ORGAN DONATION MANAGEMENT SYSTEM (PROJECT: ODMS)

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ABSTRACT

Organ Donation Management System is a novel idea to support organ donors in India with a new age interface and ease of registration, and systematic guidelines of Government India to ensure the legalities. As we included a Aadhar authentication for this process to register a donor, we duly abide by the laws, values and of Donors to serve the communities in India. ODMS is an online system which consists of Android Application and a Website. The health care system has access to detailed information of patients and donors within a management. As the penetration of Mobile phone and gadgets is another boon for this project idea deployment. We designed a system if a user willing to donate organs post their death due to an unfortunate accident or incident with help of Aadhar system we trace the organ donor and within the golden period we take the permission of family members of deceased organ donor to transplant his organs to other patients in need. Aadhar plays a pivotal role in this entire process for Authentication, Tracking the deceased donors and the Know Your Donor called as KYD where a donor himself provide a legal acceptance of organ donation post his death through video KYC and digital forms filling.

KEYWORDS

ODMS, Government of India, Aadhar, Organ Donor, Organ Recipient, Database, Website, Android App.

1. INTRODUCTION

There is a saying in Telugu language which goes like only Women and Mother Earth have the ability give birth to lives as in case of human and plants. But There is another person called Organ Donor. He can give birth to many others. And we believe in it. Organ donation is describe as giving an organ or part of body organ to be transplanted into another person. Organ transplantation is the only option to save live in patients affected by organ failure and improve their quality of life. However, there is stress gap between the donor and recipient or between the supply and demand of organ, which make visible to death rates. For that some of the main reasons are lack of awareness, religious and superstitious beliefs, and strict laws.

The universal issue of organ shortage is prevalent in Asia, particularly in India, where the situation is worse compared to other countries in the continent, many factors contribute to this problem, such as religious myth, lack of knowledge or awareness, and efforts of government not reaching the root level. Though government is coming up with "Ayushman Bharath", Swachh Bharat Healthy Bharat, ABHAA etc. schemes were limited to health improvement only NOTTO which is statutory government body under Ministry of Health & Family Welfare is working singularly to improve the conditions. Transplantation of Human Organ Act has been passed in 1994 by Indian Government which

Some people are interested in this social cause but don't have enough knowledge as to what to do and how to donate. Another factor is people are not literate enough to know the importance of this cause. So, we are providing our Country with an Organ Donation Management system to spread awareness and give an easy service to our people to recover life. Because the era of internet technology opens the window with application/software/website. A management system which will bridge the gap between donor and recipient in the need of hour and will help user to get medical service, hospital bed availability, doctor etc. in need of time. This system contains the process of login and sign up. When the user opens the app, it will start with beautiful graphics called splash screen activity. Then intent activity will be called to change the activity. Then login page will appear where the user will put the credentials to sign up. If already a member, then log in will be done from those credentials. If login credentials are equal as member credentials, then admin portal will open. In basic user credentials the user can donate or seek for organs through proper guidelines displayed in the app. User will put his/her information and submit the response. The information will be monitored by admin. User will also share his number of government id proof during submission. All these data will be stored in google cloud database. Along with this user information will be kept confidential. Admin will access the user information and do the verification process. Admin can accept of delete user request. Admin will manage the data handling process in firebase. When the user will request any organs through this app information of user will be stored in cloud. Admin will fetch that information and provide it to doctors in hospitals and from there the official verification and other formalities will be done. However, doctor will have a member account through which he can observe the database. User requirements will be forwarded to government hospitals through doctors and NGO to manage the guidelines of donation system. User will also Agree to terms and conditions of this app.

2. RELATED WORK SOFTWARE REQUIREMENT ANALYSIS

2.1. Literature Survey

A. Smart Blood banks central distribution system in arab continent saudia arabia

There is online system having aim for setting up the blood branch in every region of saudia arabia and will check the require amount of blood in each categories, their expiration date and preserving time. To control they have linked everything online like blood bank hospital. What they have done is basically They are running this system with the linear digital algorithm which are computed for the mandate fraction of blood units. Target of this system is to estimate how to take use of blood before its expiration from blood bank and reduce the blood shortage . However there is some limits. They mostly aligned on hospital and blood bank.and drawback is that among donor and hospitals there is no interaction.

