International Interdisciplinary Virtual Conference on
'Recent Advancements in Computer Science, Management and Information Technology'
International Journal of Scientific Research in Computer Science,
Engineering and Information Technology| ISSN : 2456-3307 (www.ijsrcseit.com)

Car Accident Detecting and Recording System

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ABSTRACT

We developed such a system that accidents are detected, and it will automatically message hospitals for ambulances, police stations, and rescue squads. Vehicles were meant for transportation purposes, and it was a transition from animals to machines. There are around 1.4 billion cars in the world, and according to the Government of India, approximately 1.5 lakh people die on Indian roads out of 1130 accidents and 422 accidental deaths per accident .This work on artificial intelligence and machine learning (AI ML) The system records factors in the car such as engine temperature, speed of the car, fuel economy, fuel level, level of coolant, rear and front camera recording, etc. This technology is inspired by black boxes in aircraft. It will also detect accidents and take the necessary steps to save the lives of those in the car.

Keywords: AI ML, speed, fuel economy, detector, accident, car recorder.

I. INTRODUCTION

A vehicle is a mechanism that moves people or stuff from one location to another, typically over land. Examples include cars, bicycles, trucks, and buses. These were meant to help people, and they helped but also became the cause of death for many people. The usage of vehicles has increased over the past decade. Approximately 1.3 billion people die per year in the world. And here we came with research to reduce the death rate in road accidents. This will help injured people in accidents save their lives. In many cases, all over the world, people who are witnesses to that particular accident cannot provide injured people with aid. [1,2,3] The car recorder system is a bit similar to the black box in an airplane and keeps records as mentioned above and detects accidents as mentioned above. Its shape is a box, and it can easily be installed in cars. It can also work with more technologies differently, such as ESS (Emergency Stop Signal), Autopilot mode, etc. In the future, it can also be installed in trucks and tractors. It will work when an accident takes place and airbags get deployed with the help of crash sensors, and that's where we get our input. Here we will have to understand that if any of the inputs are high, our system will be activated. The user will have to give the number of his family in case an accident has occurred and any victim's families will be informed. When the system is activated, it will send messages to the police, ambulance, rescue squad, and the two individuals mentioned above. The message "ACCIDENT DETECTED AT ----- LOCATION" will appear. The GPS Module will be used

by the system to add a location to the message. This process will follow many processes mentioned in the discussion. It will keep records like a black box.

II. RELATED WORKS

In this system of accident detection, Crash sensors, a GSM module, a GPS module, an Arduino Uno, and a radio wave emitter are used to detect accidents and emit signals to the police, ambulance, rescue team, and the victim's family [1, 2, 3].When the system detects an accident, it sends a message via GSM Module[1,2,3] .If a network is present, it will emit a radio wave signal via a radio wave emitter. Taking factors of the network into consideration, we used radio wave technology and the concept of LoRaWAN (Long Range Wide Area Network). It is used to enable the long range without wired data transmission.

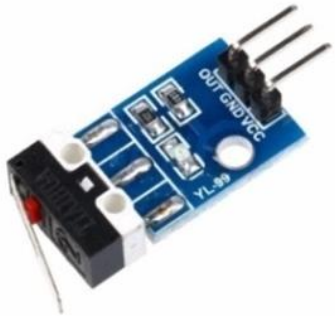
In the car recorder system, it will record all the factors such that it will record only factors before 30 minutes of the accident and will record for 10 minutes after. The queue structure follows the FIFO (first in, first out) rule. And taking its safe position into consideration, it will be installed at the centre of the car and coated with a layer of metal to avoid damage to it, like the concept of a black box.

III. METHODOLOGY

In this system, the components are as follows:

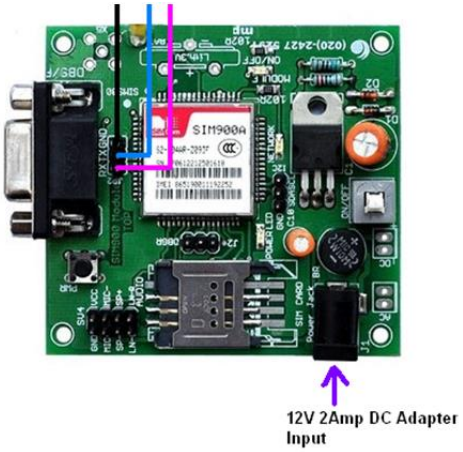
1. **Arduino UNO** [1, 2, 3]: It is used as a microcontroller in the system and controls its functioning. It has a set of digital and analog input and output pins. It is programmable via the Arduino IDE (Integrated Development Environment).

