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A CONTEMPORARY ACCIDENT DETECTION AND PREVENTION SYSTEM

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Abstract: The objective of this project is accident prevention and accident detection. Accident prevention is done by only initiating the automation system by scanning the valid license so that the person below 18 years cannot drive the vehicle that also helps in the test control. Accident detection is done by automatically detecting the accident and alerting the needed people. An automatic accident detection system will initiates itself and will alert the emergency medical teams like ambulance, hospital emergency ward whenever an accident occurs and also provides the live location of the vehicle. An android application is developed in such a way that detects and sends an alert message to the concerned people. A sudden tilt of the vehiclewill be observed using the tilt sensor, accelerometer, and GPS respectively. The application will also share the exact location of the vehicle in an alert message that will result in saving time.

Keywords: GPS module, GSM module, license verification

I. Introduction

The automobile industry is expeditiously increasing in terms of technology and number of vehicles. Along with this, the number of accidents is also increasing at an alarming rate. Approximately 1.35 million people die each year due to road accidents, of which two-wheelers account for 60% of the total road accident deaths. In many cases, the victims suffer from serious injuries where time plays a crucial role in saving lives.

This device is going to be a best one to the victims of Hit-n-Run accidents, also those who meet with an accident in early mornings or late night, when there's nobody around to witness and call for help.

An automatic electronic system is going to be more efficient and reliable than any eyewitness calling for help. This device mainly focuses on motorcycles as motorcycle drivers are more prone to body damage in accidents as compare to car drivers.

II. Related Work

In this project, the accident was detected by an accelerometer and also the vibration sensor's data. After detection, the location was identified and saved by the GPS then GSM sent an alert message to the emergency people. Alert Message comprises the location.

This application allows canceling the alert message to avoid false alarms. This application tracks the location of a vehicle so that it can avoid theft of a vehicle. The user gets a notification while theft and the vehicle get started. The user can also stop the engine through an application.

III. System Implementation

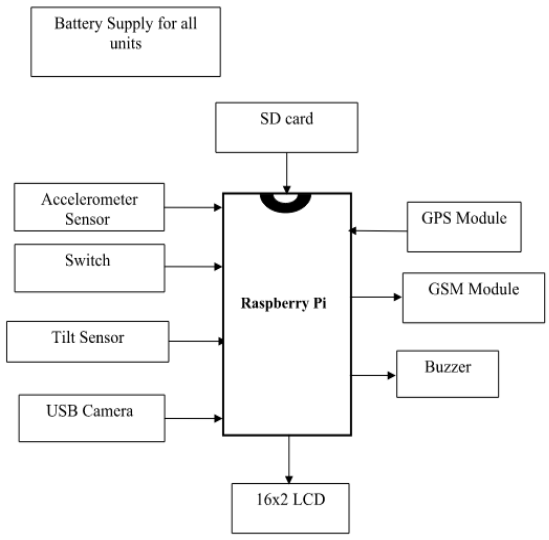

Fig 1. Block Diagram

The microprocessor plays an important role in this project. It receives the signals from the ACCELEROMETER sensor and TILT sensor when an accident occurs and sends an alert message to the responders along with the location with the help of GPS / GSM MODULE. The SWITCH works in a way that if it is pressed then the alert message would not be sent in case of minor accidents. The BUZZER also gets buzzed during the situation to alert the nearby people. To prevent the accident, a CAMERA is used to scan the license and use it as a key to start the bike. It is also used to detect potholes and alert the user.

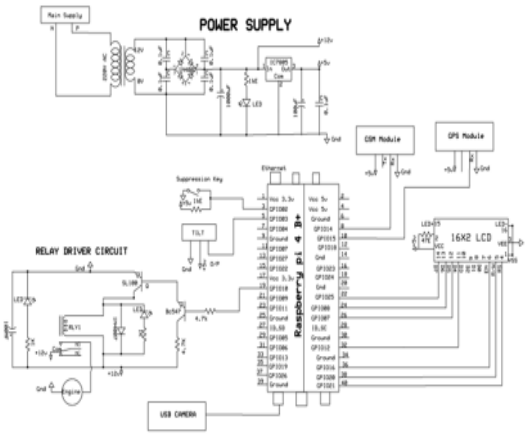

Fig 2. System Architecture

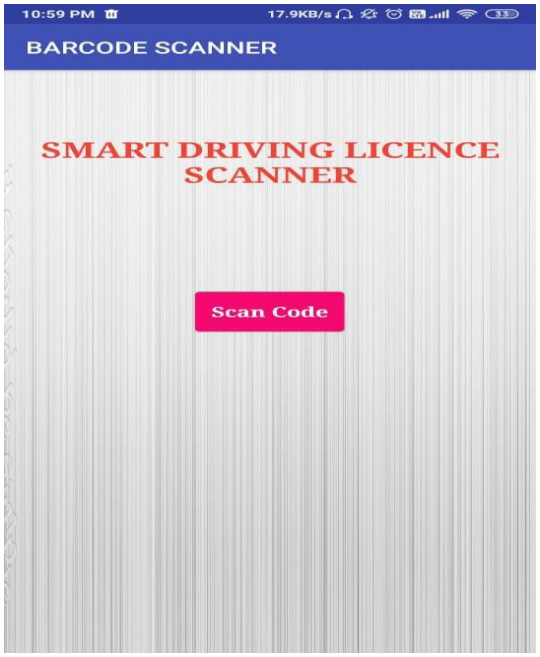

Fig 3. System Application

IV. Conclusion & Future scope

We can arrive to the conclusion that this system can be used in two-wheelers to detect accidents and help in preventing them by causing fewer injuries. The main issue of getting late medical help and false alarms can be solved by using this system.

As the emergency responders will be intimated at the earliest within the time without any delay and there is an option available to cancel the alarm, the system has solved the issue very well. For additional care, the system is also trained to detect potholes thus reducing the rate of accidents.

The developed system can be enhanced in future works by using a nano camera and making the size of the system small and portable.

A smart key can be introduced to start the vehicle and using the license for verification by using face detection and machine learning. In addition to this, the system can be trained to stop the vehicle automatically when the accident is occurred to reduce injury. In this way, the system can become more efficient to detect accidents and prevent them in most cases.

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