INNOVATIVE BIKE (I BIKE)USING EMBEDDED SYSTEM

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INTRODUCTION

There has been a sharp rise in the total number of deaths that occur due to road accidents in the past few years. Reckless driving, ignorance of traffic rules and absence of a protective shield have been some of the most important reasons for these deaths. The driver must have a line of defence in case an accident occurs. A survey performed in India confirmed that there were a total of 134513 deaths due to road accidents in India in the year 2014. The Number increased to 142485 in the year 2011. An analyses of the road

accidents, injuries and deaths in India from 2002-2009 is very high. Accidents involving two wheelers are more dangerous due to the absence of protective guards like air bags and the direct interaction of the user with the environment. It becomes utmost essential for the user have a line of defence in case

they encounter an accident. Fatal injuries to the brain are an important reason behind deaths due to the road accidents.

In this project, to prevent the drive bikes without wearing helmet and control the maximum two persons only sit on the bike seat by using embedded system technology. And also we are using LDR sensor device for automatic controls the night time DIM and DIP light system. Now we are adopting this setup using PIC16F877A microcontroller in embedded system. So we need the program to control the function of full bike system. This project must be in such a way that when bike's IGNITION KEY IN OFF condition that time bike in OFF mode and no operation executed. Otherwise when bike's IGNITION KEY IN ON condition that time bike in ON mode and monitored in LCD display as KEY ON. At that time if a rider (person1) wear HELMET and sits on the bikes seat. In these conditions only satisfy the process for start the bike engine. Here we will discuss some condition is after wearing helmet and sit on seat by rider(person1) continuously another one person only sits on the

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same seat in bike. Suppose three persons same time sits on seat, automatically bike Engine will be go to OFF mode. And the main operation of automatic light control is executed by LDR sensor device. Here vehicle running in night time on the road side, opposite side vehicles produce some unwanted light signal like over light signal from their light dooms. That time our LDR sensor circuit automatically produce the same head light or unwanted light signal from our project vehicle. In this way of process we must prevent from more number of accidents.

Embedded C

Looking around, we find ourselves to be surrounded by various types of embedded systems. Be it a digital camera or a mobile phone or a washing machine, all of them has some kind of processor functioning inside it. Associated with each processor is the embedded software. If hardware forms the body of an embedded system, embedded processor acts as the brain, and embedded software forms its soul. It is the embedded software which primarily governs the functioning of embedded systems.During infancy years of microprocessor based systems, programs were developed using assemblers and fused into the EPROMs. There used to be no mechanism to find what the program was doing. LEDs, switches, etc.

were used to check correct execution of the program. Some 'very fortunate' developers had In-circuit Simulators (ICEs), but they were too costly and were not quite reliable as well.

As time progressed, use of microprocessor-specific assembly-only as the programming language reduced and embedded systems moved onto C as theembedded programming language of choice. C is the most widely used programming language for embedded processors/controllers. Assembly is also used but mainly to implement those portions of the code where very high timing accuracy, code size efficiency, etc. are prime requirements.Initially C was developed by Kernighan and Ritchie to fit into the space of 8K and to write (portable) operating systems. Originally it was implemented on UNIX operating systems. As it was intended for operating systems development, it can manipulate memory addresses. Also, it allowed programmers to write very compact codes. This has given it the reputation as the language of choice for hackers too.

As assembly language programs are specific to a processor, assembly language didn't offer portability across systems. To overcome this disadvantage, several high level languages, including C, came up. Some other languages like

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PLM, Modula-2, Pascal, etc. also came but couldn't find wide acceptance. Amongst those, C got wide acceptance for not only embedded systems, but also for desktop applications. Even though C might have lost its sheen as mainstream language for general purpose applications, it still is having a strong-hold in embedded programming. Due to the wide acceptance of C in the embedded systems, various kinds of support tools like compilers & cross-compilers, ICE, etc. came up and all this facilitated development of embedded systems using C.

