SMART HELMET SYSTEM

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Abstract :

A low power intelligent helmet system is designed using Atmega 328p processor which ensures the safety of a two-wheeler rider. The primary concept behind the working of the system is that the ignition of a two-wheeler will be enabled only if the rider is wearing a helmet and not under the influence of alcohol throughout the ride. An alcohol sensor and helmet wearing sensitive switches are installed inside a helmet, which is connected wirelessly and communicates with the vehicle unit to switch off the ignition system of the bike if any violations occurred. The helmet is powered by a lithium-ion battery, integrated outside the helmet. Vehicle and helmet units check and intimate information about helmet status, alcohol consumption and accident through geometric coordinates via SMS. By using geometric coordinates, the location of the rider can be traced using a simple GPS tracking application.

IndexTerms - Atmega, GPS, Helmet wearing sensitive switch, Ignition.

I. INTRODUCTION

In today's era, especially in the young generation, the craze to ride bike is rapidly increasing .The middle class families prefer to buy two-wheeler over four-wheeler because of their low price. As the number of two-wheeler on the road are increasing, road mishaps are also increasing day by day. In the event of an accident, lack of timely medical attention to the injured person may lead to death. Thus, there is a need for a system which ensures safety of rider by enforcing rider to wear helmet as per government guidelines and also assist in providing the rider for a medical assistance in the event of an accident.

II. MOTIVATION

The road accident is one of the major problems all over the world. The recent report says that the annual average road accident is estimated to be about 7, 00,000 of which 10 percentage occur in India which has overtaken China. The annual statistics revealed by the World Health Organization (WHO) in its Global status report on road safety says that around 80,000 people are killed on Indian roads due to rush driving, drunken driving and less usage of helmets. Also, 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. To overcome problem, a system called Accident Detection, Theft and Drive Protection using intelligent Wireless Safety Helmet is introduced.

III. OBJECTIVE OF THE PROJECT

The objective of project is to design intelligent helmet system which ensures wearing of helmet and prevent switching ON bike if rider is under influence of alcohol throughout the ride. The system detects accident and intimate relatives through geometric location of rider via SMS.

IV. BLOCK DIAGRAM

The system mainly consists of two major units as shown in Figure 1 and Figure 2. They are:
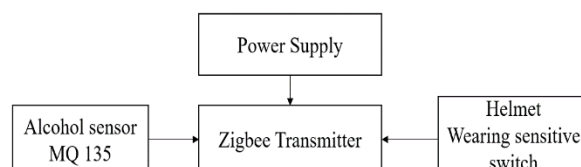- Helmet Unit
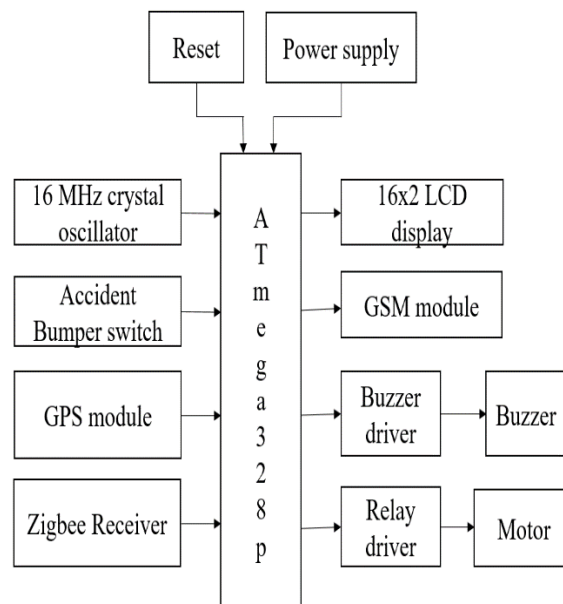- Vehicle Unit.

