SMART HELMET USED FOR THE AVOIDANCE OF ACCIDENT

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Abstract : In our today's situation wearing the helmet is the most important thing. Because wearing helmet while driving a bike will avoid from accidents. But most of us are not wearing helmets today because many of us are forgotten to wear that and we do not like that to wear. So people are affecting while the accidents and cause an injury. Now our prototype is about after wearing that helmet only we can start the bike. After wearing that sensor placed helmet in the head only we can start the bike. Because it is almost like a key to start a bike . We are going to place a touch sensor in that helmet and it will give touch the head and give a key for a bike and it gets to start. So everyone will wear that helmet, due to this many accidents will be avoided. The idea of our project is to first check if the rider has actually worn the helmet, in other words the availability of the rider's head inside the helmet.

I. INTRODUCTION

Around 13% of the victims from road-related deaths are pedestrians in India as compared to 15% of accidents from passenger cars and taxis and 27% from riders of motorised two-or-three wheelers. The helmet described here once installed with any bike forces the rider to wear it while riding so law or no law the biker will have to wear the helmet ensuring his/her own safety. Providing safety to a person while riding the bike is of prime concern. One of the ways to do this is by making it mandatory to wear helmet while riding a bike. This is difficult to implement as every time the concerned people can't keep an eye on everybody. The system makes it mandatory for the rider to wear helmet before starting the vehicle and also he shouldn't have consumed alcohol. If the rider fails to do so then the vehicle cannot be started.

'Accidental Deaths and Suicides in India' is an annual publication of the National Crime Records Bureau of the Ministry of Home Affairs, Government of India. This report contains comprehensive statistics on a range of aspects with regard to deaths due to accidents and suicides. The National Summary of Injury Mortality Data provides tabulations of the total numbers of deaths and the mortality rates per 100,000 populations for major and other selected external causes of death from injury, by race, gender, and age groupings.

II. OBJECTIVE OF THE PROJECT

In every methodology the developer needs to send the information in a quick and safe way. By using Zigbee the information gets easily affected to the noise present outside while sending the information. While using the Wi-Fi, it does not have spectrum assignment and operational limitations. Power consumption is very high when compared to other standards and making the battery life low and heat the system which we use. While using Ad-hoc networks, it has minimal security against the most unwanted incoming signals. Attackers will have generally little difficulty to access the Ad-hoc networks.   To overcome these disadvantages, we are using Bluetooth technology, pretty much very soon; you will be noticing quite a bit of technology will be wireless due to Bluetooth. As it is already, but most likely it will be more dominant.

Widely Used:

Bluetooth is now really popular and keeps getting more popular as time passes by. Companies are taking the benefit by using this in their new and future products to make life much easier for everyone.

Feature Simplicity:

You do not need to know much about technology in order to run Bluetooth. Anyone that doesn't have any knowledge about the new

technology can still is able to use the Bluetooth feature due to its simplicity and the ease of use.

Free of Charge:

Best of all, you do not have to pay a penny for the service! It's not an extra cell phone or cable bill that you have to add to your budget.

Go Wireless:

It allows you to stay cord free and do not have to worry about finding the correct place to connect that extra long cord. Avoid having to have a ton of cords wherever you go.

You're in Control:

Even though you are able to exchange data across your cell phones, you still have the ability to keep your information private.

III. LITERATURE REVIEW

Prevailing System:

The existing project basically has a wireless telecommunication, and is connected to a smart phone. This prototype uses sensors to detect a crash or accidents and the communication hardware is used to automatically dial a predefined emergency contact. The other existing system is to control the speed in which the biker is going in. The helmet is fixed with all the components and sensors that read the speed of the bike and accordingly instruct the rider to reduce or increase the speed based on the obstacles ahead the bike. Along with the speed limit sensors the helmet also checks if the rider is drunk and driving. If the rider is drunk then the ignition of the bike is avoided and the hence not letting the rider to ride the bike.

