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STUDY ON INTELLIGENT AUTOMATIC VEHICLE ACCIDENT PREVENTION & DETECTION SYSTEM

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Abstract

Recently technological and populace development, the usage of vehicles are unexpectedly growing and on the equal time the prevalence accident is likewise increased. Hence, the value of human lifestyles is neglected. No you can actually save you the twist of fate, but can save their lifestyles by means of expediting the ambulance to the medical institution in time.

Keywords: Arm7 Board, Gprs, Gsm Module, Lcd,L293d Driver Ic Dc Motor, ultrasonic sensor, vibrate sensor, mems sensor

I.INTRODUCTION

Main motive of this mission is to prevent accidents. Accident preventions are taken care with the help of computerizedbreaking device the usage of ultrasonic sensor. Using ultrasonic as a ranging sensor, its function based totally on ultrasonic wave.After transmit with the aid of transmitter, the wave can mirror while obstacle detected and obtain via receiver. The primary goal forthis mission is motors can routinely braking because of limitations whilst the sensor senses the barriers. The braking circuitcharacteristic is to brake the auto mechanically after received sign from the sensor. To prevent these injuries of vehiclesfrom taking location we're using Automated Emergency Brake Systems and Ultrasonic Sensors.Now a day, many accidents are going on due to the alcohol intake of the driving force or the individual that is usingthe vehicle. Thus drunken riding is a most reason of accidents in nearly all international locations everywhere in the international. To avoid it,we've implemented, “Drunk and riding detection”. We have integrated alcohol sensor with our device so one canhit upon alcohol continuously. Once it's miles detected, system will trigger message to circle of relatives character.Even using those prevention measures, there are probabilities of incidence of injuries. Today, it's far very tough to findthat an accident has passed off and to find the position in which it the accident befell. It’s greater hard for the lives ofvictims until any individual know the information and informed it to the emergency automobiles like ambulance or to hospitalsand if it takes place in faraway regions it'll becomes no hope to live on. To avoid these, distinct technology like General package radio services (GPRS) and GSM/GPRS are used. The GPRS primarily based accident identity module carries a MicroElectro Mechanical System(MEMS), vibrating sensor, hearth sensor , infrared sensor and a GPS module related to theprocessor unit. At the moment of twist of fate, the vibration sensor or MEMS or hearth sensor detects the twist of fate gives theinformation to the microcontroller, so that you can show the data on LCD, switch on the buzzer unit and sends theirformation to the

ambulance, police and proprietor/mother and father through GSM community. Here the machine additionally gives the userto music the car location, while he/she required. Here the location of the car is also ship to the cellular in phrases of range and longitude. The principal objective of this mission is to come across the vehicle twist of fate and transmit the vicinity ofthe twist of fate with the information of victim and kind of twist of fate to the medical assist center and police manage room. Soclinical assist centre and police control room will get the precise location by the geographical co-ordinates transmitted thrumessage with the assist of map

II. EXISTING SYSTEM

In present used two important modules those are GPS and GSM, The GPS will takes values from traveler continuously each time coincidence arise Vibration sensors detects from controller then routinely the controller sends longitude and latitude values of unique place thru GSM module to authenticated character

III. PROPOSE SYSTEM

But in proposed machine the same utility we will enforce by the usage of GPRS module with this module we can discover the place by way of the use of and also we will use theidenticalmodule for GSM programs like message sending, calling….Etc. And also we are able to save you the coincidence by way of the use of ultrasonic sensor based on the object distance the automobile will mechanically managed itself.

So that the ambulance can attain the spot in time and human existence can be saved and the accident vicinity is diagnosed sends the twist of fate location straight away to the foremost server. The predominant server reveals the nearest ambulance to the accident region and sends the precise coincidence location to the emergency car. The manage unit video display units the ambulance and gives the shortest direction to the ambulance. This scheme is absolutely automatic, thus it locates the coincidence spot appropriately, offer the shortest route to reach the vicinity and to the medical institution in time.

