



Management of Diabetes in Children Based on Diabecolux

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ABSTRACT

In this project a new health platform to support an emerging multidimensional care approach for the treatment of diabetes. The architecture of the platform extends the existing Web standards to access and control objects. This incorporates, each of which encompasses disease management hub and health care. This provides a set of services for both patients and their caregivers that support the full continuum of the multidimensional care approach of diabetes. To maintain security, use encryption and decryption in which send data to the disease management hub. The disease management hub is nothing but intermediation process in which the authorized person shares patient information to health carer department and health carer response and or result is transferred to patient. The patient can view the data based on the given details. The patient details is full monitored and maintained at disease management hub. The disease management hub shares the health carer feedback to concerned patient or user in which transferred data from patient and health carer department. By this patient can easily know about diabetes and can make easy conversation to the health career through the disease management hub.

1.INTRODUCTION

1.1 Web Application Development

In computing, a web application or web app is a client-server computer program in which the client (including the user interface and client-side logic) runs in a web browser. Common web applications include webmail, online retail sales, online auctions, wikis, instant messaging services and many other functions.

The general distinction between a dynamic web page of any kind and a "web application" is unclear. Web sites most likely to be referred to as "web applications" are those which have similar functionality to a desktop software application, or to a mobile app. HTML5 introduced explicit language support for making applications that are loaded as web pages, but can store data

locally and continue to function while offline.

Single-page applications are more application-like because they reject the more typical web paradigm of moving between distinct pages with different URLs. Single-page frameworks like Sencha Touch and AngularJS might be used to speed development of such a web app for a mobile platform. There are several ways of targeting mobile devices when making a web application: Responsive web design can be used to make a web application - whether a conventional web site or a single-page application viewable on small screens and work well with touch screens.

Progressive Web Apps are a hybrid of regular web pages (or websites) and a mobile application. Native apps or "mobile apps" run directly on a mobile device, just as a conventional software application runs



directly on a desktop computer, without a web browser (and potentially without the need for Internet connectivity); these are typically written in Java (for Android devices) or Objective C or Swift (for iOS devices). Recently, frameworks like React Native, Flutter and Xamarin allow the development of native apps for all platforms using languages other than each standard native language.

Hybrid apps embed a mobile web site inside a native app, possibly using a hybrid framework like Apache Cordova and Ionic or Appcelerator Titanium. This allows development using web technologies (and possibly directly copying code from an existing mobile web site) while also retaining certain advantages of native apps (e.g. direct access to device hardware, offline operation, app store visibility). [3] discussed about an eye blinking sensor. Nowadays heart attack patients are increasing day by day. "Though it is tough to save the heart attack patients, we can increase the statistics of saving the life of patients & the life of others whom they are responsible for. The main design of this project is to track the heart attack of patients who are suffering from any attacks during driving and send them a medical need & thereby to stop the vehicle to ensure that the persons along them are safe from accident. Here, an eye blinking sensor is used to sense the blinking of the eye. spO2 sensor checks the pulse rate of the patient. Both are connected to micro controller. If eye blinking gets stopped then the signal is sent to the controller to make an alarm through the buffer. If spO2 sensor senses a variation in pulse or low oxygen content in blood, it may results in heart failure and therefore the controller stops the motor of the vehicle. Then Tarang F4 transmitter is used to send the vehicle number & the mobile number of the patient to a nearest medical station within 25 km for medical aid. The pulse rate monitored via

LCD .The Tarang F4 receiver receives the signal and passes through controller and the number gets displayed in the LCD screen and an alarm is produced through a buzzer as soon the signal is received.

1.2 Security in Web application

Data-storing and exchanging between computers is growing fast across the world. The security of this data has become an important issue for the world. The best solution centered on securing the data is using cryptography, along with other methods. This paper proposes the enhancement of the TSFS algorithm to support the encryption of special characters, correct substitution process by providing more than one modulo factor to differentiate between data types and prevent increasing the data size, as well as correcting the shifting process for the same reasons by providing four 16-arrays.

