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# ANAMNESIS - Analysis, Prediction and a Digital Helping Hand to Organize and Monitor

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**Abstract:** Now a days many health servicing devices are available, but they are not connected to any system. We are proposing an E-health card integrated with smart medicine box. The card will consist of an unique Id to maintain confidentiality of health related details in it. The data will be updated and fetched from our cloud database at real time. Information in the card can be retrieved and modified in the available departments of hospitals, laboratories, ambulances, pharmacies and other required places with the help of card readers. The basic idea is to provide exact checkup to the patient by the simple and secure access to the data stored within the card from any required place with the help of cloud connection rather than carrying the whole bunch of documents together.

Whereas the medicine box system can be monitored by the patient and pharmacist as it will be linked to our online portal of respective users. This portal will be used to configure the medicine box by calculating the weight of each pill and notifying the user regarding the unavailability of the pills and the data can also be used to maintain the health history of the user.

**Keywords:** IOT, Pill box, RFID, Sensors, Cloud Computing, Medical science, Healthcare.

## I. INTRODUCTION

A Remote Medicine Box is an extension of a hospital medical system where a patient's medicines can be monitored by Patient's Relative, Doctor and Chemist. The proposed solution also includes a digital healthcare card which provides a Unique ID for each patient.

The unique id will be the RFID card. The application includes healthcare history and prescriptions of patient, making it comparatively easier to access, than all kind of clinical records and documentations in form of paper. It will be a low cost device, which will be able to communicate through a web based system. Our system will have a medicine box attached with IOT sensors and Cloud database for centralized communication.

An android application / web portal having user login, doctor login and a pharmacist login will be connected to the system.

### A. Problem Statement

Develop an Effective Web based Application using Cloud Services to help citizens maintain health history by developing e-health records which covers medical information of patient and by providing the citizens with e-health cards integrated with IOT based smart medicine box that alerts the user and pharmacist.

### B. Objectives

- 1) To design a digital healthcare card this provides a unique Id for each patient.
- 2) To make hassle free management of important prescriptions.
- 3) To assist patient's relative and pharmacist, monitor the availability of medicine using an android application or a web portal.
- 4) To provide a reminder to the patient regarding the next appointment .

## II. LITERATURE SURVEY

1) *Title:* - An IoT based Patient Health Monitoring System

a) *Author:* - D.Shiva Rama Krishnan and Subhash Chand Gupta

b) *Year:* - 2018

This paperwork, came up with the idea of giving all the patients information on their smartphones and providing them the medication according to their conditions.

2) *Title:* - IoT Solutions for Health Monitoring: Analysis and Case Study

a) *Author:* - Ivan Medvedie and Oleg Illiashenko

b) *Year:* - 2018

This paper work ,introduced IOT as aplatform in healthcare department. They paid main attention to the confidentiality and security of the customer.

3) *Title:* - Advanced IOT Based Combined Remote Health Monitoring, Home Automation and Alarm System

a) *Author:* - JayeetaSaha and Arnab Kumar Saha

b) *Year:* - 2018

This paperwork, introduced an advanced IOT based automated remote health monitoring system.it offered alarm and dose quantity. They focused on removing the human error and monitored the patients remotely using various IOT tools.

4) *Title:* - Design of IoT based Generic Health Care System

a) *Author:* -0 J.V.Alamelu and A.Mythili

b) *Year:* - 2017

This paperwork introduced WSN and collaborated with cloud computing to implement their thoughts. They created an application for alerting about Tsunami using various sensors available.

5) *Title:* - Health Monitoring Based on IoT using RASPBERRY PI

a) *Author:* - Amandeep Kaur and Ashish Jasuja

b) *Year:* - 2017

They also proposed a monitoring system for patients. The used Raspberry pi for the development.They also provided a secure access to the data which was generated and stored.

6) *Title:* - An IOT based Human healthcare system using Arduino Uno board

a) *Author:* - S. Jayapradha and P.M Durai Raj Vincent .

b) *Year:* - 2017

This paperwork, combined various healthcare devices along with IOT. With the help of various sensors they managed to get the information about the human and thus process it and use accordingly for further development.

They calculated the human temperature and kept attention over the heart rate at real time.

### III. EXISTING SYSTEM

In existing system, the data is recorded in the form of prescription papers or local storages. But generally that data is accessible to all. This cause loss of confidentiality of patient's medical record. Hence we are proposing a new way where patient, doctors and pharmacist are able to communicate through a web application by using biomedical sensors and real time data transmission and processing through internet.

Existing system also do not cover medicinal area and there is no system as per our best knowledge to keep the track of availability of medicines for patient.

#### A. *Limitations of Existing System*

1) Even tough there exists some medical boxes systems.(not connected to any mobile application or web portal)

2) Lack of careful follow-up of various diseases of patients.

3) Time waste in traditional pen and paper process .

4) Paper prescription can be lost.

5) Misplacing medical reports.

6) Inspection problems.

7) Increased costs .

