
Home automation
IOT
Automatic door
unlock

Problems and Solutions:

Ever wondered if you can open the door of a room while sitting in another room? Might as well give it a try!!

Well we can do it using one of the most common commodities of our life, our phone. Wanna know how?! Then just dive in!!!

Project objective

To help people open door locks sitting in another room, just for all the laziness we pack :P.

The project also helps in increasing security as it only opens using automated biometric lock of registered user and not using some manual lock and key system.

Project Working Overview

Note: This project will works with Android phones which support fingerprint scanning.

App scans the fingerprint.

It sends bluetooth signal to bluetooth module HC-05 and then accordingly rotates the servo motor which opens or closes the lock.

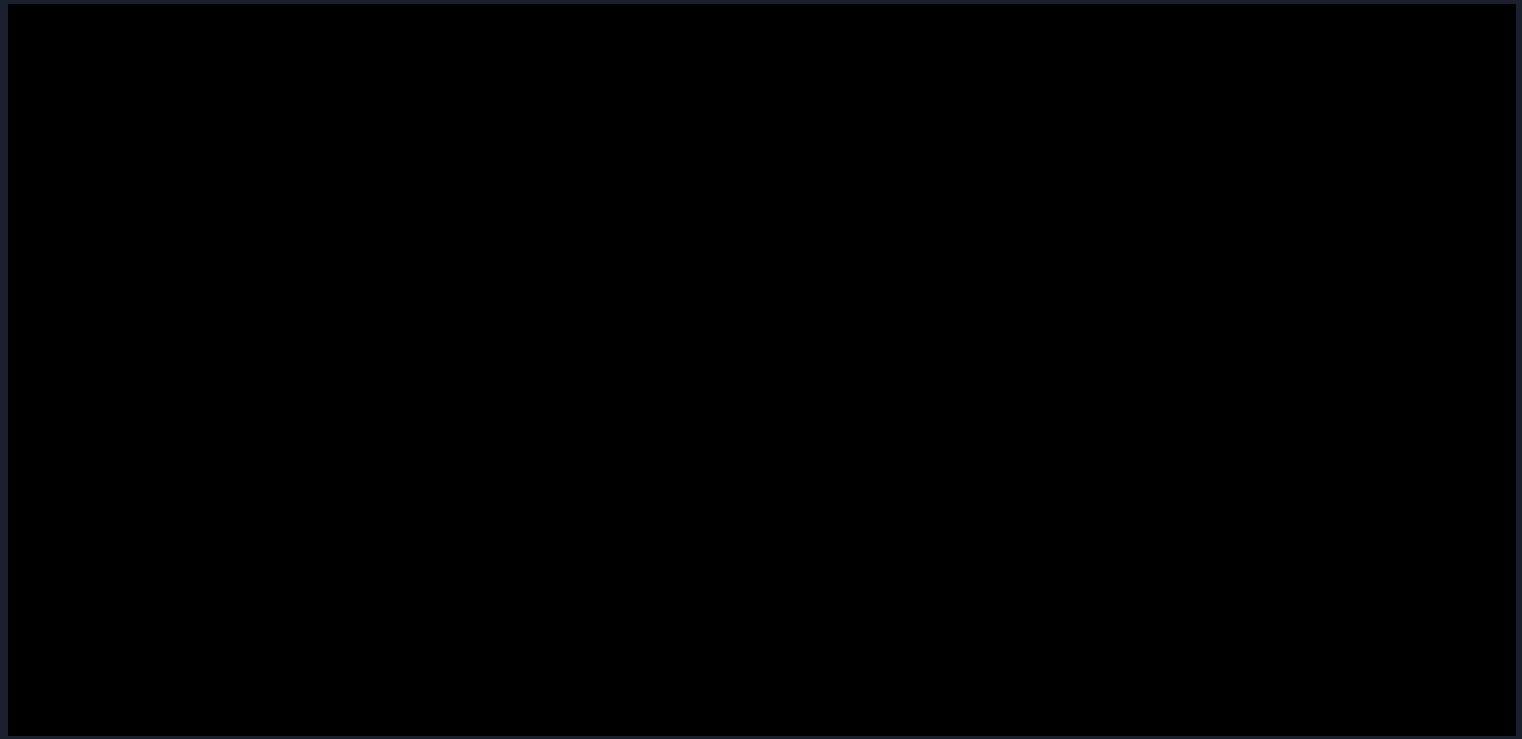
Biometric match is used by The Android app and a signal(True or False) is sent to the Arduino which rotates the motor to open the lock when the signal is True and keeps it locked or locks it again depending on the state it was in if the signal is False.