1.3 Data Stored in Database

A database is not generally portable across different DBMSs, but different DBMSs can interoperate by using standards such as SQL and ODBC or JDBC to allow a single application to work with more than one DBMS. Computer scientists may classify database-management systems according to the database models that they support; the most popular database systems since the 1980s have all supported the relational model - generally associated with the SQL language. Sometimes a DBMS is loosely referred to as a "database".

Existing DBMSs provide various functions that allow management of a database and its data which can be classified into four main functional groups:

Data definition – Creation, modification and removal of definitions that define the organization of the data.

Update – Insertion, modification, and deletion of the actual data.



Retrieval – Providing information in a form directly usable or for further processing by other applications. The retrieved data may be made available in a form basically the same as it is stored in the database or in a new form obtained by altering or combining existing data from the database.

Administration – Registering and monitoring users, enforcing data security, monitoring performance, maintaining data integrity, dealing with concurrency control, and recovering information that has been corrupted by some event such as an unexpected system failure.

Both a database and its DBMS conform to the principles of a particular database model. "Database system" refers collectively to the database model, database management system, and database.

Physically, database servers are dedicated computers that hold the actual databases and run only the DBMS and related software. Database servers are usually multiprocessor computers, with generous memory and RAID disk arrays used for stable storage. RAID is used for recovery of data if any of the disks fail. Hardware database accelerators, connected to one or more servers via a high-speed channel, are also used in large volume transaction processing environments. DBMSs are found at the heart of most database applications. DBMSs may be built around a custom multitasking kernel with built-in networking support, but modern DBMSs typically rely on a standard operating system to provide these functions.

1.4 Comparing data in Database

The Data Compare Tool allows users to compare data in tables, views, or queries across databases or in the same database. The options that can be selected on the data compare screen are the connection that to use to query the table or run the query, and

whether to compare a table or a query. Once the options are selected, the compare tool will compare the data and display the differences similar to the Unix diff tool. Users can choose to do table to table compare, query to query compares, or table to query compares.

As the data is compared, a Data Manipulation Language (DML) script is generated, which you can use to synchronize the differing databases by updating some or all of the data on the target database. When the data comparison finishes, its results appear in the Data Compare window of web application. After the comparison finishes, you can take other steps:

- You can view the differences between the two databases.
- You can update part or all of the target to match the source
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1.5 Identify diabetes

The DIABECOLUX algorithm applied to Luxembourg. DIABECOLUX algorithm applied to the population of Luxembourg. Step 1 included all the patients treated for diabetes in Luxembourg (N = 22,178). The first phase of step 1 included 96.8% (N = 21,468) of this population. Among those, 83.4% met criterion 1, 7.8% for criterion 4, 5.3% for criterion 2 and 0.3% for criterion 3. Around 3% (N = 710) were added in the second phase of step 1. Among the 22,178 patients treated for diabetes, step 2 selected 20,808 patients and step3 added 260 patients.

The DIABECOLUX algorithm is relevant to identify treated type 2 diabetes patients. It is reproducible and should be transferable to every country using medico-administrative databases not including diagnosis codes. Although undiagnosed patients and others with lifestyle recommendations only were not considered in this study, this algorithm is a cheap and easy-to-use tool to inform health authorities.



2.SYSTEM ANALYSIS

System Analysis is a combined process dissecting the system responsibilities that are based on the problem domain characteristics and user requirements. This focuses on specification what the system or application is required to do. It allows individuals to see logical elements apart from the physical components it uses.

It is a process of gathering and interpreting facts, diagnosing and using the information to recommend improvements to the system. System study and analysis deals with the study of both the existing and the proposed system and how the difficulties of the existing system are resolved in the proposed system.

The analysis phase deals about how to learn about the setting, the existing system and the physical processes related to the revised system. After obtaining the background knowledge of the existing system, several analyses are made on the drawbacks of the existing system and these drawbacks are resolved in the proposed system.

