

Identifying Organ Donors with Fingerprint based on Image Segmentation Algorithm

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Abstract— The main objective of this project is to automate the process of organ donation through cloud computing environment. Large numbers of health organizations have started shifting the electronic health information to the cloud environment. Introducing the cloud services in the organ donation sector, facilitates the exchange of organ donors and seekers. The hospitals and clinics, enables the cloud to act as a medical record storage for organ donation efficiency by retrieving the patient's organs from the donor. The sponger can get the organs from the hospital and the donor by sending the request. The donor will send request to hospital to check their organs and those medical records can be maintained by the hospital admin. The untested organs will be changed by the hospital and it will be viewed to the donor. The donor or sponger can check the status and check their organs whether it is tested or untested. The admin has the authority to view all the users but not to modify the details i.e, only the registered hospital with license can access the database. Apart from storage, this system also helps to avoid duplications of the donor and seeker's details since unique identification number that is Aadhar card number of patient along with fingerprint using Image segmentation algorithm are fed into cloud while registering.

Index Terms— Aadhar card, Cloud Environment, Donors, Medical Record, Sponger, Untested Organs, Image segmentation.

1) INTRODUCTION

The cloud-computing model shifts the computing infrastructure to third-party service providers that manages the hardware and software resources. Large numbers of health organizations are now accessing and viewing their health records in cloud computing. Introducing the cloud services in the organ donation sector facilitates the exchange of organs between donors and seekers. The hospitals and clinics, enables the cloud to act as a medical record storage for organ donation efficiency by retrieving the patient's medical history. The donors before going for the donation will get to know about the health issues of the patient. The present organ donation system does not update data of individual after death. Hence this system retrieves medical and relational data to the administrator. So that the licensed organization is aware of the donors updates. This is done by using the donator's unique identification number and reference person's details. In future, by updating it with security and accuracy this can be used to get information of a organ donor who is deceased and whose organ donation details is unknown to the environment and hospital. [1]

Aubrey P, Arber S, Tyler M. The organ donor crisis reports on the findings of an audit of deaths undertaken in ten accident and emergency (A&E) departments in North Thames region, UK. Although the results are very encouraging duplication of details may occur. [2] Bair HA, Sills P, Schumacher K *et al.* Improved organ procurement through implementation of evidence-based practice shows that more than forty hospitals across Michigan to implement evidence-based practices in organ donation. It focused on four specific outcomes and process measures. Outcome measures were conversion rate and referral rate, whereas the process measures were timely notification rate and the rate of requests by appropriate requester.

Table(1)

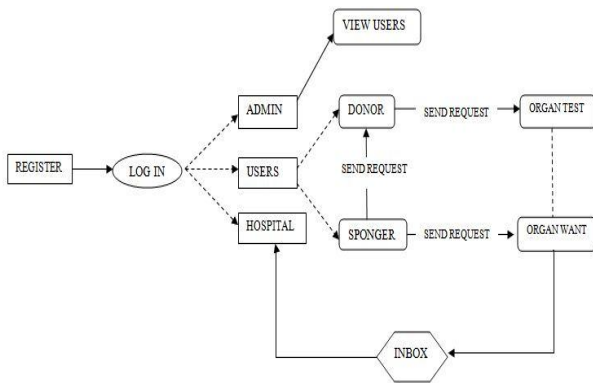
Year	No. of Organs Available	Eligible Donors
2004	66	32
2005	81	40

Table(1) shows the data summarized for pre-implementation (January-December 2004; thirty two eligible donors) and post-implementation (January-December 2005; thirty eligible donors). In 2004, a total of sixty seven organs were made available to Gift of Life Michigan; in 2005, a total of eighty one organs were made available, a 31% increase. In this system, it is hard to get the organ donors. [3] Dickerson J, Valadka AB, Levert T *et al.* Organ donation rates in a neurosurgical intensive care unit. In this study, the authors analyze donation rates in the NICU and discuss factors that may be important in maximizing these rates. All referrals from the NICU to the OPO from 1996 to 1999 were analyzed. If one assumes that all fifteen patients would have been suitable donors, the unsuccessful resuscitation rate becomes fifteen (13.3%) of hundred and thirteen. This system does not provide more security. Hence the following idea is implemented.

