HIGH PROTECTION BASED BANK LOCKER SECURITY SYSTEM

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Abstract :

Encountering the real time challenges in the "security" arena and enhancing the existingcriteria by designing an advanced technology. Implicit guarantee of your money in the bank being safe has always been the fact of concernment. With huge development people felt a need to secure their earnings.Here we are using Face recognition for identifying the person and his voice (i.e.,Authentication Key). We can compare with the registered images of face if it is matches with the register faces and based on the voice command(i.e., Authentication Key) the locker will open otherwise locker will not open.

IndexTerms - Voice Assistant, Arduino, Node MCU, Python, Face Recognition.

I.INTRODUCTION:

In the real world, peoples are more concerned about their safety for their valuable thingslike jewelry, money, important documents etc. So the bank lockers are the safest place to store them. The arrival of fast growing technologies makes users to have high security systems with electronic identification options.But, unfortunately these are not protected due to hacker attacks, thefts, and forgotten passwords. however, the voice or face authentication based identification is the most efficient and reliable solution for stringent security. Face recognition operates in verification mode or identification mode. In the verification mode system validates person's identity by comparing the captured face template which is prestored in the system data base .In the identification mode the system recognize an individual by searching entire template data base for match. And the system performs one to many comparisons to establish the individual identity or fails if the subject is not enrolled in the system data base.so in our project we are using face and voice recognition security system.

II.LITERATURE REVIEW AND EXISTING SYSTEM:

2.1: GSM Based Security System:

PIR sensor detects motion by sensing the difference in infrared or radiant heat levels emitted by surrounding objects. The output of the PIR sensor goes high when it detects any motion. The range of a typical PIR sensor is around 6 meters or about 30 feet. When the PIR sensor detects any motion, the output of the sensor is high. This is detected by the Arduino. Then it communicates with the GSM module via serial communication to make a call to the preprogrammed mobile number. An important point to be noted about PIR sensors is that the output will be high when it detects motion.

2.2: IR based security alarm system:

IR based security alarm circuit can detect any movement and trigger the alarm. This circuit is very useful in homes, banks, shops, restricted areas where an alert alarm is needed on any movement. This circuit is based on IR sensor where an IR beam is continuously falling on a photodiode, and whenever this Infrared beam breaks, by any kind of movement, alarm is triggered. In this IR based security alarm circuit, we have placed IR LED in front of photodiode, so that IR light can directly falls on photo diode.Whenever someone moves through this beam, IR rays stops falling on photo diode and buzzer start beeping.

2.3: Existing system:

In existing system, we have used buzzer alerts in case of any unauthorized persons triesto open door. And we have used RFID for detecting authorized persons. For this RFID can be used by anyone so that no safety and security is available. If RFID tag is stolen then the person needs to worry about as the tag can be used to open door.

Drawbacks:

