ACCIDENT DETECTION AND SMART RESCUE SYSTEM

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ABSTRACT

Speed is one of the main causes of car accidents. Many lives would have been saved if paramedics could get the details of the accident and arrived on time. Now, globally the location system has become an integral part of the automotive system. This seminar is refreshing the ability of the receiver of the ground suspension system to monitor vehicle speed as well detect danger based on monitored speed and send the location of the accident to the Alerts Service Center. The global positioning system will monitor vehicle speed and compare it with the previous speed per second per MCU. At any time the speed will be lower than specified, it will cause an accident. The system will send the location of the hazard found in the global positioning system and time as well as speed through the GSM network. This will help to access the rescue service on time as well as save precious human life. Influential indicator of survival rates after recovery An accident is the time between the occurrence of an accident and the arrival of an emergency they reacted to the scene. Decreases at this time, too, may affect the death toll, and this is achieved through automatic road accident detection and notification programs built on modern cars or found on the roads.

Keywords: Microcontroller, GSM modem, SMS.

I. INTRODUCTION

The development of the transport system has become a productive force so that humans can have a higher civilization than the creatures on earth. Cars are very important in our daily lives. We use it to go to our workplace, communicate with our friends and family, and deliver our goods. But it can also lead to disaster and even death. Speeding is one of the most fundamental aspects of driving. Not only does it affect the severity of the crash, but it also increases the risk of being involved in an accident. Despite the many efforts taken by various public and private organizations around the world with various programs to raise awareness of reckless driving, accidents occur frequently. However, many lives would have been saved if paramedics had received the details of the crash early. Therefore, effective automatic accident detection with automatic notification of emergency room service is a key requirement to save a precious human life. The project proposes to use the capabilities of the landfill receiver system to monitor vehicle speeds and hazard detection according to monitored speed and transfer the location and time of the accident from the ground system data processed by the sub-control via the GSM network to the Alerts Service Center. The concept of using a vibrating sensor is simple: there are three parameters measured by the vibrator sensor. Sensors work with the principle of piezoelectric. The crystal produces a low voltage or charge when pressed during pressure. Movement in the axial direction accentuates the crystal due to the negative force of the weight and produces a signal corresponding to the acceleration of that mass. This small acceleration signal can be amplified to measure acceleration or converted inside the sensor into a speed or shift signal. In general, the operating system of the whole system states: that the vibration sensor detects an accident occurring depending on the frequency at which it is detected and detects and triggers an alarm, and sends a notification to the hospital and car owner, at the same time. The LCD indicates that the vibration sensor has been detected and a message has been sent.

II. LITERATURE SURVEY

A literature survey represents a study of previously existing material on the topic of the report. This literature survey will logically explain this system and a review of the literature gives a clearness and better understanding of studying the proposed system:

1. Paper Name: Accident Alert System and Intimation for Ambulance and Hospital using LORA

Author Name: P Veeraraghavan, Syed Ajmal Deen Ali, K Ajay Subaiaya, M Hari Vaigundam, M Joshua Mani

Year: 2020

The heartbeat sensor and accelerometer are used to detect the accident and transmitted via Bluetooth module Coverage includes accident detection and emergency ambulance transportation by a licensed ambulance service from the location of the sudden accident to the nearest hospital where Emergency health services can be performed. For this purpose, we have implemented an effective ambulance system by using GPS and COLLISION sensors along with LoRa technology. The heartbeat sensor and accelerometer are used to detect the accident and transmitted via a Bluetooth module. Here our receiver system can receive the signal or message through a Lora. Lora at the receiver side can detect the same Lora from the transmitted signal.

2. Paper Name: Accident alert system using IoT

Author: Akash Kumar Gupta, D. Sunilkumar, P. Prathima, V. Prashantha

Year: 2020

An IoT-based accident and rescue information system have been developed. The contact between the Web server and the hardware system is made via GSM / GPRS, with a GPS shield. Vibration sensors, keypads, and buzzers are used to identify the incident. The project is built to collect data in real-time using a web application. Introducing a new framework for automatic accident detection to resolve the current issue. The signal is transmitted via the IoT network from the microcontroller to the central device. The GPS module provides the coordinates of latitude and longitude of the victim vehicle sent via the IoT network. The central unit sends the locations to the closest ambulance to pick the victim up. The central unit is located in the police station or the hospital, where the vehicle unit receives signals. The ambulance is given a warning alert near the accident site.