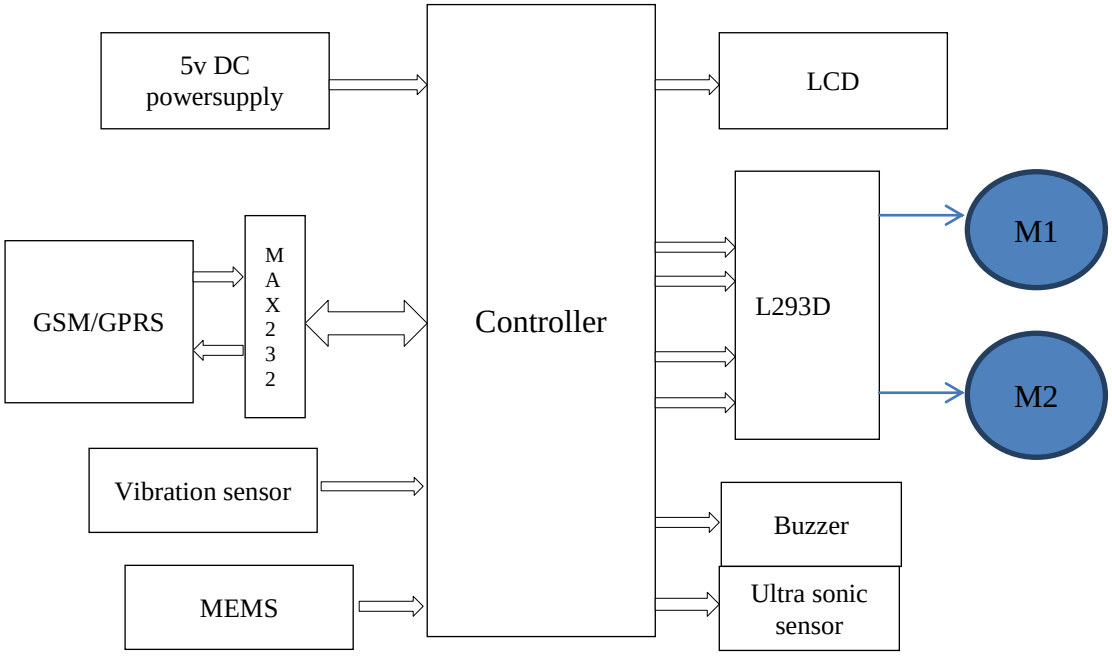

Fig1: Block diagram

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IV. HARDWARE REQUPIREMENTS

LPC2148 Microcontroller:

The ARM7 (advanced RISC gadget) pressers board primarily based complete on a 16/32-bit ARM7 its method of sixteen/32-bit ARM7 TDMI-S microcontroller, 8 computer reminiscence unit to forty pc reminiscence unit of on-chip static RAM and 32 laptop memory unit to 512computer reminiscence unit on-chip flash memory; 128-bit In- gadget Programming (ISP). 32-bit timers/out of doors occasion counters, PWM pulse width modulation unit (six outputs) and watchdog, Low electricity of actual-Time Clock (RTC), a couple of serial interfaces which has 2 UARTs , fast I2C-bus (400kbit/. There are sixty 4 pins of ARM7 processer and a couple of ports (port0, port1) forty five pins are enter/output.

