fig 9: Traffic signal detection.

VI. CONCLUSION

This system will ensure that the rider wear helmet or not and if doesn't wear then it will not turn on. This system also detects accidents and location of accidents. This system will detect the traffic status and hump ahead. If the rider drink alcohol then this system will detect and every condition will be send to the previously added numbers. And the same status will be displayed on LCD display. This may help us to save life.

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