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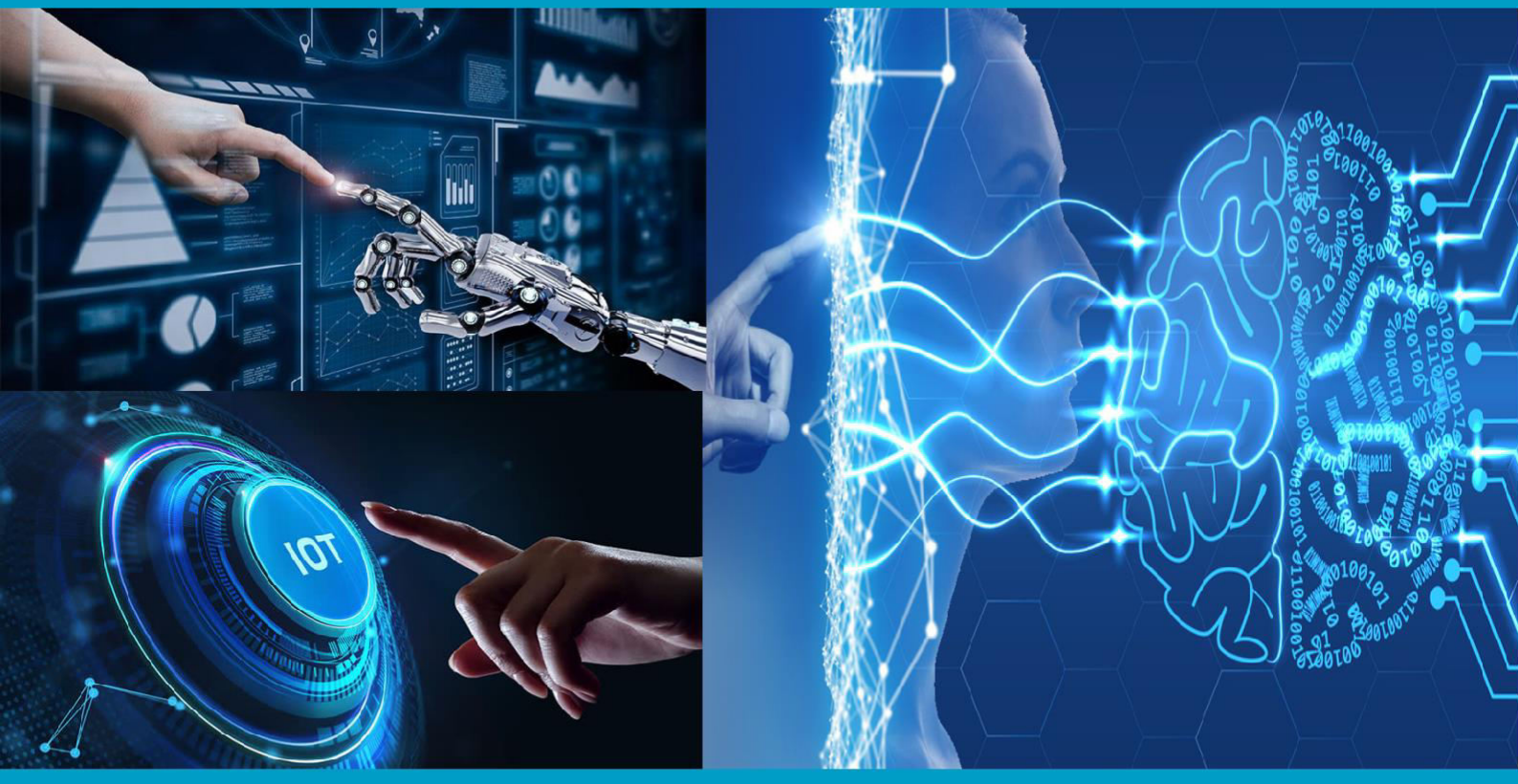


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# Fingerprint based two wheeler security system with the Feature of Accident Detection

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**ABSTRACT**: Using an accelerometer and a GPS module, this research suggests a two-wheeler accident detection system. In the event of an accident, the system notifies emergency contacts via a distress message. To prevent unauthorised access to the bike, a fingerprint-based security system is also used. Riders of two-wheelers will benefit from the proposed system's improved safety and security features.

**KEYWORDS:** Accelerometer, GPS module, Fingerprint

## I. INTRODUCTION

Due to an increase in accidents and thefts, accident detection and fingerprint-based two-wheeler security systems are becoming more and more crucial in today's society. These technologies offer a dependable and safe way to safeguard both the rider and the car. The accident detection system detects accidents and notifies emergency services using sensors and GPS technology. Biometric identification is used in the fingerprint-based security system to make sure that only authorised people can start the car. These systems are popular among owners of two-wheelers since they are not only efficient but also simple to operate.

## II. EASE OF USE

A. Accident Detection:

With the use of sensors and microcontrollers, an intuitive two-wheeler accident detection system may be created. Installing an accelerometer and a GPS module on the two-wheeler will enable the system to function. The vehicle's acceleration or direction may suddenly change, which the accelerometer might detect as a potential sign of an accident. Once the vehicle has been located, the GPS module will send a notification to a predetermined emergency contact number or a central monitoring system. A smartphone app that is connected to the two-wheeler's system can aid with this.

B.Fingerprint-based Two-Wheeler Security System:

Rider access to their bike can be made simple and secure with the help of a fingerprint-based two-wheeler security system. The system can be put into use by connecting a fingerprint scanner to the two-wheeler's starter motor or ignition switch. As only authorised users whose fingerprints are registered in the system will be able to start the vehicle, this will prevent unauthorised access to the vehicle. This system might be made more user-friendly by allowing numerous people to register their fingerprints. This will make it possible for several users, such family members or friends, to use the car without a key or a password. The system may also be made to give the user feedback.

## III.METHODOLOGY

We have undertaken to create a much better and precise anti-theft cum vehicle for our B. tech final year project assignment. A tracking security system that the user may control from anywhere. In our project, the main control component that will combine all of the system's modules is a microcontroller. According to the system is controlled by the information that various modules receive. Fig. 1 depicts the designed system's block diagram, which has the following modules:

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A. Arduino Uno R3

By combining the Arduino Uno R3 with sensors like accelerometers and gyroscopes to detect sudden changes in motion or collisions, an accident detection system for two-wheelers can be created. This may set off an alarm or notify emergency services. The Arduino Uno R3 can be used to manage vehicle access in a fingerprint-based two-wheeler security system by connecting it to a fingerprint scanner. Before granting the user entry to the car, the user's fingerprint is scanned and validated. Additional security features like an immobiliser or an alarm system can be controlled by the Arduino.

B. GSM Module

The Global System for Mobile Communication, or GSM, is used for communication. Here, the GSM module is mostly used for call reception and message confirmation. Cellular connections are established using the Global System for Mobiles (GSM) technology. The transmission of mobile voice and data services takes place through it. Everything required to support the microcontroller is included.

C. GPS Module

An accident detection system can employ a GPS module to track a vehicle's location and speed in real-time. The module can notify emergency services of a collision and give them the precise position of the bike. A GPS module can be used in a fingerprint-based two-wheeler security system to locate the bike in the event of theft. The module enables prompt recovery of the stolen car by sending notifications to the owner's mobile phone or an external security system. In general, a GPS module can improve the security and safety of two-wheelers by enabling real-time position tracking and theft or accident notifications.

D. Fingerprint Module

The module can be utilised in a fingerprint-based two-wheeler security system to restrict who can start the car. The system will only allow the engine to start if the user's fingerprint matches an authorised print recorded in the system's database. The fingerprint scanner can be built into the ignition switch. Theft or accidents.

E. Accelerometer

By detecting rapid changes in velocity and acceleration that can be signs of a collision, an accelerometer can be employed in accident detection systems. In order to notify authorities, this information may then set off an alarm or emergency response system.

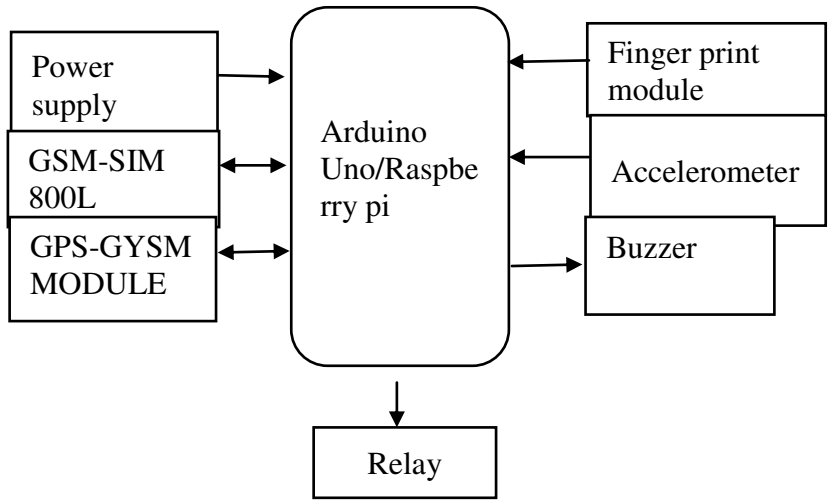


Fig.1. Block Diagram of Designed System

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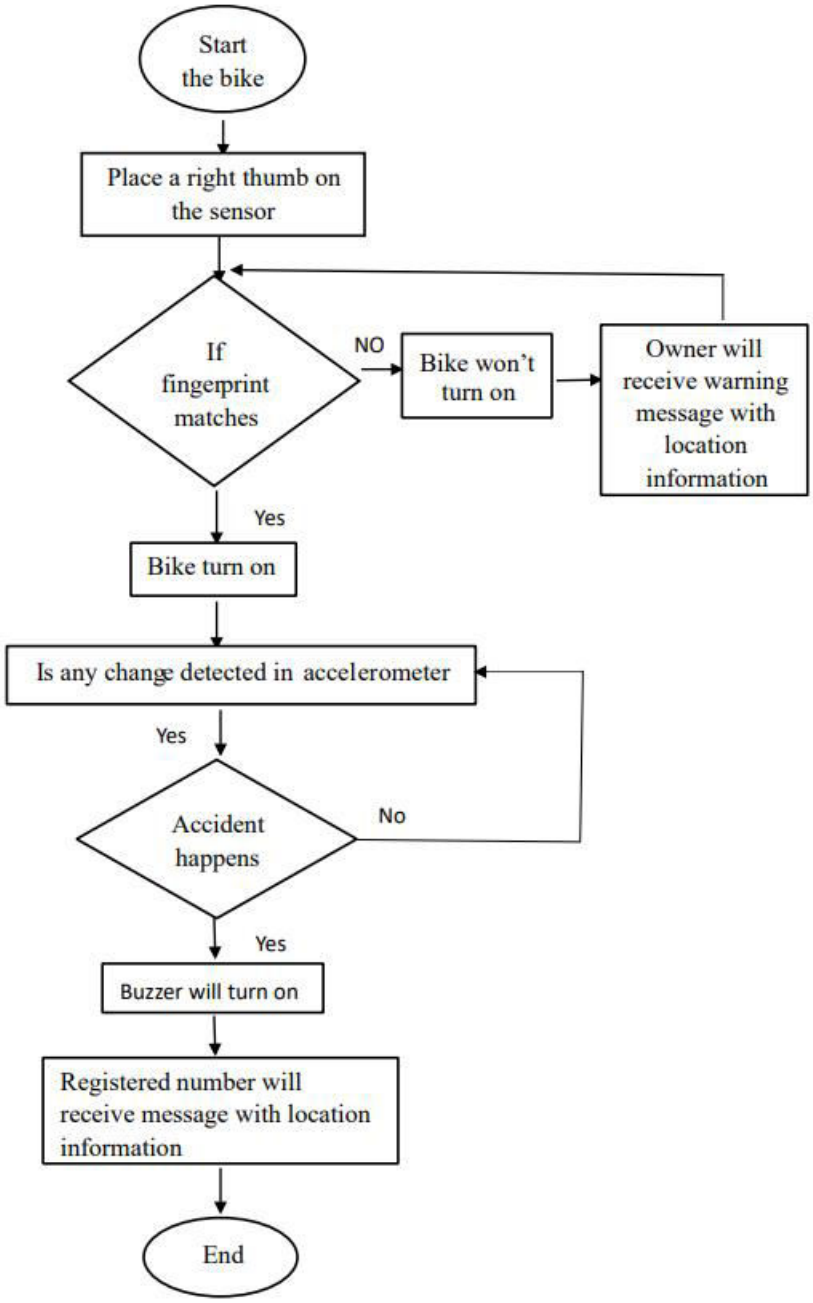
The working of the system can be summarized with the help of flow diagram as shown in Fig.2




System for detecting accidents: The system monitors the motion of the vehicle using a variety of sensors, including accelerometers and gyroscopes, to identify any rapid changes in motion. The technology can notify emergency services of an accident and provide the accident's location.

Two-wheeler security system based on fingerprints: The system uses a fingerprint scanner to verify the owner of the two-wheeler. The vehicle can start if the system detects the owner's fingerprint. The technology will prevent the car from starting if an unauthorised person tries to start it and may sound an alarm. This technology can enhance vehicle security and deter theft.

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## IV. CONCLUSION

Innovative technologies, such as accident detection and fingerprint-based two-wheeler security systems, can considerably improve rider and vehicle safety and security. Systems for detecting accidents and instantly alerting loved ones or emergency services make use of sensors and algorithms. By speeding up reaction times in urgent situations, this can potentially save lives. Biometric authentication is used by fingerprint-based two-wheeler security systems to deny unauthorized entry to vehicles and lower the risk of theft. Although both of these technologies are still in the research and testing phases, they have the potential to revolutionize the two-wheeler industry and improve everyone's riding experience. It's crucial to remember that these technologies cannot take the place of safe and responsible driving habits. The priority for riders should always be their safety andthe safety of others on the road by wearing appropriate gear, following traffic rules, and avoiding reckless behaviour.

## ACKNOWLEDGMENT

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