Figure 1: Helmet Unit

Figure 2: Vechile Unit

IV. WORKING

The ignition of the bike will be enabled only if the rider is wearing a helmet and not consuming alcohol and an alcohol sensor and helmet wearing sensitive switches are installed inside the helmet, which is connected wirelessly to the motorbike. Signal will be transmitted only if these two conditions are satisfied and power supply to the bike ignition will be enabled only after receiving the signal from the helmet section. Accident bumper switches is used to sense the occurrence of the accident. GPS module is used to track the location information and GSM module is used to transmit the alert messages and location information to the mobile numbers of the concern people.
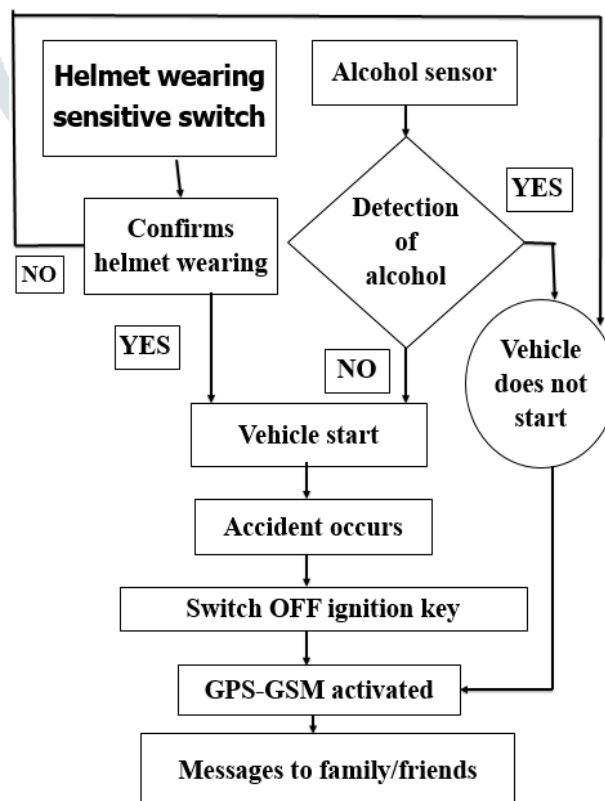
V. FLOW CHART

Figure 3: Flow Chart

VI. RESULTS

Figure 4: Finding Network   Figure 5: System Ready   Figure 6: Getting GPS data

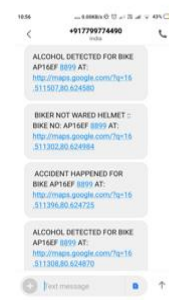Figure 7: Status of bike rider   Figure 8: If any case fails   Figure 9: Display of Message
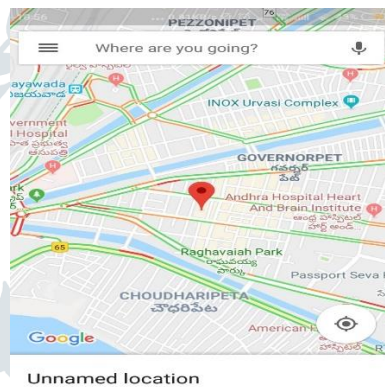

Figure 10: Shared location

VII. ADVANTAGES

The developed system efficiently ensures:
- Rider is wearing helmet throughout the ride.

- Rider should not be under influence of alcohol.

- Accident detection and automatically shares the location of the rider.

- Bike can be easily tracked with location when two wheeler is stolen.

VIII. FUTURE SCOPE

- In future this intelligent system can be fabricated in a compact size so that it is globally acceptable to notify no entry and no parking area[

- Over speed limiting devices can be installed which would restrict the biker from over speeding

- In case the biker over speeds, his registration number would be sent to the traffic regulatory authorities for necessary   action

- Theft protection can be included as helmet itself is acting as a key to start the bike.

IX. CONCLUSION

An acknowledgement section may be presented after the conclusion, if desired. Smart helmet can help to reduce lot of road accidents of two- wheelers and it can also used to prevent the damage occurred to the vehicle by the accidents, so this helps in curbing the road accidents by implementing mandatory helmet protection and detection of alcohol content during the starting on of the bike.

REFERENCES

[1]   Ministry of Health and Family Welfare. ” Integrated Disease Surveillance Project- Project   Implementation Plan 2004-2009. New Delhi: Government of India”; 2004:1-18.R. E. Sorace, V. S. Reinhardt, and S. A. Vaughn, High-speed digital-to-RF converter, U.S.Patent 5 668 842, Sept. 16, 1997.

[2]   ”Drunk Drivers Beware Of Saab De-vice”,[http://www.buzzle.com/articles/drunk drivers-beware-saab-device.html].

[3]   Honglie Leng, Yingzi Lin,” Design & Experimental study of CNT sensor for measuring alcohol content with short response delay” IEEE Sensor Journal, 2010, pp. 1091-1097.

[4]   http://www.alldatasheet.com/datasheet-pdf/pdf/118634/PHILIPS/LPC2148.html’

[5]   Al-Bayari, O., B. Sadoun, ”New centralized automatic vehicle location communications software system under GIS environment”, International Journal of Communication Systems, Vol 18, Issue 9, April 2005, pp. 833 - 846.

[6]   V.N.S Aditya, Radha Krishna Murthy, Lt. Ravindra Babu Kallam, ”Alternate Method for the Failure of Antitheft Device used in Motor Vehicles”, International Journal of Computer Applications, Volume 13, No.6, January 2011, pp. 023-026.

[7]   R. L. Boylestad, L. Nashelsky, "Electronic Devices and Circuit Theory", *Pearson*, 2009.

[8]   "Those deadly motorcycle crashes", *Damayanti datta*, Sep. 2011, [online] Available: http://indiatoday.intoday.in/story/india-has-   highest-rates-of-motorcycle-injuries/1/151522.html.

[9]   Harry Karsten, "Breath alcohol detection system with identity verificat-on", *US Patent*, Nov 2005.