Design of Smart Helmet by using 8051

[1]Prof. Zanzane Archana Pandurang, [2]Prof. Bhise Pournima Avdhut, [3]Bondre Supriya Suresh, [4]Prof. Kokare Anil Jagannath

[1]Assistant Professor , [2]Assistant Professor, [3]Assistant Professor, , [4]Assistant Professor
[1]E&TC Department, [2] E&TC Department, [3] E&TC Department, [4] E&TC Department,

[1]SMSMPITR Akluj, India

Abstract : In present time, especially for teenage people, the madness for motorbikes is really remarkable. As the bikers in our country are increasing, the road mishaps are also increasing bit by bit, due to which many the end of the life of a person occur, most of them are reason for the ignorance in wearing helmet. And another cause for this accident is action of using the resource of alcohol. In order to control this problem, initially a sensors in helmet checks whether the rider wear the helmet or not and also a breath analyzer test. In case of any pessimism bike does not start.

At the time of accident, the helmet benefits the service of GSM accompanied by come to the aid of of GPS it sends message with exact location to the ambulance or predefined contact. In Helmet side RF transmitter acquire signals from those sensors on the foundation of above mentioned condition then encode it to the receiver. In bike side receiver decodes which is continuously scanned by the AT Mega32A MC accordingly it takes the desired actions.

IndexTerms - Alcohol sensor, Helmet System, Amplitude Shift Keying(ASK), GPS module, GSM module

I. INTRODUCTION

The idea of this work is to give information about the rider wearing the helmet or not, whether the rider drunken or not and also, he met with an accident it freely transfer the possession of an information about location where he is met with an accident through GSM module to mobile numbers family members, so I have chosen GSM technology to give the information by sending SMS, using GSM module having SIM card slot to place the SIM and send SMS. Sending SMS alone can't help the driver, if we send and an SMS saying that accident had occurred where the ambulance will occur nott knowing the place of the accident. So to trace out the location where exactly accident occur using GPS module, and gives to microcontroller, then it sends the SMS which contains the latitude and longitude of a area to family members mobile numbers For this we use GPS module to extract the location of the accident, the GPS data will contain the parallel and distance north or south of the equator values using which we can find the accurate position of the accident place.

I. IMPLEMENTED WORK

This part composed of an alcohol sensor, helmet sensing switch, encoder and an RF transmitter. Switch as well as the alcohol sensor are contoured in the helmet. Data reads from the sensors, finds if the driver has non-alcoholic breath and helmet sensor switch is in shut down position and gives relative digital output to an encoder only if the two conditions are satisfied. It encodes one from all the energetic inputs to a coded binary output. RF transmitter transfers the coded binary output from the encoder. The popular ASK modulation is used here.

Fig.1.Helmet Unit

technique. In this RF system, the digital data is presented as slight difference in the amplitude of carrier wave. This type of modulation is known as Amplitude Shift Keying (ASK).
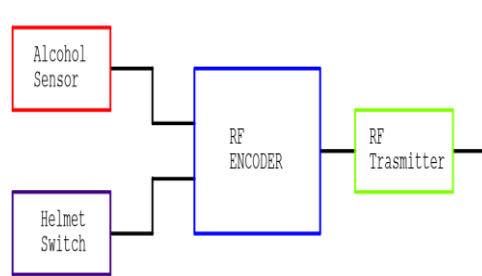
Fig.2.Block diagram of Helmet Unit
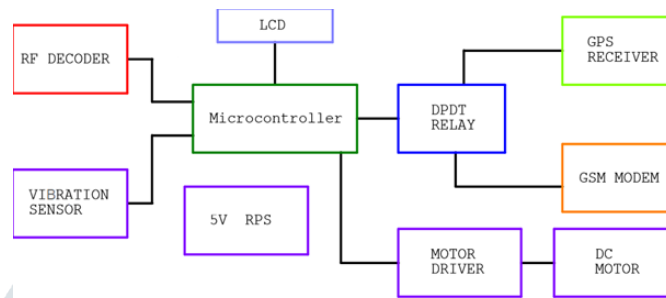
II. VEHICLE UNIT

Fig.3. Block diagram of Vehicle Unit

It basically consists of a Receiver, Microcontroller, GSM Module and GPS Module: A RF receiver operating at 434 MHz Radio Frequency is devoted to receive the data over wireless medium.

III. MICROCONTROLLER

On the authority of the data microcontroller will receive from the module on bike it will control the output of remaining components. Based on the output of both the accelerometers on bike and helmet, it will dispatch meshelmet, it will send message to nearest Hospital and Relatives in case of an accident using GSM module. And based on the outputs of alcohol sensor and IR sensor, it will send a relay output to the engine.

IV. RESULTS AND DISCUSSION

- IF RF module is in range or helmet RF module is switch on

- If rider is not ware helmet, then it shows the message of "No Helmet Pls Wear it".

- If alcohol attentiveness present in human breath then it display the message on LCD And it shows the SMS to register no. with their current location.
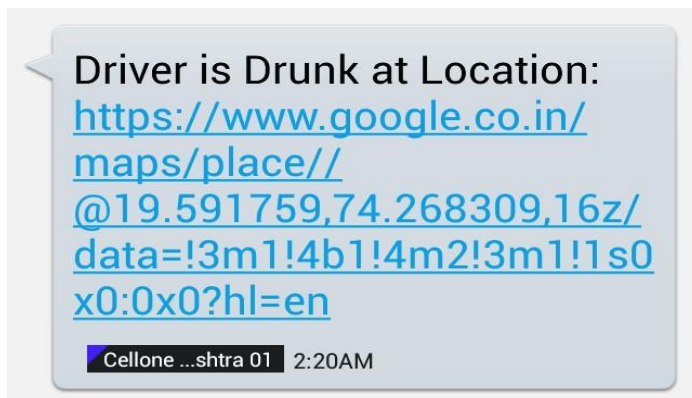
Driver is Drunk at Location:
https://www.google.co.in/
maps/place//
@19.591759,74.268309,16z/
data=!3m1!4b1!4m2!3m1!1s0
x0:0x0?hl=en

Cellone ...shtra 01   2:20AM

Fig.4. Alert message on mobile for drunk Driver

- If accident occurred, then bike is fallen. It display the message on LCD. And it sends the SMS to register no. with their current geographical location.

No Helmet Pls We
ar it

ACCIDENT OCCUR

Accident Happend at
Location: https://
www.google.co.in/maps/
place//
@19.591759,74.268309,16z/
data=!3m1!4b1!4m2!3m1!1s0
x0:0x0?hl=en

Cellone ...shtra 01   2:14AM

Fig.5.Aware message on mobile for Accident

➤ **Observations Table:**

Sr No	Component Name	Range	Description
1.	MQ6 Alcohol Sensor	0-0.8mg\lit	1.If below 0 to 0.8 mg\lit ,user not drunk. 2.If above 0 to 0.8mg\lit ,user drunk
2.	Vibration Sensor	0-20mm\sec	1.If below 0 to 20mm\sec, accident not occur. 2.If above 0 to 20mm\sec, accident occur.

Fig.4.Sensor Range Table

The developed system efficiently ensures Rider is wearing helmet through out the ride. Rider should not be under influence of alcohol.Accident detection & theft prevention.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 driving the bike after consuming alcohol.

II. ACKNOWLEDGMENT

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