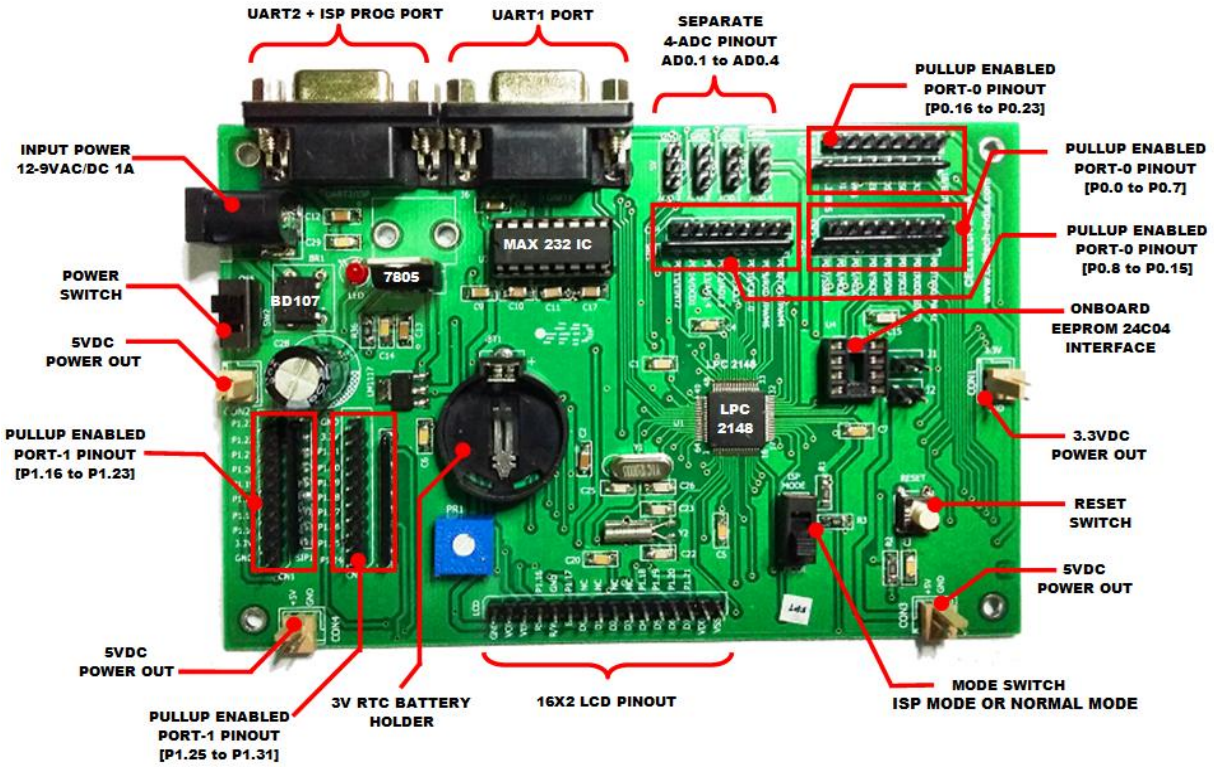


Fig2:-LPC2148 board

GSM/GPRS-Module:

GSM (global tool for mobile communications) is a cellular network, which means that that mobile telephones hook up with it through way of trying to find cells within the right away place. GSM networks characteristic in four specific frequency tiers. Maximum GSM networks feature within the 900 MHz or 1800 MHz bands. A few worldwide places in the Americas use the 850 MHz were already allotted. Different bands are assigned in some international locations, in which the ones frequencies have been formerly used for first-technology structures.

Fig 3: GSM/GPRS module

L293d:

The L293D is a quadruple high-contemporary half-H drivers, it also called as line driver circuit. The L293d is designed to offer bidirectional power currents of up to at least one A at voltages from 4.Five V to 36 V. The motive force carries definitely sixteen pins, in that four pins for enter and four pins for output. The output pins are linked to the vehicles and input pins are takes from the controller and l293d incorporates energy supply pins and two ground pins. The foremost use of the l293d IC is in addition up the voltage stages to run the D.C motor. Here we are taking the four enter pins and four output pins, the D.C motor calls for simplest pins so we will run two cars at a time by the use of the l293d driver IC.

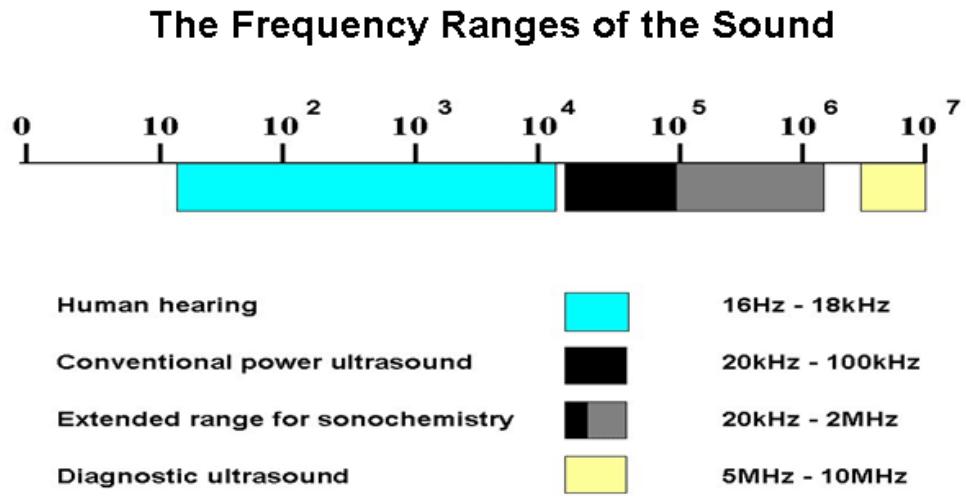
Dc motors:

