

Design Of Smart Helmet For Hazardous Events Using 8051

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Abstract: In today's fast paced life most of accidents happen due to drinking and driving. Most of the countries are forcing the motorists to wear a helmet; however rules are being violated by uncivilized citizens. In this paper Smart helmet is designed to reduce injuries in the accidents. Smart helmet contains sensors to detect condition of person and information send to the predefined mobile user if accidents are happened. So when the rider crashes and the helmet hit the ground, these sensors sense and gives to the microcontroller board, then controller data exceeds minimum stress limit then GSM module automatically sends message to ambulance or family members. This helmet uses simple cable replacement for wirelessly switching on a bike, so that the bike would not start without both the key and the helmet. Also, whenever the driver starts ignition, the alcohol sensor measures the content of the alcohol in his breath and automatically switches off the bike if he is drunken

KEY WORDS: Biker's safety, Accident detection, Smart helmet, Alcohol detection.

1. INTRODUCTION

A traffic accident is characterized as any vehicle mishap happening on open interstate streets. The prospect of building up this undertaking comes to benefit a few things towards the general public. Bike accidents are expanding step by step and lead to loss of numerous lives. The primary point of our task is to assemble a well being framework which is coordinated with the savvy protective cap and insightful bicycle to lessen the likelihood of bike accidents. On the off chance that any accident happens no people at spot where to offer data to the rescue vehicle or guardians. This is a circumstance we watch our everyday life, an idea of discovering some answer for purpose this issue concoct this thought of giving the data about accident at the earliest opportunity and in time. accident protector concentrating on three noteworthy applications which are useful in our everyday life. At first and most one is the start of the bicycle won't on in the event that we are not wearing the protective cap. Besides alcoholic driving is preposterous by utilizing this shrewd head protector. In the event that the rider is alcoholic, the bicycle won't begin. Third application is mishap discovery. On the off chance that individual met with a accident, nobody is there to support him and basically leaving or disregarding the individual, In such circumstance advising to emergency vehicle or relatives through portable to safeguard him for a degree. Different advancements are currently accessible for bicycle rider security. Remote

correspondence between bicycle to head protector and bicycle to traffic flag and speed breaker.

The framework will be contained a protective cap module including stereo speakers and mouthpiece, and a bicycle mounted base unit. The framework will make utilization of various remote correspondence conventions including ZigBee and other radio recurrence conventions. At the point when the rider or driver driving a bicycle he don't have a clue where the speed breakers are there. By utilizing RF innovation they will discover where the speed breakers are there. Brilliant Helmet with Sensors for Accident Prevention, the microcontroller utilized in the framework is Peripheral Interface Controller (PIC). Force Sensing Resistance (FSR) and the speed sensor are utilized as sensors to work this framework. Flag transmission between the two circuits is utilizing a radio recurrence idea. 315 MHz Radio Frequency Module is utilized since the range between the circuits is short. Disadvantage of this work as the bikes motor will just begin is the protective cap is worn and the belt has been clasped. A Solar Powered Smart Helmet with multi highlights.

In this head protector have multi highlights like Engine control framework with the keen, in manufactured Bluetooth framework, mishap ready framework, crisis ready switch (it gives the crisis message to police or relatives) and mobile phone accusing of the sun oriented power. Incidental Avoidance and Cabin Safety System for Automobiles. This framework persists fundamentally with two modules specifically Gas detecting module

and Obstacle discovery module these are interfaced with 8051 microcontroller. IR sensors transmit motion from its sensor head and again get the flag reflected from a snag and teach the microcontroller which cautions the driver with an alert and controls the vehicle by halting it.

The gas sensor here is mounted inside the vehicle identifies the dimension of the lethal gases it illuminates to the microcontroller which cautions the people inside the vehicle with an alert. Keen Helmet Using GSM Technology for Accident Detection and Reporting System, vibration sensors are set in better places of protective cap where the likelihood of hitting is more which are associated with microcontroller board. So when the rider crashes and the head protector hit the ground, these sensors sense and after that controller separate GPS information utilizing the and when the information surpasses least pressure limit then GSM module naturally sends message to emergency vehicle or relatives. Brilliant Helmet by Kajal Thakare, frameworks which are as of now actualized are utilizing different sensors, for example, FSR sensor, Alcohol sensor, Vibration sensor. At times for recognizing the street mishaps and finding the location GSM innovation is utilized.

