

# A SMART INTELLIGENT AND PROTECTION SYSTEM FOR AUTOMOBILES USING WIRELESS SENSOR NETWORK

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## ABSTARCT:

The venture objectives in designing an automobile to vehicle protection using zigbee wi-fi conversation. Basically motors has were given lot of issues while using times because of many inconvenience ,this tool has designed to offer automobile to vehicle protection at the usage of time, definitely so we are able to provide greater safety to the motors in lots of processes.This device has a couple of sensors (like drowsyness, alcohol, pace restrict switches, and so forth) constant at the automobile dashboard, additionally zigbee, GSM and GPS systems placed into the automobile. So that we're in a function to expose and automobile control of automobiles ignition even as any volatile situation occurs and the popularity gets owner immediately thru GSM Message together with region. These automobile emergency scenario can update to shut with the useful resource of cars routinely the usage of zigbe conversation, if you want to help them at volatile conditions. Zigbee is a PAN era based totally completely on the IEEE 802.15.Four elegant. Unlike Bluetooth or wi-fi USB gadgets, Zigbee gadgets have the capacity to form a mesh network among nodes. Meshing is a kind of daisy chaining from one device to some other. This approach lets in the quick variety of an person node to be elevated and improved, overlaying a miles big area. This Project is largely on an virtual tool which can be used on the time of emergency on the identical time as the use of a car .It has embedded the concept of wireless verbal exchange i.E. Zigbee and GSM and masses of various sensors with the aid of way of the help of which at once help may be introduced to the person who has met with an coincidence .The common form is based totally at the ARM7 microcontroller. Research content material makes use of the era of Zigbee for the transmission of message to the alternative vehicle within the time of need in their help in addition to for serving the possible of relaxed and sound the usage of the capabilities like drivers alcohol detection, vehicle pace slowing and automated vehicle lock with collision detection is used. The GPS is also getting used proper right here for locating the proper automobile place actually so it is able to be located if misplaced.

## INTRODUCTION

Wireless sensor network mote [1] is a tiny device which usually consists of a low cost-sensor module, a microprocessor module and a communication module, and provides a powerful consortium of distributed sensing, computing and communication. These modules can rapidly and easily be deployed to collect, process, and transmit information. The wireless sensor networks can be applied to many field areas [2- 3] such as environmental monitoring [4], surveillance

[5], smart home [6], agricultural [7], child education [8], emergency medical care with mobile device [9], etc Internet of things (IOT) has become a hot issue of global concern, and people constantly put the equipment and appliances that can be associated into the network. It is also considered as one of the most significant technological innovations after the Internet. With the continuous development of Internet of things, smart home (digital home) based on it has got more attention in the world [1]. European Union in 2005 proposed “European information society strategic plan i2010-Initiative” which made the goal clearing that “Create a single European information space, improve digital communication technology research investments, and improve people's quality of life and national public services by the use of digital communications technology” [2]. In 2009, USA launched “National Broadband Plan,” which aimed to provide nationwide cable TV, high-speed Internet access, and telephone services for home user. Japan proposed “U-Japan strategy,” which establishes “ubiquitous information network” to provide more convenient way for public network information services. Smart home is studied to be smarter [3]. In China, several plans have been proposed, such as “Modern service industry technical support system and application demonstration project,” “Next Internet generation demonstration application project,” “Digital cable project,” and so on [4]. Smart vehicle space [5] and smart classroom [6] are limited in the space. Smart home is a platform of building [7], network appliances [8], communication [9], appliances automation [10], telemedicine, home office, entertainment, and other functions [11]. It provides a safe [12], convenience [13], energy saving [14], and friendly living environment [15], which includes system, structure, service, and management. Biometric access control is considered in smart home [16]. Secure wireless monitoring and control systems are studied [17]. Nowadays digital home systems within the family network are usually used by a single network, and it has a lot of limitations. Service gateway is important for smart home [18]; it should be adaptive [19]. Varieties of consumer electronics devices have to be accessed. As extensive sensors network and multimode control devices accessing, it required a gateway platform which can efficiently process varieties of protocols and heterogeneous data. In addition, the use of technology now also has its shortcomings. Wireless technology will produce radiation, unstable performance, message leaking, and so on. Wired technologies within the family will cause inconvenience of installation. Power line carrier (PLC) technology [20] has the technology of wired and wireless technology, not only stability, but also safety. Power line communication [21] and its application in smart home [22] are studied. However, as extensive devices and sensors are linked to home platform [23], the old PLC protocol X10 is not fit for the advance of smart home. In order to overcome the shortcoming of X10 protocol, a new power line carrier protocol is proposed in this paper. It supplements and expands X10 protocol to accommodate large amount data transmission, and it increases centralized control modes and reduces control data frame size. ZigBee network is used in information collection [24], which can also be used for home automation system [25] and energy management system [26]. In our study, smart home is designed based on intelligent digital home gateway and PLC-power line communication technology is designed as main family inner network. Intelligent gateway is based on embedded platform, which is the core part of digital home. It has a unified controller, protocol conversion, data processing, and other functions. Internet networks for personal computer, mobile phone, and mobile devices are used as external network, so it meets the requirement to connect anywhere.

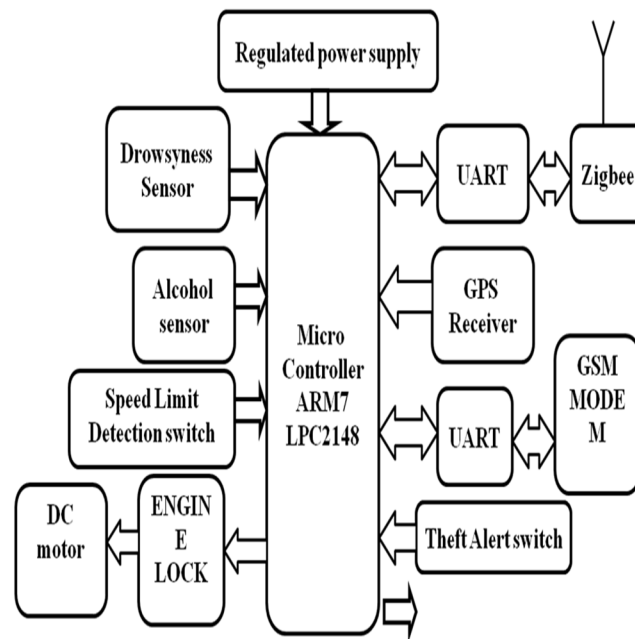
## EXISTING SYSTEM

This mission is designed to inform approximately an twist of destiny that happened to a vehicle to the own family individuals of the travelling people. This project makes use of a piezo-electric powered sensor which could discover the abrupt vibration while an twist of destiny is came about. This sends a signal to microcontroller. This Project offers an automatic automobile twist of destiny detection tool the use of GPS and GSM modems. The device may be interconnected with the car alarm device.

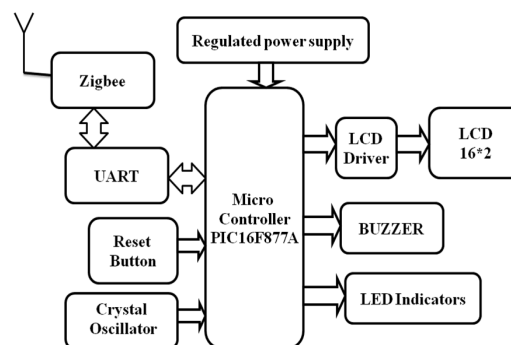
## PROPOSED SYSTEM

This Project gives an automated automobile twist of fate detection machine using GPS and GSM modems. The gadget may be interconnected with the Alcohol detection, and alert the owner on his mobile cellular telephone. This detection and messaging machine includes a GPS receiver, Microcontroller and a GSM Modem. GPS Receiver receives the area information from satellites in the form of range and longitude. Eye blink sensor is also interfaced, if purpose pressure is feeling drowsy the auto will prevent and symptoms with the burglar alarm. The Microcontroller strategies this data and this processed records is sent to the man or woman/owner the use of GSM modem A GSM modem is interfaced to the MCU. The GSM modem sends an SMS to the predefined cell amount and informs approximately this twist of fate. This allow it to screen the twist of fate conditions and it is able to proper away indicators the police/ambulance carrier with the location of accident. An IR sensor is interfaced to the automobile to stress it autonomously. The assignment is built across the micro controller. This micro controller presents all of the functionality of the SMS alert tool. It furthermore looks after filtering of the signs at the inputs. In our android mobile call of the location can be regarded. This is to apprehend the vicinity without issues.

### BLOCK DIAGRAM



**Fig: Block diagram of Vechile1 “Design and construction of smart intelligent and protection system for automobiles using wireless sensor network”**



**Fig: Block diagram of Vechile2 “Design and construction of smart intelligent and protection system for automobiles using wireless sensor network”**

**FATIGUE STATISTICS** Ideally, each individual needs between seven and eight hours of good quality sleep each night. Those with less build up sleep debt, or sleep deficit. At worst, drivers with sleep debt risk nodding off, yet fatigue can impair reaction time and decision making when behind the wheel which increases the risk of being involved in an accident. If a driver falls asleep for just four seconds while traveling at a speed of 100 km/h the vehicle will have gone 111 meters without a driver in control. Those groups of drivers considered at greatest risk of being involved in a fatiguerelated accident are: 1. Heavy vehicle drivers 2. Drivers with sleep disorders 1. Young Drivers.