By using Zigbee system

It is a high level communication protocol used in small areas like home automation, medical device data collection and it is designed mainly for small scale projects. This device is less expensive than Bluetooth and Wi-Fi. The transmission distance range limits from 10 to 100 meters which is not applicable for transmitting information's from electricity board to the consumer's home. Zigbee is used in low data rate applications and it consumes more battery power. This system will not withstand for long period of time and may cause in

wrong generation of output. This methodology is not applicable for our project

Using Ad-Hoc Networks

The main problem in Ad-hoc networks are their method of routing and characteristic of wireless network. In Ad-hoc network, a node can communicate only with a node in its area. It is a major disadvantage in this methodology. These nodes can communicate with other nodes but the routing algorithm is necessary for every nodes. The infrastructure of this network is complex and too expensive. Using Wi-Fi method Wi-Fi is based on IEEE 802.11 standards. The Wi-Fi has partial action and it is related for residence networking. For example, a home router with Wi-Fi in a room has a very less range compared to a long distance transmission. This cannot be used in long range applications. The information can be easily transmitted and received but it is not applicable for long range if distances. So this methodology is not applicable for our project where electricity board and consumer's home vary for a greater distances.

CURRENT PROJECT

In our today situation wearing the helmet is the most important thing. Because wearing helmet while driving a bike will avoid from accidents. But most of them are not wearing helmets today because many of them are forgotten to wear that and they do not like that to wear. So people are affecting while the accidents and cause an injury.
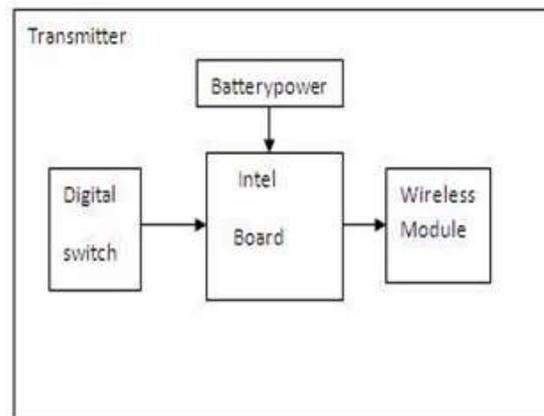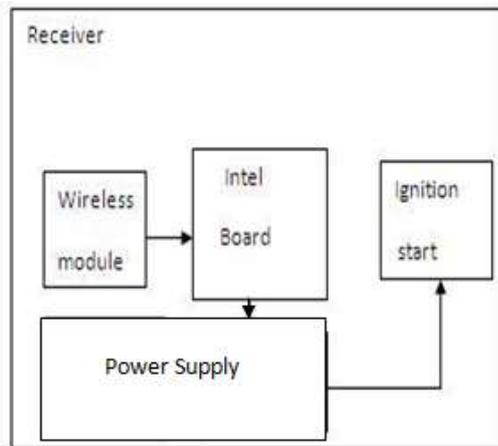
Fig - 3.1

Now our prototype is about after wearing that helmet only we can start the bike. By this we can avoid so many accidents in this world, most of the accidents are occurring due to without wearing helmet, our government is introducing lot of rules to wear helmet but our people is not responding for that, so this is a better way to follow the rules and to avoid accident. After wearing that sensor placed helmet in the head only we can start the bike. Because, it is almost like a key to start a bike. We are going to place a touch sensor in that helmet and it will give touch the head and give a key for a bike and it gets to start. So everyone will wear that helmet, due to this many accidents will be avoided. People don't get injured and we can save them by this method.