2) PROPOSED WORK

In the proposed system the organ is donated and registered in cloud storage using aadhar card number and fingerprint. Only the licensed hospital which is the administrator have rights to access or modify data. The donor can only view the data using aadhar card number as user name and password. The seekers request the admin in need of organ. The admin refers to the database and contacts seekers as per the need. In case of emergency, it can be found that whether the person is an organ donor or not with the help of fingerprint. Economic Feasibility is mainly concerned with the cost incurred in the

implementation of the software. Since this project is developed using Jsp /Servlets with Java and MYSQL Server which is more commonly available and even the cost involved in the installation process is not high. Similarly it is easy to recruit persons for operating the software since almost all the people are aware of Jsp / Servlets with Java and MYSQL Server. Even if we want to train the persons in these area the cost involved in training is also very less. Hence this project has good economic feasibility. The system once developed must be used efficiently. Otherwise there is no meaning for developing the system.



Figure(1) Architecture of Online Organ donation

Duplication is avoided as the donors are registered using aadhar card number and fingerprint will also help to avoid replication. The details of the donor is updated periodically when donor goes for medical checkup. In case of unavailability of the user the reference person can be contacted or he/she can update the donor's details. Since it is applied in cloud environment, it is easy to access from remote places. One major advantages of this project is that sponger will be able to view all the organs who were donated. As shown in Fig(1) The organ will be divided into two types - tested organ and untested organ. So that the donor will be able to select the organs which are tested and which are in need. A *module* is a single block in a pile of blocks. From the architecture Fig(2), the flow of work depends on the following modules.

MODULES

1. Organ donor module
2. Sponger module
3. Search module
4. Hospital module
5. Tested/untested module
6. User management module

1.Organ donor module: Organ donor module is used to register the form. i.e., the user should register the form before he/she donates the organs. This is used to give the organs to the particular person in need. The user who is ready to donate the organs must register in the organ donation module and he/ she should register and fill the donation form. The donor can also approaches to the hospital to test their organs. The donor gets the message or request from the admin to donate the organ.

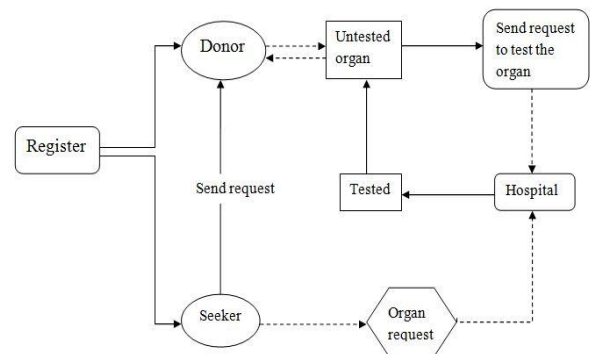
2.Sponger module: Spongers module is used to get the organs from the particular persons or he can get through the hospitals. The spongers should also register the form after that he/she can get the organs from the hospitals. He/she can approach to the hospitals for the organs. The spongers will be a to find the organ in the organ donor field. The spongers can send the request to the hospital to get the organs. The spongers used to view all the details of donor. So that they can easily send the request to the donor or the hospital.

3.User management module: User management is used to view all the sites in the project. The user can see the organ donor who is ready to donate the organs; he/she can view the spongers who wanted the organs immediately. The admin is known as user management. The user management can also view the hospitals and tested organs. The admin can view all the details of donors and spongers.

4.Hospital module: Hospital module is used to get or give the organs to the seekers. This plays an important role in this project. The patients who are getting the organs or wanting to donate the organs can approach through the hospitals. Likewise the hospital also gives a message to the patients. The hospital module is used to test the organ which is send through the donor. If the donor ask the hospital to test the organ , they should test the particular organ and send that to the particular person.

5.Tested/untested organs module: Organs which is tested from the hospitals will be displayed in this tested organs module. This module will be useful to the spongers because the spongers can directly view the tested organs and they can send the request to the donor or the hospital. The tested/untested organ will be viewed in the hospital module. This process will be done by the hospitals through the doctors.

6.Search module: Search option is used to search the organs according to the persons. The person who is donating or giving the organs can search regarding to the names of the organs which is given in the search. The hospital admin also can search the organs in this module.