2. **Crash sensors:-** Crash sensors are the sensors that are used in the airbag system in cars. They detect collisions and convert them into signals in microseconds. We are going to use it to detect accidents, as they are already installed in cars.



3. **GPS Module** [1, 2, 3] **:-** GPS is the global positioning system; it makes use of satellites to send the signal. It is used to get the position of an accident spot. We are going to use a NEO-6M GPS module in it.

4. **GSM Module**[1,2,3]**:-** GSM Module is Global System for Mobile communication . It transmits the message in form of sms to requiredpeoples such as police, ambulance, rescue squad and victim's family.

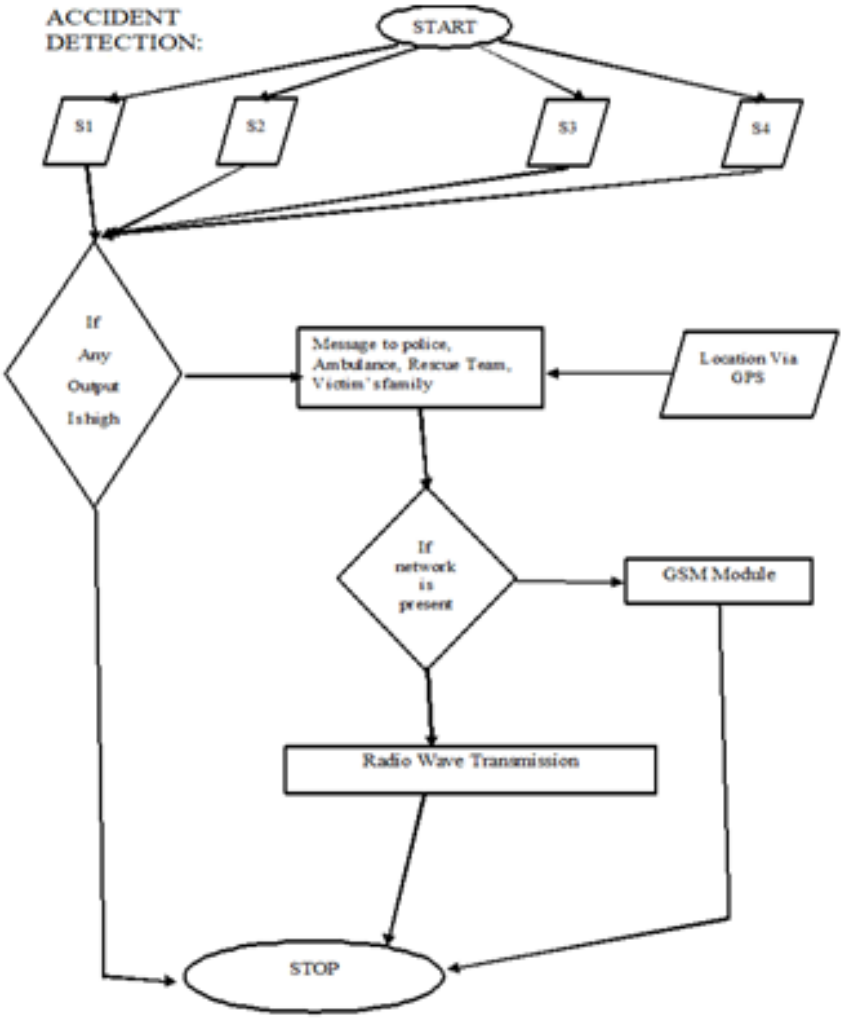


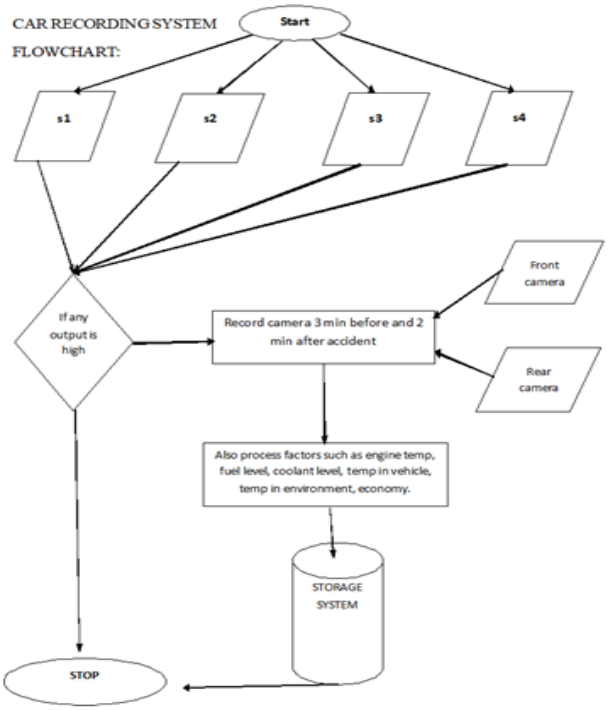
5. **Radio Wave Emitter:-** A radio wave is released by the transmitter and then cached by the receiver. To receive and transmit radio waves, it requires an antenna. It emits radio waves and transfers signals through the air in electromagnetic form.

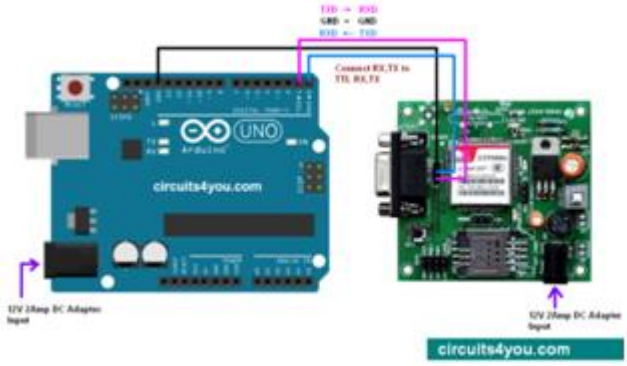
IV. DISSCUSSION

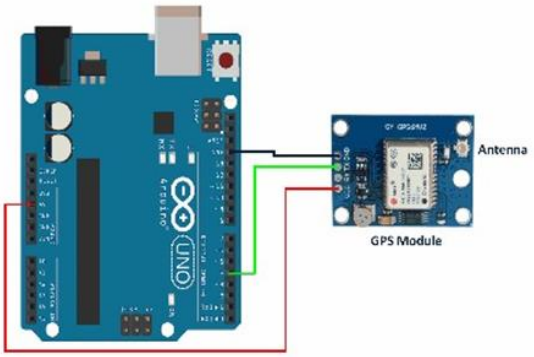
In this system, our prime focus is to reduce the death rate in the whole world. Where the death rate due to accidents all over the world is 1.3 billion per year, we can reduce this rate by some number. This system works when an accident is detected, and then people who are critically injured will be helped. To avoid accidents,

there are many systems in existence, such as the ESS (Emergency Stop Signal) system, etc. Many drawbacks of this system are avoided, such as connectivity in mountains [1, 3]. What we can do is install a radio signal transmitter, and when the system will not be in range, meaning when the system is not connected to a WAN (wide area network), it will use radio waves to transmit signals and send the last location when