LITERATURE SURVEY
Piezo Electric in Vehicle

The piezoelectric material converts the pressure applied to it into electrical energy. The source of pressure can be either from the weight of the moving vehicles or from the weight of the people walking over it. The output of the piezoelectric material is not a steady one. So a bridge circuit is used to convert this variable voltage into a linear one. Again an AC ripple filter is used to filter out any further fluctuations in the output. The output dc voltage is then stored in a rechargeable battery. As the power output from a single piezo-film was extremely low, combination of few Piezo-films was investigated. Two possible connections were tested - parallel and series connections. The parallel connection did not show

significant increase in the voltage output. With series connection, additional piezo-film results in increased of voltage output but not in linear proportion. So here a combination of both parallel and series connection is employed for producing 40V voltage output with high current density. From battery provisions are provided to connect dc load. An inverter is connected to battery to provide provision to connect AC load. The voltage produced across the tile can be seen in a LCD. For this purpose microcontroller PIC16F877A is used. The microcontroller uses a crystal oscillator for its operation. The output of the microcontroller is then given to the LCD which then displays the voltage levels by using this concept we used the seating arrangement in the two wheeler.

The Helmet

The helmet was a normal driving helmet that had been instilled with 4 infra-red sensors that were connected to an Atmega 16 development board. This development board also had a CC-2500 wireless receiver/transmitter attached to it. The Atmega16 was the brain of this section of the setup and was concerned with the transmission of messages to the receiver part as soon as the helmet is worn by a human being. A MAX-232 IC is used for conversion of data to RS-232 protocol. We developed a prototype for our proposed solution.

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The prototype consisted of two parts. The protective guard or the helmet that was worn by the people that were sitting on the two wheeler and the receiver section that initiated motion as soon as the helmet was worn by the user. The main idea behind our proposal was to prevent a driver from riding a two- wheeler unless he/she does not wear a helmet.

Photoresistor

Most often used to indicate the presence or absence of light to measure the light intensity. In the dark, the resistance is very high, sometimes up to 1m ohm, but when the LDR sensor is exposed to light, the resistance drops dramatically, even down to a few ohms, depending on the light intensity. LDRs have a light sensitivity that varies with the wavelength of the light applied and are non-linear devices. They are used in many applications but are sometimes made obsolete by other devices such as photodiodes and phototransistors. The sensitivity of photo resistor varies with the light wavelength. If the wavelength is outside a certain range, I will not affect the resistance of the device at all. It can be said that the LDR is not sensitive in that light wavelength range. Different materials have different unique spectral response curves of wavelength versus sensitivity. Extrinsic light dependent resistors are generally designed for longer wavelength of light, with a tendency towards the infrared. When working in the IR range, care must be taken to avoid heat build-up, which could affect measurements by changing the resistance of the device due to thermal effects.

EXISTING SYSTEM

Olden days two wheelers are controlled by the manual mode of operation like kick starter for engine, manual switch for dim and dip head light control. These system only presented on old version of vehicles. And these olden vehicles are not interfaced with helmet system and seat sitting system. This type of vehicle's no co-operate with government traffic rules like wearing helmet and more than two persons sit on seats. And also nowadays some advanced system used in two wheelers. These system contains added some features over olden vehicle systems. That's nothing but the self-starter for engine control, and manual mode of kick starter. Here also system not interfaced with helmet system and seat sitting system. This type also no co-operate with government traffic rules like wearing helmet and more than two persons sit on seats.

In these two type of two wheeler systems also not interfaced auto mode for night time Dim and Dip of two wheeler head light. But in our future proposed systems contained notification of helmet wearing logic, seat sitting concept

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and automatic head light control of Dim and Dip.

PROPOSED SYSTEM

In this project, to prevent the drive bikes without wearing helmet and control the maximum two persons only sit on the bike seat by using embedded system technology. And also we are using LDR sensor device for automatic controls the night time DIM and DIP light system. Now we are adopting this setup using PIC16 F877A microcontroller in embedded system.So we need the program to control the function of full bike system. This project must be in such a way that when bike'sIGNITION KEY IN OFF condition that time bike in OFF mode and no operation executed. Otherwise when bike's IGNITION KEY IN ON condition that time bike in ON mode and monitored in LCD display as KEY ON. At that time if a rider (person1) wear HELMET and sits on the bikes seat. In these conditions only satisfy the process for start the bike engine. Here we will discuss some condition is after wearing helmet and sit on seat by rider(person1) continuously another one person only sits on the same seat in bike. Suppose three persons same time sits on seat, automatically bike Engine will be go to OFF mode. And the main operation of automatic light control is executed by LDR sensor device. Here vehicle running in night time on the road side, opposite side vehicles produce some unwanted

light signal like over light signal from their light dooms. That time our LDR sensor circuit automatically produce the same head light or unwanted light signal from our project vehicle. In this way of process we must prevent from more number of accidents.

PROJECT DESCRIPTION

Working Principle

In our projects contains the operation for fully controlled and safety. These operation deeply given below. When two wheeler system on stage, that time only possible for our main project operations. From fig 2.1 firstly started the ignition key switched ON condition our project is activated by the microcontroller unit. If the Key is ON condition all other steps are possible, otherwise two wheeler system an OFF condition. In Key ON condition followed by the step is Helmet wearing concept. Here main condition is driving person (1st person) must wear Helmet device. Because bike rider must wear helmet by according to the traffic rules. So after ignition Key On condition, helmet must wearied by the rider (1st person). And the main think in our project is avoiding over load of persons sit on bike seat. Here maximum two persons only possible for sitting on bike seat system. If more than two persons sits on seat system, automatically bike Engine system goes to OFF mode condition.

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Otherwise bike Engine system in ON condition. In this project followed by the steps of Key ON condition, wear Helmet device by the rider and seat sitting concept. Any one step will be stopped in between the conditions by rider or other persons Engine automatically goes to OFF mode of operation. Another main concept of our project is automatic DIM and DIP light control of head light system for night time travels'. This auto operation of light system controlled by the LDR sensor unit.In these section operated only by the night time travel. Here operation start by the switch button of head light system. When travelling at the night time by bike, opposite vehicle's or other two wheeler's head light are produced an unusable or unwanted light signal.
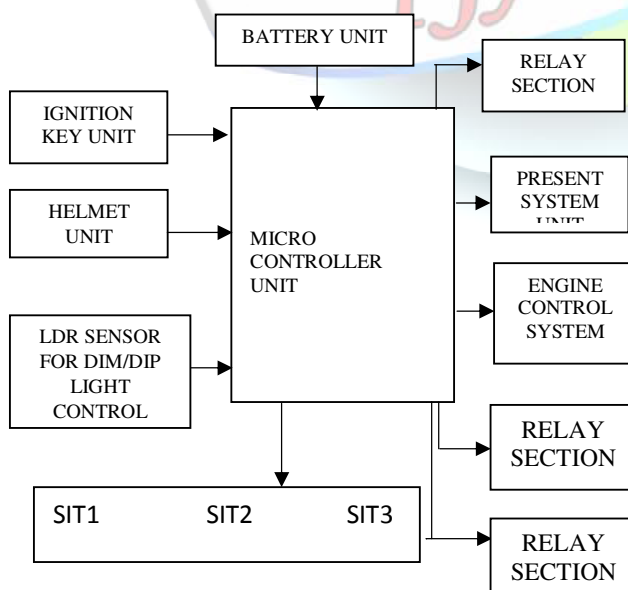
BLOCK DIAGRAM
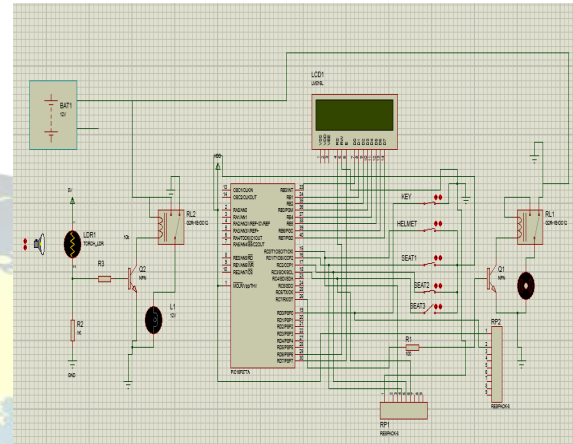

Fig . Block Diagram of I Bike

CIRCUIT DIAGRAM

Fig. Circuit Diagram for I Bike

CONCLUSION AND FUTURE ENHANCEMENT

CONCLUSION

A seating arrangements may not be a full proof but is definitely the line of defence for the rider in case of an accident. Because it ensures that, the three persons sits at the time on seat automatically bike engine will be go to OFF mode and the main operation of automatic light control is executed by LDR sensor device. It produce some light signals from their dooms in the night time. Our proposed approach makes it mandatory for the rider to use this
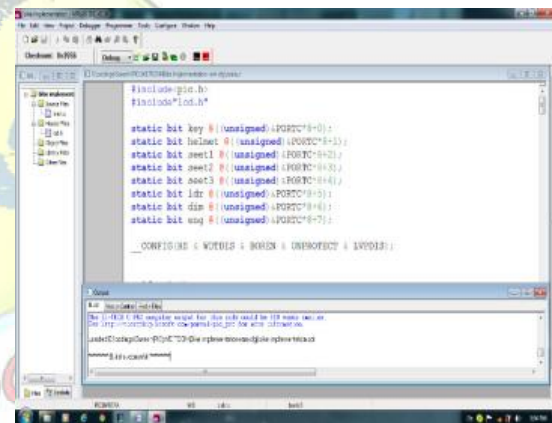
protective guard in order to drive a two-wheeler vehicle. This system ensures the safety of the human brain and therefore reduces the risks of brain injuries and deaths. Therefore it is extremely vital for the people on a two wheeler. In this way of process we must prevent from more number of accidents.
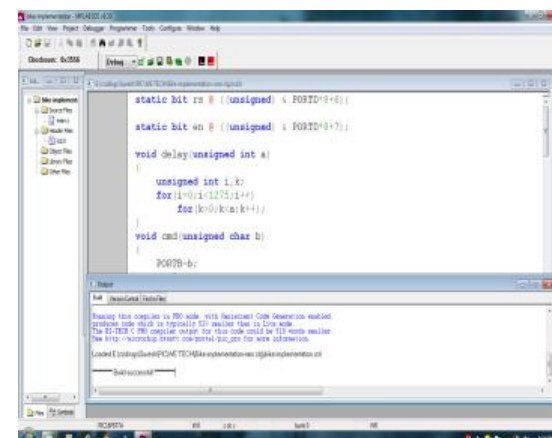
FUTURE WORK

Our project is only interfaced with two wheeler system. So we will need to introduce many innovative ideas for future development of two wheeler system like RF communication for Helmet unit, finger print based security system, auto removal side stand and notification of drunk and drive to police station. Firstly we will able to interface the RF wireless system with Helmet unit and two wheeler system. Here RF transmitter fixed on the helmet setup and RF receiver unit placed on the two wheeler system. When RF receiver (on bike) received a RF signal from the RF transmitter(on Helmet),that time only vehicles Engine goes to ON mode operation otherwise OFF mode.
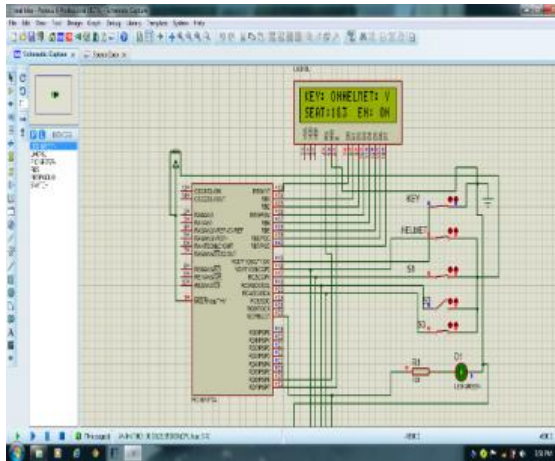
Finger print technology is most important one in biomedical security system. Here we will add these technologyfor security purpose. If presented finger is yours, automatically Engine will ON mode

otherwise OFF mode and unauthorized message will send to your own mobile number using GSM technology.Auto side stand system is one of the most important for two wheeler safety system. Here automatic side stand operated by the dc motor device controlled by the microcontroller. When ignition KEY is ON condition that time side stand automatically removed otherwise (OFF condition) side stand putted around the ground surface.

Experimental Results.

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