Review on Smart Helmet: A Boon For Bikers

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Abstract- *Road accidents have been and will continue to be one of the utmost health perils. Statistically, it has been shown that numeral of death and damages due to motorway accidents. It has been growing gradually. The project aims is to offer the security and safety of the bikers against motorway accidents. A Smart Helmet is distinct notion which makes motor cycle driving safer than before; this is implemented using GSM technology. In situation of accidents, we are using piezoelectric sensors which will detect vibrations and message will be send through GSM technology. It will help reducing accidents. "SMART HELMET", as the name suggests, helmet with some advanced and automated features for safety tenacity.*

Keywords- GSM, GPS, Helmet, Accident, Automobiles

I. INTRODUCTION

An accident is an unanticipated, infrequent, inadvertent outward action which happens in specific time and site. The foremost reason for accident is inattentiveness of the driver is. The government has made guidelines that rider must wear the helmet and also not drink alcohol and drive. Still they do not follow the rules. These accidents are caused due to only the inattention of the rider. If a rider does not wear the helmet, then it can cause the rider with head damages which may lead to demise. To overwhelm this problematic situation here is an intellectual system, smart helmet is, and it senses the accident vibrations and also the alcohol present in riders breathe. The project goal is to offer security and safety of the bikers against road accidents. A Smart Helmet is distinctnotion which make motor cycle driving safer than before, this is implemented using GSM and GPS technology. The other benefit of this project is to measure the alcohol stratum of drunken people who is riding motorbike. We are developing an embedded kit or embedded system which will be placed in Helmet consists of some sensors and electronic circuitry which continuously observing and quantifying the alcohol stratum &state of accelerometer. We measure the alcohol stratum in&display it in the LCD display. Whenever the alcohol stratum crosses the predefined value the alarm triggers and we get notice about the drunken person. An accident is an unanticipated and in advertent incident. In today's world road accidents stand among the prominent grounds of human demise. Road safety for motorist is an indispensable prerequisite of society. As the number of automobiles rises day by day, collision of vehicle also increases concurrently; in this status quo this project accomplishes the persistence of saving lives. Helmet is best protection equipment for driver. In this system primarily we stab to circumvent accidents by using, the sensor will trigger the GPS to find the site and further SMS will send to ambulance and family members. This will heighten accidents as well as human death ratio by accidents due to providing appropriate carefulness with in time frame.

II. WORKING PRINCIPLE

The operational norm of the cool helmet is very modest. Helmet hit the ground, this sensors intellect and gives to the microcontroller then controller excerpt GPS data using GPS module then timers twitch counting upto 10 minutes. If the person is not proficient to driven bike upto 10 min then automatically sends massage to ambulance and close relative. This project is essentially to distinguish the alcohol drunken persons. Here we are using microcontroller which is interfaces to alcohol sensor. Alcohol Sensor is a sensor that dealings the quantity of alcohol that is present in surrounding environment. If any drunken person came, an alcohol sensor senses it and passes it to controller through ADC.

III. BLOCK DIAGRAM

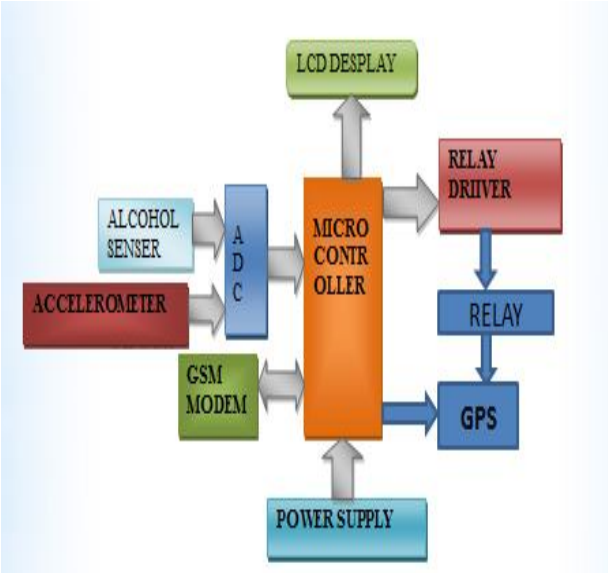

Figure 1:- Block Diagram of Smart Helmet

1. Micro-controller board:

It is a low power, high-performance CMOS 8-bit microcomputer with 8K bytes of Flash Programmable and Erasable Read Only Memory ROM). The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the MCS-51. Instruction set and pin out. The on chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with Flash on a monolithic chip, it provides a highly flexible and cost effective solution so many embedded control applications.

