Smart Helmet and Bike System

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Abstract— In our society, security has been all of us priority. Most of the global areas imposing their humans to put on helmet when driving bike and don't ride when the character is no more having helmet or below the influence of alcohol, however still policies getting violated. To get control of this issue, Smart helmet and bike desktop is developed. This venture consists of clever system embedded into the helmet and also in the bike. This mission is carried away through 4 applications. First two functions are placed in helmet section and the subsequent two purposes in the bike system. Coming to the helmet part, helmet segment consists of IR sensor and alcohol sensor for helmet and alcohol detection applications. These sensors talk with the bike part to swap off the ignition device the bike if any of these two prerequisites i.e., alcohol detection and helmet detection are no longer met. Other utility is making the motor of the ignition machine is to ON\OFF be the use of Bluetooth. Last software program is about accident detection, which is operated the usage of vibration sensor. If any accident occurs, the vibration sensor senses the vibration value. So, every time the accident happens, it right away communicates by phone name to their family individuals about the vicinity of the accident the utilization of GSM Module. By implementing and developing this project, a secure two wheelers outing will be viable which would restriction the head accidents all via street accidents and moreover decrease the accident price due to riding bike after ingesting alcohol or no longer sporting helmet.

I.INTRODUCTION

Rapidly these days we continue to be in a time the place the safety of one's property is of the pinnacle precedence troubles for one, their cars being one of these. Each man or female feels the necessity of staring at their car parked in unknown vicinity. The vehicle may additionally moreover want to or may additionally no longer be geared up with an alarm and so the alarm ought to or can also moreover now no longer trigger. The proposed machine can disclose the vehicle constantly on every occasion it's in motion. The auto will be fit with a sensible computing device with a web work and Global System for bikes (GSM), and gorgeous sensors like IR sensor, accelerometer sensor, alcohol sensor etc.

Most of the thefts showcase up due to the fact no longer preserving a correct distance between them this is moreover a serious hassle that to be consider, to this trouble we had deliberate a vehicle observant and controlling framework, in that we have utilized specific sensors and gathered data from each and each sensor and statistics is analysed and that we had used a GSM module to talk to the persona via way of name or message and right proper right here the microcontroller we have used Arduino nano.

In present day instances helmets had been created required in Asian global areas site visitors' accidents neighbourhood unit been growing 12 months by ability of year This location unit 3 imperative troubles that motivates North American kingdom for developing this project. If the alcohol content fabric is greater than permissible level, ignition turns off which effects in stopping of bike or if it is below permissible diploma or at zero ignition can't be grew to flip out to be off so as well as the bike maintains running. Associate in Nursing alcohol detector can appear at the alcohol content present in persons breath, to beneficial resource the accidents because of crapulous and the utilization of that bring forth thousands of accidents. For this completely select out MQ3 alcohol detector.

These manner neighbourhood unit employed in helmet unit. Third step is, in case of any accidents GPS laptop indoors the bike unit can sight the rider and on the spot verbal trade are going to be transferred to the contributors of the household or ideal authorities regarding the feature of the accident. For this choose vibration detector which can scent the pressure of the bike.

Sensor which can observe the alcohol content and determine to end the ignition or not. If the alcohol content material is extra than permissible level,

ignition turns off which consequences in stopping of bike or if it is under permissible stage or at zero ignition can't be turned off so as properly as the bike continues running.

Alcohol detector is typically used as breath sensor that spot the content material of alcohol in rider breathe when exceeding admit desk range ignition can't begin. It shoots the verbal alternate to register range. For this truly pick out MQ3 alcoholic detector. These manner vicinity unit employed in helmet unit. Third step is, clearly in case of any accidents GPS computing device within the bike unit can sight the rider and instant verbal alternate are going to be transferred to the contributors of the family or special authorities involving the characteristic of the accident. For this pick out vibration detector which can smell the strain of the bike.

The give up of this paper is to structure a protection device in the course of a helmet for a honest safety of bike rider. The pinnacle helmet that is constant with detectors that act on spot put on helmet or not. There are a unit two totally extraordinary microcontroller is employed at some stage in this style. Every unit has used a separate micro- controller i.e., in each the helmet and the bike unit.

