

Accident Detection and Image Transmission Along with Location using IoT

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Abstract— The goal of the project is to automatically detect the location of the car involved in the accident. This geographical position and status of the vehicle are transmitted in the form of latitude & longitude values through GSM and GPS to the concerned authorized mobile. If a pilot or a ship captain wants to specify a position on a map, these are the coordinates they would generally use and are measured in degree. One of the most hotly debated topics in the embedded systems business is the vehicle tracking system. A car may be readily traced everywhere on the planet using this project. The Arduino is connected to MEMS, LCD, GPS, and GSM modems in this project. The entire system will be installed in a moving vehicle. When an accident occurs the MEMS sensor detects the vehicle vibration and reports it to the controller. With the help of a global positioning system the location of the exact vehicle is tracked and the same will be sent to emergency services in the form of SMS through GSM. The airbag will also be released immediately after the accident is taken place to protect the person. Whenever the vehicle is crashed, location information will be transmitted to the concerned mobile automatically.

Keywords—GPS,GSM,MEMS,ESP32,FTDI,RELAY

I.INTRODUCTION

In this world, every people is in the need to cross continents for their daily survival. However, on their way to success, they were unfortunately involved in accidents owing to a variety of factors at any time of day. Due to the present situation, there is a need for an accident prevention system. Our project management system was implemented to reduce the number of car accidents on the road.

This suggested system is a prototype model, a portable and extremely dependable system that, in the event of a collision, transmits alert messages and photographs of the accident to cellphones via the cloud. The Arduino UNO, Arduino MEGA, DC Motor, Fire Detection Circuit, LCD, ESP32, GPS, GSM, MEMS sensor, and Switch, as well as power supply, make up the entire system. Arduino integrated development

circumstances are used to modify the user interface of the model. The whole system is to be fitted in the moving vehicle. When the accident occurs the MEMS sensor will sense and give the information to the controller and latitude and longitude are calculated through GPS when the accident is detected the SMS is

through GSM and the image is captured by the ESP32 and sent to mobile using the cloud.

II.LITERATURE SURVEY

Rajvardhan Rish, Sofiya Yede, Keshav Kunal, and NutanVBansode proposed this According to the system, the most common cause of death in car accidents is a delay in receiving medical help. This can be averted if authorities and emergency contacts are notified as soon as possible. The system consists of several modules such as GPS, GSM, mems sensor, and Arduino. It alerts

nearest places such as hospitals, Detecting changes in the MEMS sensor enables police headquarters, family, and friends to be notified in the event of an accident.. Using an Arduino and a GPS module, the system forwards a google map link. When an accident is detected, the vehicle sets the flag bit on the Arduino UNO until the measuring system detector detects an abrupt divergence from the threshold values.

observe an accident. A sensor detects car rolling over and sends it as an input to the controller. This system employs the GP\$ module to locate the position of a rollover and the G\$M module to send a message to the medical authorities when a rollover is identified.

Unless a collision is noticed, the device set an effective sensitive value for measuring instruments detecting devices along with the entire accident. When the measuring instrument detector detects an accident or bit, Arduino activates the G\$M module, which has a manually saved signal of the accident victim. emergency contact and sends a pre-stored SMS to the contact, and the system. However, it does not detect rare minor accidents with no casualties. In the case of minor collisions The Arduino UNO is also used, which is a less powerful microcontroller than those already available.. Only GSM, GPS module and mems sensors were chosen as system architecture components that would benefit the project in terms of accuracy.