To launch a system investigation a master plan is required which describes in detail what the steps to be taken are. The study on the existing system is a must because it is obvious that the problem defined is verified correctly. After the completion of the initial investigation, a proposed system is defined which summarizes the findings and the recommendations of the system that is to be developed.

2.1 EXISTING SYSTEM

In Existing system, the patient send and tell the defects to robots in which robot is made of medical sensors and capillary networks. By this robot can identify the sugar level of the patient and send to the disease management hub. Disease management hub sends data to health care. Then health care find the result and send that

result to via disease management hub. By this way, the robot can able to identify the diabetes.

Disadvantages of Existing System

- There is more possible to hack file from disease management hub and health care.
- If there is wrong input to the robot or any malfunction in the robot, this makes more affect to the patient.
- So, privacy of patient details is decreased.
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2.2 PROPOSED SYSTEM

In proposed system, the patient send and tell the defects to the disease management by means of giving their details like sugar level, etc. In this, diabecolux algorithm is used. This algorithm is used to identify diabetes in children based on blood pressure and sugar level. By this, the disease management hub can send the data to health care. The health care data viewed using by giving secret key. Then health care find the result and send that result to disease management hub. By this way, the disease management hub can able to identify the diabetes.

Advantage

- Data transmission is secure and safe than the existing system.
- The patient details are monitored immediately.
- The accuracy of information transferred from health carer department through disease management hub.
- There are no defects from the proposed system because there is no misuse and malfunction is possible.
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3.SYSTEM DESIGN

System design involves identification of classes their relationship as well as their collaboration. In objector, classes are divided into entity classes and control classes. The Computer Aided Software Engineering (CASE) tools that are available commercially do not provide any assistance

in this transition. CASE tools take advantage of Meta modeling that are helpful only after the construction of the this diagram.

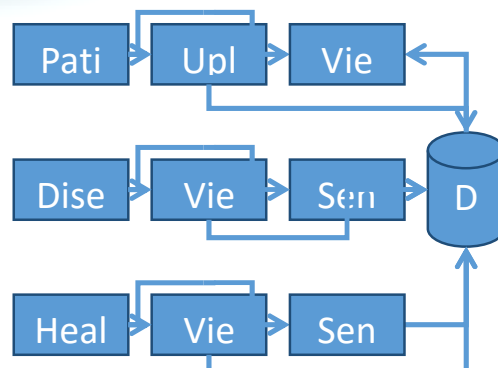
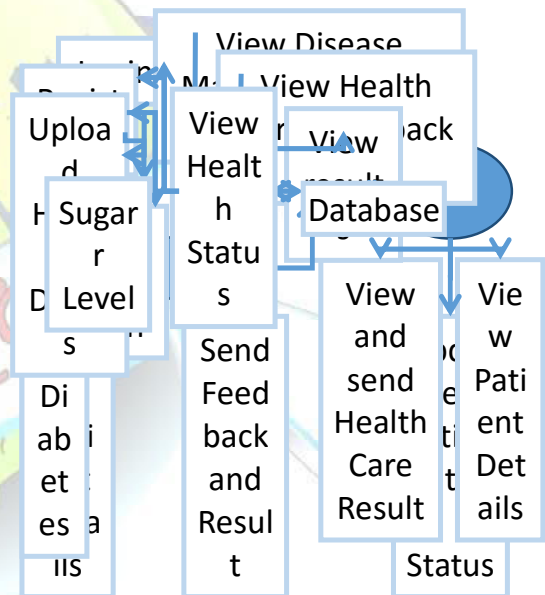
In the FUSION method some object-oriented approach likes Object Modeling Technique (OMT), classes, and Responsibilities. Any software project is worked out by both the analyst and the designer. The analyst creates the user case diagram. The designer creates the class diagram. Java byte code instructions are analogous to machine code, but they are intended to be interpreted by a virtual machine (VM) written specifically for the host hardware. End-users commonly use a Java Runtime Environment (JRE) installed on their own machine for standalone Java applications, or in a Web browser for Java applets.