- No safety and security

- Card is compulsory

Fig 2.1: Existing system

III. PROPOSED SYSTEM:

In this proposed system we have used image capturing techniques with the help of python. the camera interfaced with PC which has Python software Installed. The cable is interfaced to Arduino and PC so that the data will transfer between Arduino and Python. So that if any unauthorized person tries to open locker, then the mail will be sent along with the persons face. In this we have used voice recognition also i.e., a keyword is given to verify whether the person is authorized or not. If the person gives the keyword, then it checks whether it is correct or not if it is correct then the door will open. In this we can use either Face Recognition or Voice keyword recognition.
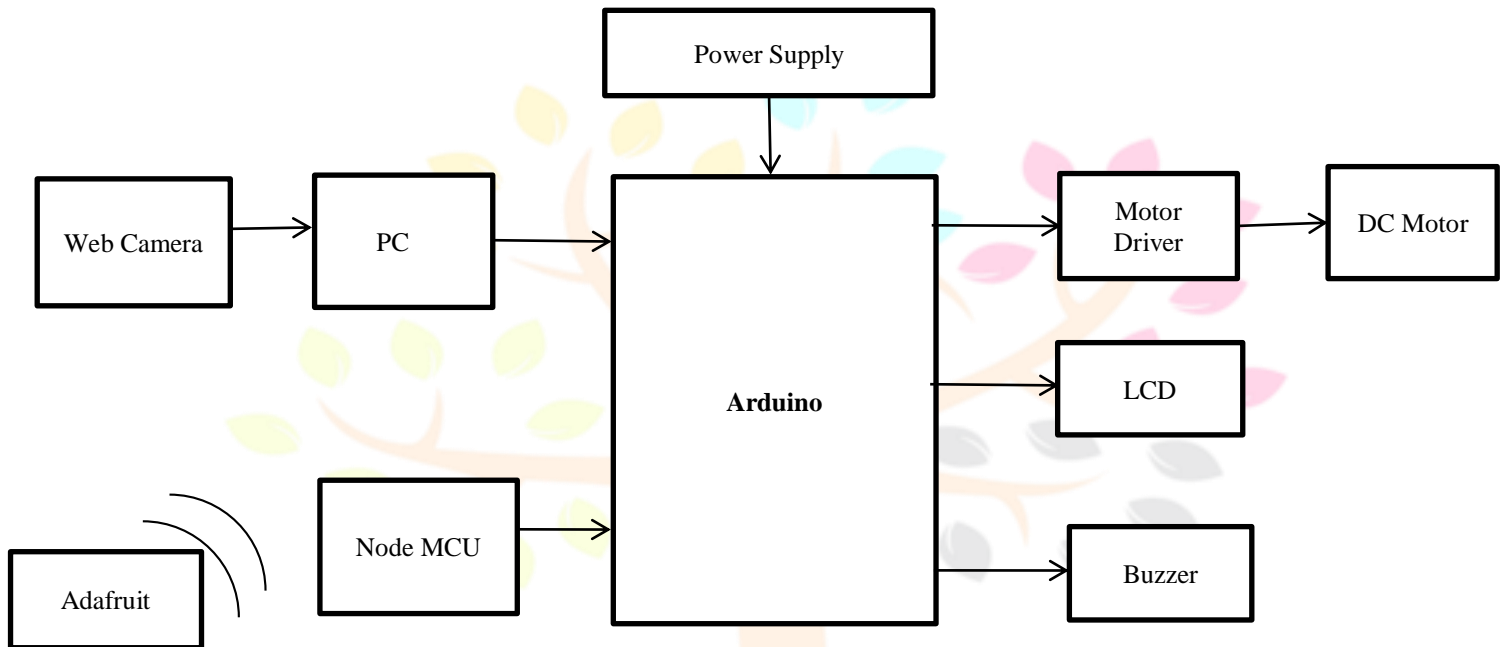
3.1 : BLOCK DIAGRAM:

Fig 3.1: Block diagram of proposed system

3.2:ADVANTAGES:
- Less power consumption
- Real time observation

3.3:APPLICATIONS:
- In banks
- In town areas

IV.COMPONENTS DESCRIPTION:

4.1: HARDWARE COMPONENTS REQUIREMENTS:

4.1.1: ARDUINO UNO:

Arduino Uno is a very valuable addition in the electronics that consists of USB interface,14 digital I/O pins, 6 analog pins, and Atmega328 microcontroller. It also supports serialcommunication using Tx and Rx pins.There are many versions of Arduino boards introduced in the market like Arduino Uno, Arduino Due, Arduino Leonardo, Arduino Mega, however, most

common versions are Arduino Uno and Arduino Mega. If you are planning to create a project relating to digitalelectronics, embedded system, robotics, or IoT, then using Arduino Uno would be the best,easy and most economical option.
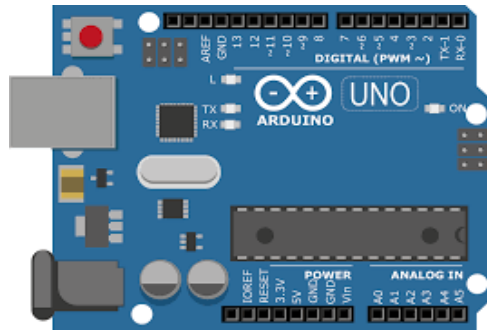

Fig 4.1.1: Arduino UNO

4.1.2: WEB CAMERA:

A webcam is a video camera that feeds or streams an image or video in real time to or through a computer network, such as the Internet. Webcams are typically small cameras that sit on a desk, attach to a user's monitor, or are built into the hardware.Webcams can be used during a video chat session involving two or more people, with conversations that include live audio &video.