it was in the network, and it will record factors in the car as said above to get clarity about factors responsible for accidents, and using that data and AIML (artificial intelligence machine learning), we can reduce the chances of accident. It will be useful in critical situations where no one is available to assist and many people are critically injured. False reporting is not possible in this system because it takes input from crash sensors which help airbag to open i.e. when airbag is opened.









V. CONCLUSION

A car recorder and accident detection system will help people save their lives. It's a safe system that will help people. In accident conditions, it will send a message to the ambulance, police, rescue squad, and family of the victim with a live location. GPS Module will get the exact geographic location, and GSM Module will help convey a message; if GSM Module fails, it will transmit radio signals [1, 2, 3]. As an ambulance arrives, it will

provide aid, police will manage traffic and many other conditions, and in critical situations, if the ambulance is late or in the mountains, if a car crashes in the valley or is in danger, the rescue squad will assist. It is cost-efficient and cheaper than the lives of victims.

VI. FUTURE SCOPE

All across the world 1.3 billion people die due to road accident. To reduce number of deaths this system is used. It will inform ambulance, police, rescue team, victim's family as soon as accident occur and hence death due to accidents can be prevented. We can use it's collection of data to prevent accident with help of AI ML in future and data will be recorded by using car recording system.

VII. ACKNOWLEDGEMENT

In this paper, research would not be possible without help and guidance from Prof. MeghaTijare and Dr. S.K. Devade.

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