The bioelectric sensors for checking Brain, Cardiac and Respiratory Activity. Thus shrewd head protector is a unique thought which makes bike driving more secure than previously. Liquor recognition by AbhinavAnand, for the most part to identify the liquor tanked people. MQ-3 sensors is utilized here to recognize the liquor content in the breath and if the rider is alcoholic the bicycle won't begin. Correspondence conceivable by utilizing RF module. Keen mishap ID and area show framework. This framework has been created and actualized utilizing the brilliant sensors and smaller scale controller based versatile innovation. In the event that the mishap happened, at that point this framework quickly transmit the area of the mishap and people heart beat status to the crisis care focus telephone number through SMS. Bicycle rider's wellbeing utilizing protective helmet. The framework configuration will be to such an extent that without wearing the head protector the rider can't begin bikes. The protective cap will be associated with vehicle key start frameworks which will be electronically controlled. accident For Indian Bike Riders, gives a great option in contrast to the current unplanned evasion procedures. These incorporate Hi-tech head protector and an electronic framework which can be connected in mechanical framework as bikes to maintain a strategic distance from accident on streets by impulse of wearing helmet.

2. LITERATURE SURVEY

Smart helmet sensor is a sort of defensive headgear utilized by the rider which makes bicycle driving more secure than previously. The primary motivation behind this location to give wellbeing to rider. This actualize by utilizing advance component like liquor recognition, mishap distinguishing proof, area following, use as a hands free gadget, sunlight based controlled, fall location. This makes accident protector as well as highlight of brilliant bicycle. Its mandatory to wear cap, without head protector start switch can't ON. An RF module as remote connection which ready to impart among transmitter and recipient. In the event that rider getting alcoholic it gets consequently start switch is bolted, and send message naturally to their register number with their present area. So when mishap happens, it will send message by GSM to enlist numbers with their present area by GPS module. It can use to get call while driving. The particular utility of venture is fall location, if the bicycle rider tumble from bicycle it will send message naturally. These are the three principle issues which spurs us for building up this undertaking.

The initial step is to recognize the unfortunate casualty is wear or not. On the off chance that protective cap is wear, at that point start will begin else it will stays off till head protector isn't wear. For these we use FSR sensor. The second step is liquor recognition. Liquor sensor is use as breath analyzer which distinguishes the nearness of liquor in rider inhale in the event that it is surpasses reasonable range start can't begin. It will send the message to enlist number. At the point when these two conditions are fulfilled then start will begin. The third fundamental issue is mishap and late therapeutic help. In the event that the rider met mishap with him he can't get therapeutic help in a split second, its integral explanation behind passing.

Around consistently beyond words to late restorative help or the mishap place is unmanned. In fall location, we place accelerometer at the bicycle unit. Because of these system we identify the mishap happens or not. The point of this venture is to make an insurance framework in a protective cap for a decent wellbeing of bicycle rider. The shrewd protective cap that we made is settled with sensors which go about as to recognize wear head protector or not. There are two distinctive microcontroller is utilized in this undertaking. Every unit has utilized a different microcontroller, for bicycle unit we use Arduino Lily cushion and for head protector unit we use ARM7 lpc2148. Flag transmission between the cap unit and bicycle unit is utilizing a RF idea.

Through this paper we mean to exhibit an enhancement in existing bicycle protective cap framework with speed sign. Framework is made progressively proficient with expansion of insight in term of fake vision utilizing small scale controller procedures to assess real vehicle circumstance. To accomplish this, the framework can transmit the data continuously likewise framework is sufficiently astute to give data which bicycle getting fast then GSM framework make an impression on government. So this framework similarity for client or rider and government who sets aside better choice each time for diminishing mishap extra the proposed work is an endeavor to Helmet.

Smart helmet is a sort of defensive headgear utilized by the rider which makes bicycle driving more secure than previously. The primary reason for this brilliant Helmet to give security to rider. It obligatory to wear Helmet without Helmet start switch can't ON. It comprises of RF transmitter and RF collector framework. As client wear Helmet RF flag emanate from transmitter and once these RF flag get detected by the set in the start switch of the bicycle. Bicycle will get begin. The venture is relied upon to enhance security and diminish mishap and confined the rapid by government particularly deadly to the motorcyclist. With the expanding purchasing intensity of normal man today the quantity of vehicle we are utilized however today's time, particularly in the youthful age, the fever of motorbikes is extremely amazing. The white collar class families like to purchase motorbikes more than four wheelers due to their low costs.