Fig 4.1.2: Web Camera

4.1.3:NODE MCU:

Node MCU is an open-source firmware and development kit that plays a vital role in designing your own IoT product using a few Lua script lines.Multiple GPIO pins on the board allow you to connect the board with other peripherals and are capable of generating PWM, I2C, SPI, and UART serial communications.
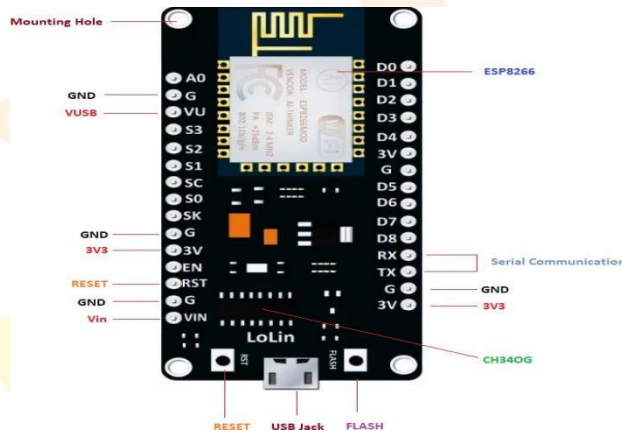

Fig4.1.3: Node MCU

4.1.4: LCD:

LCD(Liquid Crystal Display) is the innovation utilized in scratch pad shows and other littler PCs.Like innovation for light-producing diode(LED) and gas -plasma,LCDs permit presentations to be a lot more slender then innovation for cathode beam tube(CRT).LCDs expend considerably less power than LED shows and gas shows since they work as opposed to emanating it on the guideline of blocking light.

Fig4.1.4: LCD

4.1.5: MOTOR DRIVER:

A motor driver is an integrated circuit chip which is usually used to control motors in autonomous robots. Motor driver act as an interface between Arduino and the motors. The most commonly used motor driver IC's are from the L293 series such as L293D, L293NE, etc. These ICs are designed to control 2 DC motors simultaneously. L293D consist of two H-bridge.
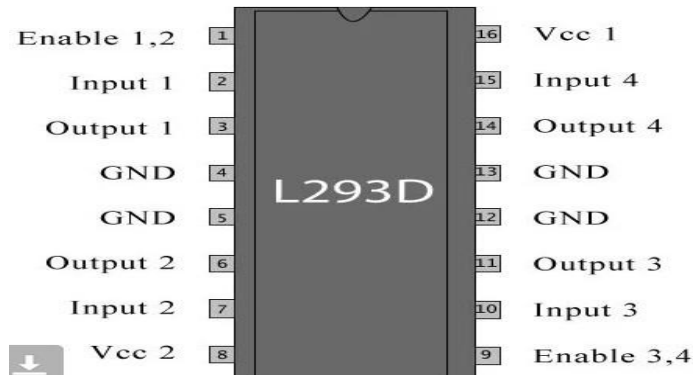

Fig4.1.5: Motor Driver

4.1.6: BUZZER:

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or keystroke. Buzzer is an integrated structure of electronic transducers, DC power supply, widely used in computers, printers, copiers, alarms,electronic toys,automotive electronic equipment,telephones,timers and other electronic products for sound devices. Active buzzer 5V Rated power can be directly connected to a continuous sound, this section dedicated sensor expansion module and the board in combination, can complete a simple circuit design, to "plug and play.

Fig4.1.6: Buzzer

4.1.7:DC MOTOR:

A machine that converts D.C power into mechanical power is known as a d.c. motor. Its operation is based on the principle that when a current carrying conductor is placed in a magnetic field, the conductor experiences a mechanical force. The direction of this force is given by Fleming's left hand rule and magnitude is given by;
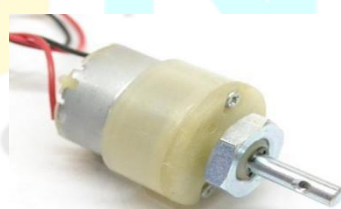
- F = BIl newton's

Fig4.1.7: DC Motor

4.2: SOFTWARE COMPONENT REQUIREMNTS:

4.2.1:ARDUINO IDE SOFTWARE:

The Arduino integrated development environment (IDE) is a cross platform application (for Windows, macOS, Linux) that is written in the programming language Java. It originated from the IDE for the languages Processing and Wiring. It includes a code editor with features such as text cutting and pasting, searching and replacing text, automatic indenting, brace matching, and syntax highlighting, and provides simple one-click mechanisms to compile and upload programs to an Arduino board. It also contains a message area, a text console, a toolbar with buttons for common functions and a hierarchy of operation menus. The source code for the IDE is released under the GNU General Public License, version.

4.2.2:EMBEDDED C:

EMBEDDED C Programming is the soul of the processor functioning inside each and every embedded system we come across in our daily life,such as mobile phone,washing machine and digital camera. Each processor is associated with embedded software. The first and foremost thing is the embedded software that decides functioning of the embedded system. Embedded C language is most frequently used to program the microcontroller.

