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Smart Helmet

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Abstractt: ***Nowadays cases of bike accident can be seen around us. People's get injured and one of the main reason is not wearing helmet. A helmet is a protective layer that is worn in order to prevent head injury. Many peoples could save their life in accident cases if they weared helmet at the time of riding their bike. Countries like India, these accidents are common due to ignorance toward safety. According to National Crime Records Bureau (NCRB) two wheelers claimed 92 lives every day out of which most were due to helmetless drive. So as to over come this problem we came up with SMART HELMET. along with some new innovation your bike will never start until and unless you wear your helmet and tie its strips, as It consist of a RF transmitter and a RF receiver system. Means, If the rider is wearing the helmet he will be able to crank the engine and could propel, and if helmet is not there then vehicle will cannot start. Thus, giving you protection from very first step making it more useful. The smart helmet will help to reduce the injuries to head and will inform your nearby hospital and alert your relative with a message comprising your current location with the help of GPS system and after that a call will alert again with tye use of GSM MODULE. It will be technically advanced and electronically controlled. Thus, with these useful technologies it is expected to improve safety of an individual and family and reduce accidents, especially fatal to the motorcyclist.***
Keywords: Safety, Sensor, Vehicle, Accident, Drunken Driving, Helmet, Intelligent system, IR sensor,Gas Sensor component.

I. INTRODUCTION

Strips. MEANS THAT BIKE WONT START. and there will be cut off from ignition and as soon as he untie the strips of helmet. ROAD accident take the lives of around 1.5 lakh persons every year and counting of injure person goes over 3 lakh which are more than any country in the world. With this paper we will share our idea of SMARTHELMET for two wheeler riders in order to reduce the fatality . IN India craze of purchasing two wheelers is increasing day by day as with that number of accidents are rising more rapidly due to carelessness towards wearing of helmet which provides safety that safe one"s life and their family from tears .The Indian two wheeler (2W) industry registered sales of one lakh thirty seven thousand units in 2012-13, a growth of 2.9% over the previous year 2011-12 .[1]Over 1,37,000 people were killed in road accidents in 2013 alone, that is more than the number of people killed in all our wars put together.One serious road accident in the country occurs every minute and 16 die on Indian roads every hour.1214 road crashes occur every day in India.Two wheelers account for 25% of total road crash deaths.20 children under the age of 14 die every day due to road crashes in in the country.377 people die every day, equivalent to a jumbo jet crashing every day.Two people die every hour in Uttar Pradesh – State with maximum number of road crash deathsTamil Nadu is the state with the maximum number of road crash injuries.

Top 10 Cities with the highest number of Road Crash Deaths (Rank –Wise):

Delhi, Chennai, Jaipur,Bengaluru,Mumbai,Kanpur,Lucknow,Agra,Hyderabad,Pune.

So it should be made mandatory to make the people
wear the helmet when they ride the bike, then these rates
of accidents will start falling and a new record of low death occurrence will be made.

In INDIA under MVA ACT

Driving without Helmet	177	First Offence: Fine up to Rs. 100; Subsequent Offence: Fine up to Rs. 300

This fine should be imposed highly .So in order to reduce the injuries, most the time injuries are head injuries That's why we came up with an idea of SMART HELMET .The smart helmet will reduce the number of head injuries. The smart helmet main function is its first step that ignition wont take place until and unless an individual the strips .MEANS THAT BIKE WONT START .and there will be cut off from ignition and as soon as he untie the strips of helmet .

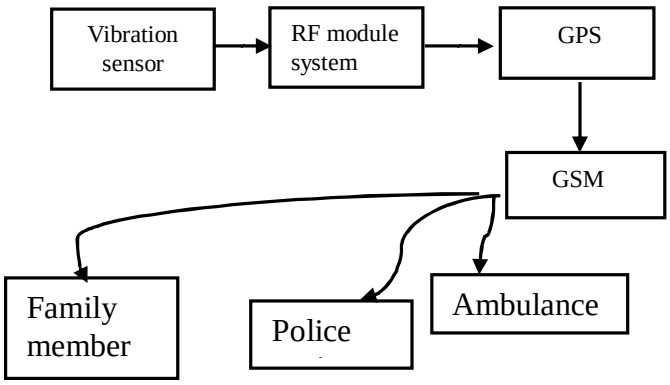
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II. METHODOLOGY

By means of this project we will provide information including location about the accident to the nearby hospital , so we have chosen GSM and GPS technology to provide such information through SMS and call to their respective family members . We are using GSM module which has SIM card slot to place the SIM and with help of GPS a message with location will be send via SMS. This is the methodology used in the project, let me once again give a brief description about the working of project, The vibration sensor is placed in the helmet such that it detects vibrations of the helmet which can easily sense the impact and perform its fuction before getting any harm to the circuit . When the rider crashes, the helmet hits the ground and the vibration sensor detects the vibrations that are created when the helmet hits the ground and then the Microcontroller will send a SMS an containing information about the accident as well as of location of accident.



