

Motorcycle theft avoidance using an fingerprint and number-lock system

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Abstract : Finger print and Number locking system , we present an advanced security system for motorcycle. As there is tremendous increase in sells of motorcycle but also the counter of stolen vehicles rapidly increases. Nowadays usually to prevent theft the normal locks and wireless key. In these cases it is really difficult to get the motorcycle back. This project is designed to solve this purpose. Main concept of our project is bike security system using fingerprint and number locking password entered through keypad . It uses Microcontroller: This is the CPU (central processing unit) of our project. Whenever bike owner removes key from the ignition lock at that system is turned on . We present an advanced security system for motorcycles. As there is tremendous increase in sells of motorcycles but also the counter of stolen motorcycle rapidly increases. Nowadays usually to prevent theft normal locks and wireless key, these are the two options available in the market. But our proposed system is designed such that there is no need of any lock. Our proposed Security System is totally based on the Password approach in which if password is correct then automatically gets start and ready to drive but if password is incorrect then it is impossible to start motorcycle. All these messages displayed on LCD. In this document a simple solution to the problem has been presented. This automated scheme is used by any motorcycle and provides ample incentive for pretty thieves.

Keywords:

Keyless security system , LCD (Liquid Crystal Display) , Password.

I.INTRODUCTION

Many times we hear the cases of motorcycles getting stolen from the parking area. Or sometimes we forgot to remove the keys from the motorcycle by mistake. In these cases, it is really difficult to get the bike back. “Password based Lock for Motorcycle security with ignition key” project is designed to solve this purpose. The main concept behind this project is a motorcycle security system using a password entered through a keypad . In this project we will be Interfacing Fingerprint Sensor with Arduino to design Fingerprint Sensor Based Self Bike Starter using Arduino. The type of fingerprint module we are using is R305 Fingerprint Scanner Module. Security is a major concern in our day to day life, and digital locks have become an important part of these

security systems. Fingerprint sensor-based is one of the safest motorcycle starting systems as it has the ability to identify and distinguish every person individually without making any error. Also, the module is very small that it can be kept anywhere and with the portability feature and less power consumption you can carry it to any place as well . While biometrics and fingerprint identification has been existing for well over 100 years in some basic form, it is the growth of maker community that made R305 Fingerprint Module so popular. R305 is common modules used fingerprint scanners, with the aid of a powerful DSP in its core. We can communicate with it using a packet of hex codes in a specific format.

II. PROPOSED MODEL

In this proposed system the idea behind this scheme is to incorporate two functions security system and automatic features that will help the motorcycle owner to keep tab of his motorcycle. The proposed system consisting of LCD display and keypad as security system and side stand, headlight and foot rest control as features. The whole operation is performed using Arduino board.

For this proposed architecture the essential prerequisite hardware components is as follows and each hardware components description is given for the same.

a) Arduino Mega 2560

The Mega 2560 is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins (of which 15

can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB

connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the

microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to

get started.

b) Liquid Crystal Display

The main purpose of LCD in this proposed design is to display the information like password and welcome message.

The configuration of the LCD used is 16*2.

c) Motor

A motor is a mechanical device which uses electrical power to work according to the application. Here in this project a

stepper motor and DC motor has been used perform the operations like side stand and foot rest control.

d) Keypad

A keypad is a set of buttons or keys bearing digits, symbols and/or alphabetical letters placed in order on a pad, which can be used as an efficient input device. Here to enter a password it is used.

