International Journal of Future Innovative Science and Engineering Research (IJFISER)
Volume – 3, ISSUE – I **ISSN (Online):2454- 1966**

Research Manuscript Title

Web-based Health Emergency System through SMS

M.Buvanesvari[1], K.Nandhini[2],Shaik Karishma[3],Mrs.D.Radhika[4].

UG Scholar[1,2,3], Assistant Professor[4]
[(1,2,3,4)]Department of Computer Science and Engineering,
[(1,2,3,4)]Vivekanandha College of Engineering for Women, Tamil Nadu, India.

Corresponding author E-Mail-ID: buvanamohankptm@gmail.com, nandhininandhu9698@gmail.com, itsmekareshma@gmail.com, radhikadeva6@gmail.com.

March – 2017

www.istpublications.com

Web-based Health Emergency System through SMS

International Journal of Future Innovative Science and Engineering Research (IJFISER)
Volume – 3, ISSUE – I ISSN (Online):2454- 1966

M.Buvanesvari[1],K.Nandhini[2], Shaik Karishma[3], Mrs.D.Radhika[4],

UG Scholar[1,2,3], Assistant Professor[4]
[(1,2,3,4)]Department of Computer Science and Engineering,
[(1,2,3,4)]Vivekanandha College of Engineering for Women, Tamil Nadu, India.

Corresponding author E-Mail-ID: buvanamohankptm@gmail.com, nandhininandhu9698@gmail.com, itsmekareshma@gmail.com, radhikadeva6@gmail.com.

ABSTRACT

Healthcare and medical emergency are essential systems in human life; so that many countries work toward having it. The fully computerizing and combining of such medical systems will lead to produce a Novel Integrated Healthcare Medical Emergency Model (IHMEM). IHMEM includes three main parts: The web based database, the intelligent agent, and the mobility. This paper focuses on developing an interactive web-based database with unified EMR as well as using SMS facilities, where all hospitals, healthcare and emergency centers can view the patient record simultaneously, exchanging, managing and collaborate on sharing resources between medical units. A prototype for this work is build and sample of implementation results for interactive database and SMS facilities are shown.

Keywords— ***web-based database; healthcare; medical emergency; intelligent agent; SMS***

1. INTRODUCTION

In the web-based multimedia environment, the images for medical model can be categorized into different types: magnetic resonance (MR), computerized topography (CT), X-ray, electrocardiograms (ECG) among others as well as medical information in forms of charts, graphs and others. These images could be loaded electronically with digital devices into the patient medical information. Thus, this would prevent the patient‟s medical images from damage or lost. Besides, it would be much comfortable for both patient and doctor, where, a patient may go for treatment in other medical center without carrying the medical report. The doctors could also view the patient health related images for further clarification without re-examine the patient [1].

A mobile phone and other mobility devices can be used to link to the model. The wireless application protocol (WAP) is used to standardize the way mobility devices associated for Internet access, including e-mail and the World Wide Web [2].

On other hand; an emergency system reduces the risk of an emergency case to the health and safety of persons and valuables by providing an effective means of communication with relevant authorities, safety guidelines and measures to be taken in an emergency situation. Several of these systems are normally rely on the existing telephone and other communications infrastructure via operators and service personnel; therefore they suffer from several drawbacks [3].

Many hospitals and emergency centers are not efficient enough because the big number of emergency cases, which is not easy to be handled. In an emergency department, most likely a nurse will determine the severity of

the wound and check patients vital signs such as temperature, blood pressure and heart rate. Additional personal information and medical history have to be obtained [4]. In case patient‟s information is stored in another clinic or hospital they have to be obtained. Unless the patient has brought the personal file along, getting the required information will slow down the process. An emergency physician will have to examine the patient. In some cases, the patient needs great attention and sometimes the surgery room or other devices will be needed. All these will have to be arranged in timely manner, which in general is not the case [5].

2. RELATED WORK

Telemedicine can be defined as the use of audio, video, and other telecommunications and electronic information processing technologies to provide health services or assist health care personnel at distant sites. Nowadays the evolution of wireless communication means enables telemedicine systems to operate across the world, increasing telemedicine benefits, applications, and services[6-9]. The following are sample of projects that have been developed in the field of telemedicine and communication.

2.1 Momeda (Mobile Medical Data): is a demonstrator that can be used from a PDA (Personal Digital Assistant) to access electronic patient record data and provide it to the consulting physician. Diagnostic information such as radiological images as well as text and laboratory data is transmitted to a wireless pocket-size terminal in a user-friendly multimedia format using Web-approach. It allows patients to access customized disease-specific information material that enables them to fully understand in a simple and constructive form what their medical problem is, what the planned procedures are, what lifestyle they should follow during and after their hospitalization, thus becoming more qualified partners in the recovery process [10].

2.2 The Ambulance project: was developed by the national university of Athens. They develop a portable emergency telemedicine device that supports real time transmission of critical bio-signals as well as still images of the patients using GSM link.

Emergency-112: is an extension of the ambulance project. It targeted to: reduces treatment times, improve medical diagnosis, and reduce costs by developing an integrated portable medical device for Emergency Telemedicine. The transmission of critical bio-signals (ECG, BP, HR, SpO2, and Temperature) and images to an Emergency call centre enables physicians to direct pre-hospital care more effectively, improving patient outcomes and reducing mortality. Networking links to medical information databases, Hospital Information Systems, and Inter-hospital links are also provided to maximize information available to consulting physicians. The Emergency-112 system has been used successfully since 1998 in three European Countries (Greece, Italy, and Cyprus). Nevertheless, as the above projects mainly use a slow GSM link (9.6kbps), it cannot incorporate video along its transmission nor can it support high resolution imaging [11].

3. PROBLEM DESCRIPTION

Framework visualized in Fig.1, the collections of movie-review documents are labeled with respect to their overall sentiment polarity either positive or negative or subjective rating is "two and a half stars" and sentences labeled with respect to their subjectivity status is subjective or objective or polarity. Polarity dataset v2.0 (3.0MB) (includes README v2.0): 1000 positive and 1000 negative processed reviews [12].

In machine learning, Classification algorithms are supervised learning models that analyze data and recognize patterns, used for classification and regression analysis [13]. A LibSVM model is a representation of the examples as points in space, mapped the separate categories are divided by a clear gap between words as wide as possible. A support vector machine constructs a hyper plane or set of hyper planes in a high-dimensional or infinite-dimensional space, which can be used for classification, regression tasks. Intuitively, a good separation is achieved by the hyper plane that has the largest distance to the nearest training data point of any class, generally the larger the margin the lower the generalization error of the classifier.

Structure-based sentiment analysis methods typically use a text's structure in order to distinguish important text segments from less important ones and subsequently weight each segment's conveyed sentiment in accordance with its assigned importance [14]. Rule-based sentiment analysis suggests that a text's rhetorical structure, as identified and applying the Rhetorical Structure Theory can be successfully exploited in order to improve polarity classification performance.

RST is a popular framework for discourse analysis [15]. The RST framework can be used to split a piece of natural language text into segments that are rhetorically related to one another. Each segment may be split as well. This process yields a hierarchical based rhetorical structure, i.e., an RST tree, for the analyzed piece of text. Each segment in this tree is either a nucleus or a satellite.

Different classify algorithm used to perform the classification process measure the accuracy. Comparison of classification algorithm used improves classification accuracy.

4. PROPOSED SYSTEM

Integrated Healthcare Medical Emergency Model

The model provides an integrated healthcare and medical database, which can provide stakeholders with related medical information. The registered users can log into the system to access or provide medical information based on their accessing privilege. The medical information can be stored in a variety of multimedia forms such as video, audio, pictures and text. For example, in addition to text description of patients‟ historical medical information, graphic images such as X-rays or video files of doctors‟ discussion about the disease can also be saved in patients‟ record.

The model have the capabilities for finding the patient location based and suggest the nearest emergency center, arrange all necessary related patient information to be ready for the physician when the patient arrives, assigning a doctor to the patient based on the availability of the doctors and list all necessary requirements (if any) such as special devices or surgery room. "Fig.1" shows the IHMEM architecture.

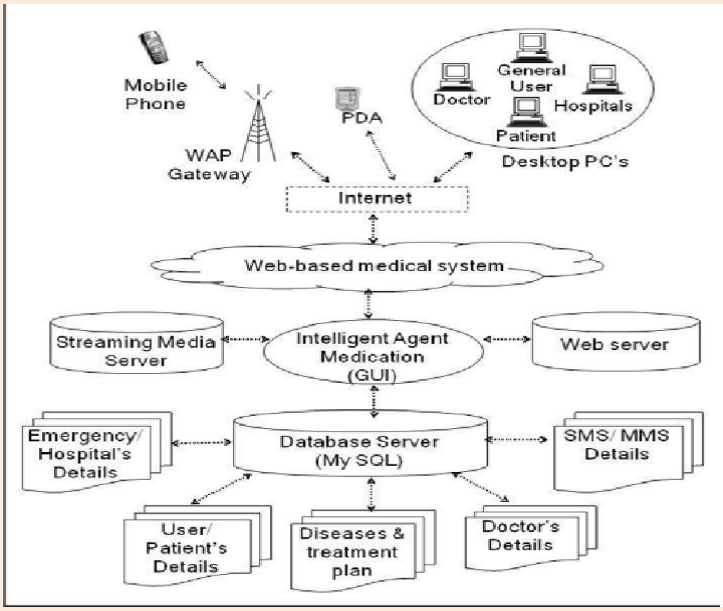

Fig.1Overall IHMEM Architecture

The model is an open cross-platform web-based real-time client-server environment with multiple language capabilities. The client system is loaded with multi-form interfaces, database access functionalities, and multimedia information processing and manipulation tools. The system provides mechanisms for exchange of image files, shared discussion lists, textual information exchange, access to images and data exported from local data bases, voice and video transmission.

The scripting language used to build the model is PHP and MYSQL database. MySQL is a true multi-user, multi-threaded SQL database server. PHP is an HTML-embedded scripting language. The goal of PHP is to allow web developers to write dynamically generated pages. By implementing MySQL and PHP together, one can design a functional web-based database quickly. The main components of the IHMEM include:

Database: this is a fundamental part of the system. It stores all important and detailed information about general users, emergency authorities, doctors, patients, hospitals and emergency centers, places or locations and events within the area of implementation, set of prerecorded SMS and MMS, which are suitable for different emergency and guidance cases. In addition, the database supports real-time multimedia.

4.1 Web Interface: the interface is simple, user friendly and requires little input from the user, mostly in the form of choices. It is based on Web 2.0 technology and has multiple language features.

4.2 Web Server: will listens for requests from Web browsers and upon receiving a request for a file sends it

back to the browser. It will host the program and control information for the system

4.3 Telephony Server: will act as a Private Branch Exchange using the open source Asterisk PBX. Users are able to call the PBX number and will be prompted with an interactive voice response (IVR).

4.4 The SMS server: will continually listen for incoming SMS, process and pass them to the Agent. The agent will respond accordingly and the SMS server will deliver the response back to the user.

4.5 Streaming Media Server: this is a dedicated Streaming Server for streaming multimedia to the stakeholders. It provides high quality media, effective bandwidth utilization, and supports detailed reporting and multi-stream multimedia for larger numbers of users.