II.LITERATURE SURVEY

A. Survey of the Existing Models/Work: Pannu et al. emphasize is on developing a seen modality, self-sustaining vehicle mannequin utilising Raspberry Pi as a managing chip. A high definition digicam aboard accomplice degree ultrasonic sensing problem used to be as soon as used to current administer permit to supply furnish relinquish integral facts from this present-day fact to the vehicle the car is foot for achieving the given intention firmly and insightfully at some factor of this manner warding off the hazard of human mistakes. exclusive brand-new calculations like route identification and obstacle neighbourhood are consolidated to administer very fundamental management to the automobile.

Kumar et al. proposed the layout and enchantment of an accelerometer-based laptop for driver safety. This framework is structured by way of the use of victimisation Raspberry Pi (ARM11) for rapidly having get proper of entry to to the administration and measuring instrument for healthy discovery the harm. The computing machine completely includes

one module ignoring the contrary lethal explanations therefore growing the deliberate mannequin incompetent and incomplete.

Summit et al. deliberate a compelling approach for the crash evasion affiliation of an auto to spot the boundaries present inside the front and blind spot of the vehicle. the purpose strain is afraid with the help of a buzzer partner degreed an LED sign, due to the fact the distance between auto and impediment reduces and is mirrored on a display. The ultrasonic sensor identifies the kingdom of the object if it is shifting or is stationary for the vehicle. This method is incredible for finding vehicles, bicycles, motorcycles, and pedestrians that pass by with the useful resource of the lateral side of the automobile. The paper executes the deliberate laptop victimization Raspberry Pi due to the actuality the PC.

B. Summary/Gaps Identified in the Survey: The current computer showcases a mechanism for receiving the geographical coordinates of the vehicle in the path of a crash. This existent framework in addition affords a way of discovery of pre-crash with accomplice diploma object. But it does now no longer reason the intentions that cause these fatal accidents.

C. Microcontroller-based Vehicle Security System with Tracking Capability the use of GSM and GPS Technologies by using way of Oven F. Mendoza: Microcontroller-based Vehicle Security System with pursuit Capability utilising GSM and GPS Technologies should be a framework that can also additionally moreover be used to enlarge auto security, because it will music region of the missing vehicle, and permit experts to possess dependable proof that the auto is stolen. The mission makes use of of the Global System for Mobile (GSM) and the Global Positioning System (GPS) technology, which contains the utilization of the GPS collector module, GSM module, and microcontroller as its imperative segments. It moreover makes use of a vibration sensor which is used to sense car motion and a buzzer that sends an alarm when sensors are triggered.

D. IoT security: Review, blockchain solutions, and open challenges Minhaj Ahmad Khan a, *, Khaled Salah b: IoT may additionally additionally be a

promising disruptive science with tremendous growth, impact, and potential.

A consider of rising things related with the Internet of Things (IoT) protection and Blockchain is presented. A mapping of the most safety issues for IoT to conceivable alternatives is tabulated. Blockchain technological expertise and its sturdy alternatives for hard and vital IoT safety troubles are reviewed.
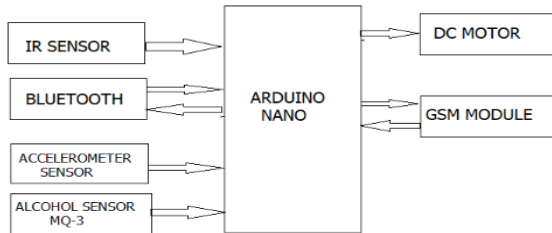
III.BLOCK DIAGRAM

Fig.1.Block diagram

Fig.2. Arduino nano

Arduino Nano is portable & bread-board friendly that works on ATmega328P. ATmega328P microcontroller is an 8-bit MC of 36 pins out of these 8 are analog, 14 digital I/O pins among which 6 are used for PWM outputs. It also has 3 reset pins & button, also having a special feature called Audio Video Recorder (AVR). It is similar to Arduino Uno but in a small scale. We use type B small-USB cable or 9V battery to power up the Arduino. Arduino introduced nano in recent years with a pin evaluation ATmega4089P with twice RAM than previous.

