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FINGERPRINT BASED DOOR LOCK SECURITY SYSTEM

Prof. P. S. Wankhade[*1], Rohit P. Tike[*2], Tushar R. Milmile[*3], Shital H. Kohchade[*4], Vaishnavi S. Warhekar[*5]

[*1]Assistant Professor, Department of Electrical Engineering, Jagadambha College Of Engineering And Technology, Yavatmal, India.

[*2,3,4,5]Student, Department of Electrical Engineering, Jagadambha College Of Engineering And Technology, Yavatmal, India.

ABSTRACT

In the past, security turned into and still is a difficulty today in our homes, as well as in offices, stores, and greater. Everyone fears that an unauthorized man or woman will input their domestic or office without their knowledge. Normal doors can be outfitted with locks capable of breaking the use of a replacement key. Alternatives to this machine may be found such as a password or sample gadget in a re-lock that has the option to show and unencumber. So, one way to those issues can be to combine door locks with biometrics. Biometric validation is any way one can look different by examining one or more unique biological features. Unique identifiers consist of fingerprints, hand shape, earlobe form, retinal and iris patterns, voice waves, DNA, and signatures. here, we can use fingerprints to verify biometric as it is something for everyone and the use of fingerprints as a door key can overcome the security problem. Secrets and techniques of unauthorized human beings breaking into our houses, stores, offices, and so on. to a large volume because duplication in the sort of key is not feasible. further, this gadget will not reason problems such as key loss due to the fact we do now not need to hold the key if we use this system as opposed to a traditional lock. So with the use of Arduino we can try to use the machine with functions in a way to increase the level of safety.

I. INTRODUCTION

This record is meant to address the security issue of unauthorized persons getting into our houses, shops or offices. Security problems can be solved the usage of a traditional padlock, but there may be usually the opportunity that someone will free up it even without breaking using a replica key. the usage of those varieties of locks additionally reasons trouble if we lose the key and we have to bring the important thing with us at all times. Once more, using patterns in the padlock can decorate security, however once more, it may be opened if the password or patterns are in some way recognized. So leaving each system in this assignment, we are able to put in force one which makes use of biometrics. In the case of biometrics, the pattern with a purpose to act as the important thing might be specific. Right here, to make the challenge, we are able to use the fingerprint as the important thing. This Arduino undertaking will use specific gadgets to do the security key wherein there might be exceptional features to boom the safety degree.

In short, we are saying that we are setting up a door-to-door system that uses Arduino using fingerprints. to determine who permits and who does not permit within the house, office, door items, and so forth. We attempt to try this by way of the usage of a simple, commonplace door lock hooked up in each domestic to reduce the price of the device as a product.

II. LITERATURE REVIEW

2.1 "Arduino-primarily based clever Fingerprint Authentication device."- All over the world, homes, workplaces, shops, banks are looking for extreme security features with safety motives. To ensure the security of these regions, a smart lock system is installed. many types of smart door locks are made to lock and unlock the device. Those form of locks has fingerprint, RFID card, pin, password or IOT by way of unlocking the machine using mobile cellphone. consumer the use of those boiler systems both use a pin code or fingerprint or RFID card to release the gadget. These gadget does not have safety pecking order to develop the safety. To develop the safety the consumer have to unbolt the gadget through minimal security order. In residence lock machine there ought to be unlocking option for visitor. One day thieves may miss out on the option and enter the house. So, we can deliver two degree of safety for visitor also. This method ought to be completed with the use of owner for protection purpose.

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In a crisis, there is the opportunity to hack and unlock smart locks. The advised system can beat the safety issues confronted in the contemporary scenario. The device's three-level security can help users with correct safety. the principle motive the gadget is provided is to defend the person's living area, administrative center or to maintain valuables and critical papers competently. So this challenge can be understood through the public and might be beneficial for future work More use of technology and modern development can be achieved in this challenge. This venture can be rebuilt the usage of extraordinary microcontrollers and various strategies.