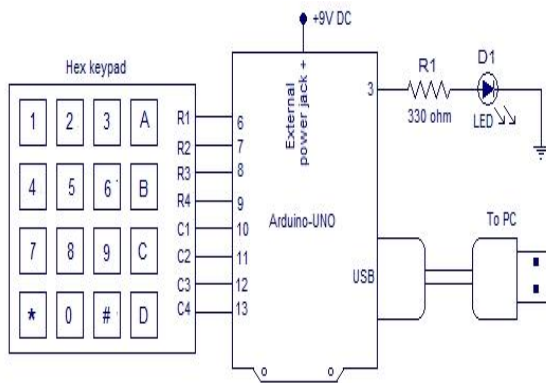


Fig. 1, Numerical lock keypad FPS Interfaced with Arduino Microcontroller

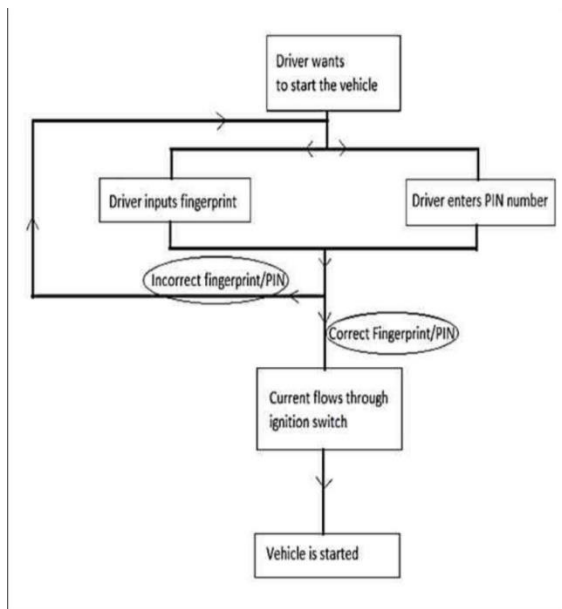


Fig. 2, Flow Chart Of Methodology

III. Biometric Fingerprint Sensor

This is the primary security system of our design which

unlocks the vehicle only when the valid fingerprint is given as input. This system provides more confidentiality to the user as only he can access the vehicle with his fingerprint and no other can unlock his vehicle. There are two separate stages involved in using a fingerprint [1]. First process is called enrolment during which user's fingerprints are scanned, analysed and then stored in a coded form on a secured database. Once enrolment is complete, the system is ready to use and it is the second stage known as verification. Anyone who wants to gain access has to put their fingers on a scanner. The scanner takes their fingerprint, checks it against the print in the database stored during enrolment and decides whether the person is entitled to gain access or not granted access.

The finger print sensor GT511 C3 is a most commonly available and easy to interface type in the market. The fingerprint sensor has four pins in it. The pins were following,

- Transmitter
- Receiver
- Ground Pin
- Power Supply

The transmitter pin is the main pin of the fingerprint sensor as it transmits the recorded fingerprint templates to the micro controller and further allows for the processing of the same. The receiver pin aids in the process of receiving the information from the micro controller ports. The ground pin grounds the positive supply produced from the last pin and converts the electrical energy into useful form for

fingerprint recognition. Moreover the output pins in the Arduino micro controller is 5V powered hence this cannot be directly given to the fps as it could fry the fps. Hence two resistors of resistance 560 ohm and 1000 ohm are connected in series and this ensures the proper amount of current supply. The program files for the fps are included in the Arduino library.

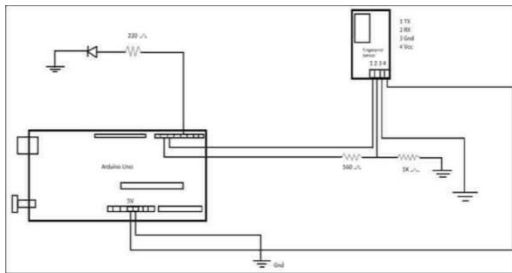


Fig. 3, Biometric FPS Interfaced with Arduino Microcontroller

IV. MATRIX KEYPAD

This matrix keypad is used as a secondary security system of our design to enable the access of the vehicle to associated people without the user's fingerprint [3].