Motors are electro mechanical gadgets which are used for to transform the electrical alerts into mechanical indicators. The all D.C cars are having identical internal mechanism, both electromechanically to exchange the direction of modern-day glide in a part of the motor. In venture we're used for to transport the motor in unique course. We need to connect the motor to controller thru driving force IC handiest.

Fig5: DC motor

Ultrasonic Sensor

Ultrasonic sensors are gadgets that use electric–mechanical energy transformation, the mechanical electricity being in the form of ultrasonic waves, to measure distance from the sensor to the goal item. Ultrasonic waves are longitudinal mechanical waves which excursion as a succession of compressions and rarefactions along the direction of wave propagation via the medium. Any sound wave above the human auditory range of 20,000 Hz is referred to as ultrasound. Depending on the form of application, the form of frequencies has been notably classified as tested within the discern under:



When ultrasonic waves are incident on an item, subtle reflected picture of the power takes place over a large solid angle which might be as high as one hundred eighty stages. Thus a few fraction of the incident energy is contemplated once more to the transducer inside the shape of echoes and is detected. The distance to the item (L) can then be calculated thru the speed of ultrasonic waves (v) within the medium by means of the relation

Fig 6: ultrasonic sensor

The Free scale measuring device consists of a MEMS electric phenomenon sensing g-cell and a image learning ASIC contained in a totally unmarried bundle. The detector is sealed hermetically at the wafer stage using a bulk small machined cap wafer. The g-cell may be a mechanical systems from semiconductor materials mistreatment protecting and etching procedures. The tool are frequently sculptured as a movable beam that

movements between 2 automatically fastened beams (Figure 4). 2 gaps vicinity unit shaped; one being between the movable beam and also the initial desk bound beam and additionally the second one between the movable beam and also the second stationary beam. The ASIC makes use of switched electric condenser techniques to live the g-cell capacitors and extract the acceleration expertise from the distinction among the two capacitors. The ASIC additionally signal situations and filters (switched capacitor) the sign, imparting a digital output it's proportional to acceleration.

Figure 7: Simplified electrical device Physical Mode

Vibrate Sensor

A piezoelectric sensor is a device that uses the piezoelectric effect, to measure changes in pressure, acceleration,temperature, strain orforce by converting them to an electrical charge. The prefix *piezo-* is Greek for 'press' or 'squeeze'.

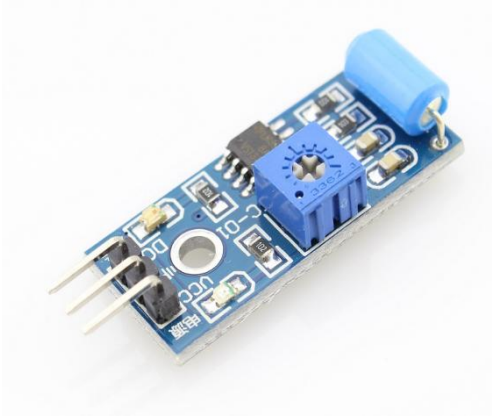


Fig 8: vibrate sensor

V. SOFTWARE DESIGN

In this proposed contrivance, as we tend to used LPC2148 we wish to use following software package instrumentation to program for it.

