

Automatic patient information detection at emergency in ambulance using fingerprint

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ABSTRACT

Accidents are increasing day by day in India. When accident takes place, at that time the identification of patient becomes a major challenge. So we have proposed model that can help to identify patient during emergency. Recently the focus on patient's identification has become more important. There are many new technologies and tools present to improve quality of patient care at the point pre-treatment. The proposed model is implemented in such a way that can be used to retrieve information. This information is mainly includes pre-medical history and patients identification information which will help to improve the patient safety and reduce medical errors. Mistake during treatment such as wrong blood group, misidentification of patient, wrong medication can cause the loss of patient's life. Misidentification of patient is major problem. This implemented model is designed in such a way that uses biometric to identify the patient. The model stores the medical information of patient which includes pre-medical history, personal information and biometric print. This all information is retrieved using biometric during transport of patient to hospital. Patient information will help to justify problem and to prepare for the treatment. During transportation, traffic would be controlled by sending message to traffic police.

Keywords— Health –Monitoring, Biometric, Image processing, IOT.

ARTICLE INFO

Article History

Received: 2nd June 2018

Received in revised form :

2nd June 2018

Accepted: 5th June 2018

Published online :

8th June 2018

I. INTRODUCTION

In recent years, the digital images are turned out to be more widespread all over the world. Many organisations such as civil department, IT sector are depends on the digital images for identification. The fingerprint identification is one of the common identification techniques which is used on larger scale. The technique is fast, reliable, least cost and easiest way to identify the individual. It is mainly used for authentication purpose and for its accurateness.

As accident takes place on larger scale, the identification of patient becomes difficult. After accident takes place, the appropriate medical treatment is necessary. During emergency, the ambulance plays a vital role. After the ambulance is arrived, during the transportation the identification of patient as well as its pre-medical history should be retrieved till we reach the hospital.

In recent times, the mobile based applications are used on large scale. As technology is increasing, people are

able to use applications and get the benefits. The application provides healthcare services which will meet the urgent requirement of real time access to patient's data. The efficient healthcare application depends on capability to connect medical history, patient, doctors and procedure. A limited access to patient's information can be result into lack of treatment. This pre-medical information can be useful to doctor for the treatment of patient at crucial time.

We are using local server to store the data. Local server has many advantages which will help to protect data by making backups easier. Sharing data or retrieving data over the local server is quite easier. As local server is present on PC, the data processing capability is faster. Freeing up memory, Storing large data and enabling the software to work better. The local host enables you to setup and work on without any network configuration. In this model, we are using apache server on desktop will enable PHP scripts to setup database. The local server works autonomous of the internet. Therefore development time becomes faster.

As traffic also plays a vital role at emergency. The proposed model uses GSM to inform the traffic police and hospitals. When we call the ambulance by default it selects the nearest hospital. After ambulance is arrived, the person’s fingerprint is scanned and information of that person is retrieved. The message is send to the traffic police to clear the path towards the hospital. And another message is send to hospital. This will help doctors to identify the requirements for the further treatment.

II. PROBLEM STATEMENT

Accidents are increasing day by day. In many cases, it is difficult to get information about the person who met with an accident. So need to establish and maintain information about the person with his medical history such as blood group, disease and allergies to any particular medication. This will save life of a person and also time for pre-medical diagnosis.

III. BACKGROUND

Title	Overview
A Broad Survey on Fingerprint Recognition Systems	A detailed literature on fingerprint identification mechanism has been discussed in this paper. Generally, the biometric approach is used by the fingerprint identification mechanism. Fingerprint, which is utilized to recognize a person, is a physical biometric feature. Due to any physical disturbance like accidents happened fingerprints can be changed. With compare to other existing method, Wave Atom Transform and Modified Cuckoo Search (MCS) algorithm, gives better results even with low quality fingerprint images as it gives better PSNR values.
Survey on wearable sensor	In health monitoring system, the design and development of wearable biosensor system is increased. It’s helping the future healthcare by giving proactive personal health management and monitoring patient health condition. Wearable biosensors included physiological sensors and processing capabilities. The cost is also reduced and used all day in any place. It can be used in real time decision taking for early detection of symptoms and context awareness.
Use of Internet of Things (IoT) in management and monitoring of health.	In this paper, with the impressive collection of applications enabled by the IoT using smart and related health care is significant. Sensors in the network either wearable on

	the body or embedded in our living environments, use to gather information of our physical and mental health. By mining the gathered information, the optimistic solution can be brought in healthcare. The intelligent processing algorithms used are (a) permit personalization of treatment as well as management options targeted to the specific conditions and needs of the human being and (b) Reducing the cost of treatment and improving outcomes.
Biometrics: a splendid challenge	Security disquiet: In Central Authentication Entity’s database, the biometric templates are recorded by usual biometric authentication system .The users’ biometric information must be secured from being attacked.
A fuzzy vault system by generating an invariant iris private key.	The proposed a fuzzy vault system incorporates fuzzy logic and local iris feature to bear within class variance for error correction.

