

GPS and GSM Based Smart Helmet

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Abstract: A mishap is an unexpected, abnormal, and unintended outside activity that happens specifically time and spot. The carelessness of the driver is the main consideration for the mishap. The administration has made standards that rider should mandatorily wear the helmet and not devour liquor and drive. Still, the riders don't comply with the guidelines. Not wearing the protective helmet causes the rider head wounds which may prompt passing of the rider. So as to conquer this a savvy framework, the shrewd protective helmet is proposed, it recognizes the helmet and furthermore, the liquor present in riders breathe. There are various sensors to guarantee the helmet is on the head. The limit switch is set inside the protective helmet, which will identify whether the rider has worn the helmet or not, if not, at that point the bike won't begin. Savvy head protector band gives assistance if there should be an occurrence of mishap by utilizing GSM and GPS innovation. At the point when the information surpasses the least pressure limit then the GSM module naturally sends a message to rescue vehicles or relatives.

Keywords: Accelerometer, Microcontroller, Limit switch, Alcohol sensor, GPS, and GSM.

INTRODUCTION

Presently day bikers in our nation are expanding and street disasters are additionally expanding step by step. Numerous losses happen because of the carelessness of wearing head protector. The task makes obligatory to wear the head protector, if the individual met with a mishap, at that point in such circumstance a message alongside the area is sent to the emergency vehicle or relative to save him. The venture focuses on the knowledge security band giving attention to wearing a helmet and gives avoidance to human life wellbeing.

A mishap is said to be any vehicle mishap happening on an open thruway. These mishaps in this manner include collisions among vehicles and creatures, vehicles and walkers, or vehicles and fixed obstructions to reports the average mishaps every day in India are around 1600 and 550 individuals are passing on every day on account of street accidents. The primary driver of the street mishap is driven under the influence of alcohol and not wearing a protective

helmet. The utilization of a protective helmet by two-wheel riders is mandatory under the Motor Vehicle

Act. The act makes it a must for a rider to wear the head protector. [1]

The utilization of liquor diminishes convergence of the rider. It forestalls the rider's vision due to giddiness. Liquor cloud fears and impels the rider to go out on a limb. Every single above factor causes mishaps while driving and multiple times it demonstrates critical results. The danger of mishap pairs for each expansion of 0.05 blood liquor focus. To aggravate this issue Indian traffic authorities are not well furnished with the important types of gear required to check. There are laws to check tipsy drive and wear protective helmet however there is no fruitful execution of the law.

According to the motorcycle Act, two-wheeler driven by a smashed rider will be at risk for discipline from

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the outset offense for detainment for a term of a half year or with a fine which may broaden 2,000 rupees or both for a next offense. The law is exceptionally effective in the event that it is made compulsory, however, it is typically bombed because the hands of the concerned charge official are paid off. The tipsy driver is similar to a killer as he can't do his very own errands with no hazard and jeopardize. These are the two main reasons which inspire us to fabricate the Smart Helmet.[2], [3]

The undertaking point of the security and wellbeing of the bikers against street mishaps. A Smart Helmet is an extraordinary thought which makes driving more secure than previously, this is actualized utilizing GSM and GPS innovation. The other bit of leeway of this undertaking is to quantify the liquor level of tanked individuals who are riding a bicycle. We are building up an implanted unit or installed framework which will be put in Helmet comprise of certain sensors and electronic hardware which continuously checking and estimating the liquor level and state of the accelerometer. We measure the liquor level in and show it in the LCD show. At whatever point the liquor level crosses the predefined esteem the alert beginnings and we get warning about the drunken individual.

LITERATURE SURVEY

The exploration paper targets finding the event of any mishap and announcing the area of the mishap to the recently coded numbers with the goal that prompt assistance can be given by emergency vehicles or the concerned relatives. GSM innovation is utilized to imply the vehicle position as scope and longitude facilitate through SMS. The area spot is recovered utilizing GPS which is a navigational framework utilizing a system of satellite circling the earth. Sensors, for example, vibration, liquor and fire indicators recognize signal if there should arise an occurrence of a mishap event and send a sign to the associated microcontroller. The controller thusly works the transfer to sparkle the airbag and consequently lock the brakes. This paper gives a structure which has numerous advantages like ease, little size.