3.1 System Architecture Diagram:

A system architecture or systems architecture is the conceptual design that defines the structure and/or behavior of a system. An architecture description is a formal description of a system, organized in a way that supports reasoning about the structural properties of the system. It defines the system components or building blocks...and provides a plan from which products can be procured, and systems developed, that will work together to implement the overall system.



Fig.3.1 Abstract view of the proposed eHealth system





4.SYSTEM IMPLEMENTATION

Implementation is the stage of the project when the theoretical design is turned out into a working system.

DESCRIPTION:

Modules means emphasizes separating the functionality of a program into an independent interchangeable, such that each contains everything necessary to execute only one aspect of the desired functionality. This is the stage of the project when the theoretical design is turned out in to a working system.

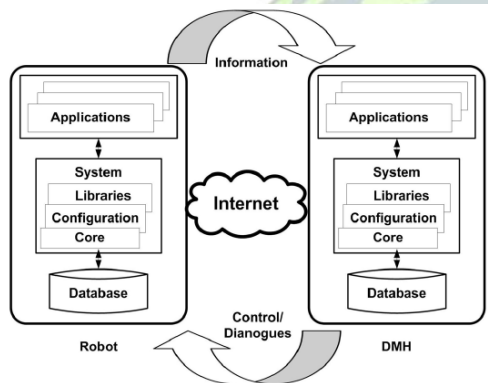


Fig.3.2. Software architecture of the eHealth system

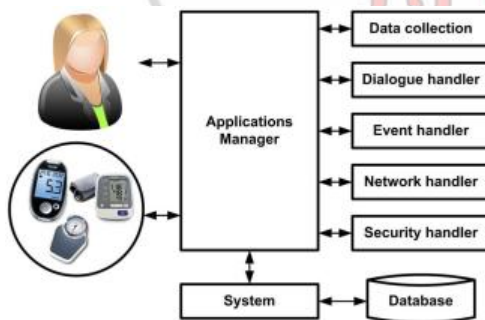


Fig.3.3. Application modules of the robot

4.1.1 Upload Patient Details

In this module, the patient registers their personal details like name, mobile number, etc. After that the user login to the web application and do the process. Then the patient can upload the details which are

given in the form like sugar level, etc and then upload the data.

4.1.2 View Patient details by Disease Management Hub

In this module, the user given data reach to disease management hub. Then Disease Management Hub view data and then encrypted that patient data by encryption algorithm. That encrypted data send to health care and then send secret key for decrypt data.

4.1.3 Send data to Health Carer

In this module, the health carer can able to view the encrypted data and then decrypted by using key. By this health care details view patient data and then check with nurses and all staff to find the disease.

4.1.4 Find result by Health Carer

In this module, the health care sends result to the patient via disease management hub. The disease management hub is nothing but intermediation process in which the authorized person shares patient information to health carer department and health carer response and or result is transferred to patient. In which the health care finds the patient disease according with respect to patient own details.

4.1.5 View data to Patient

In this module, the patient can able to view the data based on the given details. In which the patient details is full responsible for disease management hub. The disease management hub shares the health carer feedback to concerned patient or user. In which the accuracy of transferred between patient and health carer department.

5.CONCLUSION

This is achieved through an intelligent, adaptable and reconfigurable



process of participatory design in which patients are heavily involved in creating their personalized health profile, follow-up and treatment plans. The developed platform facilitates a continuous but loosely coupled connectivity between patients and their caregivers over a distance and thus improving patients' engagement with their caregivers and minimize the cost, time, and effort of the traditional periodic clinic visits. This will also contribute to long-term behavioral change from unhealthy to healthy lifestyles.

The end-to-end functionality and DQ of the developed platform were tested through a pilot clinical acceptability study. The suggested architecture and applications can also be considered a blueprint for developing a generic eHealth platform for management of various chronic diseases other than diabetes. This platform is therefore remains open for further technical improvements and clinical studies. In particular, the virtualization approach and semantic representation of Pos that tackles the heterogeneity challenge of the platform can be further improved through enhancing the cognitive capabilities of the VOs.

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