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### Elegant helmet using IOT

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#### ABSTRACT

The foremost goal of our project is accident discovery, notification and expectation. This helmet makes rider to feel comfy as well as with high safeguard and security. A elegant helmet is a special idea which makes motorcycle driving safer than before. This is implemented using GSM and GPS technology. Vibration sensors are placed in different places of helmet where the prospect of thumping is more which are connected to microcontroller board. It sends information of the consequent location to family members, nearby police station and hospitals of the rider and emergency contact number. Alcohol sensors sense the alcoholic content in riders breath. If the rider is not wearing the helmet or if there is any alcohol content found in rider's breath, the bike remains off. The bike will start until the rider wears the helmet and if there is no alcoholic content there.

**Keywords:** Vibration sensors, GSM, GPS, Alcohol Sensor, Bike, Helmet, Microcontroller.

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#### INTRODUCTION

The main endeavor of our project is to build a wellbeing system which is included with the smart helmet and intelligent bike to condense the prospect of two-wheeler accidents. If any accident occurs no persons at place where to give information to the ambulance or parents or nearby police station. Sensors is a device, component or a subsystem whose principle is to detect events or changes in its environment and send the in sequence to other

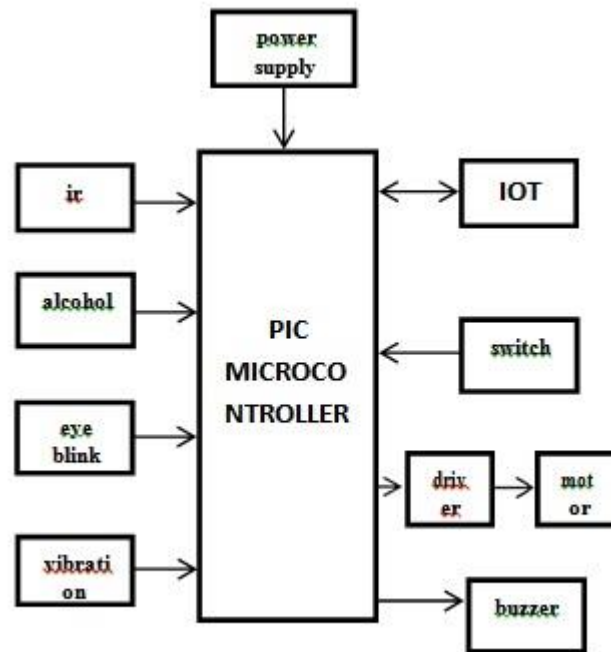
electronics, habitually a computer processor. Flush if the helmet falls accidentally, the GSM will send messages to the emergency contacts instantly, GPS shows only latitude and longitude position but not visual representation. This helmet overcomes these drawbacks by sending visual images of the location where the person met with the misfortune with the exact position of latitude and longitude and this will be customary by his/her contacts. So it gives clear outlook to save the person.

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## ARCHITECTURE DIAGRAM



### Description of Architecture IOT

The Internet of things (IoT) is the network of day by day bits and pieces physical things embedded with electronics, software, sensors, and connectivity enabling data barter.

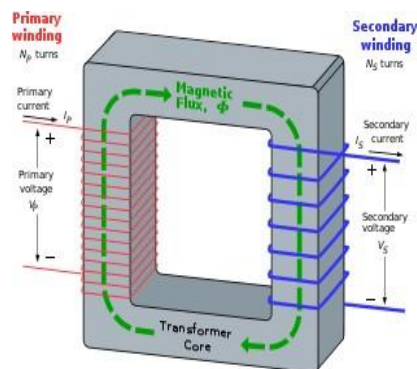
Basically, a diminutive networked computer is attached to a thing, allowing information exchange to and from that thing. Be it light bulbs, toasters, refrigerators, flower pots, watches, fans, planes, trains, automobiles, or anything else roughly you, a little networked computer can be combined with it to accept input (especially object control) or to

congregate and engender informational output (typically object status or other sensory data).

### Power Supply

#### Transformer

The prospective transformer will step down the power supply voltage (0-230V) to (0-6V) level. Then the derivative of the potential transformer will be connected to the meticulousness rectifier, which is constructed with the help of op-amp. The advantages of using meticulousness rectifier are it will give peak voltage output as DC, rest of the circuits will give only RMS output.