5. RESULTS AND DISCUSSION

In this section we will present sample results for implementing IHMEM model. IHMEM model provides the registration interface for different class of users to register then view different data in database. Administrator will register the staff and their username and password will be given by the admin. But, admin can only register new staff and new medical centre and only staff can register new patient. After login validation user in group patient will be directed to the patient page. In this page, patient can view their own personal and contact detail information. Staff has the authority to view patient‟s detail.If we click on the patient name; the full detail of that patient will be displayed.Or, for specific patient, staff can do searching by inserting patient‟s IC number and click Submit. Then the server will sent the input to the database and search for patient with the given input. The model offers searching the availability of the emergency unit. With this information, user can know whether the medical centre has emergency unit or not, the number of available room, bed and ambulance. The doctors work schedules is very important to identify the availability of doctor. The system has the capability to add/update and delete the work schedule. The administrator is responsible for add/update their own respective doctors‟ work schedules.

6. SUMMARY AND CONCLUSION

We develop an Integrated Healthcare Medical Emergency Model (IHMEM) to overcome such problems. This paper focuses on developing and implementing a prototype for an interactive web-based database with unified EMR as well as using SMS facilities, where all hospitals, healthcare and emergency centers can view the patient record simultaneously, exchanging, managing and collaborate on sharing resources between medical units. Sample of the results are shown in this paper which reflect some of the capability of this model in offering insertion, deletion, updating and searching for different related data. The results show the important of this model in serving different stakeholders such as doctor, nurse, patients in their daily activity. IHMEM is a very helpful user friendly tool for patients and other users especially in emergency cases since it offers information about medical centers and available emergency units so the patient can go directly to the suitable and nearest one.

REFERENCES

[1] National research Council, *Networking Health: Prescription for the Internet*, National Academy Press, Washington, 2000

[2] Shihab A. Hameed, Shahina Shabnam, "Integrated Medical and Emergency System", ICCCE06, Malaysia 2006

[3] Shihab A. Hameed, Shahina Shabnam, "An Intelligent Agent-Based Medication and Emergency System", ICTTA06, Syria 2013

[4] Leslie Versweyveld, *Virtual Medical Worlds*, http://www.hoise.com/vmw/02/articles/vmw/LV-VM-03-02-33.html

[5] Warner MD, Malaysian Medical Matrix: Telemedicine in the age of Multimedia Super Corridor, http://www.pulsar.org/febweb/papers/m3web.htm

[6] Materia Medica Malaysiana, Putrajaya hospital showcases latest eHealth service,http://medicine.com.my/mblog/2004/08/put rajaya-hospital-showcases-latest.html

[7] Mark H. Spohr, Healthcare Informatics Online, Malaysia"s 21st Century Goal: IT-Based Health Gains For One And All, http://www.healthcare-informatics.com/issues/2000/04_00/international.ht m

[8] Loh Foon Fong, *Stuck In The Cyber Web*, www2.jaring.my/pcdom/Stuck%20in%20the%20cyber%20web.pdf

[9] Shihab A. Hameed, B.A. Aliyu, "WIMAX Wireless Technology to enhance an Integrated Emergency and Guidance System", Accepted in ISM06, UAE 2011.

http://www.acponline.org/computer/telemedicine/glossary.html.

[10] *The MOMEDA project.* http://www.biomed.ntua.gr/ momeda

[11] Pavlopoulos, S. Prentza, A. Kyriacou, E. Marinos, S. Stassis, A. Kalivas, D. Koutsouris, D. Filippatos, G., "A personalized medical information system for patienteducation-MOMEDA", MES/EMBS Conference, 1999. Proceedings of the First Joint Volume 2, Issue , Oct 2014 Page(s):1238

[12] Li Ling; Yao Dezhong; Li Jianqing; Li Bin; Wang Ling, "A multimedia telemedicine system", Engineering in Medicine and Biology Society, 2005. IEEE-EMBS 2005. 27th Annual International Conference of the Volume , Issue , 2005 Page(s):3746 - 3748

[13] Project E-vita, http://www.projectevita.com/prod ucts/what_is_pe.aspx,2011.

[14] Wee, N. C. Real-Time Web Vehicle Classifier with Multimedia Database, A Bachelor degree Thesis, University of Quensland, Oct 2015.

[15] Asterisk PBX, http://www.asterisk.org/