

# Fuel Injection Lock Using Biometric Authentication For Two Wheelers

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**Abstract-**Many times we hear the cases of bikes getting stolen from parking area or sometimes we forgot to remove the keys from bike by mistake. In these cases it is really difficult to get the bike back. This project is designed to solve this purpose. Main concept behind this project is for bike security system using biometric recognition. It uses Microcontroller: This is the CPU (central processing unit) of our project. In this, solenoid valve is used to lock the flow of fuel. R305 Fingerprint scanner will scan the owner thumb impression with the help of arduino controller if the impression matched then the relay will get trigger and the solenoid valve will open

and close the valve, then a direct acting solenoid valve is possible. When the scanner is recognised then the controller will pass to relay it gets trigger and solenoid valve will open. By this method owner can control their bike.

$$F_s = P A = P \pi d^2 / 4$$

II. Ease

of Use

**Keywords-** Arduino,Solenoid valve,Relay,R305 scanner

## I. INTRODUCTION

Biometric system can be either an 'identification' system or a 'verification' (authentication) system. In order to prevent bike theft this system will be usefull. Arduino/Genuino Uno is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. R305 Fingerprint Module is a serial fingerprint scanner which can be directly connected to the PC's com port. R305 Fingerprint Sensor can easily be connected to any controller via MAX232 IC. This Fingerprint scanner is capable of storing and comparing the fingerprint and accordingly giving the desired output.Fingerprint processing includes two parts: fingerprint enrollment and fingerprint matching (the matching can be 1:1 or 1: N). A solenoid is an electromechanically operated valve. The valve is controlled by an electric current through a solenoid; in the case of a two-port valve the flow is switched on or off; in the case of a three-port valve, the outflow is switched between the two outlet ports. Multiple solenoid valves can be placed together on a manifold.

Solenoid valves are the most frequently used control elements in fluidics. Their tasks are to shut off, release, dose, distribute or mix fluids. They are found in many application areas. Solenoids offer fast and safe switching, high reliability, long service life, good medium compatibility of the materials used, low control power and compact design. Solenoid valves are also characterized by how they operate. A small solenoid can generate a limited force. If that force is sufficient to open

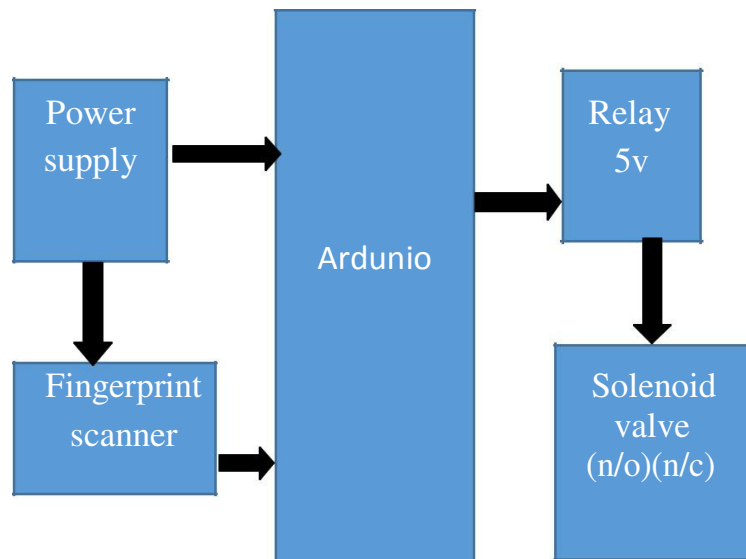


Fig 1.0 block diagram

## A.Arduino

Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog (I/O) pins that may be interfaced to various expansion boards or (shields) and other circuits. The boards feature serial communications interfaces, including (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages

In addition to using traditional compiler toolchains, the Arduino project provides (IDE) project

After your code is compiled using Arduino IDE, it should be uploaded to the main microcontroller of the Arduino UNO using a USB connection. Because the main microcontroller doesn't have a USB transceiver, you need a bridge to convert signals between the serial interface (UART interface) of the microcontroller and the host USB signals.

The bridge in the latest revision is the ATmega16U2, which has a USB transceiver and also a serial interface (UART interface).

#### B.FINGERPRINT R305



Fig1.1

Fingerprint recognition or fingerprint authentication refers to the automated method of verifying a match between two human fingerprints. Fingerprints are one of many forms of biometrics used to identify individuals and verify their identity.