1. Keil4 Vision

2. Flash Magic

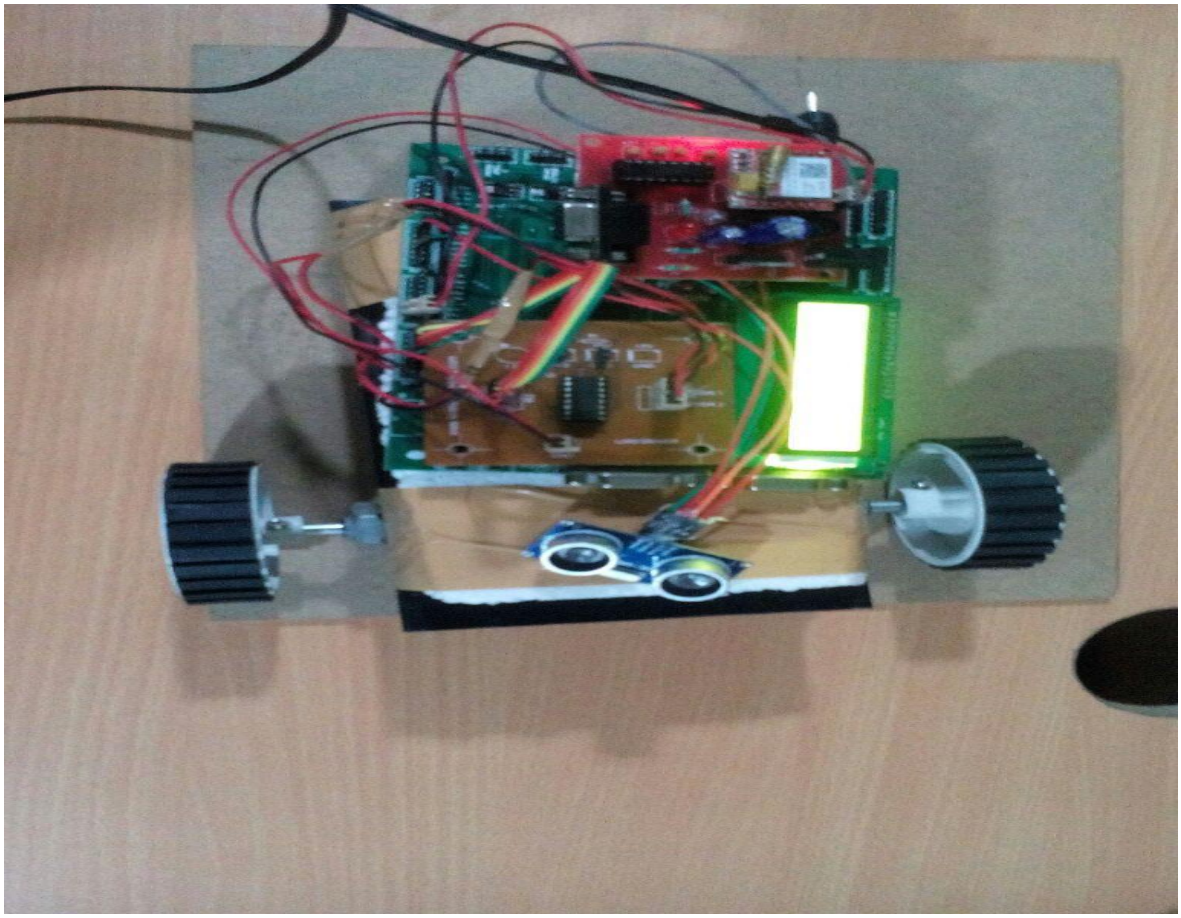
The Keil4 Vision an IDE for Embedded c language. In this IDE, we desire to import the utilities and libraries consistent with the controller. This IDE may be very more without difficulty and in consumer pleasant thanks to apply, assemblers, and debuggers in it. It simplifies the manner of embedded simulation and trying getting into conjunction with Hex file generation. The flash magic is a programming software. The C/C++ software written in IDE could be processed into Hex record i.E. In .Hex layout. By the use of hex report we have a tendency to products the code into microcontroller and carry out utility.