#### IV. PROPOSED SYSTEM

We are proposing an E-health card integrated with smart medicine box. The card will consist of a unique ID to maintain confidentiality of health-related details in it. The data will be updated and fetched from our cloud database in real time. The system can be monitored by the patient and pharmacist as it will be linked to an online portal. This portal will be used to configure the medicine box by calculating the weight of each pill, setting up the schedule of medicine, notifying the user about the number of pills.

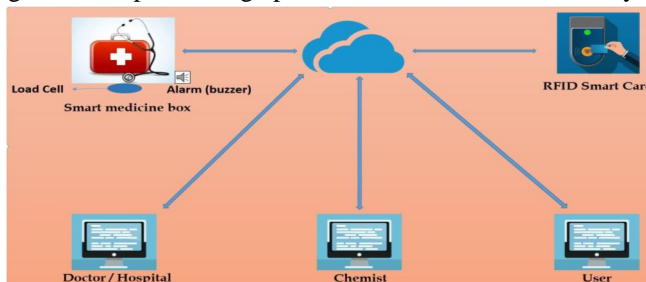


Fig.1:- System Architecture

There has always been a chaos of taking the medicines on time and keeping all the health records intact in a systematic manner for further treatments.

Our Project Anamnesis is a solution for same, which helps in maintaining the health-related documents, records for a patient as well as a doctor.

For easy accessibility, each patient is recognized by a unique ID generated with the help of an RFID Card.

The above-mentioned is one among the major features provided by our website, which acts as a helping hand to the Hospital System. Secondly, we have a medicine box which notifies the patient/user and the pharmacist about the time to intake and availability of medicines through the weight present in the box respectively.

#### V. MATHEMATICAL MODEL

Let 'S' be the system

Where,

$S = \{I, O, P, F_s, S_s\}$

Where,

I = Set of input

O = Set of output

P = Set of technical processes

$F_s$  = Set of Failure state

$S_s$  = Set of Success state

A. Identify the input data  $I_1, I_2, \dots, I_n$

$I = \{(\text{Medicine weight value}, \text{RFID Value})\}$

B. Identify the output applications as  $O_1, O_2, \dots, O_n$

$O = \{(\text{Weight calculation}, \text{Health care data})\}$

C. Identify the Process as P

$P = \{(\text{Weight calculation}, \text{send weight value on cloud}, \text{validate with threshold value}, \text{send notification to chemist}, \text{send notification to relative})\}$

D. Identify the Failure state as  $F_s$

$F_s = \{(\text{If data not processed}, \text{if system shows invalid result})\}$

E. Identify the Success state as  $S_s$

$P = \{(\text{if data processed properly}, \text{if system shows proper results}, \text{if system performs all operations successfully})\}$



## VI. RESULT & DISCUSSION

In proposed system we have created one web based application using java and jsp. In proposed application we are fetching real time values of the RFID cards and also the weight of the medicine box. We are applying algorithm on reports of the patient to store them in an encrypted manner. To access data from cloud we have use 000webhost as our cloud server.

To access any portal of webpage user needs an authentication , after which we allow them to show the data.

Admin,Doctor,patient,pharmacist are the portals we designed.

After accessing the data we are also storing that data into SQL database offline as well as the data from the hardware is stored on the cloud. The data is being continuously monitored while the hardware is connected to the internet. This allows us to monitor the patients health history and keep track of the medicine.

### A. Advantages

- 1) Alarms at time of medicines to be taken.
- 2) Notifies pharmacist and family member(s) about refilling of medicines.
- 3) Helps to maintain health history from an infant to old citizen.
- 4) Cancels the need to carry multiple prescriptions and reports.
- 5) Prediction of hereditary diseases and knowledge about past injuries.
- 6) To exchange data between distant medical institutions by sharing ID of patient.
- 7) Remembering Appointment dates.
- 8) Maintaining the confidentiality of patient's data.

### B. Applications

- 1) Smart Hospitals to manage patient data.
- 2) Health Insurance companies for faster processing of medi-claim.
- 3) Help patient keep track of next appointment
- 4) Helps Doctor to examine and understand patient's whole data thus included in the health card.
- 5) Helps patient take his/her medicines on time.

## VII. CONCLUSION

This concludes that our project helps to maintain health history from infant to old citizens in a single card which simplifies the task of carrying multiple documents from place to place. The proposed system is more reliable with timely alerts of the skipped medications and the unavailability of pills in the box. Our model will be cost efficient and highly scalable. Various modules helps us to use them independently and develop new structures out of it .

We have considered the patients confidentiality as our priority. Our system will make it easier for doctor and patients both to keep a track of their overall history and thus diagnose easily.

## VIII. FUTURE SCOPE

In the future, we would like to collaborate with the dynamic e-commerce sites like netmeds and pharomeasy, if the tablets in the container are empty it directly notifies to the pharmacist or the e-service providers which can facilitate the door step delivery of the ordered tablets.

Scanning of prescription for uploading over cloud can be done. Various image processing algorithms can be applied over the images to make further prediction and various tasks.

Keeping an eye on current situation of the COVID-19 , we can Add Video conferencing through directly customer support for patients. Enabling/Disabling Direct communication through Video Call, This will allow us to go more digital and help us maintain social distancing norms.

## IX. ACKNOWLEDGEMENT

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