Blind Point Detection Digital Safety and Entertainment Helmet based on IOT with Isolated Solar Charging Station

Group 13

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***Abstract*—For every biker helmet is one of the most important protection elements which protects the most impartment part of human body. There is some way to avoid many major dangers and preparation for road accidents. Keeping an emergency phone number on telephones and using a location tracker can help after any kinds of accidents. In this project, a digital helmet is designed by using smart technology which can automatically send accident alert SMS to riders' relative number with his location if any accident occurred. Also, there are multimedia and blind point detection system. This full system is powered by a solar charging system which powered the battery.**

***Index Terms*— helmet, bike, accident, sensor, objective, part, safety,**

I. INTRODUCTION

Bike becomes very much popular due to its speed and comfortableness. More or less its make rider mind fresh and full of joy. But this joy become dust if they face any bike accident. By considering all of vehicle accident, bike accident is the most dangerous one. Almost in every bike accident, biker fall into a serious injury. For all of those reason every biker should have to take enough precaution before starting his riding. Among all of those precautions, waring helmet is the most important one. Whenever an accident happens, it has a high chance to harm the upper part of a body first. If any lower parts of the body are hits by accident, people can still survive. When something hits in the head, it has a low chance for that person to stay alive. That is why now it is mandatory to wear a helmet. Helmet protects the motorbike riders head from concussion in case of an accident. It is important for bikers to understand the risks of riding without a helmet. If there is in an accident, they suffer a traumatic brain injury, even most of time they die on spot. In 2012, the National Highway Traffic Safety Administration estimated 1,699 lives were saved because individuals wore helmets. From 2008 to 2010, there were 14 ,283 motorcyclist fatalities in the United States, and 6,057(42%) of those who did were not wearing helmets. Without a helmet, there are serious dangers involved in riding. A helmet is a lifesaver. Also, when it became digital it become so much helpful for rider. It makes the ride more secure and comfortable.

II. METHODOLOGY

This lot-based helmet is divided into two objects. In the primary objective is to ensuring rider safety and make ride more comfortable by finding blind point detection system. And in the secondary objective are the multimedia system and solar charging system. Discussing abouts those objects are given below:

i) Primary objective: In this part an accident alert system and blind point detection system are integrated by the system. This system is designed with a GPS, GSM module and vibration sensor. In this accident alert system in case any accident occur the system can automatically send a SMS with the current location coordinates to the riders relative so the they can track the accident sport and send necessary help to save his life.

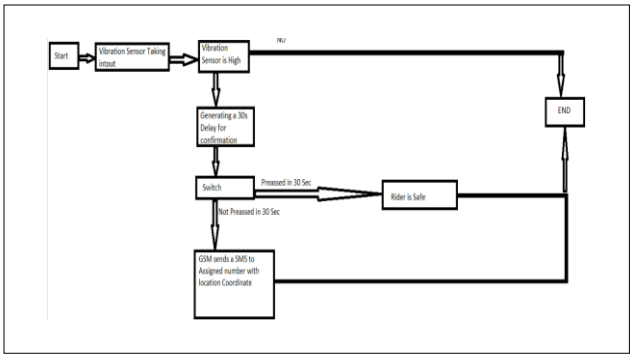

Fig 1.1: block diagram for accident alert system

Also, there is a blind point detection system with ultrasonic sensor. two ultrasonic sensors are added to measuring any close call. If any vehicle comes near, those sensors detect them and a LED light blink on that side of the helmet. So that rider can understand a vehicle is coming near of his bike.

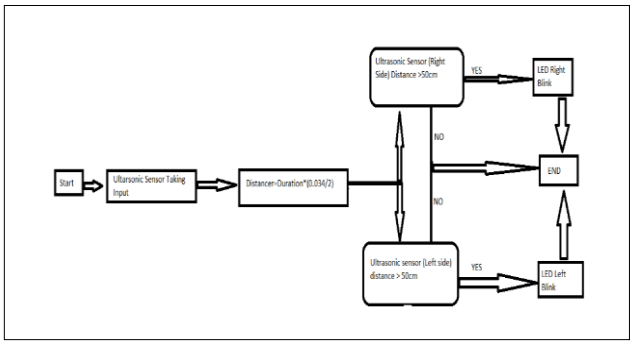

Fig 1.2: block diagram for blind point detection system

ii) Secondary objective: In this part there is a multimedia and solar charging system. This multimedia system is operated by a Bluetooth system. With this system rider can receive call while riding. There is no need to hold the phone by his hand next to his ear while riding cause there is a high opportunity to encounters a serious accident. Next there is an isolated solar charging part which is charge through solar panels. This solar system can charge battery which supply the power to operate the whole system.