Fingerprint processing includes two parts: fingerprint enrollment and fingerprint matching (the matching can be 1:1 or 1:N). When enrolling, user needs to enter the finger two times. The system will process the two time finger images, generate a template of the finger based on processing results and store the template. When matching, user enters the finger through optical sensor and system will generate a template of the finger and compare it with templates of the finger library. For 1:1 matching, system will compare the live finger with specific template designated in the Module; for 1:N matching, or searching, system will search the whole finger library for the matching finger. In both circumstances, system will return the matching result, success or failure.

Hardware connection Via serial interface, the Module may communicate with MCU of 3.3V or 5V power: TD (pin 3 of P1) connects with RXD (receiving pin of MCU), RD (pin 4 of P1) connects with TXD (transferring pin of MCU). Should the upper computer (PC) be in RS-232 mode, please add level

converting circuit, like MAX232, between the Module and PC. Serial communication protocol The mode is semiduplex asynchronism serial communication. And the default baud rate is 57600bps. User may set the baud rate 9600~115200bps. Transferring frame format is 10 bit: the low-level starting bit, 8-bit data with the LSB first, and an ending bit. There is no check bit.

#### C.SOLENOID VALVE



Fig1.2

There are many valve design variations. Ordinary valves can have many ports and fluid paths. A 2-way valve, for example, has 2 ports; if the valve is open, then the two ports are connected and fluid may flow between the ports; if the valve is closed, then ports are isolated. If the valve is open when the solenoid is not energized, then the valve is termed normally open (N.O.). Similarly, if the valve is closed when the solenoid is not energized, then the valve is termed normally closed. There are also 3-way and more complicated designs. A 3-way valve has 3 ports; it connects one port to either of the two other ports (typically a supply port and an exhaust port).

Solenoid valves are also characterized by how they operate. A small solenoid can generate a limited force. If that force is sufficient to open and close the valve, then a direct acting solenoid valve is possible. An approximate relationship between the required solenoid force  $F_s$ , the fluid pressure  $P$ , and the orifice area. When high pressures and large orifices are encountered, then high forces are required. To generate those

forces, an internally piloted solenoid valve design may consist of contactors which connect or disconnect be possible. In such a design, the line pressure is used to mechanically. In a basic relay there are three contactors: generate the high valve forces; a small solenoid controls normally open (NO), normally closed (NC) and how the line pressure is used. Internally piloted valves common (COM). At no input state, the COM is are used in dishwashers and irrigation systems where connected to NC. When the operating voltage is applied the fluid is water, the pressure might be 80 psi (550 kPa) and the orifice diameter might be  $\frac{3}{4}$  in (19 mm). contact to NO.

In some solenoid valves the solenoid acts directly on the main valve. Others use a small, complete solenoid valve, known as a pilot, to actuate a larger valve. While the second type is actually a solenoid valve combined with a pneumatically actuated valve, they are sold and packaged as a single unit referred to as a solenoid valve. Piloted valves require much less power to control, but they are noticeably slower. Piloted solenoids usually need full power at all times to open and stay open where a direct acting solenoid may only need full power for a short period of time .

E. POWER SUPPLY

Power supply. A power supply is an electronic device that supplies electric energy to an electrical load. The primary function of a power supply is to convert one form of electrical energy to another. As a result, power supplies are sometimes referred to as electric power converters.

$$F_s = P A = P \pi d^2 / 4$$

D. RELAY



Fig.1.3

Relay is an electromagnetic device which is used to isolate two circuits electrically and connect them magnetically. They are very useful devices and allow one circuit to switch another one while they are completely separate. They are often used to interface an electronic circuit (working at a low voltage) to an electrical circuit which works at very high voltage. For example, a relay can make a 5V DC battery circuit to switch a 230V AC mains circuit. Thus a small sensor circuit can drive, say, a fan or an electric bulb.

A relay switch can be divided into two parts: input and output. The input section has a coil which generates magnetic field when a small voltage from an electronic circuit is applied to it. This voltage is called the operating voltage. Commonly used relays are available in different configuration of operating voltages like 6V, 9V, 12V, 24V etc. The output section

Why ARDUINO board than other controller?

Well known, controllers to us are 8051, pic 16f/18f, ARM7, msp430, other latest boards like Intel Galileo Gen 2 etc. Out of all these ARDUINO is the best We require two UARTS, but pic 16f/18f and 8051 has only one UART.

Whereas ARDUINO has two UARTS as required, one in hardware and other in software.

Msp430 has 3 UARTS but it is very costly than ARDUINO. ARDUINO is even less in cost as compared to other controller. Other boards like Intel Galileo gen 2 are very very costly and complex to handle.

The best part of Arduino usage is that its programming is very easy as compared to other devices.

For the new start by students it's very feasible and easy to use.

III. CONCLUSION

In this project there are some advantages and disadvantages. so by this system we can prevent the bike from theft easily .

IV. REFERENCE

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