4.2.3:PYTHON PROGRAMMING DESCRIPTION:

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed. Often, programmers fall in love with Python because of the increased productivity it provides. Since there is no compilation step, the edit-test-debug cycle is incredibly fast. Debugging Python programs is easy: a bug or bad input will never cause a segmentation fault. Instead, when the interpreter discovers an error, it raises an exception. When the program doesn't catch the exception, the interpreter prints a stack trace. A source level debugger allows inspection of local and global variables, evaluation of arbitrary expressions, setting breakpoints, stepping through the code a line at a time, and so on. The debugger is written in Python itself, testifying to Python's introspective power. On the other hand, often the quickest way to debug a program is to add a few print statements to the source: the fast edit-test-debug cycle makes this simple approach very effective.
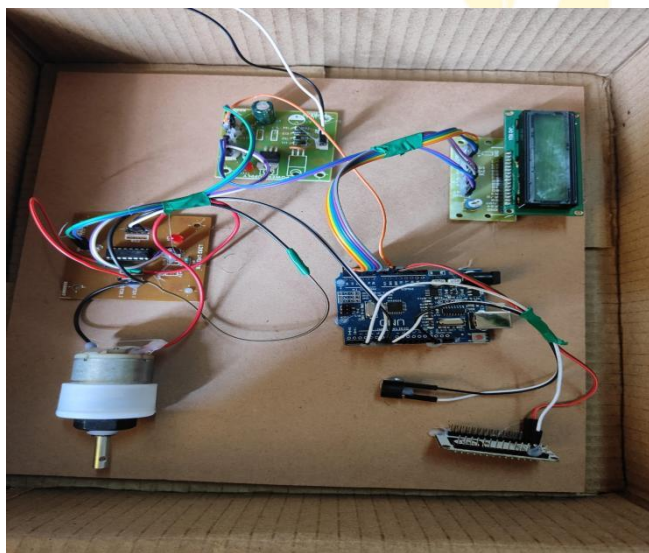
V.RESULT AND DISCUSSION:
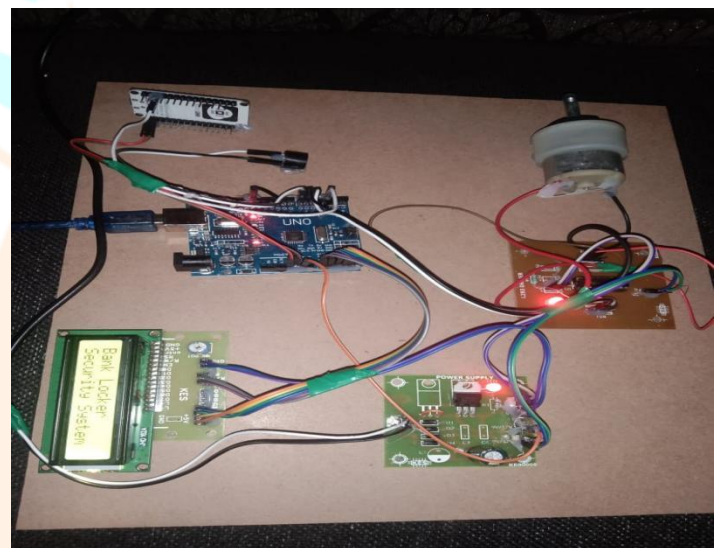

FIG 5.1: WORKING MODEL OF THE PROPOSED SYSTEM

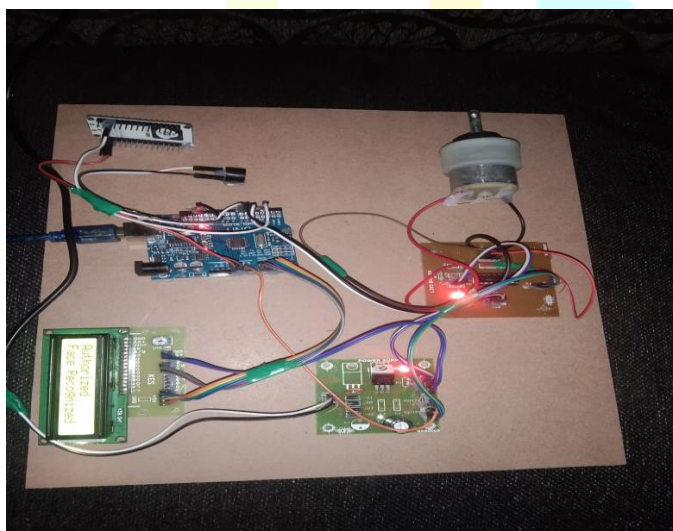FIG 5.2:WHEN WE GIVE POWER SUPPLY DEVICE WILL START

