

Fingerprint based robot access to personalised secured future robotics remote controlling

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Abstract—Bots are frequently and commonly used in military of approximately all the developed countries. We never found genuine security system to protect the robots from enemy or terrorist. So we introduced a fingerprint security system in a robot to make it secure. So only authorized person or user can access the robot and unauthorized access will be prohibited. With this technology security can maintain, and can be taken to next level. Rather than using password, PIN or key lock we can use “finger print based robot access to personalized secured future robotics remote control” for provide security.

Index Terms—Bots, fingerprint security, genuine security, personalized, remote control.

I. INTRODUCTION

Security is of primary concern and in this busy, competitive world, human cannot find ways to provide security to his confidential belongings manually. Instead, he finds an alternative which can provide a full-fledged security as well as atomized. In the ubiquitous network society, where individuals can easily access their information anytime and anywhere, people are also faced with the risk that others can easily access the same information anytime and anywhere. Because of this risk, personal identification technology, which can distinguish between registered legitimate users and imposters, is now generating interest. Generally passwords, identification cards and PIN verification techniques are being used but the disadvantage is that the passwords could be hacked and a card may be stolen or lost. The most secured system is fingerprint recognition because a fingerprint of one person never matches the other. Biometrics studies commonly include fingerprint, face, iris, voice, signature, and hand geometry recognition and verification. Many other modalities are in various stages of development and assessment. Among these available biometric traits fingerprint proves to be one of the best traits providing good mismatch ratio, high accurate in terms of security and also reliable.

II. PROPOSED MODEL

The proposed system acquires or captures the finger print and the acquired data is sent to microcontroller for verification purpose. The matching will be done depending on database stored. If the finger print is matched then the access of robot will be allowed else it will be locked. If access will be allowed then the commands from smart phone can also be called android phone having an App will be accepted. After accepting the command the microcontroller will process it and accordingly sends command to motor driver module which drives the DC gear motors. The detailed description of each blocks are as follows.

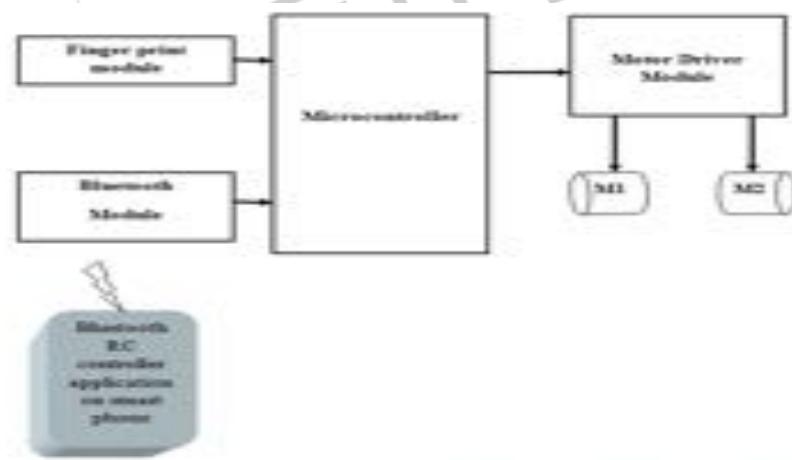


FIG.1 Proposed systems

Fingerprint module consists of f finger print sensor and scanning section. A finger print pattern is composed of a sequence of ridges and valleys. In a finger print image, the ridges appear as dark lines while the valleys are the light areas between the ridges. A cut or burn to a finger does not affect the underlying ridge structure, and the original pattern will be reproduced when new

skin grows. Ridges and valleys generally run parallel to each other, and their patterns can be analyzed on a global and local level. Ridges and valleys generally run parallel to each other, and their patterns can be analyzed on a global and local level.

Bluetooth RC controller application on smart phone

As our project having Bluetooth module thus instead of using conventional way to use keypad, we use the Bluetooth RC controller application on smart phone. This application will help to connect any Bluetooth device which is used to operate robot this will give easy operating access to robot. The application had been designed using MIT App inventor.



FIG.2 Bluetooth car controller applications

III. IMPLEMENTED SYSTEM

The microcontroller having RAM and ROM inside, all other peripherals are on chip compacts the circuit. The microcontroller processes the finger print data coming from finger print module for recognition purpose. The data is matched with the stored data and if its matches then microcontroller gives a pulse or allows to pair Bluetooth module. The data or commands coming from android app is decoded and utilized for robot movement via motor driver board connected prior to DC gear motors.

HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. The HC-05 Bluetooth Module can be used in a Master or Slave configuration, making it a great solution for wireless communication. This serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR (Enhanced Data Rate) 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband. It uses CSR Bluecore 04-External single chip Bluetooth system with CMOS technology and with AFH (Adaptive Frequency Hopping Feature).

L293D is a dual H-Bridge motor driver, so with one IC we can interface two DC motors which can be controlled in both clockwise and counter clockwise direction and if you have motor with fix direction of motion then we can make use of all the four I/Os to connect up to four DC motors. L293D has output current of 600mA and peak output current of 1.2A per channel. Moreover for protection of circuit from back EMF output diodes are included within the IC. The output supply (VCC2) has a wide range from 4.5V to 36V, which has made L293D a best choice for DC motor driver.

Whenever a robotics hobbyist talks about making a robot, the first thing comes to his mind is making the robot move on the ground. And there are always two options in front of the designer whether to use a DC motor or a stepper motor. When it comes to speed, weight, size, cost... DC motors are always preferred over stepper motors. There are many things which you can do with your DC motor when interfaced with a microcontroller. For example you can control the speed of motor; you can control the direction of rotation. In this part of tutorial we will learn to interface and control of a DC motor with a microcontroller. Usually H-bridge is preferred way of interfacing a DC motor. These days many IC manufacturers have H-bridge motor driver available in the market like L293D is most used H Bridge driver IC. H-bridge can also be made with the help of transistors and MOSFETs etc. rather of being cheap, they only increase the size of the design board, which is sometimes not required so using a small 16 pin IC is preferred for this purpose.

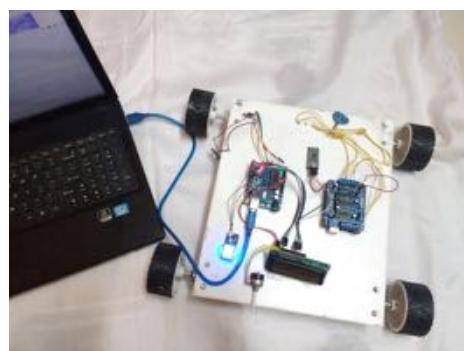


FIG.3 Fingerprint based robot locking system

IV. FLOW CHART

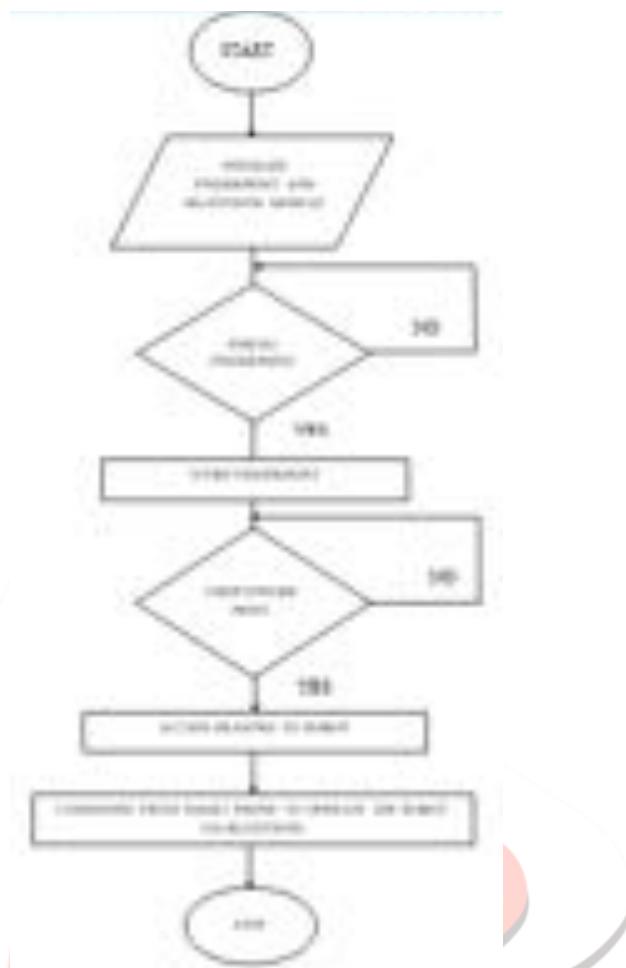


Fig.3 Flow chart for fingerprint based robot locking system

V. RESULTS

Table 1 Result

Operation	Figure
Scanning process message on display	
Access granted	
Operate permission for robot	
Unverified finger access	

VI. CONCLUSION

The synopsis here gives an economical and reliable system for robot security access. The security can be achieved with different methods but here the importance of security in robotics system shown for future. The dual security access can also be implemented using finger print scan on android phone access to access the app for robot control. The system can perform securely and can be utilized for military applications in the domain of robotics.

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