3. Paper name: Modeling IoT Enabled Automotive system for Accident Detection and Classification

Author: Nikhil Kumar, Anurag Barthawal, Divya Lohani

Year: 2020

An IoT-based system has been developed in this work to report the occurrence, location as well as type of road accident. The system uses in-built sensors of passenger smartphones to detect and classify accidents. Along with the occurrence and location, a model to classify the type of road accident based on the Naïve Bayes classifier. A Vehicular Ad-hoc Network and Internet-of-Things-based system have been developed which detect and estimate the severity of road accidents. A message is transmitted to the control room on the detection of an accident and the coordinates of the accident are determined to locate the nearest hospital for immediate medical assistance.

III. PROBLEM STATEMENT

Road accidents are one of the biggest problems facing the world. One of the major causes of road accidents is traffic congestion and overcrowding. Reducing road accidents is one of the biggest challenges as the majority of deaths worldwide are due to road accidents. There is, therefore, a need to provide better transport services that can reduce the rate of road accidents and save lives. One of the proposed solutions in this paper is to use IR sensors and Arduino Uno technology. The program has two phases - Risk Detection and Risk Prevention. The detection phase is performed using IR sensors that can detect and alert people by sending an SMS using a GSM module containing pre-defined numbers and the location of danger using a GPS module. Phase Two, Accident Prevention is performed using IR sensors by alerting the driver to neighboring vehicles when the distance between them is above the limit.
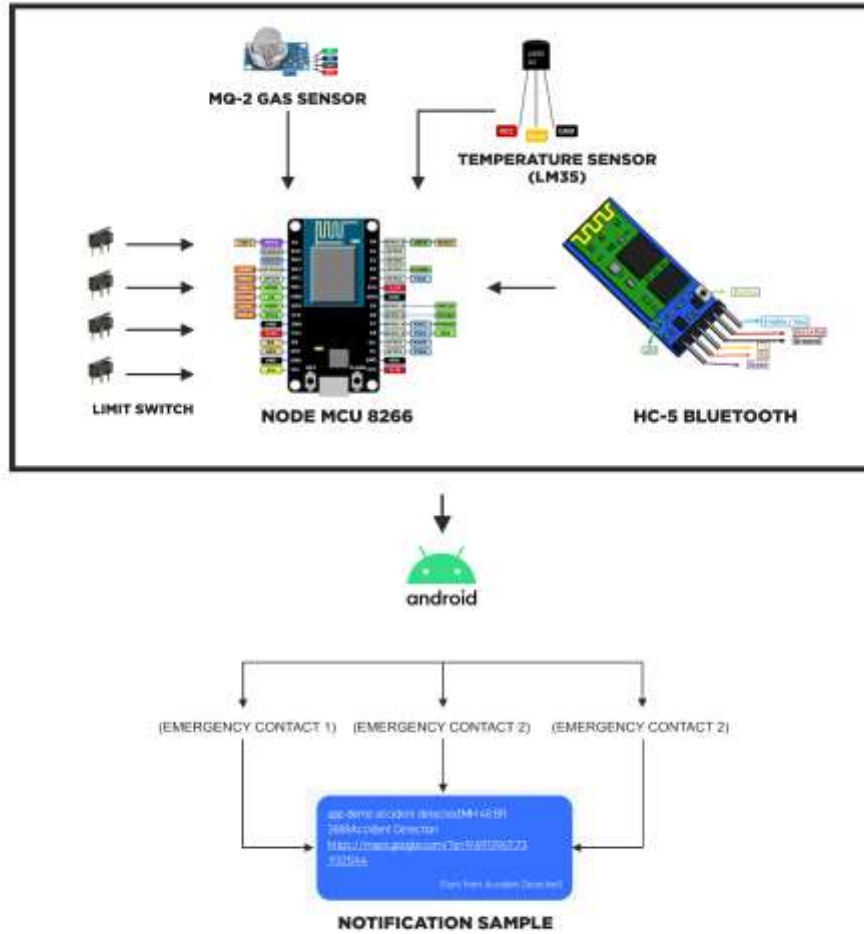
IV. ARCHITECTURE

Fig 4.1: Block diagram (Leakage Detection)

Accident detection and notification: Accident is detected in real-time when the vehicle is involved in an accident. Whenever a deviant car partner is found by the Node MCU to engage, the driver, that is correct if no driver responds, will record the location of the vehicle using GPS connected to the MCU node.ADXL345 sensor connected to the Node MCU using the -I2C. Messages will be sent to emergency numbers. All data is sent to the server using MQTT.