**EYE BLINK SENSOR MODULE:** Here we use the CNY 70 IR transmitter. It is a reflective sensor that includes infrared emitter and phototransistor in a lead package which blocks visible light[1]. One main condition is that the IR transmitter and receiver should be in a straight line for optimum performance. The transmitter transmits IR rays into the eye of the driver. Depending on whether the eye is closed or open, there will be high output for closed eye and low output for open eye. The transmitted signal is captured by the IR receiver. This receiver is connected to the comparator. The comparator is an op amp where the reference voltage is given to inverting input terminal and the output of receiver is given to non-inverting terminal. When the IR transmitter passes the rays to the receiver, the receiver is conducting due to the fact that non inverting input voltage is less than inverting input voltage. Now the output of comparator is GND, so output is given to microcontroller

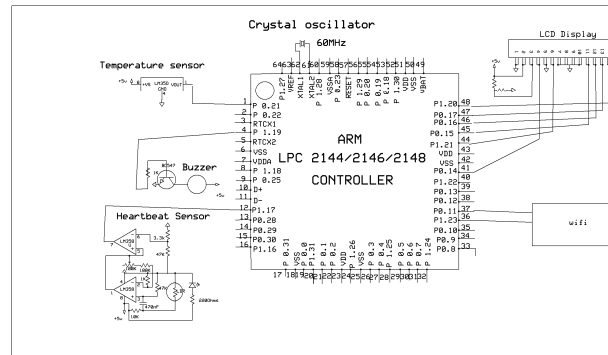
**RELATED WORKS:** Driver drowsiness resulting in reduced vehicle control is one of the major causes of road accidents. Driving performance deteriorates with increased drowsiness with resulting crashes constituting 20%-23% of all vehicle accidents. The National Highway Traffic Safety Administration (NHTSA) conservatively estimates that 100 000 reported crashes are caused by drowsy drivers each year. These crashes result in more than 1500 fatalities, 71 000 injuries, and an estimated \$12.5 billion in diminished productivity and property loss. Many efforts have been made recently to develop on-board detection of driver

**Drowsiness Features:** The drowsiness features are characterized by the blinking frequency of the eye by the driver.

State	Output	Risk
Awake	Conscious	Normal
Drowsy	Less conscious	Risky
Sleep	Out of conscious	Extreme risk

**IMPLEMENTATION:**

Here schematic diagram and interfacing of ARM-7 LPC2148 microcontroller with each module is considered.



**Fig: schematic diagram of ARM7 BASED VEHICLE SAFETY DEVICE-AN EASY FOR SAFE DRIVING”**

The above schematic diagrams of each transmitter and receiver sections of drowsiness sensor based totally live individual detection and also using Alcohol sensor to locate and avoid the street injuries, furthermore explains the interfacing section of every element with ARM-7 LPC2148 micro controller and GPS ,ZIGBEE,GSM, sensor module.

### ADVANTAGES:

1. Detection of human drowsiness the use of drowsiness sensor.
2. Wireless controlling of human using the usage of gsm, gps, and zigbee generation .
3. Fast response.
4. Efficient and coffee fee format.
5. Low strength intake.
6. Avoid 65p.Cof avenue injuries.

### DISADVANTAGES:

1. Drowsiness sensor takes eliminate of a while to enjoy the presence of a person, while switched on.
2. ALCOHOL sensor now not sensing the accurate values with right away .
3. Limited distance.

### APPLICATIONS:

1. Can be used to come across injuries regions.
2. Can be utilized in diving packages.
3. Can be used to discover below the impact of alcohol drivers.

## RESULT:

The undertaking of “ARM7 BASED VEHICLE SAFETY DEVICE-AN EASY FOR SAFE DRIVING” have become designed such that the device can be operated the usage of ZIGBEE generation and the EYE BLINK sensor detects the human DROWSINESS and even as the presence of human changed into DRUNK detected it stops and buzzers an alarm device.

## CONCLUSION

Vehicle to Vehicle Safety Device is a device indulge with the present day technology and consists of the technique primarily based mostly on the mixture of Zigbee, GSM and plenty of different modules with the resource of the help of which immediately manual can be supplied to everybody in want of it. This mission is microcontroller based totally definitely challenge .As part of As part of reading the evaluation circuits and applications had been simulated on Micro vision four Keil ,Hardware implementations are carried out using PCB layouts and EXPRESS PCB. In this paper a quick description is supplied with the aid of the medium of Block Diagram and Flow diagrams similarly to the advent of technology. Also the consequences and implementation is being stated right here. Secondly, the usage of specially superior IC's with the assist of growing generation, the mission has been correctly finished. Thus the assignment has been efficiently designed and examined.

## FUTURE SCOPE

Our undertaking of “ARM7 BASED VEHICLE SAFETY DEVICE-AN EASY FOR SAFE DRIVING” is specifically speculated to come upon people by using the use of manner of a SENSORS. This project has a EYE BLINK sensor, ZIGBEE technology to manipulate and monitoring the wirelessly and a sensor which are interfaced to the ARM-7 LPC2148 micro controller. The micro controller is programmed in this type of way that the system can be operated using ZIGBEE generation and the ALCOHOL sensor detects any RIVERS in DRUNK its way and if any DRIVERS is being detected it stops and buzzers an alarm tool.

This assignment may be extended the use of Zigbee era, which increases running wireless distance. Also a video digital camera can be used get the snap shots of the person being detected.

With the improvement inside the vehicle to car verbal exchange, the utility can be increase in our every day existence. Some of the development is find of radar or sonar sensor in place of strain sensor. With the usage of radar and sonar sensor, the automobile can act in line with the state of affairs, surroundings and landscape..

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