Some of the members proposed three major components for this system: MEMS sensors, GP\$, and a GSM module. The vibration sensor detects the impact when a car is involved in an accident, which Arduino compares to the program's threshold values. If the values exceed the threshold, the Arduino Uno will produce a current location using GP\$ and send an alert message to the proper authorities using GSM. The vibration sensor's primary function is to detect collisions. One of the biggest flaws with the system is that it provides no assistance in minor accident circumstances where no catastrophic injuries or fatalities have occurred. the cost in terms of resources and time will eventually be incurred. Furthermore, this approach does not provide any medical information on the victim, resulting in a delay that impedes the cause. Kalinga, P. Lakshmi C Thangamani has developed a system that uses a MEM\$ to detect and

III.BLOCK DIAGRAM

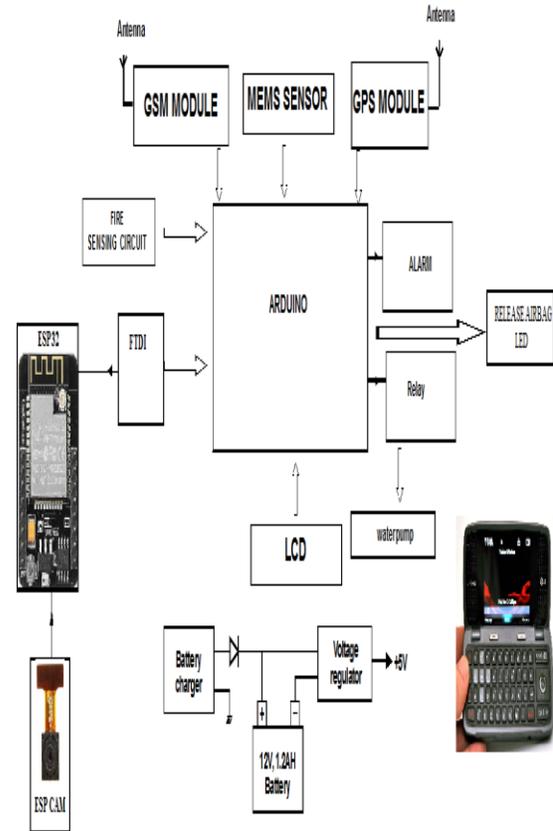


FIGURE-1:CIRCUIT DIAGRAM

About the block diagram :

The block diagram of Accident detection using IoT is shown above, which contains Arduino UNO MEMS, GSM, GPS, LCD, Fire detector, Relay Water pump, Buzzer, LED, Relay, ESP32CAM, FTDI, and power supply.

Arduino controls the whole process of a system like it will read the mems sensor values and check whether the accident is detected or not and then sends the SMS by using the GSM and Gobar positioning system.

If the accident is detected Buzzer, LED will be on and by using ESP32CAM Image is captured. If a fire accident is detected, then the relay will be on and the water pump will be on LCD

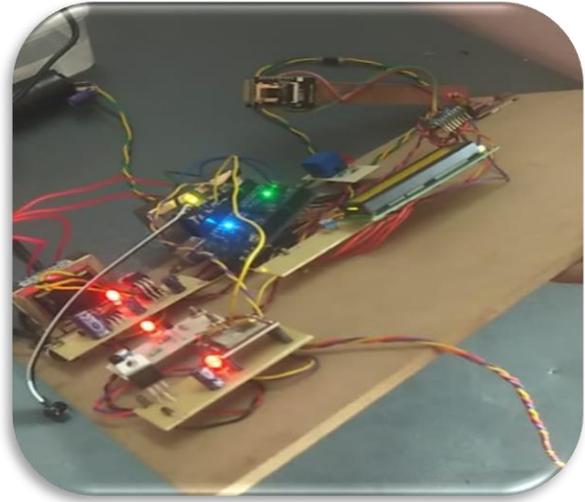
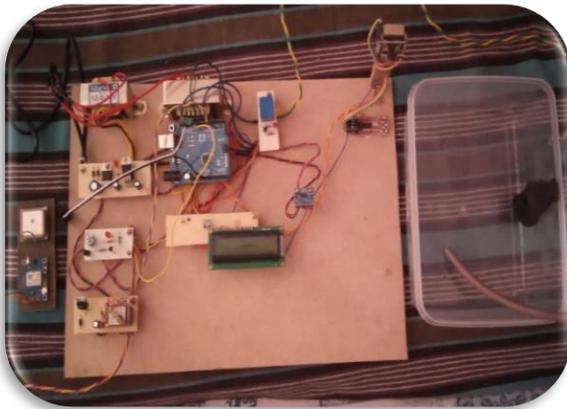


FIG-3 :After switching on the circuit.