Overheating: Usually, all cars have a temperature gauge but sometimes we fail to notice it so it is always nice to have a sound signal. The circuit will warn of a buzzer beep and a bright LED if the temperature rises above the safe level. This simple rotation would be a great idea to get a warning before the engine gets too hot so you can check what is going on or if the car needs cooling down.

Gas Leak Detection: Gas leak detection in the system will be performed using a gas sensor in the circuit. It will check the sensor status of the logic detector in the circuit. We can add an alarm system to the real-time system to notify the end-user and display numbers in the mobile app.

V. PROPOSED SYSTEM

Today, developments in the automotive industry are on the rise, leading to more injuries and road accidents. Human existence is at stake. This is because emergencies in our country do not exist. In short, we will create a notification system application where there will be a sign-in page for the login page if the user is not registered in the app for new users which will be used as a private dashboard. where there will be little and all the entry details where we can see and they can give us the car details and handling that will be required. This situation prevails. Many people in our country have lost their lives as a result of incidents. Due to accidents or intervention by the emergency team. We overcome this by providing an effective solution and minimizing the loss of life as much as possible. In our view, the design of the device allows us to detect crashes in a very short time and to transfer important information to a first aid center. Links to the location, time, and angle of the car incident are included. This distress message will be sent shortly to the rescue team and the mobile phone number reported. This program saves many precious lives in real-time. The message is transmitted via GSM and GPS. The basic idea is to locate the car device by collecting real-time car location via GPS and transmitting data via GSM via SMS. We are introducing a new framework for automatic risk detection to solve the current problem. Each vehicle has an impact sensor and signals are sent to the controller in the event of an accident. The signal is transmitted over an IoT network from a microcontroller to a central device. The GPS module provides the coordinates of the latitude and longitude of the target vehicle sent via the IoT network. The central unit sends areas to the nearest ambulance to pick up the victim. The central unit is located at the police station or hospital, where the vehicle unit receives signals. A collision sensor comes in handy when you need to get vibration and helps send a signal to the Arduino controller. Excessive temperature sensors to alert drivers will avoid further damage. If a person encounters a minor accident, the driver may inform him that there is no need to pay attention to interrupting the message using a switch. This was done to avoid wasting time with the doctor and the police team. Arduino controls to send a warning message about a GSM modem with location This accepts the SIM card and then activates the purchase from the mobile operator. An ambulance is given a warning near the scene of the accident. The ambulance also has a GPS receiver that will map the scene of the accident. This helps ambulances to enter the area and rescue the victim on time.
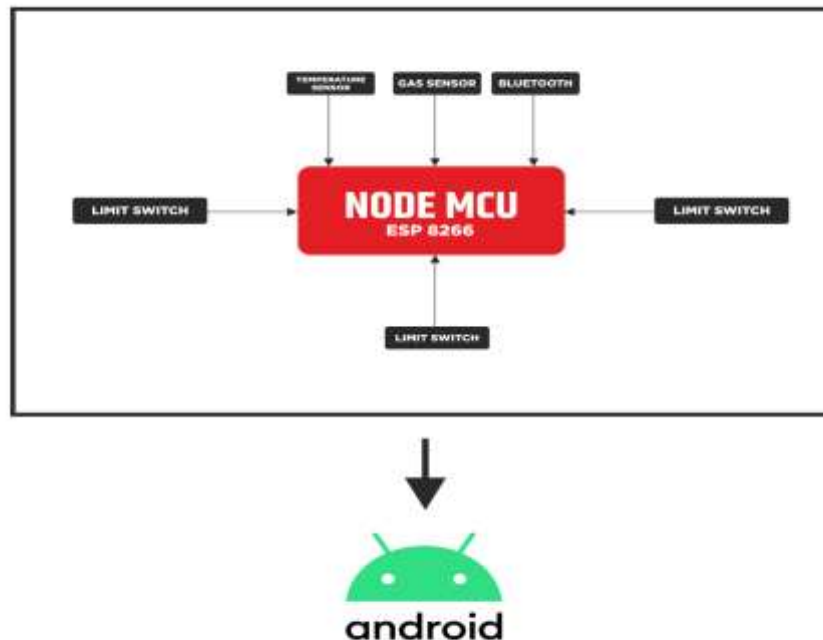
VI.   BLOCK DIAGRAM

**Figure 6.1:Block diagram for the proposed system**

VII.   ADVANTAGES

- School transport vehicle accident detection: "Vehicle Accident Detection system" can be used on the school bus.