III. CIRCUIT DIAGRAM

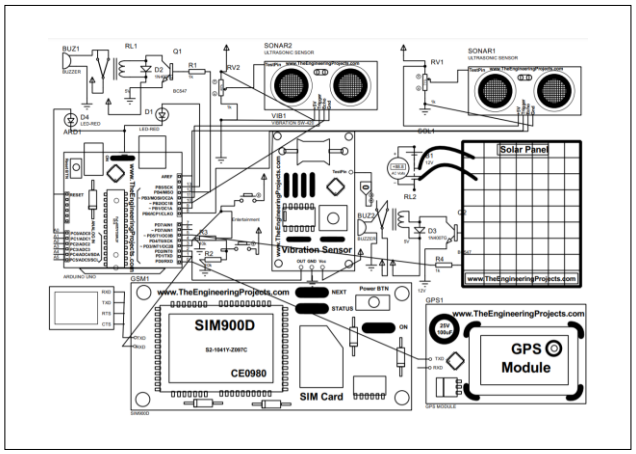

Fig 2: circuit diagram in proteus

This system is fully designed by proteus. In this system two ultrasonic sensor are used for blind point detection system and GPS and GSM is used for accident alert system. Also, a Bluetooth inbuild sound system is used for multimedia system. A Bluetooth Device is used because when traveling long distance, the rider can connect his mobile phone to listen to music and talk if he wishes. The feature that helps to rider's family to track the location when rider is injured, can be acquired by GPS & GSM. Circuit diagram of blind point detection digital safety and entertainment helmet for motorbike driver with isolated solar charging is shown in this section in figure 2.

IV. IMPLEMENTATION

The diagram provided below is a practical representation of the project – Blind Point Detection Digital Safety and Entertainment Helmet for Motorbike Driver with Isolated Solar Charging Station. Here, a chassis has been made. Sensors and other Module were set on the chassis and whole circuit is controlled by using an Arduino.

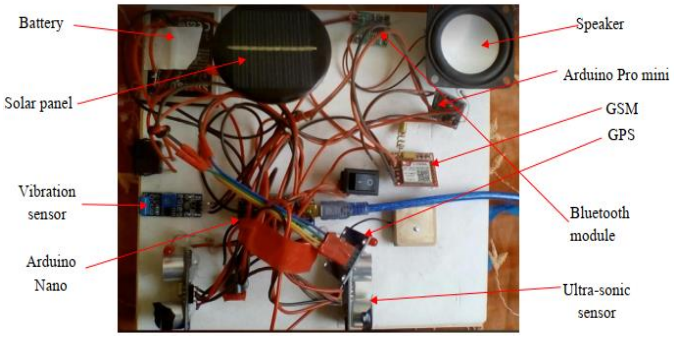

Fig 3.1: Hardware for this project

This project was designed with renewable energy resources in mind. Include this component because solar can generate electricity directly from sunlight. It absorbs sunlight as a source of energy. That's why the rider does not have to worry about charging his helmet. Also used a Bluetooth device because when traveling long distance, the rider can connect his mobile phone to listen to music and talk if he wishes. But must use this feature to follow traffic rules.