According to this technique, the I/O are divided into two sections: the columns and rows. This matrix keypad is controlled by the microcontroller. For the 16 button 4*4 matrix we use, 8 pins of the microcontroller will be used. The first 4 pins will be outputs and will be connected with the column wires and the other 4 pins will be inputs and will be connected with the row wires. The outputs of the microcontroller will not all have power at the same time .

The outputs will go HIGH one by one in cycle. This

happens many times per second. The user presses the button to enter the pin. When the output in the respective column (of the pressed button) of microcontroller becomes HIGH, the signal arrives also at the input in the respective row (of the pressed button).The uC monitors the 4 inputs and detects that when the specific output is HIGH, there is a HIGH

signal at the specific input. This is how this system reads the given input from the user. When the user enters the pin, the microcontroller detects the input and checks it with the correct pin to access the motorcycle.

V. ARDUINO

Arduino is an open source prototyping platform based on easy to use hardware and software. Arduino consists of both a physical programmable circuit board (microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write, upload computer code to the physical board. The Arduino is energized using a power supply. A password will be initially set while programming and the corresponding program will

be fed to the Arduino microcontroller [7].

Whenever anyone presses the password on the keypad, the signal will go to the Arduino. In Arduino UNO, AVR RISC controller is used where the program for the project is already written. It is also used for the continuous monitoring the keypad for a match with the stored password which is stored in its flash memory and also to provide digital and analog signals to the device. The micro controller inside it

will check whether the entered password is correct or not. If the entered password is correct the Arduino will send a signal to the LED which will glow. Any mechanisms connected will be started, which in this case is the starter system of a vehicle [5][6]. If the password is wrong then the LED will not glow.

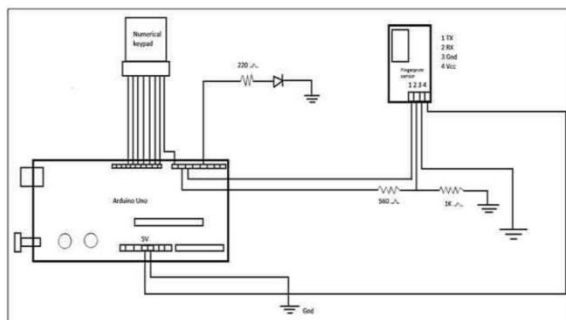


Fig. 4, Integrated System

VI . RESULT AND CNCLUSION

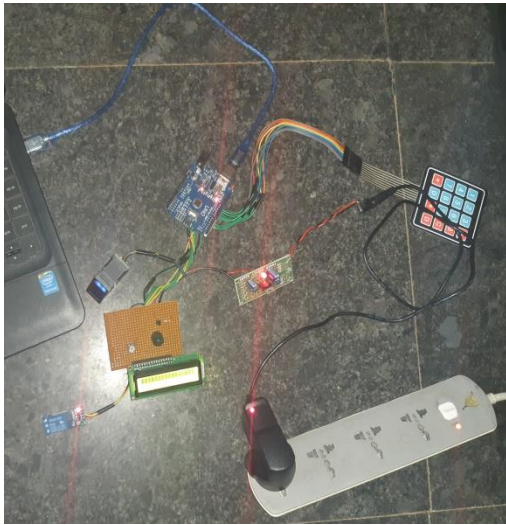


Fig . 5, Experimental Setup

From the above experiment it can be concluded that either the PIN input or Biometric Fingerprint is required to access the vehicle and thus the security system for two wheelers has been enhanced successfully. We ensure advanced protection for our two wheelers than the existing system. This system provides better protection and eliminates the need to carry key everywhere. The implementation of this security system in our two wheelers is easy compared to the conventional key security system and it is flexible to user's

convenience. This system also avoids some inconvenient

situations like losing the key and searching for it or to make new key to move our vehicle again. The advantages of our security system prove that this is an enhanced security system compared to the existing system and is eligible to be implemented in every two wheeler for better security.

VII . REFERENCE

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