As the biker in our nation are expanding the street incidents are likewise expanding step by step because of which numerous passing's happen the vast majority of them are caused because of most basic carelessness of not wearing the Helmets and achieving the rapid. This inspires us to consider making a framework which guarantees well being of biker by making it important to wear helmet according to government rules. Introduced a framework on smaller scale controller based hardware is utilized with utilizing GSM (Global System for Mobile Communication) GSM perform two route correspondence with bicycle and rider utilizing GSM modem is utilized for sending SMS as on rider ordinary phone additionally the framework utilized alarm and stand sensor on the off chance that somebody attempt to bicycle take the alarm is ON regardless of whether client utilized fast around then GSM send the SMS to government to dodge a accident.

3. EXISTED SYSTEM

To beat this circumstance, a wellbeing framework has been implanted inside the "Keen Helmet" where a circuit will be put inside the head protector, without wearing which the bicycle won't begin. A liquor level locator is likewise present in the hardware. On the off chance that the rider has expended liquor the vehicle won't turn on. Additionally when a mishap happens a message will be sent to the pre-put away numbers. Regardless of the security rules made by the legislature, numerous riders neglect to submit to them. The riders in India regularly sidestep the prime principle of wearing the protective cap while riding bicycle. This prompts deadly wounds to the rider if there should be an occurrence of mishaps. Aside from manual checking, there should be a framework that could implement this standard upon the riders and consequently keep them from bypassing it.

Smart helmet protector which makes cruiser driving more secure than previously. This sharp helmet was executed by putting vibrations sensors in better places of head defender where the probability of hitting is more which are related with hawkishness board. This accident defender replaces the connection relationship for remotely trading on a bike, so the bike would not start without both the key and the top. A LED pointer is used to display the working of the model. The structure is a direct telemetry system, which is established with the help of a load that is associated with the interior side of the defensive top when the rider wears. Regardless, Existed system causes loss of life. There is no security in Existed structure.

4. PROPOSED SYSTEM

The below figure (1) shows the architecture of proposed system. In this system we use panic button, LCD display, vibration sensor, alcohol sensor, crystal oscillator, GSM and GPS, RS232 and motor. A Microcontroller is a VLSI IC that contains a CPU (Processor) close by some extraordinary peripherals like Memory (RAM and ROM), I/O Ports, Timers/Counters, Communication Interface, ADC, etc. The Intel 8051 microcontroller is a champion among the most outstanding extensively valuable microcontrollers being utilized today. The frenzy catches would be associated with an alert control board which sends a flag to the checking focus when a frenzy catch is squeezed. Liquor sensor used to identify liquor when driver drinking. Vibration sensors will be sensors for estimating, showing, and investigating direct speed, uprooting and vicinity, or increasing speed.

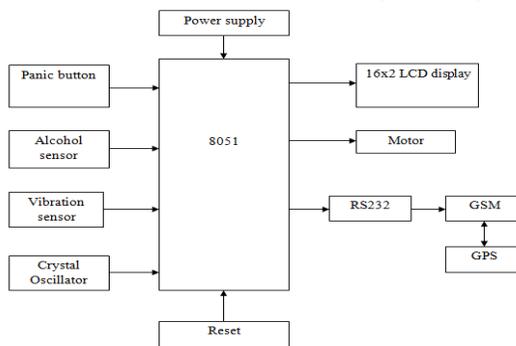


Fig. 1: PROPOSED SYSTEM

GSM (Global System for Mobile communication) is an open, propelled cell development used for transmitting adaptable voice and data organizations. GSM (Global System for Mobile communication) is an automated phone structure that is extensively used in Europe and distinctive parts of the world. GSM uses an assortment of Time Division Multiple Access (TDMA) and is the most comprehensively used of the three modernized remote telephone propels (TDMA, GSM, and CDMA). GSM digitizes and packs data, by then sends it down a channel with two unique surges of customer data, each intentionally space. It works at either the 900 MHz or 1,800 MHz repeat band. It reinforces voice calls and data trade speeds of up to 9.6 kbit/s, together with the transmission of SMS (Short Message Service). The Global Positioning System (GPS) is a space-based satellite course structure that gives territory and time information in each and every atmosphere condition, wherever on or near the Earth where there is an unhindered view capable pathway to somewhere around four GPS satellites. The structure gives essential abilities to military, normal and business customers around the world. In the proposed system the GPS module gives degree and longitude to the zone of the worker which can be pursued using versatile application.