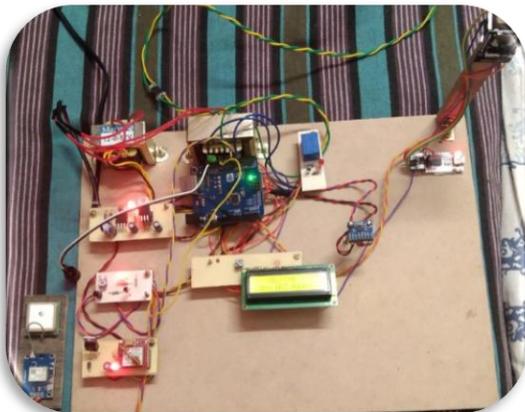


IV. WORKING OF CIRCUIT

FIG-2: Before switching on the circuit.



FIG-4&5: When an accident is detected.



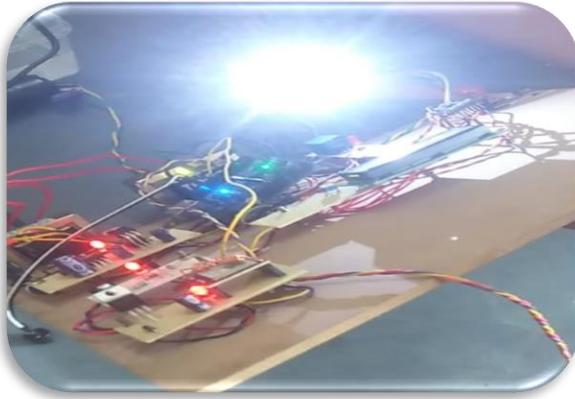


FIG-6: Camera is capturing photos while an accident is happening



FIG-7 :when fire is detected.

This is the working model of Accident detection using IoT. As you can observe Arduino UNO, Mems sensor, GSM, GPS, ESP32Cam, Fire sensor, Relay, Buzzer, Transformer, LCD, Power supply, and connecting wires are used in this project. A transformer which is used to convert ac current from one voltage to another i.e,230v to 12v ac.

The basic purpose of a power supply is to convert 12 volts ac to 5 volts dc., Arduino UNO will control its inputs and outputs like reading Mems sensor values and sending SMS to emergency .LCD is used to display the latitude and longitude values and also to display whether the accident occurred or not.

The Mems sensor will detect whether or not an accident happened. Using GSM and GPS devices, we may track the location

and send messages to emergency numbers. The ESP32CAM will capture the image and send it to the Blynk app as the accident is happening. As shown in the diagrams above, a fire detector is used to detect fires, The water pump is controlled by a relay. When a fire has been discovered, the water pump will immediately turn on, and the buzzer will sound. For GSM, we must link LCD data pins to (12,11,5,4,3,2) Arduino pins, and we must use (10,9) Arduino pins as RX (receiver) and TX (transmitter) correspondingly. Fire Detector signal pin to A0, Airbag (LED) to 7, Relay o 6, Buzzer to 13 pins of Arduino is connected properly.

VCC and GND connections are made as per requirement and we have to make all the connections as shown in the figure

We have to dump the code into the Arduino and FTDI .S which on the circuit it will display on the LCD as Welcome and then after activating all the hardware it will display latitude and longitude values on the LCD. when accident is detected then buzzer, L ED (AAirbags) will be on

While the accident is detected SP32CAM will capture the image sent to the Blynk app and also by using GSM SMS will be sent to the emergency number which is dumped into Arduino.

When a fire accident is detected, the relay will be on the water pump will be automatically on to reduce the fire and San MS will be sent to the emergency number as a fire accident is detected along with a google map link as you can observe in the result figures.

IV.ADVANTAGES

- Accident Information System.
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- It is also employed by insurance firms.
- Blood Banks.
- Blood Banks.
- (RTO).
- "Tollway Accident Management."