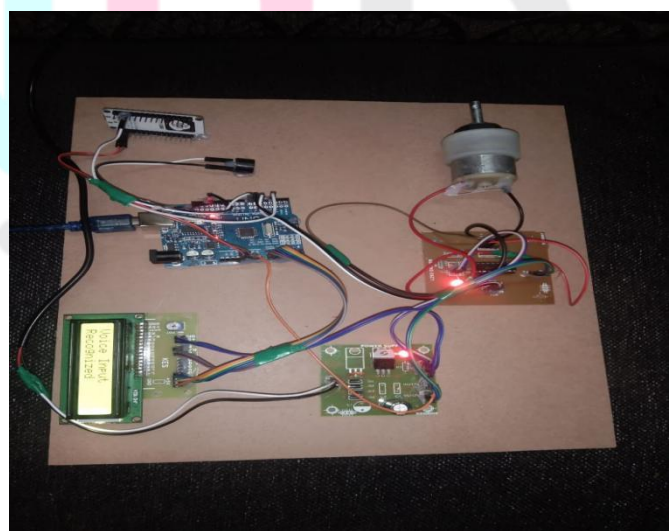FIG 5.3: WHEN THE AUTHORIZED PERSON FACE IS RECOGNIZED

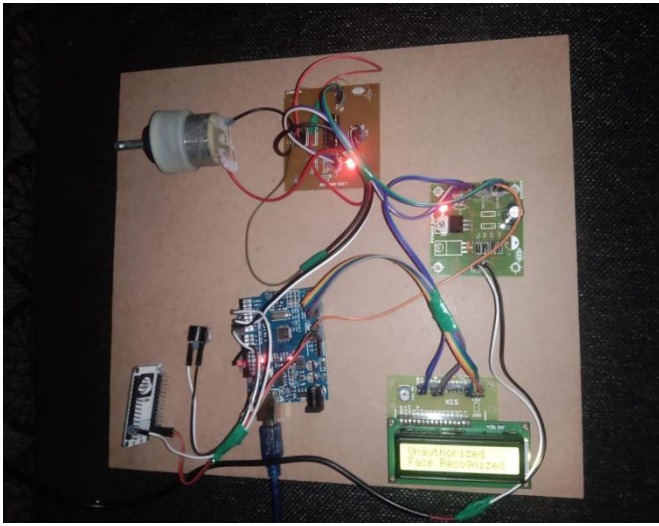FIG 5.4: WHEN THE VOICE INPUT IS RECOGNIZED

FIG 5.5 : WHEN THE UNAUTHORIZED PERSON
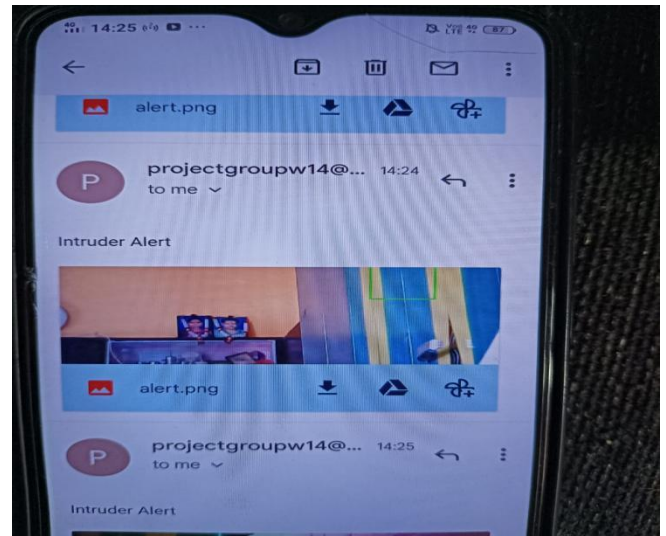TRIES TO OPEN THE DOOR IT DISPLAYS
UNAUTHORIZED PERSON

FIG 5.6: IT SENDS A MAIL WHEN THE   UNAUTHORIZED
PERSON TIES TO OPEN DOOR ALONG WITH
PERSONS FACE

VI .CONCLUSION:

A security system is proposed by using Voice Authentication and Face recognition. It is a low cost, low in power conception, compact in size and standalone system. The microcontroller compares the face scanned by it with its flash memory. If these face recognition are correct, the microcontroller provides necessary control signal to open the bank locker otherwise the door remains locked and face are saved in database card after capturing. The proposed system can be used in other places such as offices and diamond jeweler shops.