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A Graceful Smart-ware with Numerous Features

Rashmi Mishra, Pooja Tyagi

Abstract- As per the modern era, street casualties are the significant explanation behind human passing. Street calamity, however an unforeseen occasion yet has asserted numerous lives till date .Wearing an intelligent helmet may anticipate genuine head wounds yet will in any case cause loss of lives. Utilization of SMART HELMETS can make you mindful of your encompassing condition and help you handle the circumstance and anticipate mishap. Savvy protective helmets has two HUD shows, double back view cameras, acoustic and visual traffic cautions, electro-tint visor, impact nearness admonitions, recognizes crash and sends data to a relative/emergency vehicle. It utilizes Peltier module for cooling and coagulating of blood if there should arise an occurrence of wounds and solar based boards for power framework alongside battery. It gives highlights like route, Bluetooth correspondence, commotion control and remote music framework that gives better riding knowledge. A brilliant head protector is an extraordinary thought which makes riding more secure and agreeable than previously. This uses GSM and GPS innovation. This savvy protective helmet tackles a genuine difficulties with hello there tech answers for make the ideal riding condition for the open street.

Keywords- Helmet, Solar Panel, GSM module, GPS, LED, Bluetooth, Camera, Ultrasonic Sensor, Peltier module, Wiper, Headphone, Display, Battery and Relay.

I. INTRODUCTION

In the present era the number of bike rider are increasing continuously day by day, the main aim of the project is to provide the security and safety to the bikers against road accidents, while also providing the riders a comfortable, luxurious and safe two wheeler experience. This helmet resolves a real word challenges by employing hi-tech solutions to generate the optimal riding environment for the open/free road.

Studies illustrates thatthe sustained exposure to free-way levels of noise above 100dB's can effect permanent loss of hearing capability and cardiovascular effects. To over these problems the noise cancellation headphone are being used as it allows the vital audio cues like traffic, sirens and rpms. Thus it provide the features to help the riders to keep calm, focused and alert.

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* Correspondence Author
Dr. Rashmi Mishra, Department of Biotechnology, Noida Institute of Engineering and Technology researchnietip@gmail.com
Pooja Tyagi, Department of English, Noida Institute of Engineering and Technology researchnietip@gmail.com

The excess heat is generated inside the helmet so, the people abandon the use of helmets for long period of time or even short term also. The temperature sensor senses the temperature and thus the Peltier module maintains the temperature.

The navigation of the biker is tracked with the help of GPS and GSM module. It also provides the warning to the rider about the any approaching vehicle with LED notifications using proximity sensor, we can also connect wireless audio speakers and it consist of E-tint visor and a wiper[1].

II. DESIGN DETAILS

1.1. COMPONENTS AND DETAILED DESCRIPTION

MICROCONTROLLER: The microcontroller used in the project for the monitoring and controlling of the device. The microcontroller used herein is a MSP4300F1121A. It processes the data and generates a signal and transmits it into the required form[2].

COMMUNICATION CABLES: To allow the serial data exchange the linking of the computers and peripherals are performed by deploying a standard communication protocol i.e. RS-232. The standard communication protocol used herein is a TRS3112E.

MAX 232E: The conversion of TTL logic levels into RS232 logic levels are performed by using MAX232. In RS232, the logical unit 1 is for representation of -3V to +25V. The voltage converter MAX232 is used in the microcontroller system for connection of RS232[3].

BLUETOOTH MODULE: Bluetooth is basically a wireless technology used for exchanging the data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz). For mobile devices, and building personal area networks (PANs).

HUD DISPLAYS: Two transparent LCD HUD displays for displaying the features. It is connected to the vehicle detection system that is monitoring the blind spots time to time.

REAR-VIEW CAMERAS: The cameras are used for live streaming on HUD displays, and they are linked to vehicle detection system for monitoring the blind spots.

SOLAR PANEL: the solar mounted on the top of the helmet for replacing the use of the battery during day time. Solar panel aids to hitch the renewable solar power which is rich in nature and it also saves the life of the battery.

RECHARGEABLE BATTERY: Rechargeable battery is embedded in the system to provide the power supply to the system during night time.

GSM MODULE: A GSM module installed in the system for connecting the user to the system. It also provides the calling and messaging features available as in the mobile phones.

The GSM module in connection with system provides the system a wireless network connection, this module is also used to provide internet connection to the system. It can send the SMS and MMS message to the authorized person[4].

AUDIO VISUAL INDICATOR: The combination of LED and BUZZER shows the different status and condition normal and safe on the road about the senses like position acquisition details, and communication sending status etc. BUZZER provides audible alerts.

ULTRASONIC SENSOR: Alerts the bike riders about the possible collision if the distance of any vehicle is approaching the bike to from the rear side. The minimum distance of approach is set by the rider according to its preference.

ANALOG TO DIGITAL CONVERTER: ADC34J42- is basically a converter used for converting an analog signal to the digital signal.

THERMOELECTRIC MODULE AND TEMPERATURE SENSOR: The information is received by the thermoelectric module (Peltier module) by comparing the temperature inside the helmet with the surrounding temperature and then module produces a colling effect to maintain the optimum temperature for the bike rider.

POWER SYSTEM: Power system supplies the power to the system. The solar panel and battery is used for providing the solar power.

NOISE CONTROL SYSTEM: Noise control system is used for cancelling the noises of the surrounding for the headphone.

AUDIO SYSTEM: This system is established for receiving phone calls and listening to the music and the direction provided by the navigator while riding.

PELTIER MODULE: This working of this module is based on thermoelectric effect, if the bleeding occurs it can be cured by this module. As per the prefixed values it also aids the rider to maintain the temperature inside the helmet thus providing cooling[5].

MICROPHONE: It is used to transmit the voice electronically to the second person through the call.

RELAYS: The 5V relay used herein the system for providing the switching operation to the sensors.

BJT (NPN): If the sensed values by the sensors is exceeding to the pre-defined values of the rider, the microcontroller transmits the information through the NPN Bi-polar Junction Transistor (BJT).

VIBRATION SENSOR: Vibration Sensor Alarm identifies the movement or the vibration, then it sends the signal of information to the control panels accordingly.

E-TENT VISOR: E-tent visor helps the rider in a bright sun by cooling the glass. Wiper helps the rider for cleaning the water or dust and it also prevents the glass from raining effect[6].

WIDESCREEN WIPER: It provides the multispeed visor wiping, wiper delay and visor cleaning spray. The wiper is getting charged through USB and snaps off in seconds during the sun comes out.

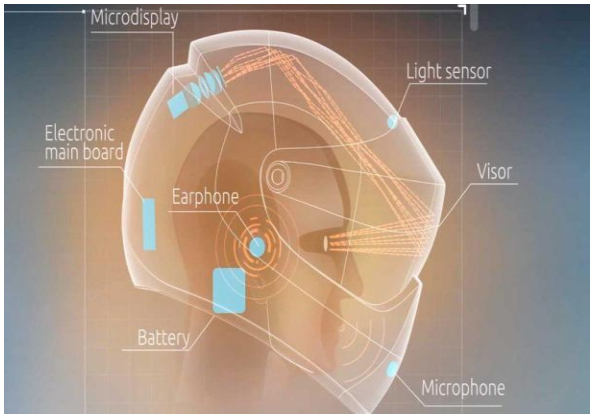

Figure 1. Components established in helmet.

1.2. IMPLEMENTATION OF COMPONENTS

HUD Display Simulated View:

Figure 2. View on the display.

Solar Panel and Wiper location:

Figure 3. Solar panel and wiper installed in the system.

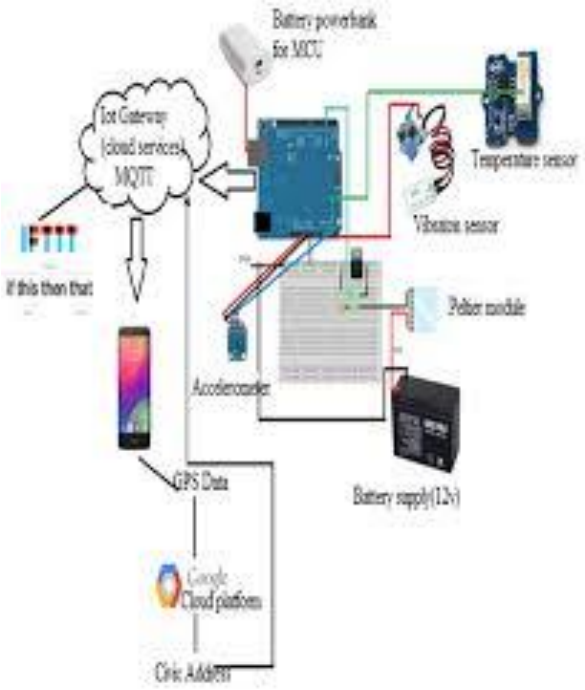

Figure 4. Circuit Diagram of the helmet.

III. METHODOLOGY

With stock incorporated into head protector, agreeable temperature can be kept up in cap by utilizing Peltier module which deals with the premise of thermoelectric impact. Additionally if any draining happens it very well may be coagulated by the thermoelectric module so the individual can be safeguarded from basic conditions. In case of street mishaps the exact area of the rider can be followed out utilizing GPS framework and utilizations GSM framework to send the message to crisis vehicle. The sun oriented board incorporated with the highest point of the head protector will help take out the utilization of battery during the day time. The impact vicinity alerts are a special touch – the cap has a worked in ultrasonic sensor to caution riders about potential back Enders. For instance while holding up at traffic lights. It has a sound route framework to assist riders with courses. It has a canny commotion controlling framework: The ear pockets are vigorously cushioned with silicone to lessen clamour .The dynamic clamour dropping mouthpieces are in ear pockets.The HUD show with double back view camera encourages a rider to have a more secure ride.

IV. CONCLUSION

Solar based power framework alongside inner battery-powered battery. Crash locator which sends the message to emergency vehicle and guardians when the rider meets with a mishap. HUD show with double camera. Back ender impact Proximity alerts when different vehicles are close-by. A savvy Noise-controlling framework with clamour dropping earphones which empowers the rider to in any case to hear crucial sound signals like alarms, traffic and RPMs. Encompassing sound capacity: If the rider needs to hear what's going in the encompassing the head protector has a worked in Ambient Mode which can be effectively exchanged on with a helpful catch on the cap's outside without evacuating the cap. The Bluetooth module incorporates cell phone availability for calls, sound and route gushing. It is additionally intended to take voice directions. Agreeable temperature inside the protective cap is furnished with Peltier module. Inbuilt GSM and GPS module for sound route and to send the crisis and mishap caution to the guardians/emergency vehicle. The e-tent visor is impregnated with LCD precious stones that obscure "in under a moment". It has a wiper to clear overwhelming precipitation water dashing to the visor and has an unmistakable vision of the street for the rider during blustery season.

V. RESULT

Thus the best riding experienced by the helmet for the riders, the riders are also feels safe while riding thus by providing the security to the riders with multiple features. This helmet also decreases the accident possibility on the road and the death morality. The safer ride is provided by the helmet.

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