VI.DISADVANTAGES

- This system is not applicable for poor network connection places.

VII.APPLICATIONS

- Accident Information System.
 - Ambulance Management.
 - It's also applicable in insurance firms.
 - police departments
 - blood banks
-
- (RTO).
 - It can be used for Tollway Accident Management as well as for Road Traveling Services.

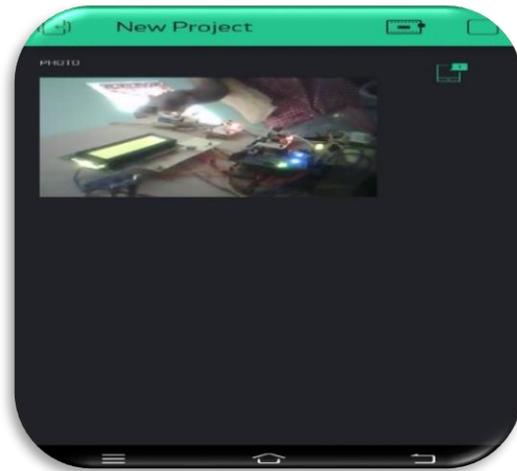


FIG-10: Captured photo in Blynk app

VIII.RESULTS

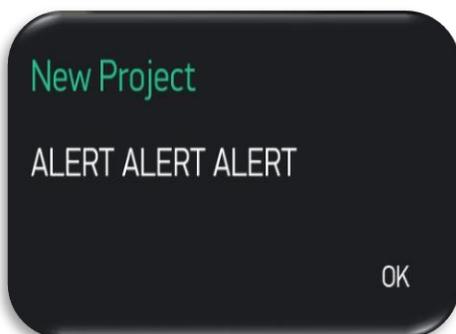
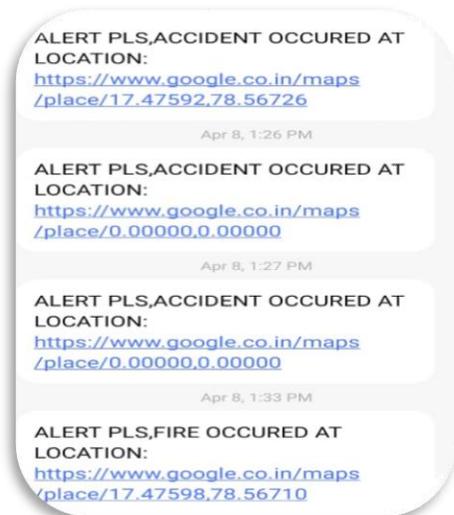


FIG -8&9:SMS and alerting message from Blynk app



FIG-10: water pump will be on when a fire accident is detected.

IX.CONCLUSION

This project explains approximately each injuries alerting & detection. Arduino Uno is referred to as the bottom of the device which facilitates in shifting the message to the one of a kind gadgets withinside the device. Vibration sensors are specially used for activating During the occurrence of the records is transferred to the registered telecellsmartphone variety via the GSM .By the use of a GP\$ module place may be despatched via a monitoring device to cowl the max geographical coordinates over the area. This twist of fate may be detected

through a vibration sensor that could act like principal module withinside the device.

Over 50% of deaths are occurring due to accidents. Many accident victims lost their lives due to insufficient information about the accident such as its location. The overall death rate can be reduced immensely if the victims can be rescued on time and the required information is communicated accurately. Therefore, we have proposed and implemented an IoT system that is used to reduce loss of death. Our system delivers information to provide emergency services and automatically transmits the location of an accident.

The BLYNK App efficiently transmits the area coordinates of coincidence incidences via this module. The main goal of the coincidence alert machine challenge is to reduce the chances of losing a life in an accident that we can't prevent. When the coincidence is detected, paramedics will rush to the unique location to expand life's possibilities. In the future, the vehicle tracking and coincidence alert feature will play a critical role in people's daily lives.

X. REFERENCES

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