B. For medical record there is model development for android` based

In a very normal way, the medical system do or maintains records and do track or perform the activities mostly on hand written on paper based work. which shows or have much drawbacks. in a current scenario is the healthcare and medical industries can be greatly get help and improved by the application which are emerging trend from information technology and digital generation. For maintaining all the medical record and doing all medical related activities will provide advantage like big storage space(cloud computing), realtime management and etc they have developed online system. it can also improve the quality of system in incredible way. MySQL database has been implemented in a backend. In their assessment which they record every year the improvements Which shows an 75%.

C. The design for Integrating health service

After having the new technology like 4g and 5g there is less communication and can be seen as most significant problem due to this healthcare system and medical bodies are facing problem like work load and Delay in service. In today world if there is not good interaction between medical staff and service like distribution of medical report among them, then it is making risk to many thing which need to maintain in a worst case state, it can also take down the medical system into worthless state. solution of representative state transfer architecture and [HL7] standard have been setup for speeding server speed and advancement in communication among healthcare system.

Our plan is to create a website and one android app to make this project run smoothly. We have created a website using Django platform as a user interface to provide and collect data from user. This website can access admin and user log in according to need. Data is saved in cloud in our authority so no one can access them without having authority. The next plan is to make the app. This app is done in android studio. User can simply install this app on phone and launch the app. From there sign in page is there. There they can connect with the signup sign in module. Data is stored in google cloud. Authentication is provided using Gmail and password. Besides these things side by side, we are updating our work in research paper to make changes that is improving day by day. Our goal is to manage website and app in a medium scale at this current stage. We will be expanding presence in our area when government approval will be given to make this happen in large and economic scale. At that moment ads will be there in app and websites to collect revenue and manage charity. Website and app need to be organized regularly. To make that happen we are also planning to make automation in our work using database analysis and visual representation of statical values. Along with things till now app will run in middle scale but after Indian government gives permission, we will deploy in hospitals to run in large scale.

3. SOFTWARE REQUIREMENT ANALYSIS

Technologies that we are used in this project are Django Framework, SQL, Html, CSS and Python API for the website part. And in the case of App we used the Android studio software for application development in Android 11 and above. DJANGO is a python web framework using for development and secure websites and it's a high-level python web-framework and it has a vast library out of that we used NumPy, Pandas, Matplotlib etc. for to design this website SQL- is a structured query language used for database purposes here we stored vast amount of user data for validation and doners' data and total data we stored in this SQL server using xampp control panel. HTML&CSS- HTML is a hyper-text markup language it is a scripting language here we used to create a beautiful webpage and we designed it using CSS Python API- This a Software used to communicate between two devices here we used this api to communicate between user and admin can create, read, update, and delete the data and user can see his reaction like admin accepted or rejected his request. Android studio-To make android app we are using android studio arctic fox. Here we are using xml files to create pages as front end and java to store and manage the click events. Data is saved on Google cloud and encrypted with https protocol. Firebase is used to manage the JSON query and file operations. Android expresso testing is in build implemented to provide wide area. Dynamic effects. Along with this we client API is used to manipulate the webpages.

4. GENERAL DESCRIPTION: PYTHON AND DJANGO

Python-Django is a high-level python web framework it was initially launched on 21 July web framework used to develop highly securable and maintainable websites ,there are so many web framework present in market like spring ,angular and react but here we used Django it is easily understandable everything thing has a new field in it like for views and for URLs we can address them in specific editor option and it has vast number of libraries like NumPy, pandas and matplotlib by using these libraries we can perform data pre-processing and data analytics for revenue generation.