- This project can be used for a cab or car companies.
- Alerts police and medical units about accidents.
- Simple design and can be interfaced with other systems.
- Easy to operate by the user.
- Reliable system.
- Easy to operate.
- Monitors hazards and threats.
- Sophisticated security.
- Simple and Reliable Design.

VIII.   APPLICATIONS

- Alerting hospitals to provide immediate attention.
- Alerting drivers regarding over-heating to prevent further damage.
- Prevent the probability of leakage in the system.
- Notifying family members as there are minimum chances of delay for the rescue of the victim.

IX.   SCREENSHOT
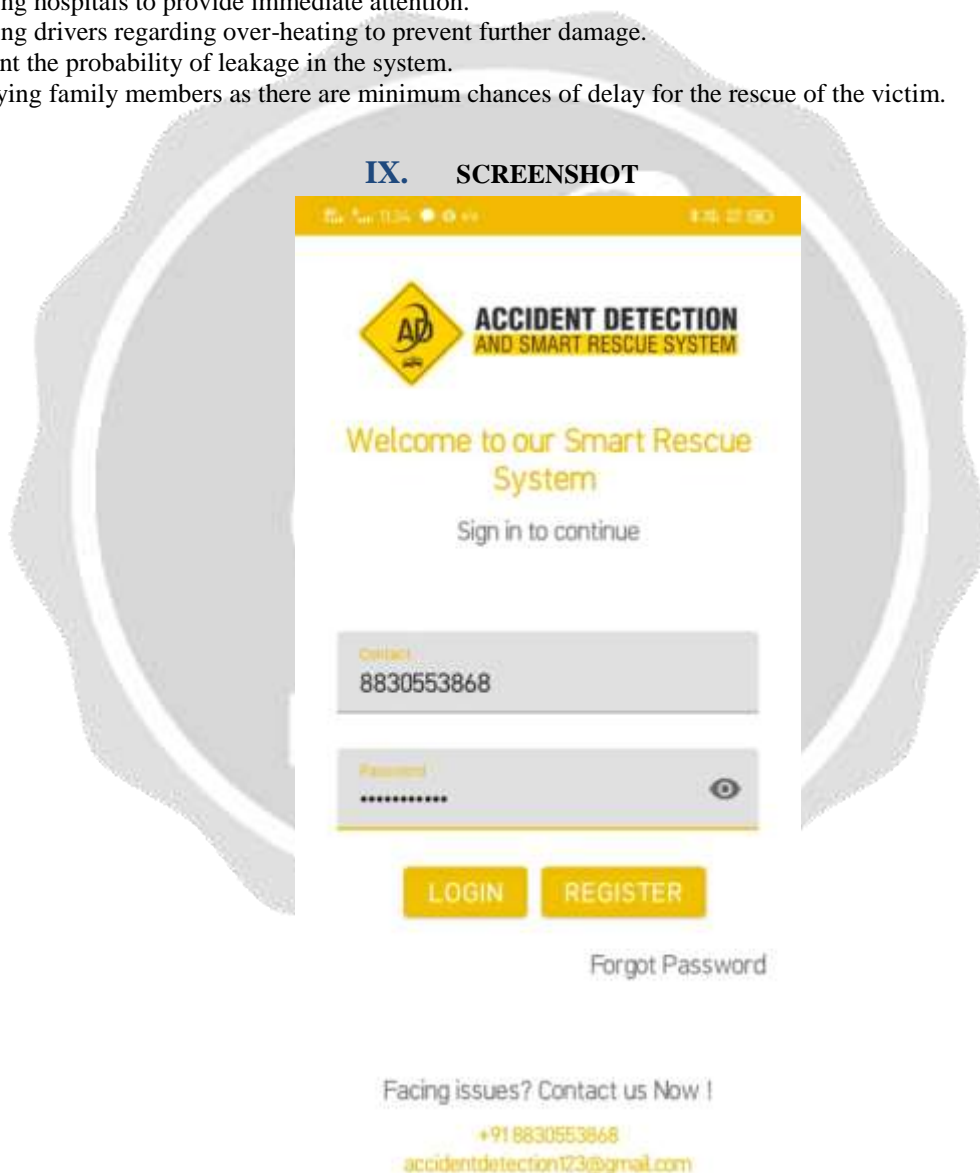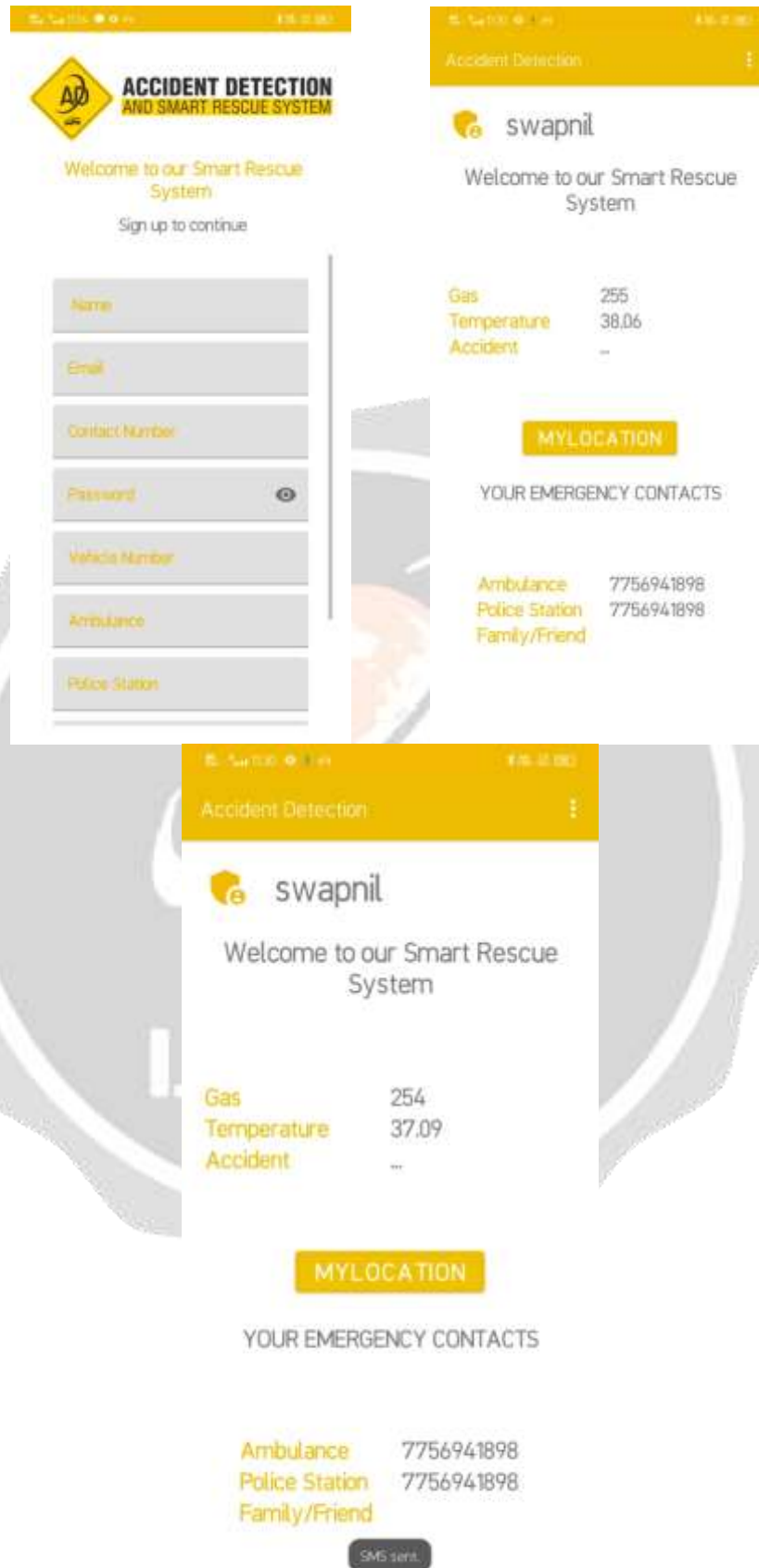
X.   CONCLUSION

The proposed program includes a warning and incident detection. The microcontroller node MCU is the backbone of a system that helps transmit a message to various systems. In the event of an accident, the Impact Sensor is activated and the information is transferred through the GSM module to a registered number. Position can be transferred using GPS via a location tracking system in the country. The impact sensor used as the main module on the device will receive an accident. The program suggested covers the warning and identification of incidents. The microcontroller node MCU is the core of the system that helps to transfer the message to various systems. When the accident happens, the Impact Sensor is triggered and information is transmitted through the GSM module to the registered number. The position can be transmitted using GPS through the geographical coordinates tracking system in the country. An impact sensor that is used as the main module in the device will detect the accident.

XI.   REFERENCES

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