2.2 "Implementation and Design of a Fingerprint Based Lock System for Shared Access."- .Nowadays, safety at home / business is an important issue that everyone, whether away from home or away from home, must face. When it comes to protection systems, it truly is one of the fundamental concerns in this busy and unforgiving world in which people can not find a way to manually shield their crucial property. Alternatively, they observed some other answer that gives higher protection, reliability, and efficiency. It was a time when everything turned out to be network-related, where everyone could get statistics from anywhere in the world. So the possibility that his facts may be broken is a serious problem. Because of those risks, it is very important to have some kind of identification in order to enter your facts. Today, private identity is turning into a count number of precept everywhere. Amongst the usual non-public identification techniques, we especially see password and identification card techniques. However now it's very easy to crack passwords and identity playing cards can come unfastened, making these strategies unreliable.

Plan and put in force a customizable and tunable fingerprint-based totally locking device. This door lock device is very powerful compared to standard commercially manufactured locking systems. Our fingerprint-based totally locking system has a excessive accuracy charge and also fast acknowledges fingerprints, bearing in mind seamless matching with users and imparting tighter safety.

2.3 "A smart door access system using fingerprint biometric system."- In this article, research is being done to provide maximum security for those high-level security applications. The objective of this examine is to layout a clever door entry gadget using a fingerprint module Hardware and software technology is used for its layout. An emergency beep is furnished to shield the system by using alarming if an unauthorized individual breaks into the gadget. a hallmark that suggests any emergency.

In this article, the author has used the fingerprint sensor, the R305 uses unique natural features to capture the pix and may store up to 128 images, which reduces friction and saves time. This tool provides additional security by using alarm bells and emergency alert signals. The device may be set up in workplaces, intensive care units (ICUs), child care units (CCUs) and research laboratories, and so on. throughout registration, person has to enter finger picture twice. The device will technique the finger image, create a finger photograph sample based at the processing result and shop the sample.

III. FLOWCHART OF PROPOSED ALGORITHM

The fundamental idea in the back of our challenge is illustrated inside the diagram above. let's understand the diagram in detail with

1. First, the finger is scanned.

2. The scanned fingerprint, if it fits the fingerprint saved within the device, will free up the door hook by servo motor.

3. The scanned fingerprint if do not in shape with the fingerprint stored inside the gadget then the unauthorized person will no longer be allowed to go into but nevertheless if again unauthorized individual tries to get entry to the door more than 3 times then matters will make visible.

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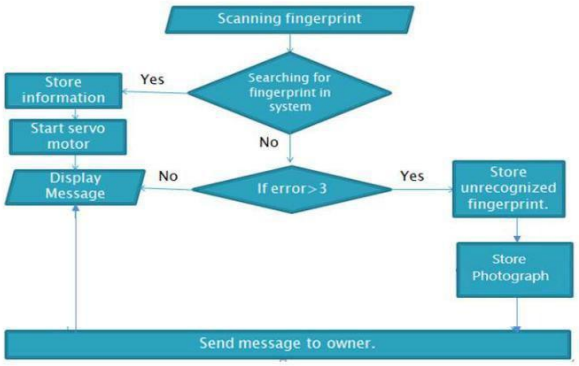

Figure 1: Algorithm of Fingerprint Based Door Lock Security System

1. Fingerprints are scanned.

2. The fingerprint is installed a circumstance in which it scans for the suit of the fingerprint. If healthy is discovered, it moves to step three. Otherwise proceed to step 6.

3. The statistics of the man or woman is recorded like call, time of access/exit, and so on.

4. The servo motor is started and hence the hook lock linked to the servo motor does its work of locking or unlocking.

5. A welcome message is displayed.

6. it's going to test if the unrecognized fingerprint is attempted extra than 3 times.

If such an attempt is made, you will move on to step 7. Else, it'll move to step 10.

7. store the unrecognized fingerprint.