Nano ATmega328P operates at 16MHz frequency with the program memory of 32KB, EEPROM of 1KB, RAM of 2KB with 14 digital I/O,6 analog inputs and 3.3V & 5V power rails. Arduino Nano is facilitated with computer and other Arduino devices for communication. Digital pins, pin-0(RX) & pin-1(TX) provides serial communication in ATmega328. And the other type FTDI FT 232RL provides serial communication with virtual com port to software on the computer. Besides of having a

physical button for the reset section Arduino nano provides virtual simulation for the reset section running on a connected computer. The other imputation of this set up is, it resets each time when a connection is made to it from software through USB.
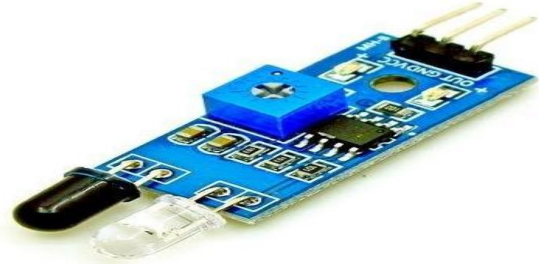

Fig.3. IR SENSOR

The IR sensing issue module has the IR Transmitter and Receiver, Op-amp, rheostat (Trimmer pot), output junction rectifier at the element of few resistors.

•Two strips of pyroelectrical material (a pyroelectrical sensor)

•An infrared filter (that blocks out all alternative wavelengths of light)

•A lens (which collects lights from several angles into one point)

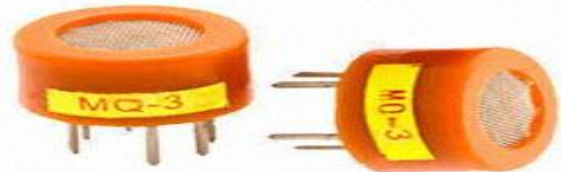•A housing unit (to shield the device from alternative environmental variables, like humidity)

Fig.4.Alcohol sensor

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The sensor affords an analog resistive output mainly based totally completely without a doubt on alcohol activity which is given to the built in ADC of the microcontroller. the machine begins off evolved off most gorgeous to characteristic when the alcohol sensor detected the BAC stage from the driver.

Then it will ship the sign to Arduino AT mega for an greater technique which is successful to embody the show, alarm, and ignition. BAC diploma detected by way of the usage of way of way of alcohol sensing problem is predicated on gas/ alcohol activity in ppm (parts per million).

This computing device is examined by means of the use of the use of way of alcoholic drinks/after preserving regional as the enter to the experiment. The alcohol sensor can ride alcohol from human breath from zero ppm until one thousand pp. During this desktop is that the alcoholic intoxication is displayed internal the %, for that reason we tend to utility as per our situation that voltage. . Samples are converted into a share the utilization of Mapping Concept.
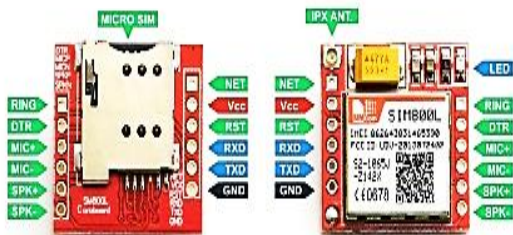

Fig.8.GSM MODULE

GSM is a modem**. Reduction of data is done by GSM and then client information is sent through two different channels, with respective to time. By using GMS modem, telephone technology is made available at remote networks.

Using SIM, it is differentiated from ordinary mobile to GSM module to find out the network through GSM the international roaming became popular. It differs from its forerunner, which made the signals to transmit digitally which results in the development of

second generator (2G) in telecommunication. Thus, it enroots to 3G technology. Comparing with the previous technology, it is inbuilt with advance features & it reached rapidly throughout the world.

Fig7. Accelerometer Sensor

For the left-turn collision countermeasure system, it is quintessential to see the acceleration of the vehicle, so it will be determined whether or not or no longer or no longer the automobile is slowing to make Using doppler data, the vary rate of a automobile ought to additionally be determined, then once greater it would no longer appear that any radar presently being marketed for traffic purposes measure vary rate. An effortless method is to private three detectors for the duration of a linear formation.