The (ITS) Intelligent Traffic System insight in both the roadway framework and in the vehicles with the

expectation of diminishing clog and environmental sway, and of improving traffic execution, by misusing the conveyed idea of the framework and by utilizing participation and coordination between the different vehicles and the different components of the roadside foundation. It includes traffic board frameworks, driver data frameworks, and vehicle control systems.

The Mechanized Highway Systems goes above and beyond than ITS and include total computerization of the driving undertaking. For better (organize wide) coordination of traffic exercises, it disseminate the knowledge between the vehicles and the side of the road infrastructure, Identified nine existing wellbeing improving ITS frameworks for cruisers. There are more eight developing advances at present in model structure, and a few extra frameworks have been depicted.

These have been talked about as far as the basic motorcycling wellbeing issues, in particular, loss of control crashes, numerous vehicle crashes, and extra factors, for example, conspicuity, liquor, and unlicensed riding. While a portion of these frameworks serves to address explicit security issues, for example, interlocks and liquor-related accidents, different frameworks will show comprehensive advantages over various accident types. [5]

Critically, this is one zone of ITS advancement that has shown a lot of development. An effective arrangement of vehicle mishap counteraction framework installed by liquor identifier. It comprises of PIC 16F876A as the primary controller, liquor sensor as the info and three yield, for example, start framework, LCD show, and alarm system. This framework can alarm the driver about the degree of tipsiness by shows the condition on the LCD. It likewise produces a caution from the signal to make the driver mindful their very own condition and too cautious others in the encompassing region. The most wellbeing component gave by this framework is the driver insignificant level of drunkenness isn't permitted to drive a vehicle as to the start framework and it will be deactivated. At last, this framework help to forestall the driver to drive in dangerous circumstance and will stay away from mishap happen.

This plan gives high entropy information bit during extraction, hence ensures the strength of created

mystery key adequate. Broad execution assessment exhibits that the proposed schemes beat the current arrangements as far as exceptionally productive mystery key generation. Helmet framework structured street risk cautioning given to the rider with remote bicycle verification and traffic adaptive mp3 playback. The principle point is to give insurance to bicycle rider and urge individuals to wear head protector and to forestall street mishaps and keep traffic-rules.

Mishap anticipation and Reporting System Using GSM and GPS, has been depicted in another paper. The exhibited framework incorporates SONAR extending modules, vibration sensor, three modules GPS receiver, Microcontroller, GSM modem and an Alarm. It empowers canny recognition of a mishap at wherever and reports about the mishap on the predefined number.

At the point when the separation is excessively short between the vehicle and impediment at that point caution will be "ON" as a pointer to move vehicle other way which is more secure however when a vehicle faces mishap regardless of caution, quick vibration sensor will distinguish the sign and Microcontroller sends the alarm message through the GSM model including the area to the predefined number. This gives a programmed mishap avoidance and detailed framework.

This paper presents a survey on the mishap identification procedures and some future potential outcomes in this field. The motivation behind the undertaking is to discover the vehicle and find the vehicle by methods for communicating something specific utilizing a framework that is put inside a vehicle. The undertaking is intended for vehicle mishap recognition and following framework by utilizing GSM and GPS.

METHODOLOGY

The protective helmet checks if the rider is flushed and driving. On the off chance that the rider is flushed, at that point, the start of the bicycle is stayed away from and the thus not letting the rider to ride the bicycle. In this framework, we utilize an Arduino microcontroller interfaced with a liquor sensor and it is utilized to screen the client's breathe and always sends signs to the microcontroller. The microcontroller on

experiencing liquor signal from the sensor and send the information to engine utilizing RF transmitter and we associate an RF receiver to the engine driver which stops dc engine to show as motor locking.[6]

The framework needs to limit switch to turn over the motor. If the liquor is identified the framework bolts the motor. The framework likewise communicates something specific expressing "Mishap happened" including the scope and longitude area of the occurrence utilizing GSM and GPS. It utilizes a vibration sensor to recognize a mishap. The transmitter part is associated with the helmet shown in figure 1.