A. Features

Radio frequency module and in short RF module , It is a small electronic device which we have used. it comprises of a transmitter and a receiver we have used both separately . RF transmitter will gets its input signal when the rider will wear helmet and tie the strips and it will send this signal to RF receiver, these signal depending on their input will let the ignition of bike starting on and off on 0 bike will remain on and on 1 means with strips bike will start means after taking care of serious note of wearing safety helmet only bike will start . performing the most important part of the project .It is an embedded system and it communicate with each other wirelessly making our work more easier for many applications it is used since it does not require line of sight and we have used short range RF module .

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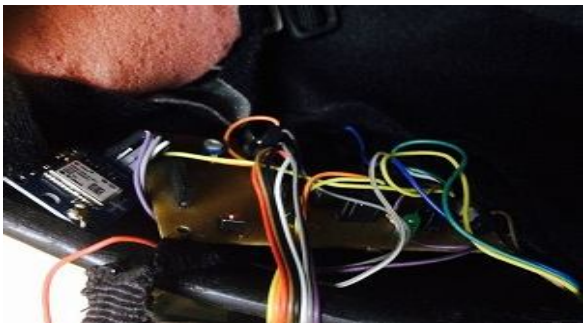
Fig.1. RF module system

III. GSM, GPS AND VIBRATION SENSOR

A GSM modem is a wireless modem that works with a GSM wireless network. The GSM modem is having internal TCP/IP stack to enable you to connect with internet. It is suitable for SMS, voice as well as DATA transfer application in M2M interface, attending incoming calls etc., through simple AT commands. A GSM modem doesn't have a keypad and display to interact with. It just accepts certain commands through a serial interface and acknowledges for those. These commands are called as AT commands. There are lists of AT commands to instruct the modem to perform its functions. Every command starts with "AT". That's why they are called as AT commands. AT stands for attention. In our project, the program waits for the mobile number to be entered through the keyboard.



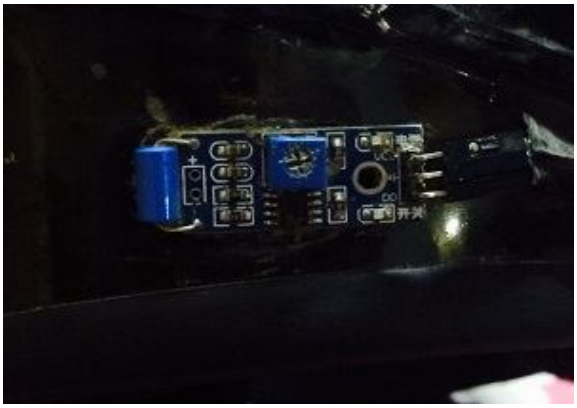
Global Positioning System (GPS) satellite broadcast signal from space that GPS receivers, use to provide threedimension location (latitude, longitude, and altitude) plus precise time. GPS receivers provides reliable positioning, navigation, and timing services to worldwide users on a continuous basis in all weather, day and night, anywhere on or near the Earth. GPS GR87 is a highly integrated smart GPS module with a ceramic GPS patch antenna. The antenna is connected to the module via an LNA. The module is with 51 channel acquisition engine and 14 channel track engine, which be capable of receiving signals from up to 65 GPS satellites and transferring them into the precise position and timing information that can be read over either UART port or RS232 serial port. Small size and high-end GPS functionality are at low power consumption. The smart GPS antenna module is available as an off-the-shelf component, 100% tested. The smart GPS antenna module can be offered for OEM applications with the versatile adaptation in form and connection.



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VIBRATION SENSOR this sensor buffers a piezoelectric transducer. As the transducer is displaced from the mechanical neutral axis, bending creates strain within the piezoelectric element and generates voltages. These vibration levels could be given to any controller/processor and necessary decisions could be taken through it. Module triple output mode, digital output simple, analog output more accurate, serial output with exact reading. Digital vibration sensing in the ADIS16220 starts with a wide- bandwidth MEMS accelerometer core that provides a linear motion-to-electrical transducer function. It uses a fixed frame and a moving frame to form a differential capacitance network that responds to linear acceleration. Tiny springs tether the moving frame to the fixed frame and govern the relationship between acceleration and physical displacement. A modulation signal on the moving plate feeds through each capacitive path into the fixed frame plates and into a demodulation circuit, which produces the electrical signal that is proportional to the acceleration acting on the device. These Digital vibration sensors are placed in different places of helmet where the probability of hitting is more which are connected to ARE7.so, when the rider crashes and the helmet hit the ground, these sensors sense and gives to the ARM7, then necessary decision could be taken through it.