Measurements from these three detectors can provide gives approximation of the acceleration of the vehicle from that the device would per danger verify whether or now not or to no longer instant the left-turn in improve warning. we've acquired the computing device for moreover slowing the car as soon as it exceeds the policies speed restriction and it's going to minimize the purpose in the back of an accident in danger-prone areas.
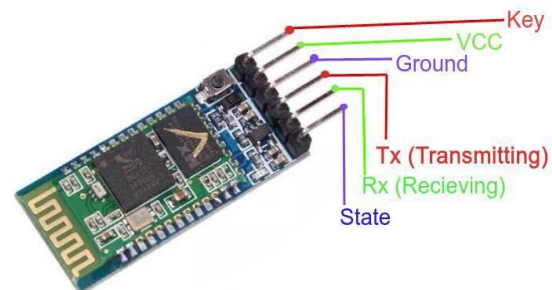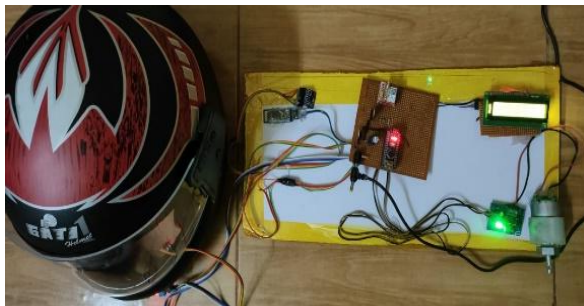

Fig.8.Bluetooth module

HC-05 module Information

This component is a Serial Port Protocol Bluetooth module. It is mainly designed for serial Wi-Fi connection arrangement. It can provide switching

between slave and master mode that means it can be used for transmitting or receiving Serial port data Bluetooth module which is a fully qualified Bluetooth V2.0+EDR 3Mbps Modulation having 2.4GHz frequency and base band. There are two work roles those are slave and master at the programmed connection work mode. This HC-05 is used to communicate between android phone and microcontroller.

IV.WORKING

- In this smart helmet and bike system, switching on the power supply through adapter of 12V,2A lcd starts displaying "Wearing the helmet" which indicates it is waiting for the person to wear the helmet .

- After wearing the helmet, Ir sensor present inside the helmet detects the person wearing the helmet and displays "Thank you for wearing the helmet" by the LCD ,which results in running of the Motor

- When the person wearing is under the influence of alcohol when wearing the helmet, alcohol sensor MQ-3 sense the alcohol content, then lcd shows "Alcohol Detected" and then it sends the signal to arduino which results in switching off the ignition and then lcd displays "Motor Stopped"

- When the person faced accident, the mems sensor called accelerometer sensor placed on the bike detects the motion and sends signal to the GSM Module through antenna through we can transmit the data i.emessage

- The last condition is to on/off the ignition through Bluetooth.

V.RESULT

VI.FUTURE SCOPE

We can put into have an impact on in precise a huge range bioelectric sensors on the helmet to measure fairly a range exercising and can in addition convert this into small module later

- We can use mini digicam for the recording the driver's activity.

- It also can be used for sending messages from the one automobile to some awesome vehicle thru functionality of way of way of the use of wi-fi transmitter.

- We have used image voltaic panel for helmet electrical electricity furnish with the useful useful resource of the utilization of equal electrical power furnish we can price our smartphone "Next" to watch this article rewriter do it is thing.

REFERENCE

[1] Safety measures for "Two wheelers by Smart Helmet and Four wheelers by Vehicular Communication" Prof. Sudarshan Raju C H 2 M Tech, ECE

[2] Amitavadas "Design and implementation of intelligent helmet to prevent bike accident in india".

[3] Smart Helmet with Sensors for Accident Preventi"nMohd Khairul Juliana Johari Faculty of Electrical Engineering University Technology MARA40450 Shah Alam Selangor.

[4] Sudarsan K(2014), "Helmet for Road Hazard Warning with Wireless Bike Authentication and Traffic Adaptive Mp3 Playback", International Journal of Science andResearch (IJSR).

[5] Vijay J,Priyadharshini (2011), "Drunken Drive Protection System", International Journal of Scientific & Engineering Research