8. Storing pictures of unauthorized customers.

9. Send a message to the owner.

10. Indicate error message.

11. Step 9 repeat, Send a message to the owner.

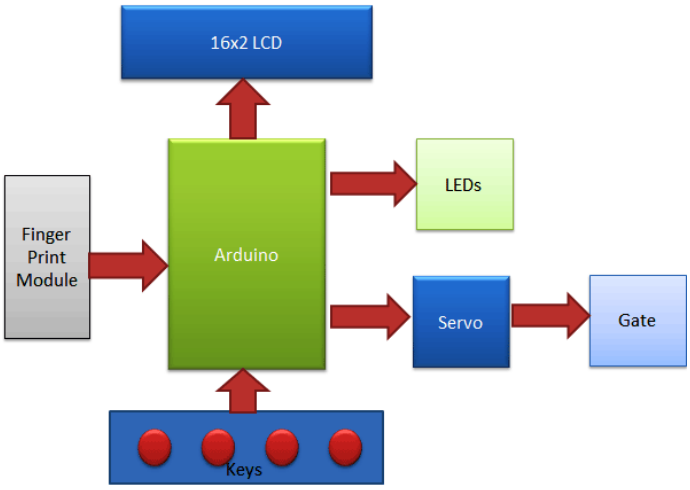

Figure 2: Block Diagram of Fingerprint Based Door Lock Security System

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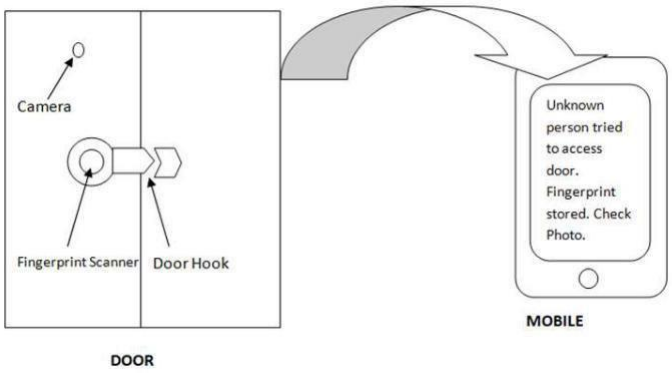
IV. METHODOLOGY



Two statistics, fingerprint and photograph, are stored in the system.

A message will be despatched to the owner informing them of unauthorized get entry to four. The door routinely locks once more after 6 seconds.

So, to carry out the noted functionalities, the basic devices we will require are:

1. Fingerprint Scanner This scans the finger for fingerprint.
2. GSM module Used to ship messages to the owner.
3. Digital camera Used to take photos in case of unauthorized get admission to tries.
4. Actuator Used to lock or liberate the door.
5. Adapter To offer power source to the system.
6. Jumper Wires to attach all devices and all others.

Also, with hardware peripherals, we use the Arduino IDE as the software to software the operation of the hardware peripherals.

Notice - earlier than doing any manner, we need to first check in/keep the fingerprint the usage of the Arduino IDE in an effort to act because the liberate fingerprint.

Principal connection of servo motor and fingerprint is the main factor of our venture done inside the following way-

- Arduino is attached to servo motor wherein crimson twine is connected to 5V, brown twine is connected to point 8 and the orange cord is hooked up to Gnd.
- Arduino linked to fingerprint sensor where pink twine is connected to 3V, white cord is hooked up to point 2, black twine is hooked up to GND and yellow twine is connected to factor 3.

V. CONCLUSION

On this paper, we've got tried to solve the safety depend in door by way of bringing the idea of biometrics in conjunction with the door lock. So, for that cause we're the usage of finger prints as particular key to put in force a device with the intention to lock or unlock a door. we've got discussed about the one-of-a-kind components using Arduino we would require to put into effect our task i.e we've given the hardware and software necessities within the assignment. we've long past via special studies papers and then given a brief about the papers and after studying the papers we've include an algorithm as to how our gadget will work. we've got also given a assignment description diagram and also a price shape with the intention to get to a rate if it's far sold as a product. we've proven a block diagram and a likely linked diagram of the additives and also given the destiny opportunities in our undertaking.

VI. REFERENCES

[1] Meenakshi N, Dikshit KJ, Monish M, Bharath S. Arduino based totally smart Fingerprint Authentication device. In 2019 1st global convention on innovations in facts and communique technology (ICIICT)

2019 Apr 25 (pp. 17). IEEE.

[2] Moyashir R, Baidya J, Saha T, Palit R. layout and implementation of a fingerprint-primarily based key device for shared access. 2017 IEEE seventh Annual laptop and conversation conference and conference (CCWC) 2017 January 9 (pp. 1-6).IEEE.

[3] Gupta RP. Implementation of Biometric Security in Smartphone Based Domotics. 2018 International Conference on Computer Development, Communication and Network Management (CCWC) 2018 Oct 12 (pp. 80-85). IEEE.

[4] Karma Toshomo has presented Dual Door Lock System Using Radio Frequency Identification and Fingerprint Recognition.