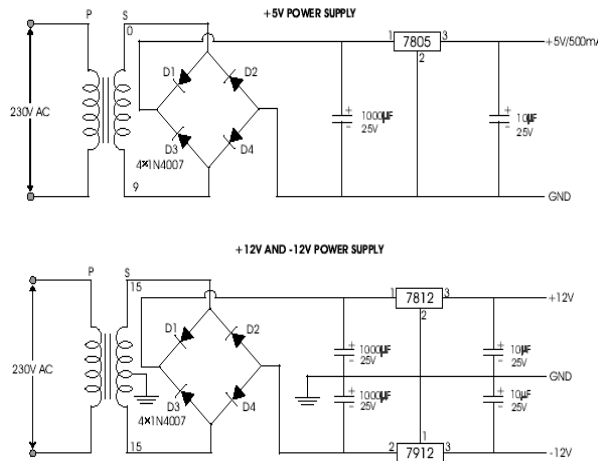
**Bridge rectifier**

When four diodes are allied as shown in figure, the circuit is called as bridge rectifier. The input to the circuit is applied to the obliquely contrary corners of the network, and the output is taken from the lingering two corners. Let us assume that the transformer is working properly and there is a positive prospective, at point A and a negative potential at point B. the positive prospective at point A will forward bias D3 and reverse bias D4. The negative potential at point B will promote bias D1 and reverse D2. At this time D3 and D1 are forward prone and will allow current flow to pass through

them; D4 and D2 are reverse predisposed and will block current flow.

**IC voltage regulators**

Voltage regulators consist of a class of widely used ICs. Regulator IC units be full of the circuitry for reference spring, comparator amplifier, control device, and overload protection all in a single IC. IC units make available regulation of either a fixed positive voltage, a fixed off-putting voltage, or an adjustably set voltage. The regulators can be selected for operation with load currents from hundreds of milli amperes to tens of amperes, analogous to power ratings from milli watts to tens of watts.



**Alcohol Sensor**

Alcohol Sensor for use in Breathalyzer’s or in an alarm unit, to spot the presence of alcohol vapors. This sensor unit offers very high sensitivity, unified with a fast rejoinder time. The unit will work with a

simple drive circuit and offers excellent firmness with long life. When all the acetic acid is cleared out of the FUEL CELL, the instrument is ready to scrutinize another sample.



## DC Motor

A Direct Current motor is premeditated to run on DC electric power. Examples of untainted Direct Current designs are Michael Faraday's homopolar

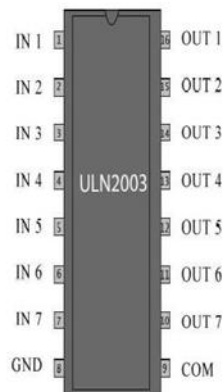
motor (which is not frequent), and the ball bearing motor, which is (so far-flung) a originality.



## Driver Circuit

The ULN2003 is a monolithic lofty voltage and high current Darlington transistor arrays. It consists of seven NPN Darlington pairs that attribute high-voltage outputs with common-cathode hold tightly diode for switching inductive loads. The collector-

current mark of a solo Darlington pair is 500mA. The pairs may be paralleled for higher current capability. Applications embrace dispatch drivers, hammer drivers, lamp drivers, display drivers (LED gas discharge), line drivers, and judgment buffers.



## Embedded C

### About Embedded C

Advanced language programming has long been in use for embedded-systems development. On the other hand, assembly programming still prevails, particularly for digital-signal processor (DSP) based

systems. DSPs are time and again programmed in assembly language by programmers who know the processor architecture surrounded by out. The key motivation for this carry out is performance, despite the disadvantages of assembly programming when compared to high-level language programming.

## Eye Blink Sensor

The eye-blink sensor works by light up the eye and/or eyelid area with infrared light, then monitoring the changes in the reflected light using a phototransistor and differentiator circuit. The exact functionality depends greatly on the positioning and aiming of the emitter and detector with respect to the eye. The sensor at the eye will consent to the user to control communication devices.

The Eye Blink switch requires one 9V battery. Alkaline batteries are recommended because they last longer. Do not use rechargeable batteries since they supply minor voltage and the unit may not perform as well. To entrée the battery compartment, you will need to slide the cover off on the back of the unit. Install the 9v battery into the compartment. Then simply slide the cover back on.

## GPS

Difference sandwiched between them is that a dial-up modem sends and receives data all the way through a fixed telephone line while a wireless modem sends and receives data through radio waves.



## GSM Modem

A GSM modem is a wireless modem that machinery with a GSM wireless network. A wireless modem behaves like a dial-up modem. The most important

## Magnetic Buzzer (Sounder)

Buzzers approximating the TMB-series are magnetic audible signal devices with built-in oscillating circuits. The construction combines an oscillation circuit entity with a detection coil, a drive coil and a magnetic transducer. Transistors, resistors, diodes and other diminutive devices act as circuit devices for driving sound generators. With the application of voltage, current flows to the drive coil on most important side and to the detection coil on the secondary side. The amplification circuit, plus

The working of GSM modem is based on commands, the guidelines always start with AT (which means Attention) and finish with a <CR> temperament. For example, the dialing domination is

ATD<number>; ATD3314629080; here the dialing command ends with semicolon.

The AT guidelines are given to the GSM modem with the help of PC or controller. The GSM modem is successively interfaced with the controller with the help of MAX 232. At this point max 232 acts as driver which converts TTL levels to the 232 levels. For serialized interface GSM modem requires the signal based on RS 232 levels. The T1\_OUT and R1\_IN pin of MAX 232 is connected to the TX and RX pin of GSM modem.

## Alarm

The Global Positioning System (GPS) is a U.S. space-based global navigation satellite system. It provides steadfast positioning, navigation, and timing services to worldwide users on a unremitting basis in all weather, day and night, anywhere on or in the vicinity of the Earth.

the transistor and the feedback circuit, causes vibration. The oscillation current excites the coil and the unit generates an AC magnetic field corresponding to an oscillation frequency. The oscillation commencing the intermittent magnetization prompts the vibration diaphragm to vibrate up and down, generating buzzer sounds through the resonator.

## EXISTING SYSTEM

A foremost cause of the fatalities happen because either the person was not wearing a helmet, or his mishap was not informed in time, and he could not be saved because of the postponed permission to a hospital, or because he was equine while drunk.

## PROPOSED SYSTEM

The main foundation of death in two-wheeler drivers is over moving and inconsiderate driving. Number of breathes could have been saved if substitute medical service could get accident evidence and reach in time to the scene. Up to 80% of all deaths occur within the first one hour of impact. Thus, in this critical phase of time, if proper aid reaches the fatalities, mortality rates can be concentrated.

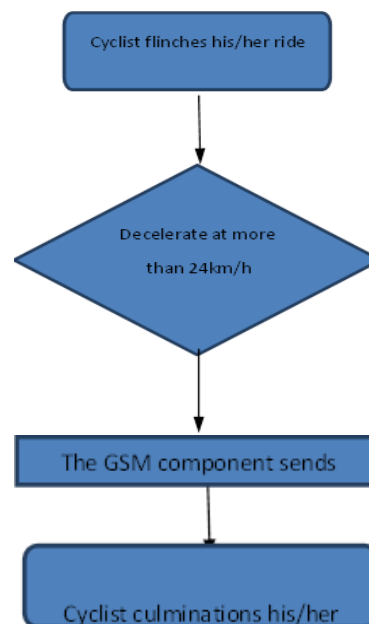
## IMPLEMENTATION

The hardware and software requirements and the work flow of the Intelligent Helmet are described here.

## SYSTEM WORK FLOW

The flowchart shown in Fig illuminates the workflow of the system. The provision wears the

helmet. When the helmet is threadbare, the IR sensor distinguishes an obstacle and gives LOW output. The alcohol sensor determines the alcohol comfortable in the rider's breath, and Gradient of the helmet is measured by the accelerometer. All these instrument outputs are sent as input to the microcontroller. The microcontroller progressions the data and sends it to the module on the bike via RF module consisting of RF bringer and RF receiver. The earpiece conducts the data to the microcontroller on the bike module. If the IR sensor is LOW, it denotes that the helmet is worn and hence the bike will run slickly else it will not allow the bike to start. If alcohol contemplation is more than the groundwork, it will not allow the bike to start else the bike will run efficiently. If the tilt of the bike and the helmet is zero with veneration to ground then it will compartment an SMS to the Police station.



## CONCLUSION

The present situation in our country we are not using the type of two wheelers and this technology. To reduce the physical efforts and human errors, we need to have some kind of automated system monitoring all limitations and functioning of the connections between the two wheeler personnel and

the parents. The elegant helmet system with progressive alcohol distinguishing including GSM and GPS technology is used to authenticate with bike to unlock the ignition of the two wheeler. The life of the rider on two wheelers can be saved from the road accident with standard protection with safety features.

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