IOT BASED SMART VEHICLE BLACK BOX WITH SECURITY SYSTEM

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Abstract - The smallest possible amount of circuits can be used to design this prototype. In order to reduce the death rate, the SBBSS can help build safer vehicles, enhance the care for crash victims, assist insurance companies with their vehicle collision investigations, and improve road conditions. Vehicle theft has become a shared issue for all citizens as the number of cars and trucks increases quickly. The populace has always needed security and safety. However, the tracking and monitoring features are missing from current anti-theft systems. With cloud services dominating the rapidly expanding electronics product category, internet of things (IOT) has been dictating the electronics era. As a result, a system for maintaining security and storing vehicle data must be created. Using IOT for the security of cars and people, the vehicle can be protected from issues like theft and towing. The user can manage the engine's ignition and, if necessary, switch it off. The prototype offers an answer to issues like towing and theft. To control the security system from the user's mobile phone or any other device with a potential Internet connection, the system makes use of a Bluetooth module and controller. In the electrical product area, it also offers 24-hour-a-day vehicle tracking using Google Maps. As a result, a system for maintaining security and storing vehicle data must be created. .When a car needs to be towed or stolen, this aids the user in tracking the vehicle. The effectiveness of the SVBBS system in accurately identifying accidents, determining their seriousness, and locating vehicles showed promise. It is a cutting-edge system that has a security system. Through the mobile app, we are able to turn the engine ON/OFF. Our car can be tracked around-the-clock.

Key Words: IOT, Arm, Sensors, Theft, Touch display, Smart vehicle, Gsm, Gps, Embedded, Rpi, arm processor.

1. INTRODUCTION

All of the people in this world rely heavily on cars and the infrastructure of the road system to get from one point to another. Since the dawn of civilization, human development has included the use of transportation. Road traffic accidents will be the tenth greatest cause of mortality worldwide in 2019, according to health statistics. Additionally, it demonstrates that crucial fatalities result from incidents that do not receive prompt medical attention. Even if technology has improved significantly, the accident prevention and detection methods still in use were static measures like speed limits and road signs that were put in place decades ago. The survey on traffic accidents suggests using IoT technologies to detect accidents. The majority of IoT devices used embedded systems created using microcontroller boards like Arduino that were only released with piezoelectric sensors. The World Health Organization estimates that more than a million people worldwide pass away every year as a result of incidents involving transportation. The black box system creates the first step to address this issue, which crosses national lines and jeopardizes everyone's safety and health worldwide. The black box system, which was first introduced to a portion of the American market in 1999,

proved to be effective. IoT technology is suggested for application in accident detection in the latter example, though the system was installed in the car. Therefore, in addition to improving the treatment and road conditions for victims to reduce deaths, create better cars, and assist insurance companies in searching for car crashes, the main goal of this research is to create a black box that can be built. any car worldwide system. Like an aircraft's data logger, "black box" technology can now play an important role in investigations of driving accidents and theft. Many cars currently on the road are equipped with electronic systems that record data in the event of an accident. That's why it's important to have a system that can control what happens before, during, and after a car accident, often as a compliment to insights from victims, witnesses, and police reports. It also provides users with high security.

In today's world of comfort and luxury, there are many luxury and expensive cars. Most of these tools have already been released with security measures. However, despite large investments in vehicle safety, car theft is still on the rise. Therefore, we can create a high security black box car based on the internet of things. In a project, vehicle owners can easily install the device in their cars with a low cost and high data recording and tracking system. This has led to the search for additional security mechanisms to prevent vehicle theft. We decided to implement our project in the field of vehicle safety and security to prevent car theft. Vehicle tracking systems allow users to track their vehicles, routes and destinations. there are still questions. Recent developments in the automobile industry have caused many people to choose to travel with their cars.

This is reflected in the vehicle owners. But parking all these cars in a big city is a very difficult task. After accidentally parking the vehicle, there are problems such as towing the vehicle and no solution has been found yet. Therefore, the project also solves the problem of parking and add-

ons. To solve all the above problems, this project has the following functions: There is no opening of the door, and the electricity is controlled by two keypads and wears the seat.

The program also takes care of people entering through the window of the car and can track the location of the vehicle in case the vehicle is towed or stolen. These features should provide better safety for the car.