A fluid precious stone showcase (LCD) is a slight, level introduction contraption made up of any number of shading or monochrome pixels showed before a light source or reflector. Each pixel contains an area of liquid valuable stone particles suspended between two direct anodes, and two polarizing channels, the tomahawks of furthest point of which are inverse to each other. Without the liquid valuable stones between them, light experiencing one would be blocked by the other. The liquid valuable stone breezes the polarization of light entering one channel to empower it to experience the other. A program must participate with the outside world using data and yield contraptions that talk about direct with an individual. A champion among the most notable

contraptions joined to a controller is a LCD appear. Presumably the most generally perceived LCDs related with the controllers are 16X1, 16x2 and 20x2 features. This suggests 16 characters for each line by 1 line 16 characters for each line by 2 lines and 20 characters for each line by 2 lines, exclusively. Various microcontroller contraptions use 'shrewd LCD' introductions to yield visual information. LCD demonstrates organized around LCD NT-C1611 module, are unassuming, easy to use, and it is even possible to convey a readout using the 5X7 spots notwithstanding cursor of the introduction. They have a standard ASCII set of characters and logical pictures. For a 8-bit data transport, the introduction requires a +5V supply notwithstanding 10 I/O lines (RS RW D7 D6 D5 D4 D3 D2 D1 D0). For a 4-bit data transport it just requires the supply lines notwithstanding 6 extra lines (RS RW D7 D6 D5 D4). Exactly when the LCD show isn't engaged, data lines are tri-state and they don't interfere with the undertaking of the microcontroller.

An oscillator gives a wellspring of dreary A.C. motion over its yield terminals without requiring any contribution (aside from a D.C. supply). The flag created by the oscillator is for the most part of steady plentifulness. The wave shape and adequacy are controlled by the structure of the oscillator circuit and decision of segment esteems. The recurrence of the yield wave might be settled or variable, contingent upon the oscillator plan. A power supply is an electrical gadget that provisions electric capacity to an electrical burden. The essential capacity of a power supply is to change over electric flow from a source to the right voltage, flow, and recurrence to control the heap. Thus, control supplies are once in a while alluded to as electric power converters.

Some power supplies are isolated independent bits of hardware, while others are incorporated with the heap machines that they control. Instances of the last incorporate power supplies found in work stations and hardware gadgets. Different capacities that control supplies may perform incorporate restricting

the flow attracted by the heap to safe dimensions, closing off the flow in case of an electrical blame, control molding to avert electronic clamor or voltage floods on the contribution from achieving the heap, control factor amendment, and putting away vitality so it can keep on fueling the heap in case of an impermanent interference in the source control (uninterruptible power supply). RS-232 (recommended standard 232) is a standard correspondence convention for connecting PC and its fringe gadgets to permit sequential information trade. This framework gives data about the accident to the rescue vehicle and relatives, so we have picked GSM innovation to give the data by sending a SMS. We are utilizing GSM module, which has a SIM card opening to put the SIM card and send a SMS. Sending a SMS alone can't support the driver, on the off chance that we send. We can't send a SMS just saying that a accident has happened. So we incorporate GPS area in the SMS, which we are sending with the goal that the emergency vehicle driver will have data about where and when the mishap has happened. For this we use GPS module to separate the area of the mishap, the GPS information will contain the scope and longitude esteems utilizing, which we can locate the precise position of the accident place. An alcohol sensor is appropriate for distinguishing liquor content from the breath. So it very well may be set just beneath the face resistance or more the extra face assurance. The outside of the sensor is touchy to different alcoholic fixations. It recognizes the liquor from the rider's breath; the obstruction esteem drops prompts change in voltage. So the wearing of head protector is affirmed by our framework and comparatively liquor sensor fitted in the visor of the cap distinguishes the liquor inside the breath and sends the measure of liquor to the controller.

5. CONCLUSION

In this paper, we developed a smart helmet based system which was successfully able to detect whether the rider as worn the helmet or not. It also sets an alarm if he has consumed alcohol beyond permissible levels. Apart from this, the system also monitors atmospheric pollution levels. This helmet protector can lessen number of street mishaps that happens each day. It guarantees the well being of the biker just as sends the injured individual's area to relatives and adjacent police headquarters. Additionally, demise rate can radically be diminished by executing this circuit as compulsory while driving and make everybody's life simpler and smoother. Rash riding is a menace in our present day society, which not only affects the rider but also others around him/her. With

the over speeding prevention feature an eye can be kept on all riders without direct human intervention.

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