5. GENERAL DESCRIPTION FOR ORGAN DONATION

Organ donation management system here we created both website and an application ,website is totally based on python-Django framework and SQL and you can access this website by installing pip in your control panel or in command prompt and you must install xampp control panel for server purposes after installing pip ,some other installation left like matplotlib , NumPy etc. after everything run code visual studio code and go to CMD do migrate first for to apply all changes have done in code after migration you can run server by giving command like python manage.py run server there you can see a web address copy that and do paste in internet browser noy you can access this website ,coming to the Android application we created this app totally in Android studio you can go easily download us .APK file 5.3.
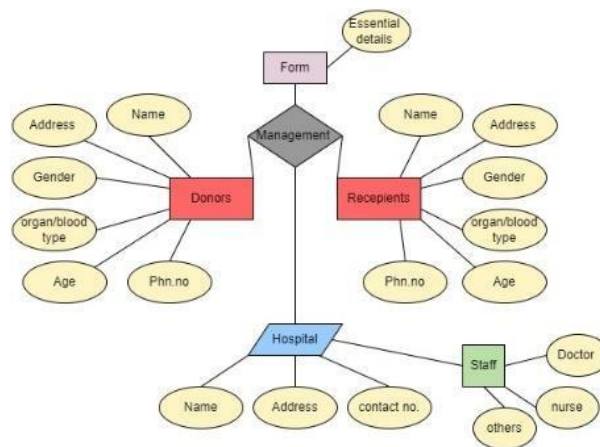

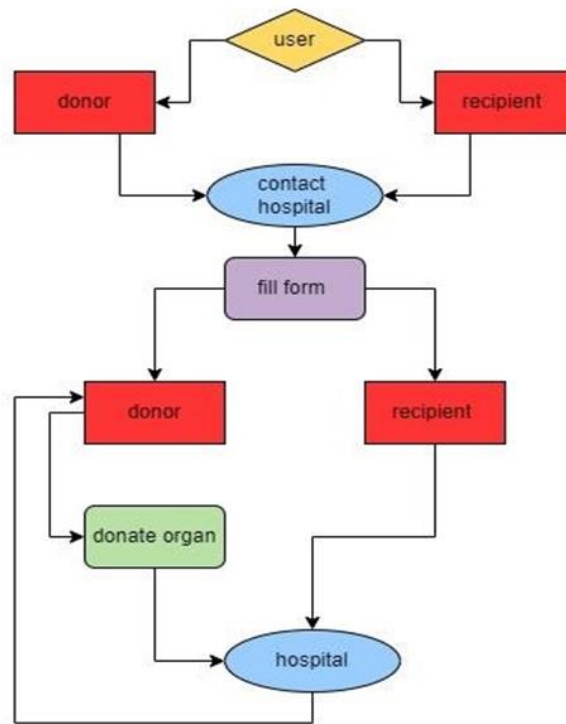Fig. 1 E-R diagram of organ donation management

Fig. 2 Flow chart of contact among donor-hospital-recipient

Fig. 3 Result can be view as advantage of Organ Donation Management Database

a) GPS system– perform searching based on organ type, blood type, tissue, region based or nearby person or hospital. it will make work rapid in finding organ donor.
b) Provide complete list with the details of people.
c) Contact information of all Hospitals, NGOs and Doctors will get through this system.
d) There is option for enroll for donate organ and to enroll during the need of organ or blood.
e) Time to time It will provide critical data and reports to the government and medical division time.
f) It will save data and prevent in loss, change of data. And, proper security for data so that no misused is there.

g) And, one of the main advantages is that we can be overdried from the <u>BLACKMARKET</u> in organ mafia.

There is a huge dependence which can be seen in future because there is huge gap between the organ donor and organ recipients.

6. SPECIFIC REQUIREMENTS

6.1. Software And Hardware Requirements

Operating system Windows 8 or 10 and Android 10-12
Database server: MySQL, cloud(firebase)
Clients: Google Chrome, internet explorer and .apk file
UI: HTML, CSS, XML, JAVA 7 5.3.2

6.2. Hardware Requirement

1) Pc with 128Gb hard-disk and 256 MB RAM
2) 2)Mobile having SDK version above 25 5.3.3

6.3. Software Requirement

1. Python-Django
2. MYSQL
3. Android studio
4. Google Firebase & Google cloud

7. PROBLEM STATEMENT

There are less websites in the market related to these organs like organdonor.gov to donate and request organs, we created this website to manage all those things stuff like donating and requesting. So many people are dying due to organ sufficiency and they can't run to hospitals in a critical time there is no guarantee that specific organ is present at that time at region/state by overcoming all those things we created this website organ donation management system here they can easily register themselves for donation and they easily request for an organ Our team from various hospitals from various states will collect data from hospitals update data using python API's. So this is the efficient way to deal with everything is becoming online why people should search all through the hospitals instead finding in a website, So this thought comes in our mind and we made it for a 1.4 Billion people in India. We know there might be some flaws in this process but one has to start at initial step.

