Project Report on e-Health Card

System Description

- We have Aadhar card, Pan card, Voter id, driving licence like identity proofs for our day to day transactions, but we have major missing that is our health card, which manages our day to day health history like disease, allergy.
- The health card can be used everywhere that is in private and public hospitals, laboratories and clinics which will track the health relate data. The concerned entity will enter the new data with the help of unique id which will be provided to every user possessing the health card. Based on this id the concerned entity can analyse the patient's history and can provide treatment in a better way.
- The benefit of the card can be understood from the fact that if an unconscious patient is taken to a hospital and has his health card with him, the doctors can readily access the information about his or her health status.
- There will be a huge amount of data gathered giving information on the various diseases which are prominent in various cities and states. With the help of these data a machine learning algorithm can be devised which can predict the inflation of a certain disease in a particular area and can be extremely helpful in giving critical information to save others from getting that disease. The emphasize is only on collecting the health-related data which has nothing to do with the economical transactions.

Survey on Existing Technologies

- As of now there are no real time applications that addresses the problem.
- However, there are certain health insurance cards which aims to provide financial aid to the concerned entity but does not deal with storing the medical records of the entity.
- The problem that we are dealing with is a unique one and its implementation will be massively improve the living standards of the country.
- The major factor governing this project is to provide critical information at the right time to save the patient's life.

Approach

- All the users of HC (Health Card) will have a unique HCID (Health Card ID) which will be used to uniquely identify cardholders. Same, for hospitals there will be Hospital ID, for Doctors there will be Doctor ID, for Labs there will be Lab ID, for medicals there's medical ID and for overwatch there will be overwatch IDs.

Now there will be 2 applications, one for android and one will be a web app.

- Each kind of users will have to enter their respective ID and a user-created password to access the services of the application.

- The android app will be used only by the HC Holders. Using this app, users can manage (edit/change/hide/, etc. whatever you think suits best) their personal details. They can see their day to day health history. This app will be connected to a centralized database from which it'll fetch all the info. Now, this app will be in read-only mode for health data and read and write for the personal data. It'll also give the user for reminders of the next OPD and taking medicines. Also using ML techniques, we'll inform HC holders if they are overdosing any medicines that might have side effects which will end lead to serious health issues in the near or far future.

- Now the web app will have 5 types of users. First is Hospitals. This type of user will be used by the reception staff of the hospital, which will be used to enter data about which patient had an appointment with which doctors, appointment date & time, appointment fees paid, etc. And they will be able to see patient's personal info like Name, Mobile no. etc.

- For the doctors, they will be able to see the user's personal information as well as their medical history. The medical history will be divided into 4 categories, the first one is various allergies and disease, second one is the history of patient's visits to various doctors, third one is the lab report history of the patient and the fourth one will be medicines details. Which will have two parts, one will show currently ongoing medicines and the second will show the history of what medicines the patient has taken until now. This will help the doctor to evaluate the problem more effectively. Then there will be a section for a doctor which will be like a form.

The fields in this form will be:
- Evaluation & Cure: This is what doctor has evaluated from the info that he collected from the patient and the approach to improve the condition of the patient
Instruction: This is what instruction the doctor will give to the patient
Is it viral? This will be a drop-down menu containing the lists of various viruses. If the disease is viral, then this will be used to show that which can be used by the overwatch.
- Medicines: this will be the list of various medicines that the doctor will decide to give to the patient.

For the medical, the app will be used by people who run the medical store. They will have access to the patient's info like name and mobile number, etc. They can write data like what the customer bought like what medicine on which day, etc.

The lab type user will be able to read similar patient info like medical user. And they can write data of what kind of tests a person did on what date and what results he got.

The overwatch user will be an employee of the Health Ministry. This user will monitor the data and watch out for any disease spreading around a city or state. We will try to make AI do the work instead of this type of user. So that the system will become intelligent enough to predict the disease inflation.

Tools and Technologies
- NodeJs
- ExrpressJs
- MongoDB
- HTML5, CSS3, BOOTSTRAP 4
- Android Studio
- Justin Mind
- Amazon Web Services

Risks and Issues
- The major risk of this system is the privacy of the data. As it is a centralized data and will be used by various users, the privacy will be hard to maintain.
- Since there is minimal to no data redundancy, if a set of data is unexpectedly lost it is very hard to retrieve it back, in most cases it would have to be done manually.
- Bottlenecks can occur as a result of high traffic.
- Limited access by more than one person to the same set of data as there is only one copy of it and it is maintained in a single location. This can lead to major decreases in the general efficiency of the system.
- If there is no fault-tolerant setup and hardware failure occurs, all the data within the database will be lost.

Targeted Outcome

Smart health cards help you to get access to your healthcare benefits conveniently, protect your privacy and security and help control costs of providing healthcare by reducing administration and fraud:

- –When you need to use your healthcare benefits, your e-health card identifies you accurately and replaces form filling with a more automated process.
- Your prescriptions can be stored right on the card, so if you need a refill it is with you all the time.
- PIN entry, healthcare professional cards and online access security all help to protect your privacy and healthcare information.
- Overall healthcare costs are reduced by more effective administration, reduction of errors and reimbursement delays and reduction of fraudulent use of healthcare benefits.

Achieved outcome

- The User Interface of the system has been designed till date and database design is in progress. The schema of the database has been created and any modification necessary will be afterwards.
- The main focus is on making the centralized data more secure and reliable.
- Selection of Machine learning model which can give the maximum accuracy in prediction.
- Software requirement specification document has been prepared with the required tools and technologies to be used.
- The application is still in the early stages of its development.

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