

FINGERPRINT BASED VEHICLE STARTER

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ABSTRACT- Our project is about fingerprint based ignition in bikes which includes all two wheelers. Normally available locks in the bikes do not provide enough security to the bike owners. Traditional locks available in the bikes are well known to thieves and they can be easily broken by them. Thus there is need for more security options to be available for the motorcycle which is unique and must be different from the traditional key locks. Biometrics system can be used as a good and effective security option. An important and very reliable human identification method is fingerprint identification. As fingerprint of every person is unique thus it can be used in various security options. In this paper we are focusing on the use of finger print recognition to start or ignite the motorcycle against the use of conventional methods of key locks. Related work include enhancing the security of the bikes by adding different types of locks and alarming unit to alert owner of the bike in case of danger.

KEYWORD: Atmega328 controller, LCD Display, Arduino, Relay, Fingerprint recognition.

I. INTRODUCTION:

Fingerprint recognition technology allows access to only those whose fingerprints that are pre stored in the memory. Stored fingerprints are retained even in the event of complete power failure or battery drain. This eliminates the need for keeping track of keys or remembering a combination password, or PIN. It can only be opened when an authorized user is present, since there are no keys or combination to be copied or stolen, or locks that can be picked. The fingerprint based lock therefore provides a wonderful solution to conventionally encountered inconveniences.

Biometric system includes various types such as face recognition, voice recognition, fingerprint recognition, eye recognition. Among these techniques the fingerprint recognition is the most widely used. This is because fingerprint of every person on the earth is unique and can provide good reliability compared to the other conventional methods. Fingerprint biometrics are easy to

implement. The two significant parts of fingerprint biometric system is Identification and Authentication.

II. FINGERPRINT SENSOR:

A fingerprint sensor is an electronic device used to capture a digital image of the fingerprint pattern. The captured image is called a live scan. This live scan is digitally processed to create a biometric template which is stored and used for matching. Optical fingerprint imaging involves capturing digital image of the print using visible light. This type of sensor is, in essence, a specialized camera. The top layer of the sensor, where the finger is placed, is known as the touch surface. Beneath this layer is a light-emitting phosphor layer which illuminates the surface of the finger. The light reflected from the finger passes through the phosphor layer to an array of solid state pixels which captures a visual image of the fingerprint.

A scratched or dirty touch surface can cause a bad image of the fingerprint. A disadvantages of this type of sensor is the fact that the imaging capabilities are affected by the quality of skin on the finger. For instance, a dirty or marked finger is difficult to image properly.



Fig- Fingerprint Module

III. GSM MODULE:

It can be used to make calls, send text messages and emails in case it is an Internet based SIM card. The GSM Module uses a dual band 900/ 1800 MHz GSM modem. It works on 4 V DC regulated power supply that is controlled by the microcontroller. Apart from that it is a plug and play device which means no drivers are required for this module to be installed. The purpose for this Hardware's usage is to send a message to the registered mobile number, when someone tries to access the vehicle illegally.



Fig- GSM Module

IV. ATmega328 Controller:

The ATmega328 Controller is an open-source controller board based on the microchip ATmega328 controller and developed by Arduino.cc. The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The board has 14 Digital pins, 6 Analog pins, and programmable with the Arduino IDE (Integrated Development Environment) via a type B USB cable. It can be powered by a USB cable or by an external 9 volt battery, though it accepts voltages between 7 and 20 volts. It is also similar to the Arduino Nano and Leonardo. The hardware reference design is distributed under a Creative Commons Attribution Share-Alike 2.5 license and is available on the Arduino website. The ATmega328 comes preprogrammed with a boot loader that allows uploading new code to it without the use of an external hardware programmer.

V. LCD:

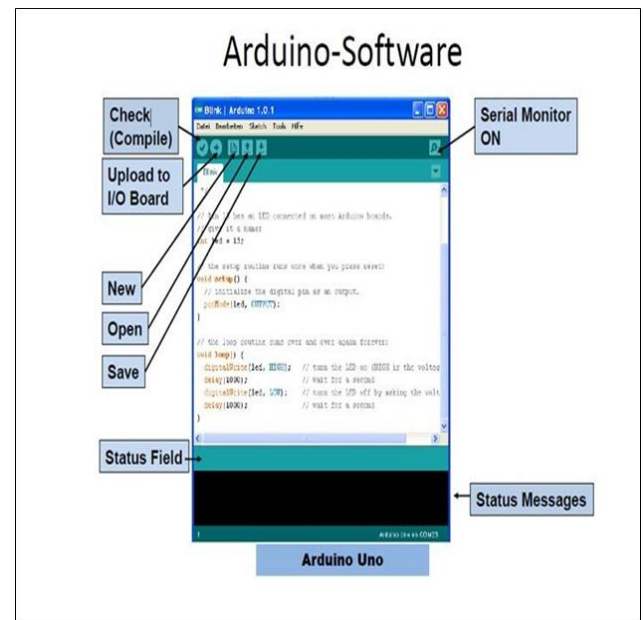
Liquid crystal displays (LCD's) have materials, which combine the properties of both liquids and crystals. Rather than having a melting point, they have a temperature range within which the molecules are almost as mobile as they would be in a liquid, but are grouped together in an ordered from similar to a crystal. An LCD consists of two glass panels, with the liquid crystal materials and witted in between them. The inner surface of the glass plates are coated with transparent electrodes which define the character, symbols or patterns to be displayed polymeric layers are present in between the electrodes and the liquid crystal, which makes the liquid crystal molecules to maintain a defined orientation angle.