2. Proposed system

Using any existing system, one cannot predict all accidents. Hence at least we must be able to detect accidents as early as possible. Any person or animal that is injured in an accident must be provided with medical treatment right away. Oftentimes, the people that are injured in accidents may not go for immediate medical treatment, either because of misjudging the injuries or due to the legal procedures involved in accidents. Even a person feels okay; there is no harm in being evaluated for any injuries. The main goal of SVBBSS proposed in this paper is immediately detecting accident, evaluating the driver's condition and informing it to the authorities. The SVBBSS was not a simple system but a framework to immediately detect accidents with severity.
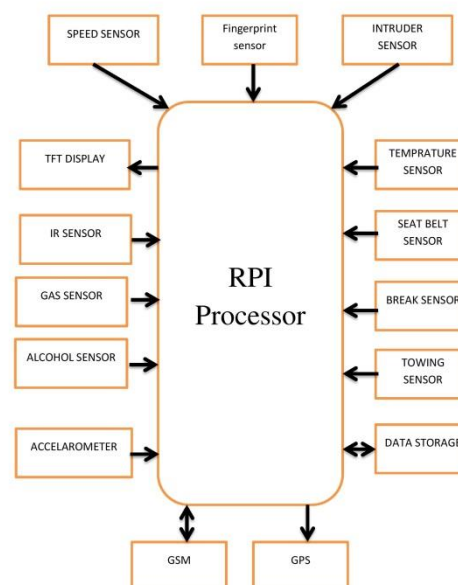
SVBSS also help the user to remotely shutdown the vehicle during theft. It also allows the user to locate the vehicle position from anywhere in the world. To accommodate all these, the SVBBSS includes ARM Processor accompanied by different sensors, GSM/Wi-Fi module and GPS module.

For ignition to start or for the door to get unlocked, user needs to enter the password through Mobile App, if password is correct then only car door gets open and the user is given only 3 chances to enter the password, if password is wrong all time then we need to press the reset button to reset the system. After that, if the user wears the Seat belt and the password is correct only then the user can operate the ignition or engine of the car. If we park our car near an unauthorized area and if it gets towed, then a limit switch will get pressed automatically. This sends a command to ARM Processor which in turn sends a command to dashboard (dashboard side mobile) through Gsm module. The dashboard will then send information to user through SMS with GPS location and the user is alerted with the same with continuous beep sound. If someone is

trying to theft valuable things through the window or any obstacle comes in between the window, it is being sensed by an IR sensor then the sensor sends command

To Processor and then Processor send command to dashboard (dashboard side mobile) through Gsm module then dashboard side mobile send information to user through SMS with GPS location and the user is getting closed.

The wireless black box has temperature sensor, smoke sensor, break sensor, fingerprint sensor, alcohol sensor, water sensor, limit switch, seat belt sensor; touch screen displays which are interfaced to the Rpi Processor. Temperature sensor measure amount of temperature exhausted from the vehicle. Smoke sensor will sense the amount of gas emitted from the vehicle. These values are also displayed on LCD. The total equipment of this project is placed inside a vehicle is not visible to others. When an accident occurs with vehicle will be detected by the MEMS and this information is given to microcontroller. The system use GPS (global positioning system) module to get the location of the vehicle where the accident has occurred. The location values are given to microcontroller. Controller will give this information to GSM module. GSM will send the message to concerned person having information about temperature level, smoke condition and speed of the vehicle and real time of accident. It also has graphical location of the vehicle.

Block diagram of Proposed System

3. CONCLUSIONS

The proposed project "IoT Based Vehicle Black Box with Security System" It takes the security level a step forward and attempt to cover numerous of the escape clauses which are in existing technology. The IOT

based progressed vehicle System is practical and can control the theft consequently. The reaction time delay is additionally less. This IOT based vehicle Black Box with Security system empowers client security by situate belt compulsion, key less locking /opening framework to function the vehicle. In expansion to the over, it gives security from towing of car and robbery through the car window and it moreover give the24*7 following system.This framework to o makesadifference to recuperate the information after the mischance and send the message to the enlist individual so the casualty gets offer assistance in less time as well as makes a difference the police or protections company to see the data what ishappen at the time of accident.

The system is perfect for cars, advance it can be utilized for

other vehicles as well by utilizing these components and modules utilized in this venture.

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