The idea behind this project is by placing the digital switch sensor and Intel board in helmet. After wearing the helmet the output of digital switch is transferred from helmet to the Intel board in bike via wireless module. After getting the input Intel board ON the relay switch which is connected between battery power and ignition start. By this we cannot start the bike and so we can avoid from death. The communication between helmet and smart dashboard is established using Bluetooth, thus providing secure and confident link between the two. Network of limit switch with proper mechanical assembly installed inside the helmet is used to detect the helmet wearing phenomenon. We have to fit the rear side of the helmet with a battery operated transmitter system, a small antenna and a switch in the helmets inside panel. The FM receiver with an antenna is installed near the ignition coil on the bike, with a connection to the bike's battery and relay system. The Arduino is a very user friendly device which can be easily interfaced with any

sensors or modules and is very compact in size. Now we are clear that the Arduino will send an affirmation to the bike for an ignition request.

IV. HARDWARE DESCRIPTION

INTEL GALILEO GEN-2 KIT

The Intel Galileo Gen 2 supports Arduino readymade hardware expansion cards. It is open source software from where the coding is very easy. The coding in Intel Galileo Gen 2 and Arduino are same. The only drawback in Intel Galileo Gen 2 is the cost which is higher.

Fig – 4.1 Intel Galileo Gen 2

It has input and output pins, UART, SD card and USB cable connection. In Intel Galileo Gen 2 the components are in build so there is no necessary for separate external components for it. It is an Intel Quark X1000 32 bit 400 Mhz. The power supply is around 7 to 15V. It has 12V power over Ethernet capability. The memory is 256 Mb. The operating system is Linux.

DIGITAL BUTTON SENSOR

A push-button or simply button is a simple switch mechanism for controlling some aspect of a machine or a process. Buttons are typically made out of hard material, usually plastic or metal. The surface is usually flat or shaped to accommodate the human finger or hand, so as to be easily depressed or pushed. The "push-button" has been utilized in calculators, telephones, kitchen appliances, and various other mechanical and electronic devices, home and commercial. In industrial and commercial applications, push buttons can be connected together by a mechanical linkage so that the act of pushing one button causes the other button to be released. In this way, a stop button can

"force" a start button to be released. This method of linkage is used in simple manual operations in which the machine or process have no electrical circuits for control.

Fig – 4.2 Digital button sensor

Pushbuttons are often colouring to associate them with their function so that the operator will not push the wrong button in error. Commonly used colours are red for stopping the machine or process and green for starting the machine or process. Pushbutton switches are mechanical switches defined by the method used to activate the switch.

WIRELESS MODULE

Wireless communication is the transfer of information or power between two or more points that are not connected by an electrical conductor.

Fig – 4.3 Bluetooth

When you use computers, entertainment systems or telephones, the various pieces and parts of the systems make up a community of electronic devices. There are lots of different ways that electronic devices can connect to one another. For example:

- ✓ Component cables
- ✓ Electrical wires
- ✓ Ethernet cables
- ✓ Wi-Fi
- ✓ Infrared signals

The art of connecting things is becoming more and more complex every day. In this article, we will look at a method of connecting devices, called Bluetooth that can streamline the process. A Bluetooth connection is wireless and automatic, and it

has a number of interesting features that can simplfy our daily lives.

RELAY SWITCH

A relay is electrically operated switch. Many relay uses elsetromagnet to mechanically operate a switch. Other operating principle such as solid state delay is used. A contractor type of relay is used to handle high power supply. If the coil is energized with alternating current, some method is used to split the flux out of phase components which add together, increasing the minimum pull on the armature during AC cycle. The relate pay the bill and the relay will terminate the power supply.
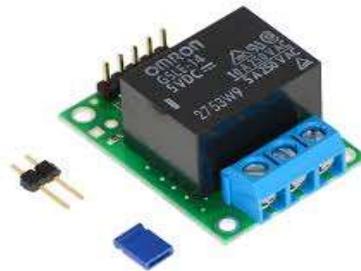
Fig – 4.4 Relay switch

CONCLUSION

This project represents an example of systematic approach to avoid the people from accidents. Thus only by wearing the helmet we can start the bike. By this we can avoid many accidents in this world, most of the accidents are occurring because of not wearing helmet, our government is introducing lot of rules to Wear helmet but our people is not responding for that , so this is a better way to follow the rules to avoid accident and save the people From the heavy head injury

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