VI. WORKING PROCEDURE

The primary goal of is to layout an ARM based totally GSM and GPS twist of fate preventions, detection and monitoring system. In thisventure LPC 1768 processor is used. When an accident happens, MEMS receives disturbed and sends output sign to theprocessor LPC1768 in order that the location is identified the usage of GPS. Our work additionally offers with alcoholic sensor whichwill detects the driving force's alcoholic percent and manage the ignition of the car.As the ARM processor calls for 3.Three volts of deliver, so a step down transformer of 230/12V is used to get the desiredAC output. To convert that AC deliver to DC supply is performed by means of using rectifier. DC output includes ripples, to removethose ripples we use filter capacitors. To get output voltages of +5v & +12v we're the use of voltage regulators 7805 &7812. Finally three.3v is given to the ARM processor for functioning. ARM processor includes modes of operationi.E.; program mode and run mode. Program mode is used for dumping of this system into ARM processor from anyexternal tool inclusive of pc. Run mode is used for the execution of application. For the reason of accidentdetection we use run mode of operation. When an coincidence happens, disturbance is created in MEMS which shows atrade in an angle of X-Co-Ordinate offers an analog signal output. This analog signal is transformed into virtual signby means of the usage of internal ADC of and as a result the digital sign is given to ARM processor. We employ three pins of MEMSparticularly X-Co-Ordinate pin(1),examine pin(2),write pin(three). X-Co-Ordinate pin is used for the indication of trade in angle;examine pin offers the statistics or records to the ARM processor. When an ARM processor reads the signal from MEMS itshows that an accident has been came about .A good way to discover the spot of coincidence we use GPS, output of GSM andGPS is given to MAX-232 .MAX-232 is a degree converter which changes RS-232 to TTL and vice-versa. Because theLPC 1768 is familiar with TTL format. When accident occurs GPS is activated and it gives the values of location in termsof Latitude and Longitude.For instance: Accident happened at place of Latitude=1641.4095 Longitude=1725.3602, the identical above values aresent to the mobiles using GSM for which the mobile numbers are dumped inside the software. At the identical time the onesvalues are displayed on LCD Display. Immediately after the coincidence detection, the air bag is released. Release of airbag is proven in our venture by using sparkling LED. Hence via the usage of MEMS, GSM and GPS accident place is detected andthe facts is sent to the cellular in addition to LCD Display.The scope of this paintings is likewise to broaden a safety car braking gadget using ultrasonic sensor (Fig.1) and to layout avehicle with much less human interest to the using. The ultrasonic transmitter has a piezoelectric crystal that resonates upto a required frequency. This also converts the electrical electricity into acoustic electricity and vice versa. While transmitting

VI. RESULT

The complete prototype as developed was tested on different voltages and different areas. It provided the accurate result at voltage of 230v to440v.we have tested circuit in "**Study on intelligent automatic vehicle Accident prevention & detection system.",** Total power consumed by store before installation of device is 22KW in month. But after installation of automatic light control system it reduced to 18.26 KW (power consumption)



VII. CONCLUSION

With our machine, a secure journey is viable which would decrease the injuries for the duration of injuries and additionally reduce the twist of fate rate due to drunken using. This device has also accident prevention technology which might reduce the twist of fate of the automobile in crowd areas. This automobile coincidence prevention, detection and alert structures provide emergency response with important records at the earliest possible time. Reducing the time between while and coincidence takes location and whilst it's far detected can reduce mortality rates. In future we can interface distinctive sensors with this work, which includes drowsiness detector, coronary heart charge detector, etc. In terms of these we are able to in reality save you accident and shop existence. Security sensors to identify theft also can be brought. It can be reprogrammed to switch off car and music the car in robbery. Safety car braking device generation might be further stronger and equal can be carried out in aircrafts, submarines.

REFERENCES

1) www.ijcsit.com/docs/Volume%204/Vol4Issue6/ijcsit2013040653.pdf
2) www.google.co.in/patents/US5485161
3) www.mecs-press.org/ijisa/ijisa-v5-n9/IJISA-V5-N9-10.pdf
4) www.indjst.org/index.php/indjst/article/view/93045
5) https://en.wikipedia.org/wiki/Vehicle_tracking_**system**
6) https://en.wikipedia.org/wiki/Global_Positioning_**System**
7) www.mycollegeproject.com/ECE_Projects.html
8) www.colorado.edu/geography/gcraft/notes/**gps**/**gps**_f.html
9) www.montana.edu/**gps**/understd.html.
10) https://www.cfa.harvard.edu/space_geodesy/ATLAS/**gps**.html

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