IV. CONCLUSION

Ultimately evidences above shows the importance and need of such project which can save thousands of life .
As one can see how much effective it is and how it can change a drastic life taking accident into a minor one and with facilities of CALL and SMS help will come on its own to you .if such project get support from government and gets implemented in modern world the day will not be very much far when it would become hard to find a single person without the most important safety tools which is HELMET. Along with safety , traffic rules will be followed more and more . and this project is totally in favor of an individual who loves to ride a 2 wheeler . Thank you for your consideration on this and we Would like to hear from you on further modifications on this as more better it will be more life**.**

A. Future Scope

It could be implemented in all the helmets to save the life of human and it could be extended to know the dangerous roads, bridges by installing zone indicators in such areas.

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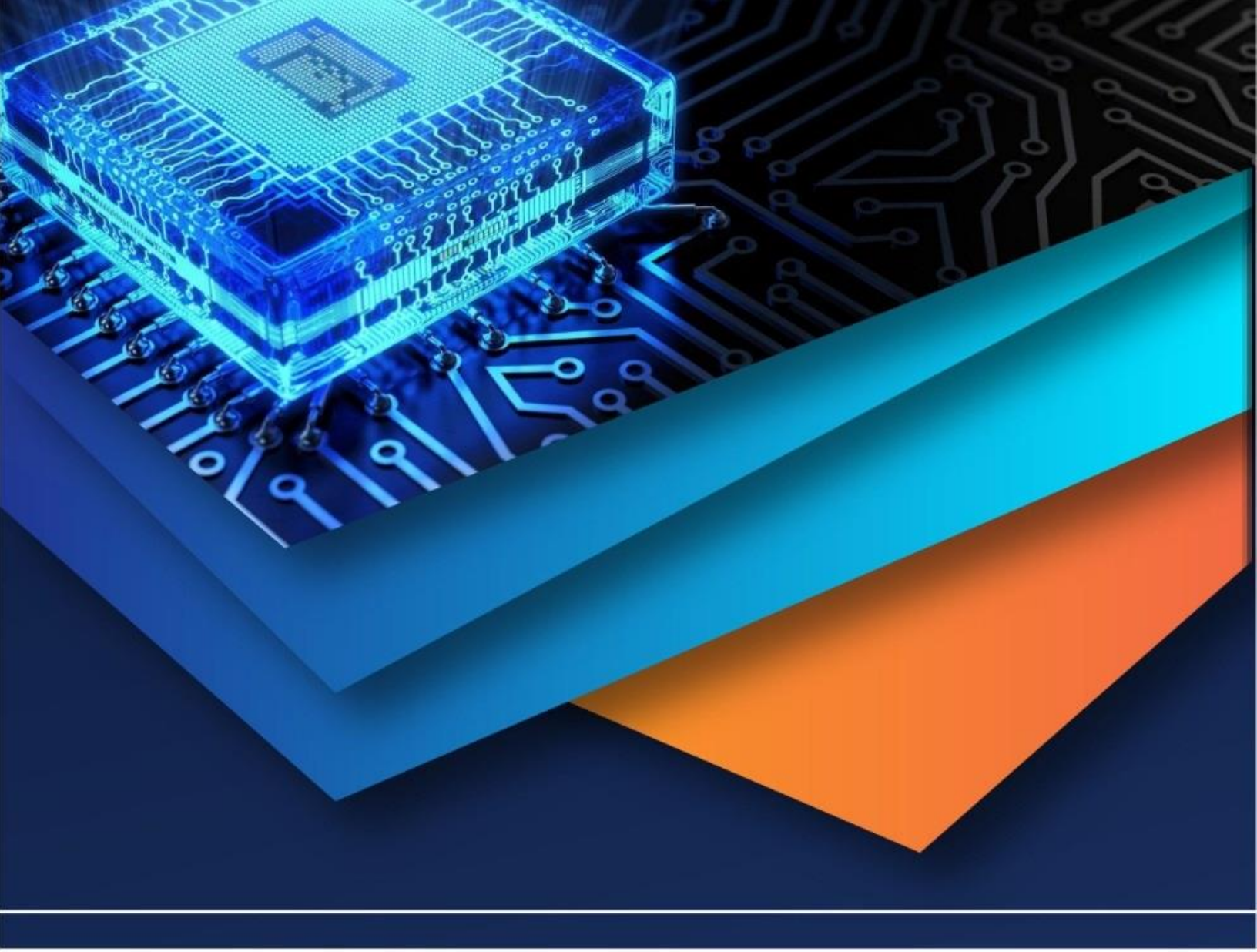
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