V. RESULT

Blind point detection system*:*

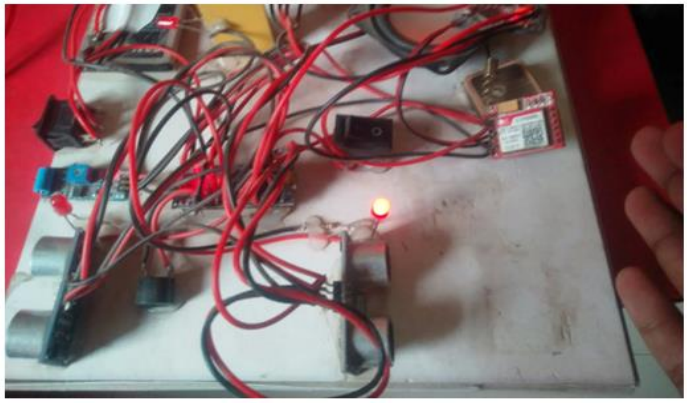

Fig 4.1: Blind point detection system with right indicator

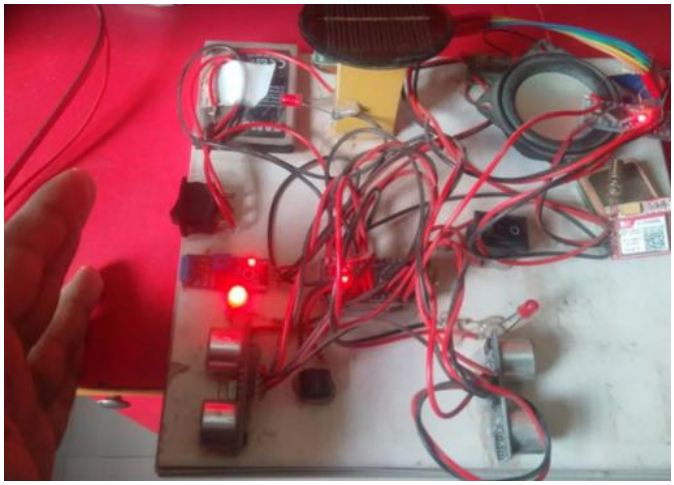

Fig 4.2: Blind point detection system with left indicator

In figure 4.1, if any object come to set range at right side. Ultrasonic sensor detects that and turn on the LED. Same process goes for left side in figure 4.2.

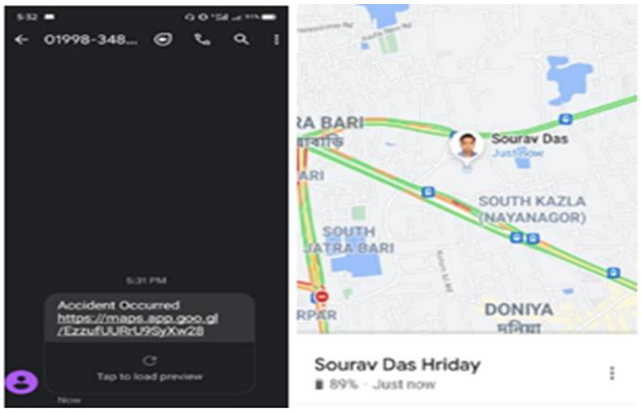

Fig1.5: Result for GPS & GSM module

If ever an accident occurs, the vibration sensor will detect it. At that point hold up a whereas, amid this time the rider will press the switch in case it is secure, something else it'll SMS the area of the mishap by means of GPS & GSM module. This feature helps to rider's family to track the location when rides are injured. The location of the accident is shown through the attitude and longitude in Figure 1.5.

VI. Cost Analysis

Serial	Name of Components	Quantity	Price in TK	Total
01	Arduino Nano	1	480	480
02	Arduino pro mini	1	320	320
03	Bluetooth module	1	1580	1580
04	Ultrasonic	2	195	390
05	Solar	1	590	590
06	Vibration Sensor	1	280	280
07	Buzzer	1	15	15
08	GSM	1	590	590
09	GPS	1	890	890
10	Jumper Wire	3 set	94	280
11	Battery	1	590	590
12	Switch	4	10	40
13	LED	5	3	15
14	Solar controller	1	490	490
15	PVC Board	1 Sheet	790	790
16	Glue Stick	5	20	100
17	Vero Board	1	80	80
18	Lead	1	180	180
20	Other			200
			Total Cost	7,900

VII. Conclusion

This project has been successfully completed. “Blind Point Detection Digital Safety and Entertainment Helmet based IOT with Isolated Solar Charging Station”, This project is very importance because it will reduce road accidents and give the gift of safe travel. Which will play an important role in the transportation system. The point of this project was to highlight the need of such a system for future use and its critical application. With more interest and commercial financing, such smart devices may become commonplace in electronic sector in the future.

VIII. Acknowledgement

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