Fingerprint Based Smart Bike

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ABSTRACT

At the point when an accident or theft happens, data related with those accidents is not recorded, and if the bike is in isolated area emergency numbers cannot be reached to help to be user. Apart from that key is the only way to get the access into the bike. This project aims at the development of self-starting motorcycle based on finger print. By using this project owner can easily start his motorcycle using fingerprint. Here owner don't have to carry key every time, also owner able to know the location of the vehicle. Another alert is that if the vehicle is met with an accident 5 friends of the owner will get alert message with location. It also provide a theft alert if someone try to stool the vehicle. Here this project proposing another technique for the authentication that is, fingerprint based authentication for the bike and accident detection system with live GPS tracking.

Keywords : IOT, Fingerprint, GPS Tracking, Accident detection

I. INTRODUCTION

Fingerprint based smart bike is having functionality of reading users/owners fingerprint details (biometric details) and cross verified with recorded database data for the successful authentication. It also provides ignition start by the help of fingerprint sensors. This bike also provides real-time GPS tracking system along with accident detection with anti-theft alarm. For non-interrupted live GPS tracking in isolated area, the system updates the location details in every minutes. A large number of vehicles currently on the roads have that record information in the event of crash. That's why it is important to have an accident detection system, which provides the exact vehicle location where the accident took place. It also records the number of accidents occurred in the database for the better investigation purposes. This system also provides anti-theft alarm from unauthorized access from theft or anyone who is not registered their biometric details.

At the point the bike can be only accessed using keys. This can be hijacked using cloned keys. In case of accident the emergency contacts cannot came to know about the accident occurred and safety is missing here. Apart from accident the theft is more often nowadays in case of theft existing system cannot provide any further securities. So in this we introducing anti-theft alarm and notification system. That is in case of theft the owner can get to know the exact live location updates and he can turn of the entire bike system remotely by using application or by sending commands as message.

We are proposing another technique for the authentication that is, fingerprint base authentication for the bike and accident detection system with live GPS tracking. In case of theft we proposing a new

security system that is tracking the bike and also we can turn of the entire the bike system

II. SYSTEM DESIGN
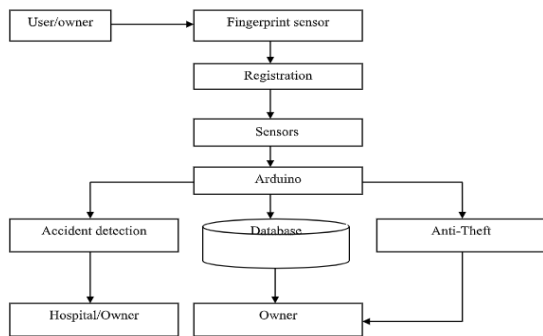
Figure 1: Architecture of Fingerprint Based Smart Bike.

Figure 1 shows the system architecture of Fingerprint based smart bike. Owner needs to register his finger for authentication. The fingerprint is matched using pattern matching algorithm by Arduino. Sensors are connected to Arduino. Arduino reads all sensor values and insert into database. Arduino will control sensor data according to that it will send location and alert to the admin.
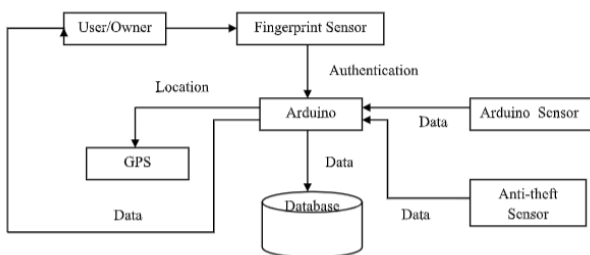
Figure 2: Data Flow Diagram for Fingerprint Based Smart Bike.

Figure 2 Shows the data flow diagram for the Fingerprint based smart bike. User or the Owner can use the fingerprint sensor this authenticates the user with the fingerprint data, and the user login details will be saved into the database with the date and time

with location details, These are controlled by the arguing and then gardenia sensors like GPS , Anti theft sensor and GPS modules will sends the required data like, Location details, time users information phone number along with latitude and longitude into the database and it will store the data into the database in each logins.

III. IMPLEMENTATION

1. ARDUINO UNO

Figure 3: Arduino UNO

The Arduino Uno is a microcontroller board based on the ATmega328. This microcontroller will control all the sensors and according to the sensor
value it will detect accident and theft attempt send notification.

2. GPS Module

Figure 4: GPS Module

Global Positioning System (GPS) is a satellite-based system that uses satellites and ground stations to measure and compute its position on Earth. GPS is

also known as Navigation System with Time and Ranging (NAVSTAR) GPS. GPS receiver needs to receive data from at least 4 satellites for accuracy purpose. GPS used to find the location of the vehicle at particular time. It will send this information to microcontroller.

3. GSM Module

Figure 5: GSM Module

A GSM module or a GPRS module is a chip or circuit that will be used to establish communication between device or a computing machine and a GSM or GPRS system. Here we use GSM to send notification and alert message to owner and others.

4. Fingerprint Sensor

Figure 6: Fingerprint Sensor

This is an optical biometric fingerprint reader/sensor module with TTL UART interface for direct connections to a microcontroller UART. The user can store the finger print data in the module and can configure it in 1:1 or 1: N mode for identifying the person. This can be used to authenticate authorized riders.

5. Accelerometer Sensor

Figure 7: Accelerometer Sensor

An accelerometer is an electromechanical device used to measure acceleration forces. Such forces may be static, like the continuous force of gravity or, as is the case with many mobile devices, dynamic to sense movement or vibrations. In this project we use accelerometer for detecting speed of vehicle and to detect accident.

6. Vibration Sensor

Figure 8: Vibration Sensor

Vibration sensors are commonly used for measuring the linear velocity, displacement and proximity. In this project vibration sensor module which detects vibrations or sudden modulations of the bike. Vibration sensor module gives a digital output HIGH/LOW depending on the vehicle action. In our case, we have used an active HIGH logic vibration sensor module. It means whenever the vibration sensor will detect vibration it will give HIGH logic to the microcontroller.

IV. CONCLUSION

As we all know, these days motor vehicle accident is not an odd incident. Also there is regular increases in the theft of motor vehicle after the year by year. This paper demonstrates how to implement a IOT module to prevent and detect motor vehicle theft and accident. This finger print base biometric authentication provides a strong secure authentication of owners and riders. Also it will sent the location of the vehicle every second and alert in case of accidents.

V. REFERENCES

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