IV. PROPOSED SYSTEM

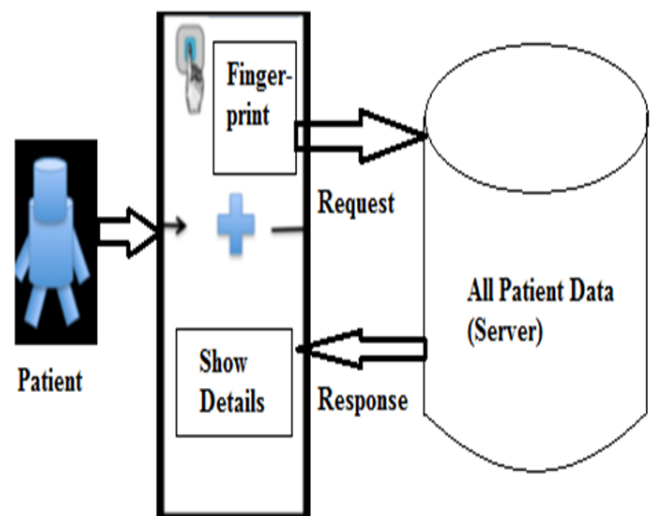


Fig..1 System Architecture

The model consists of smart healthcare application that has three functional building blocks:

- 1) Fingerprint
- 2) Display
- 3) Server

First, it consists of gathering all the data such as personal information and medical history of patient using thumb impression and store it in the database on the server.

Second, when request is send from user, all data stored in the database related to user will be able to see .

Third, for storing the data of patient large database is required. All the data is stored on cloud so that data can remotely maintain, managed and backed up.

The proposed system is built in such a way that patient life is saved and in some cases, it also help to identify person in accident place. By using thumb impression, information of patient can be find.

The main six modules are

Module 1: Hospital

The time to deliver patient and contacting hospital about patient is very critical. In many cases, the doctors cannot find exact problem with the patient till he/she reaches to the hospital. It is also found that the required medicines or tools which are not available presently can be arranged till the person arrives to hospital. It is better to make use of transportation time of patient to retrieve information about the patient. This can save the person life.

Module 2: Fingerprint

Now a days digital image processing is commonly used. They are low cost, easy to handle etc. A fingerprint is made up of tiny ridges, whorls well as valley patterns. Fingerprint is used as a unique identification of the person .In proposed model, we use fingerprint for retrieving person's personal information and previous medical history. This retrieved information can be used for many purposes such as identification, hospital.

Module 4: Registration

In the registration first all people are registered. It also has hospital related information. The information during register include personal information, medical history and thumb print.. Once the person is register to application then he can easily identified in emergency case.

Module 5: Patient

The Health Monitoring application will help people in emergency condition such as accident, natural calamities. The application helps us to retrieve information and help doctors to give appropriate treatment.

Module 6: Admin

Admin plays important role. He has permission to access the authorized data such as finger print. He adds the finger print associated with that person. He maintains database that is stored on local server.

Hardware used:

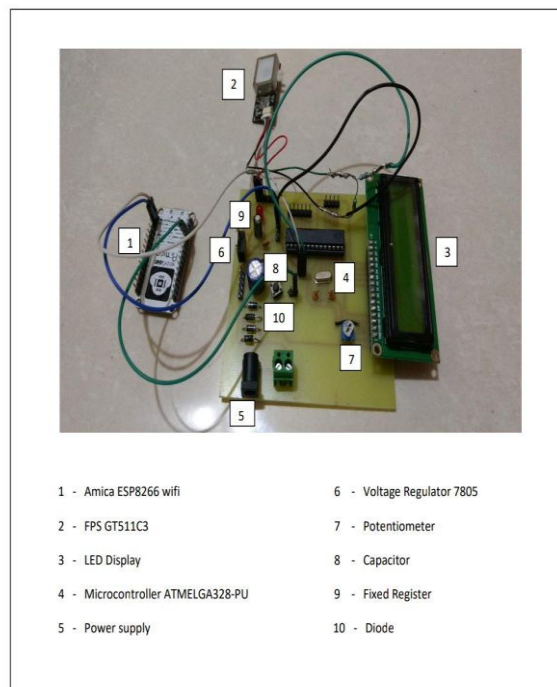


Fig..2 System hardware

V. ALGORITHMS USED

1 Image Processing Technique:

User's fingerprint is compared with the existing database with the help of optical sensor. A template of the finger is then generated and it is compared with the existing finger templates present in database. The system will compare the current fingerprint with specific template intended in the module for 1:1 matching. For 1:N searching, the whole database is searched by the system for the matching fingerprint.

The decision for the match or failure is displayed by the Microcontroller on the display provided. If match is found then a certain task is given permission or else it is denied.

Retrieving the data. The data of the entries made can be retrieved whenever required by connecting it to a PC. The GUI designed gives the details of the matched and unmatched templates.

VI.FUTURE SCOPE

We can use cloud server instead of local server. Cloud server provides us to store a large database.

We can also use iris recognition in case any damage to the fingerprint.

In future, we can use the Aadhar card to identify the person.

VII.RESULT

Testing of application is done using Jmeter.

Following are the results:

- a. Aggregation graph
- b. Graph
- c. Report

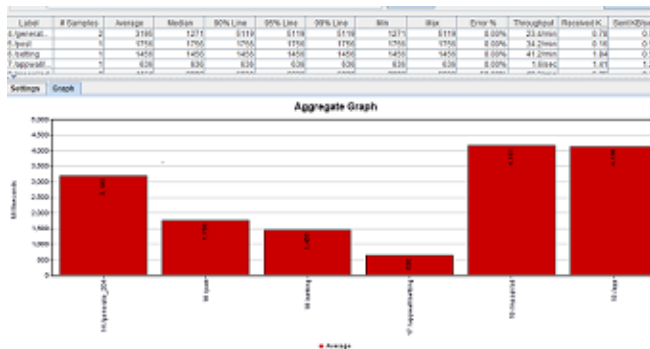


Fig.3 Aggregation graph

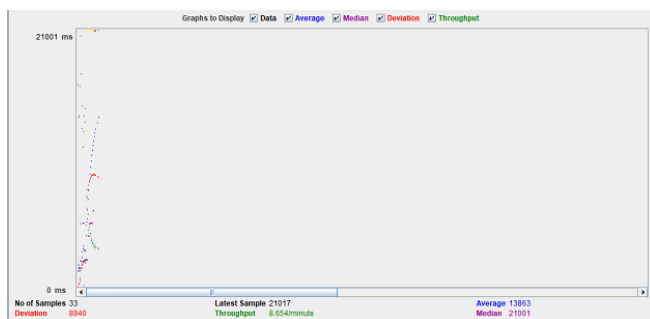


Fig. 4 Graph

Summary Report

Name: Summary Report

Comments:

Write results to file / Read from file

Label	# Samples	Average	Min	Max	Std. Dev	Error %	Throughput	Received KBits	Sent KBits	Avg. Bytes
14.generate...	2	3195	1271	5119	1924.00	0.00%	23.41mm	0.78	0.57	2055.5
15.send	1	1750	1750	1750	0.00	0.00%	34.21mm	0.15	0.52	202.0
16.receive	1	1456	1456	1456	0.00	0.00%	41.21mm	1.84	0.56	2745.0
17.receive	1	636	636	636	0.00	0.00%	1.61sec	1.41	1.29	920.0
18.receive	2	4161	2097	6230	2069.00	60.00%	19.31mm	5.75	0.76	1834.5
19.receive	1	4138	4138	4138	0.00	100.00%	14.51mm	0.05	0.23	241.0
20.receive	2	5168	5168	5168	0.00	0.00%	23.21mm	0.10	0.38	273.0
22.receive	2	1103	18	2189	1065.50	0.00%	54.31mm	1.15	0.28	1091.0
21.receive	1	2171	2171	2171	0.00	0.00%	27.61mm	0.16	0.15	346.0
23.receive	2	21001	21001	21001	0.00	100.00%	5.71mm	0.20	0.00	2133.0
24.receive	2	21003	21003	21003	0.00	100.00%	5.71mm	0.20	0.00	2133.0
25.receive	2	21005	21005	21005	0.00	100.00%	5.71mm	0.20	0.00	2133.0
26.receive	2	21003	21003	21003	0.00	100.00%	5.71mm	0.20	0.00	2133.0
27.receive	2	21004	21004	21004	0.00	100.00%	5.71mm	0.20	0.00	2133.0
28.receive	2	21000	21000	21000	0.00	100.00%	5.71mm	0.20	0.00	2133.0
29.receive	2	21002	21002	21002	0.00	100.00%	5.71mm	0.20	0.00	2133.0
30.receive	2	21003	21003	21003	0.00	100.00%	5.71mm	0.20	0.00	2133.0
31.receive	2	21006	21006	21006	0.00	100.00%	5.71mm	0.20	0.00	2133.0
32.receive	2	21017	21017	21017	0.00	100.00%	5.71mm	0.20	0.00	2133.0
TOTAL	33	13853	18	21017	8949.45	66.67%	8.71mm	0.30	0.05	2761.2

Fig. 5 Report

VIII.CONCLUSION

The application provides detailed information of a person with his medical history at emergency. This information helps the doctors to provide the pre-medical diagnosis. As the application is sending the message to the traffic police so patient can reach hospital as early as possible and the person’s life can be saved.

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