GLOBAL SYSTEM FOR MOBILE COMMUNICATION MODEM:

GSM (Global System for Mobile communications) is an open, digital cellular technology used for transmitting mobile voice and data services. Here we are using it only for transmitting and receiving the messages. GSM wireless data module is used for remote wireless applications, machine to machine or user to machine and remote data communications in many applications. Microcontroller sends AT commands to GSM modem and accordingly it operates.

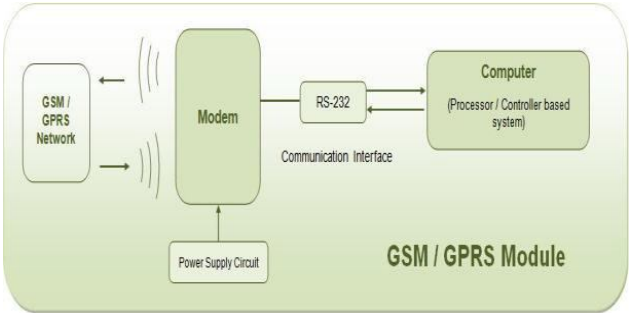

Figure 2:- GSM & GPRS Module

2. ADC:

A/D converter is that it can continuously follow the input signal and give updated digital output data if the signal does not change too rapidly. In addition, for small input changes, the conversion can be quite fast.

3. Vibration Sensor:

Accelerometer sensor can measure static (earth gravity) or dynamic acceleration in all three axis. Application of the sensor is in various fields and many applications can be developed using this sensor. Accelerometer sensor measures level of acceleration where it is mounted this enable us to measure acceleration/deceleration of object like vehicle or robot, or tilt of a platform with respected to earth axis, or vibration produced by machines.

Figure 3:- Accelerometer

4. Power Supply:

Initial stage of every electronic circuit is power supply system that provides required power to drive the whole system. The specification of power supply depends on the power requirement and this requirement is determined by its rating. For our project we require + 5 Volt.

5. GLOBAL POSITIONIG SYSTEM

Figure 4:- GPS Tracking Site

The Global Positioning System (GPS) conception is centered on time & the known position of specialized satellites. The satellites carry very steady atomic clocks that are synchronized with one another and to ground clocks. Any drift from true time continued on the ground is rectifiedday-to-day. Equally, the satellite locations are known with great meticulousness. GPS receivers have clocks as well; nevertheless, they are customarily not synchronized with true time, and are less steady. GPS satellites continuously communicate their current time & position. A GPS receiver monitors multiple satellites and solves equations to determine the precise position of the receiver and its nonconformity from

true time. At a least, four satellites must be in view of the receiver for it to compute four unknown quantities (three position coordinates and clock deviation from satellite time).

IV. SOCIETAL BENEFITS

The safety helmet system concocted goals to diminish the numeral of demises caused by not wearing helmets. We want the riders to be safe and obey to the law. As for a society we would want to see more discipline when it comes to commuting. Pollution statistics keep the citizens informed about the pollution of the locality they live in. As people become aware of the pollution levels they transform into a more concerned and responsible Human beings thus making them more disciplined. As this change begins our environment will be more livable, safer, healthier and friendly.

V. CONCLUSION

In this project, we developed a smart helmet based system which was successfully able to detect whether the rider as worn the helmet or not. It also sets an alarm if he has consumed alcohol beyond permissible levels. Apart from this, the system also monitors atmospheric pollution levels.

REFERENCES

[1] Manjesh N, Prof. Sudarshan Raj," Smart Helmet Using GSM & GPS Technology for Accident Detection and Reporting System", International Journal of Electrical and Electronics Research, Vol. 2, October - December 2014
[2] AbhinavAnand "Alcohole detection", Department of Electronics and Telecommunication, IJEETC, Vol. 4, April 2015
[3] Rasli, Mohd, et al. "Smart helmet with sensors for accident prevention." Electrical, Electronics and System Engineering (ICEESE)", 2013 International Conference on.IEEE, 2013.
[4] NitinAgarwal, Anshul Kumar Singh, PushpendraPratap Singh, Rajesh Sahani "Smart Helmet" International Research Journal of Engineering and Technology, Vol:2, Issue:2, May 2015
[5] Manjesh N "Smart Helmet Using GSM & GPS Technology for Accident Detection and Reproting System" Internal Journal for Electrical and Electronics Research, Vol:2, Issue:4, October 2014 [4] Micheal Margolis "Arduino Cookbook" O'Reilly Media, Published 2011