Figure(2) Overall DFD Representation

3) SYSTEM CONFIGURATION

Hardware system configuration:

- Processor - Pentium–III
- Speed - 1.1 GHz
- RAM - 256 MB (min)
- Hard Disk - 20 GB
- Floppy Drive - 1.44 MB
- Key Board - Standard Windows Keyboard

- Mouse - Two or Three Button Mouse
- Monitor - SVGA

Software system configuration:

- System - Windows95/98/2000/XP
- Operating Application Server-Tomcat5.0/6.X
- Front End - HTML,CSS, Java, Jsp

Apache tomcat server

Apache Tomcat (or simply Tomcat, formerly also Jakarta Tomcat) is an open source web server and servlet container developed by the Apache Software Foundation (ASF). Tomcat implements the Java Servlet and the Java Server Pages (JSP) specifications from Sun Microsystems, and provides a "pure Java" HTTP webserver environment for Java code to run in. Online organ system uses Apache Tomcat Server to store the details of donors and seekers.

4) PERT CHART AND GANTT CHART

The purpose of controlling a project is to monitor the progress of the activities against the plans, in order to ensure that the goals are being approached and, eventually, will be achieved. Another aspect of control is to detect, as soon as possible, when deviations from the plan are occurring, so that corrective action may be taken. There are following tools used for the project control:

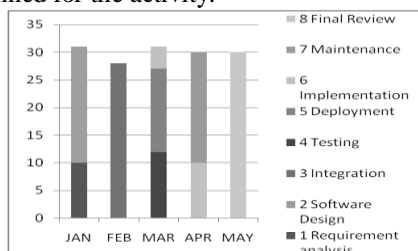
- PERT chart
- Gantt chart

Pert chart:

PERT (Program Evaluation & Review Technique) chart is a network of boxes (or circles) and arrows. There are different variations of PERT charts. Some use the boxes to represent activities and some use the arrows to do so. Each box thus represents an activity. Arrows are used to show the dependencies of activities on one another. The activity at the head of an arrow cannot start until the activity at the tail of the arrow is finished.

Gantt chart:

Gantt charts are developed by Henry L. Gantt. Gantt chart is project control technique that can be used for several purposes, including scheduling, budgeting, and resource planning as shown in Fig(3). A Gantt chart is a bar chart, with each bar representing an activity. The bars are drawn against a timeline. The length of each bar is proportional to the length of time planned for the activity.



Figure(3) Sample Gantt Chart

5) FEASIBILITY TEST

Preliminary investigation is used to examine project

feasibility. All systems are feasible if they have unlimited resources and infinite time. There are aspects in the feasibility study portion of the preliminary investigation:

- Technical Feasibility
- Operational Feasibility
- Economic Feasibility

Technical feasibility:

Technical Feasibility centers on the existing computer system, hardware, software, etc. and to some extent how it can support the proposed addition. This involves financial considerations to accommodate technical enhancements. Technical support is also a reason for the success of the project. The techniques needed for the system should be available and it must be reasonable to use. Technical Feasibility is mainly concerned with the study of function, performance, and constraints that may affect the ability to achieve the system. By conducting an efficient technical feasibility we need to ensure that the project works to solve the existing problem area. Hence this project has good technical feasibility.

Operational feasibility

People are inherently instant to change and computers have been known to facilitate change. An estimate should be made on how strong a reaction the user staff is likely to have towards the development of the computerized system. The staff is accustomed to computerized systems. These kinds of systems are becoming more common day by day for evaluation of the software engineers. Hence, this system is operationally feasible. As this system is technically, economically and operationally feasible, this system is judged feasible.

Economical feasibility

The role of interface design is to reconcile the differences that prevail among the software engineer's design model, the designed system meet the end user requirement in economical way at minimal cost within the affordable price by encouraging more of proposed system. Economic feasibility is concerned with comparing the development cost with the income/benefit derived from the developed system. In this we need to derive how this project will help the management to take effective decisions. For this a careful study of the existing system and its drawbacks are needed. The user should be able to distinguish the existing one and proposed one, so that one must be able to appreciate the characteristics of the proposed system, the manual one is not highly reliable and also is considerably fast. The proposed system is efficient, reliable and also quickly responding.

6) ADVANTAGES

The major advantages of this project is that the sponger can able to view all the organs who were donated the organs. The organs will be divided into two types they are, tested organs and untested organs. So that the donor can able to select the organs which is tested and the donor can get the request to the hospital to test their organs which is not tested.

7) CONCLUSION

This work deals with the fact that one can donate the organ or receive it using cloud computing. All the information are stored in cloud environment. Duplication is avoided by using a unique id aadhar card number and fingerprint. And also the contact details of the person is shared for better donation. By updating this system with more ideas, it can be used to get information of a organ donor who is dead and whose organ donation details is unknown to the environment and hospital.

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