Android App controls output to servo motor

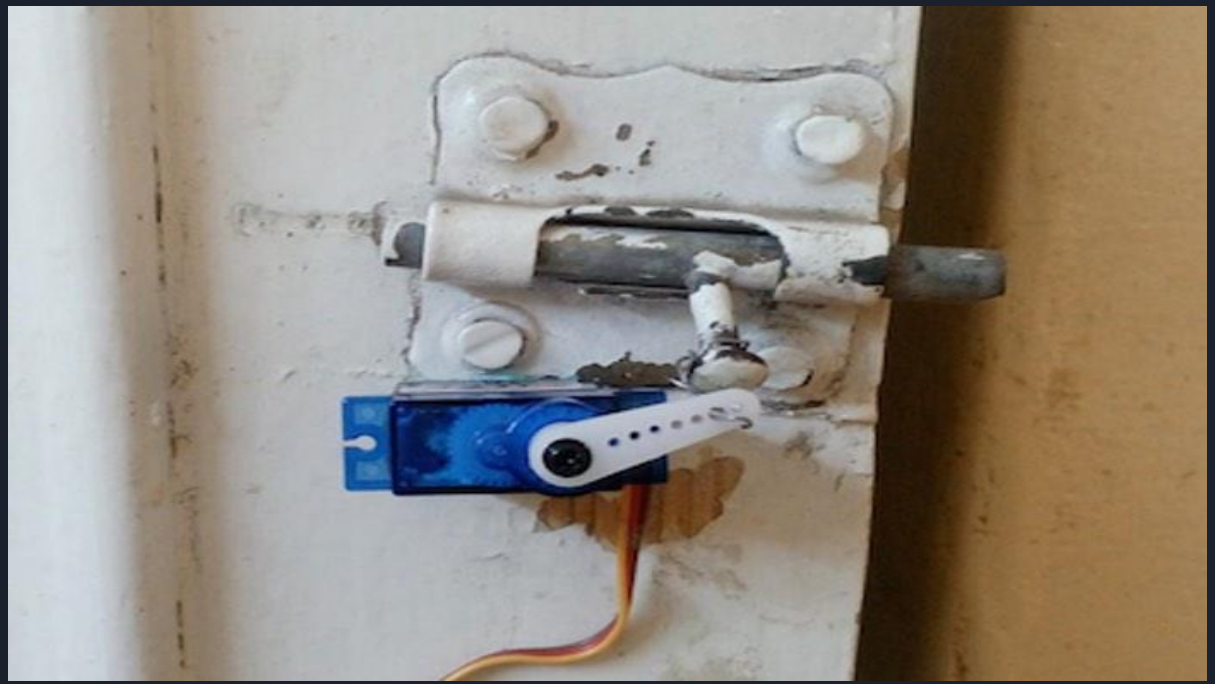
Tweaks:

Facial recognition can be added to the app.

Video demonstration:



The automated door lock would look something like this:



Components used:

- ➔ Arduino UNO
- ➔ Bluetooth module HC-05
- ➔ Servo motor
- ➔ Other necessities such as wires and battery
- ➔ A mobile phone with the **android_lock** app installed

Integration overview:

The Bluetooth module is(HC 05) operated using 3.3 V DC Arduino output.

GND pin connected to arduino

RX of Arduino to TX of HC 05,TX of Arduino to RX of HC 05

Servo motor is connected using 5V DC supply

GND and ~9 pin connected with Arduino

Initial angle of motor-false(10 degree) and when true rotates to 180 degree

setup()- switches to false(10 degree)

Code overview

```
char t;

#include <Servo.h>
Servo servo;
int angle = 10; //initial angle is 10 degree

void setup() {

  servo.attach(9);
  servo.write(angle);
  //set initial angle to 10 degree each time regardless of last position

  Serial.begin(9600);

}
```

```
void loop() {
  if (Serial.available()) {
  //check if app is connected through bluetooth and ready to give output
    t = Serial.read();
    Serial.println(t);
  }

  if (t == 'w') {
  //move forward(all motors rotate in forward direction)
   // Serial.println("hello");  for debugging

    for (angle = 10; angle < 180; angle++)
    {
      servo.write(angle);
      delay(15);
    }
  }
```

```
  else if (t == 'a') {
    //move reverse (all motors rotate in reverse direction)
   // Serial.println("Bye");  for debugging

    for (angle = 180; angle > 10; angle--)
    {
      servo.write(angle);
      delay(15);
    }
  }


  delay(100);
}
```

Relevant links:

Git repo: https://github.com/Signior-X/iot_door_unlock

Drive Link: