

Emergency Person Identification System in Critical Situations

Mrs.S.Umadevi@Yasodhei¹, Mr.I.MohanRaj², Mr. G, RamKumar³

¹ Associate Professor / CSE, ² UG Student / CSE, ³ UG Student / CSE

¹Computer Science and Engineering,

¹ IFET College of Engineering, Villupuram, India

Abstract: *The main aim of this project is to help people in critical situations such as accidents. In government hospital and police station by using this application we can get the details of the person in drowsy condition. In the case of accident if they try to inform the situation to their home they mainly check for the patient's phone. If the phone is damaged in the accident, it is difficult to inform the concerned family about the accident. So to overcome this situation the **Emergency person identification system** is introduced. For security purpose we introduce this application in government hospital and police station. Through fingerprint scanner we fetch the thumb of the crisis person, connect with database and we can easily find the address of the person and can inform their parents or relatives.*

IndexTerms - Emergency person, Arduino Uno, Adafruit Fingerprint.

I. INTRODUCTION

In our day to day life we see many accidents and malady people in hospitals. When they are in critical situation if the Pearson becomes faint or in the drowsy condition the treatment should be made within the time. So the information must be passed on to their family if they are not available near the patient. On account of this we are going to implement this application by using the finger print device. Through fingerprint scanner we fetch the thumb of the person, connect with database and we can easily find the address of the person and can inform their family members. By this we can convey the situation to their family members easily and can inform the treatment is going on to heal the problem and illness

II. EXISTING PROBLEM

- When people in critical situations only the location of a patient (accident zone) is notified to a nearby hospital.
- In these cases, the patient information is collected only when the patient is recovering after treatment. Gathering the information of the person is difficult while patient in abnormal condition.
- Their condition and admitted hospital details has been sent to registered mobile number
- Data could be collected externally through paper work

III. PROPOSED SYSTEM

- Information gathered through patient's finger print and linking matching fingerprint with database.
- Their condition and admitted hospital details have been sent to registered mobile number.
- Instant gathering of patients address and personal details

IV. WORKING METHODOLOGY

When the **Emergency person identification system in critical situations** is loaded, the follow steps should be carried out.

1. Finger Print Detection,
2. Saved details.

1. Finger Print Detection

- Collecting the information of person's thumps.
- Fingerprint scanners are security systems of biometrics. They are now used in and most recently, on computers. Every person has marks on his or hers finger

- They cannot be removed or changed. Every fingerprint is special, and different from any other human being in the world.
- Because there are countless combinations, fingerprints have become an ideal means of identification.
- Stored the details of a person along with family member details such as name, unique ID, fingerprint, photo, etc., for verification.

2. Saved Details:

- A database is a composed accumulation of information A relational database all the more prohibitively, is a gathering of diagrams, tables, questions, reports, sees, and different components. Database architects regularly sort out the information to demonstrate parts of reality in a way that backings forms requiring data
- A **database-management system (DBMS)** is a computer software application that interacts with users, can be other applications, and the database itself to collecting and analyze data. A general useful dbms permits the definition creation questioning refresh and organizations of databases

Verification:

- ✓ Search for existing match
- ✓ Compare the finger prints
- ✓ Displaying the matched information

V. FINGERPRINT IMAGE ENHANCEMENT

This section describes the methods for constructing a series of image enhancement techniques for fingerprint images. The algorithm consists of the following stages:

1. Segmentation
2. Normalization
3. Gabor filtering
4. Binarization
5. Thinning

In this section, I will discuss the methodology for each stage of the enhancement algorithm, including any modifications that have been made to the original techniques

1. SEGMENTATION

As mention in [11] Segmentation the initial step of the unique mark improvement calculation is picture division. Division is the way toward isolating the closer view areas in the picture from the foundation districts. The closer view districts relate to the reasonable unique mark zone containing the edges valleys, which is the zone of intrigue. The foundation compares to the locales outside the outskirts of the unique mark region, which don't contain any substantial unique mark data. At the point when details extraction calculations

2. NORMALIZATION

The finger impression improvement process is picture standardization said in [11]. Standardization is utilized to institutionalize the force esteems in a picture by altering the scope of dim level esteems so it exists in a coveted scope of qualities. Let $I(i, j)$ speak to the dark level esteem at pixel (i, j) , and $N(i, j)$ speak to the standardized dark level an incentive at pixel (i, j) .

$$N(I,j) = \begin{cases} M_0 + \sqrt{V_0(I(I,j)-M)^2/V}, & \text{if } (I,j) > M \\ M_0 + \sqrt{V_0(I(I,j)-M)^2/V}, & \text{if } (I,j) < M \end{cases}$$

The standardized Where M and V are the assessed mean and change of $I(i, j)$, individually, and M_0 and V_0 are the coveted mean and fluctuation esteems, separately. Standardization does not change the edge structures in a unique finger impression; it is

performed to institutionalize the dynamic levels of variety in dark level esteems, which encourages the handling of consequent picture upgrade stages.

3. GABOR FILTERING

Once the edge introduction and edge recurrence data has been resolved, these parameters are utilized to build the even-symmetric Gabor channel. A two dimensional Gabor channel comprises of a sinusoidal plane flood of a specific introduction and recurrence, tweaked by a Gaussian envelope. Gabor channels are utilized on the grounds that they have recurrence particular and introduction specific properties. These properties enable the channel to be tuned to give maximal reaction to edges at a particular introduction and recurrence in the unique mark picture. Along these lines, a legitimately tuned Gabor channel can be utilized to successfully protect the edge structures while diminishing commotion said in [4].

4. BINARIZATION

Minutiae extraction calculations work on paired pictures where there are just two levels of intrigue: the dark pixels that speak to edges, and the white pixels that speak to valleys. Binarization is the procedure that changes over a dim level picture into a parallel picture. This enhances the difference between the edges and valleys in a unique finger impression picture, and therefore encourages the extraction of particulars.

Just helpful property of the Gabor channel is that it has a DC segment of zero, which implies the subsequent sifted picture has a mean pixel estimation of zero. Thus, direct binarization of the picture can be performed utilizing a worldwide limit of zero. The binarization procedure includes inspecting the dim level estimation of every pixel in the upgraded picture, and, if the esteem is more prominent than the worldwide edge, at that point the pixel esteem is set to a double esteem one; else, it is set to zero.

5. THINNING

The final image enhancement step typically performed preceding particulars extraction is diminishing. Diminishing is a morphological activity that progressively dissolves away the frontal area pixels until the point when they are one pixel wide. A standard diminishing calculation is utilized, which plays out the diminishing task utilizing two sub cycles. Said in [7] this calculation is available in Embedded through the 'thin' task under the morph work. Each sub emphasis starts by analyzing the area of every pixel in the double picture, and in light of a specific arrangement of pixel-erasure criteria, it checks whether the pixel can be erased or not. These sub emphases proceed until the point that no more pixels can be removed.

VI. ARDUINO UNO

The Arduino Uno is a microcontroller board in perspective of the ATmega328 (datasheet). It has 14 mechanized information/yield pins (of which 6 can be used as PWM yields), 6 straightforward information sources, a 16 MHz pottery resonator, a USB affiliation, a power jack, an ICSP header, and a reset get. It contains everything anticipated that would help the microcontroller; simply connect it to a PC with a USB connection or power it with an AC-to-DC connector or battery to start [10]. The Uno fluctuates from each first board in that it doesn't use the FTDI USB-to-serial driver chip. Or maybe, it incorporates the Figure [6.1] Atmega16U2 (Atmega8U2 up to shape R2) altered as a USB-to-serial converter

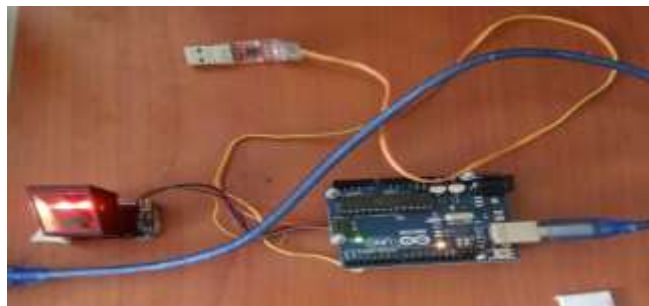


Figure 6.1: Arduino Uno process

Code: ArduinoUno process – Enroll ID

```

void doorOpen()
{
  lcd.clear();
  lcd.print("WELCOME");
  if(finger.fingerID==0)
  {
    i enrolled ID no 1 as Nidhi'sfingerprint, so used this
    line to display corresponding name
    lcd.setCursor(0, 1);
    lcd.print("A:22 N:GANESH");
    lcd.setCursor(1, 1);
  }
  if(finger.fingerID==1)
  {
    lcd.clear();
  }
  if(finger.fingerID==2)
  {
    lcd.setCursor(0, 1);
    lcd.print("A:22 ");
    lcd.setCursor(1, 1);
    lcd.print("S:M P:TVL ");
    delay(3000);
    delay(3000);
    lcd.clear();
  }
}
    
```

```

void doorClose()
{
  digitalWrite(8,LOW);
  lcd.print("No valid finger");
  lcd.setCursor(0, 1);
  lcd.print("on the sensor");
}

void setup()
{
  pinMode(9,OUTPUT);
  pinMode(10,OUTPUT);
  digitalWrite(9,HIGH);
  digitalWrite(10,LOW);
  lcd.begin(16, 2);
  Serial.begin(9600);
  Serial.println("fingertest");
  finger.begin(9600);
  pinMode(8,OUTPUT);//Pin connectet to relay
  if (finger.verifyPassword())
  {
    Serial.println("Found fingerprint sensor!");
  } else {
    Serial.println("Did not find fingerprint sensor :(");
    lcd.print("Sensor not Found");
    while (1);
  }
  Serial.println("No valid finger found,waiting for
  valid finger...");
  lcd.print("No valid finger");
  lcd.setCursor(0, 1);
  lcd.print("on the sensor");
}
    
```

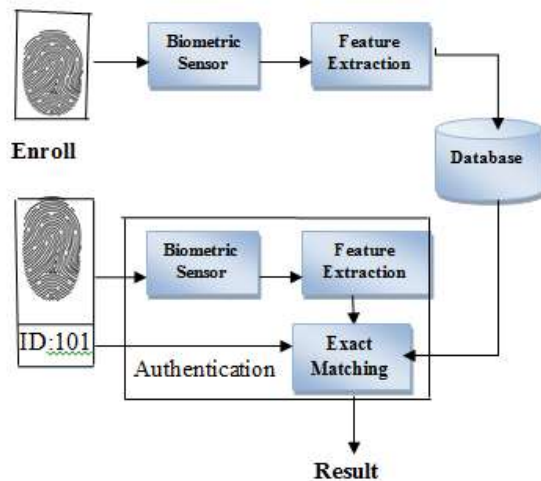


Fig 6.2: General Architecture for Emergency Person

VII.ENROLLING AND SEARCHING

There are essentially two necessities for utilizing the optical unique mark sensor. In the Figure [7.1] first place is you'll have to select fingerprints - that implies relegating ID #'s to each print so you can question them later. Once you've enlisted every one of your prints, you can without much of a stretch 'pursuit' the sensor, requesting that it recognize which ID (assuming any) is presently being captured.

You can select utilizing the Windows programming (least demanding and perfect since it demonstrates to you the photo of the print) or with the Arduino Uno portray (useful for when you don't have a Windows machine helpful or for out and about enlisting).Figure [7.2]architecture of a biometric system Stored database person details name, father name ,address ,phone no and photo, gender ,relative phone no, dob ,E-mail , id Retrieve particular fingerprint user verification.

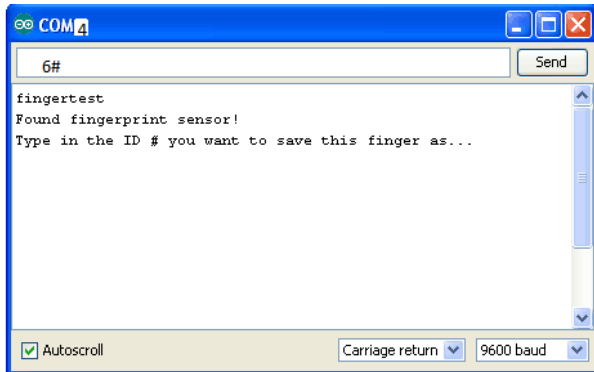


Figure 7.1: "Enroll Fingerprint"

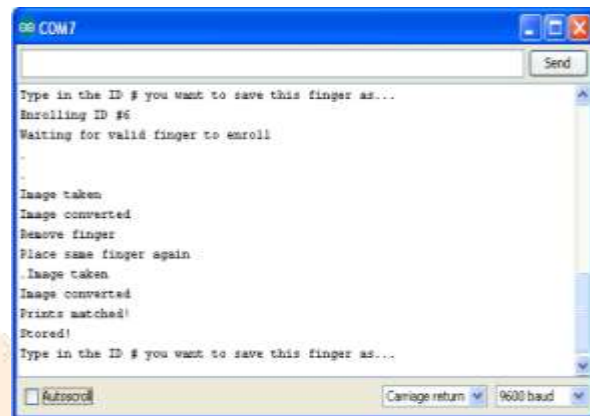


Figure 7.2: Verifying and Stored id Enroll "#Value"

VIII. CONCLUSION:

The Emergency person identification system web Application is useful for the person in critical situation which fetches the finger print of the person and connect with the database to get the patient details easily and the time consumption will be periodically less. It can easily identify the details of the drowsy person makes the process digitalized.

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