Till now some websites are working on this problem statement and so many websites are coming further and this is our initiative to start this website like we think this is a novel idea and the one who is requiring an organ at a critical time these types of websites will help a lot.

There are some websites are present in market like organdonor.gov but here in our website we made easy for user to request any organ in their particular state/region, we have a vast database here we can store data available the persons who are willing to donate from other websites and from hospitals as well we'll club all those information and build a website where a person can easily book their organ.

8. PROPOSED WORK

8.1. What's New In The System To Be Developed

Our plan is to create a website and one android app to make this project run smoothly. We have created a website using Django platform as a user interface to provide and collect data from user. This website can access admin and user log in according to need. Data is saved in cloud in our authority so no one can access them without having authority. The next plan is to make the app. This app is done in android studio. User can simply install this app on phone and launch the app. From there sign in page is there. There they can connect with the signup sign in module. Data is stored in google cloud. Authentication is provided using Gmail and password. Besides these things side by side, we are updating our work in research paper to make changes that is improving day by day.

Our goal is to manage website and app in a medium scale at this current stage. We will be expanding presence in our area when government approval will be given to make this happen in large and economic scale. At that moment ads will be there in app and websites to collect revenue and manage charity. Website and app need to be organized regularly. To make that happen we are also planning to make automation in our work using database analysis and visual representation of statical values. Along with things till now app will run in middle scale but after Indian government gives permission, we will deploy in hospitals to run in large scale

In coming days, we want to handover our project to National Organ and Tissue Transplant Organisation (NOTTO) Government of India. We want to add a feature like the one who is doing blood donation twice a month will get some benefits from our team. We want add features like blood monitor and stress control programs, diabetes alerts will be added and good diet for good health. We will add some physical exercises sheet for to maintain good health and keep organs healthy.

9. EVALUATION AND DISCUSSION

With seeing, the fast speed in hand we can use the technology of machine learning and artificial intelligence for gathering the medical data, reports, working analysis on that basis time to time will be ways and can be carry out major details between the donor and recipients through the management system itself. In future we would like to add QR code and One Time Password (OTP) verification method for authentication of user due to security concerns, and we hope this organ donation system will be making another remark when shape another dimension of health care medical infrastructure from higher authoritative to ground level. Computing technology when user will get more enrolled so that it will reduce the load of system in mobile device and on website server.

10. CONCLUSION

It's all about today's generation, the whole world is with you in in your hand. This paper informs about necessary support and provides critical recommendations for organ donation by mobile users who have to install the application or use by website when in need. This management will save many lives of people who are suffering due to lack of organ. This app will impact and address to society and humanity with spreading the concept of life after one's death. This management will give the most user-friendly platform to sign up both the organ donor user or the organ receiver in such an instant and organized way. We mainly focusing to give information in order to prepare organ donor/receiver for this system when patients are in need of organ and who

are ready to donate organ on their wish. This all can bring out the positive outcome. Therefore, we should spread awareness and encourage the acceptance of organ donation management system by using mobile or website in health care system to save lives as much as possible. We acknowledge the importance of every specific person of team work while project development and management.

REFERENCES

[1]   "Donate Life: What you need to know about organ donation in India". [The better India]. 22 November 2016. Retrieved 7 may 2021.

[2]   "Organ Report". [*Notto.gov.in.*]. Archived from the journal on 4 December 2019. Retrieved 22 may 2020.

[3]   "Narayana Nethralaya- Dr. Rajkumar Eye Bank". having Achieved From the original journal.

[4]   "Strategies and outcome in renal transplant".   Vivek B. Kute. published on 2022 march25.

[5]   "Health e-living blog: register as an organ donor". [Chester county hospital]. 02 April 2021.

[6]   "How to register". Transplant Quebec. Retrieved November 26, 2019.

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