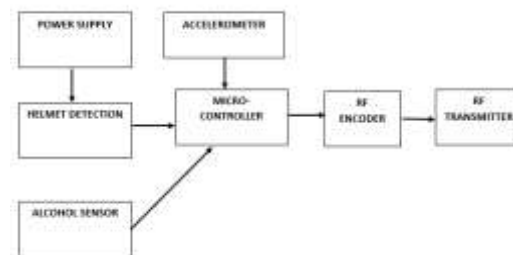


Fig.1: Block Diagram of Transmitter

Transmitter section:

The power supply is directly connected to the helmet detection unit as shown in figure 1. The Arduino microcontroller is used to control the accelerometer that monitors the changes in speed in the motorcycle engine. The alcohol sensor is connected to the microcontroller for sensing the alcohol of the rider. This microcontroller is directly associated with the RF encoder and then transmitter.[7], [8]

Receiver section:

In this section RF receiver is connected to the RF decoder that is directly associated with the microcontroller. Here microcontroller is connected to the ignition controller and smartphone alerting unit. The receiver section is shown in figure 2. This smartphone alerting comprises two parts: GPS & GSM. The receiver section is associated with the engine of the motorcycle.

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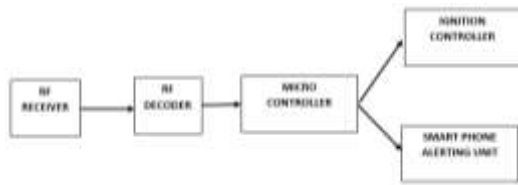


Fig.2: Block Diagram of Receiver

GPS:

The Global Positioning System (GPS) is a satellite-based route framework that sends and gets radio signs. A GPS receiver gets these signs and gives the client data. Utilizing GPS innovation, one can decide area, speed and time, 24 hours per day, in any climate conditions anyplace on the planet for free. GPS was officially known as the NAVSTAR (Navigation Satellite Timing and Ranging). Worldwide Positioning System was initially produced for the military. As a result of its well-known route abilities and in light of the fact that GPS innovation can be gotten to utilizing little, reasonable gear, the administration made the framework accessible for non-military personnel use.

GSM:

The GSM (Global System for Mobile communication) is an open, computerized cell innovation utilized for transmitting versatile voice and information administrations. GSM is an advanced cell phone framework that is broadly utilized in Europe and different places in the world. GSM utilizes a variety of Time Division Multiple Access (TDMA) and is the most generally utilized of the three computerized remote phone advances (TDMA, GSM, and CDMA). GSM digitizes and packs information, at that point sends it down a channel with two different surges of client information, each time permitting space. It works at either the 900 MHz or 1,800 MHz recurrence band. It bolsters voice calls and information move rates of up to 9.6 Kbit/s, together with the transmission of SMS (Short Message Service).

CONCLUSION

In this task, we built up a savvy head protector based framework that was effectively ready to distinguish

whether the rider as worn the helmet or not. It additionally sets an alert on the off chance that he has expended liquor past reasonable levels. By executing this task, a sheltered bike venture is conceivable which would diminish the head wounds during mishaps and decrease the mishap rate because of driving bicycles after expending liquor. The protective helmet may not be a 100% proof yet is unquestionably the primary line of a barrier for the rider if there should be an occurrence of a mishap to forestall deadly wounds. In this undertaking, we have effectively structured a keen helmet band utilizing GSM and GPS innovation. The undertaking made necessary of wear head protector to begin the start of the vehicle and keep in mind that riding if any abrupt change in speed happens, at that point accelerometer will screen the change and a short message with the area of the rider will be sent to the predefined number utilizing GSM module. This is where we discovered some answers to the issue of expanded passing proportion.

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