VI. SOFTWARE DETAILS:

Here is some software which is used in proposed system.

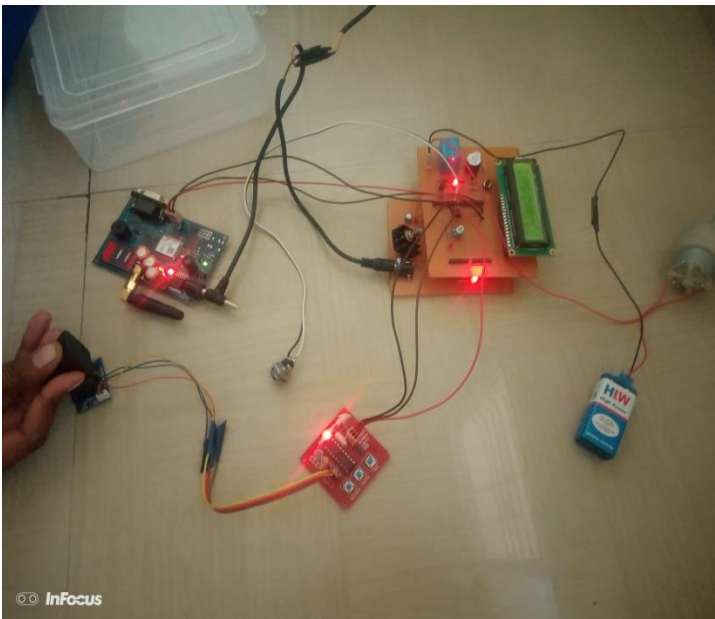
VI.1. Arduino IDE:

For the automation using BT module and Arduino, we uses the Arduino IDE (Integrated Development Environment) for programming of Arduino.



Arduino is an open source platform used for building electronics projects. Arduino consists of a both physical programmable circuit board and piece of software, or IDE that runs on your computer, used to write and upload computer code to the physical board.

VI.2 System Design:



VII.1. Block Diagram:

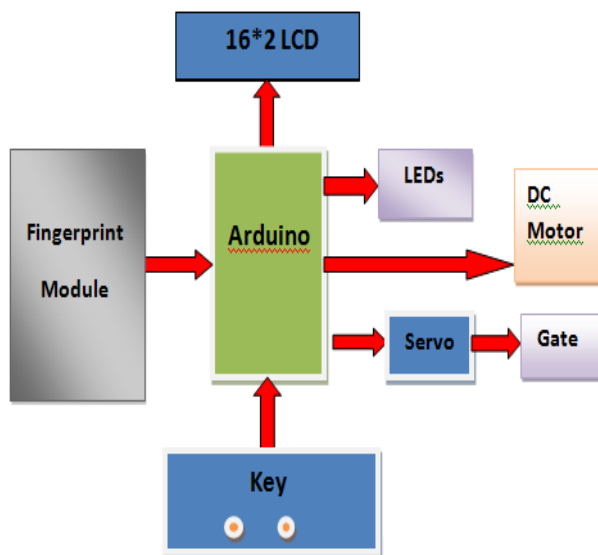


Fig- Block diagram

VII.2. Working:

The motorcycle will be ignited only when the authorized person scans his/her finger on the fingerprint module. The fingerprint of the authorized persons are

stored in the fingerprint module. When any person put his/her finger on the fingerprint module then the data of the placed finger is matched with the stored data in the module. If the fingerprint data is found in the module then match the condition occurs and the microcontroller ignites the bike otherwise bike will not start.

VII. APPLICATIONS:

- Cars
- Motorcycle
- Transport vehicles
- Home Security Systems
- Lockers
- ATM's

VIII. ADVANTAGES:

- Highly reliable
- Highly secure than other security systems.
- Processing speed is fast
- Economical biometric technology
- Less Memory Space
- Easy to use and user friendly

IX. ACKNOWLEDGMENT

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X. CONCLUSION:

The module was designed to focus on the stating of the engine by the means of fingerprint. The reason for developing this model is to increase the security level and the robustness of the vehicles from day-to-day threats. The user touches the fingerprint sensor and it authenticates the user, if the user is authorized then it automatically starts to engine. The sensor is directly connected to the engine, the wires are attached in such a way that it starts-up. The main reason for using this is low in cost and the fingerprint which is used it cannot be matched of any to people.

XI. REFERENCES

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