International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 03 Issue: 07 | July-2016 www.irjet.net p-ISSN: 2395-0072

E- Health Care Computing for better Health Monitoring

Ms.Bhagyashree Wankar, Ms. A.A.Nikose

Ms.Bhagyashree Wankar,Student,Dept. Of Computer Science & Engineering,PBCOE,Nagpur,Maharashtra,India.
Ms.A.A.Nikose,Asst. Prof.,Dept. Of Computer Science & Engineering,PBCOE,Nagpur,Maharashtra,India.

Abstract - *E-Health care system vision as an important application of computing to save lives and improper health care quality. health care system helps to monitor body condition in emergency situations. By using some wearable sensors and portable wireless device can monitor health status and automatically forward them to patient to doctor and related people. We also can use mobile phones for this purpose. Mobile phones not only used for communications purpose but also for other applications like health care monitoring by using some BSN(Body Sensor Network). BSN helps to collect personal health information (PHI) like heartbeat, blood sugar level, blood pressure and temperature also. If condition is abnormal then it will be automatically transmitted to doctor by using GSM or Bluetooth. Suppose doctors are unable to notice patient health status. BSN will help to transmit exact body condition. After receiving abnormal data from patient to doctor , appropriate treatment can be made. In emergency situation ambulance will also provide to users. Security of patient information is also important while using this app. The mutual authentication between patients and hospitals provide security about communication of patient and doctors, the location privacy of patients and also access control of patients medical record.*

1.INTRODUCTION

Nowadays Wireless Sensor Networks have given rise to many applications like in medical fields in information technology and also in telecommunication etc. Mobile Health Care System has many application to improve health care quality. To improve workflow of medical field health care organization may use Mobile Health Care System. The latest mobile technology and wireless networks helps to implement health care system. For better health monitoring users can use wearable and non wearable sensor devices. Some social issues can arise while using this system such as privacy, security, legal and other related issues. According to world health organization(WHO) estimate, heart disease kills lot of people around the globe each year, So for heart patients or in other serious situations emergency facilities are must. For smart health care system, it will open new opportunities monitoring of assisted and independent living residents and mobile health care system provides low cost facilities. Wireless networks manages a continuous patients medical history. It will be helpful to both patients and doctors to keep all records safe. High cost of installation and retrofit are avoided by self managing networks. Based on the fundamental elements of future medical applications(integration with existing medical practice and technology, real-time and long term monitoring, wearable sensors and assistance to chronic patients, elders or handicapped people), our wireless system will health care from traditional clinical hospital setting to nursing and retirement homes. Enabling telecare without the prohibitive costs of retrofitting existing structures. M-Health care system keeps the record of patient history and family background etc. and system also comprises of emergency button that will initiates a sms or call) to doctor, ambulance and family. Medical users personal health information(PHI) should be reported to health center.

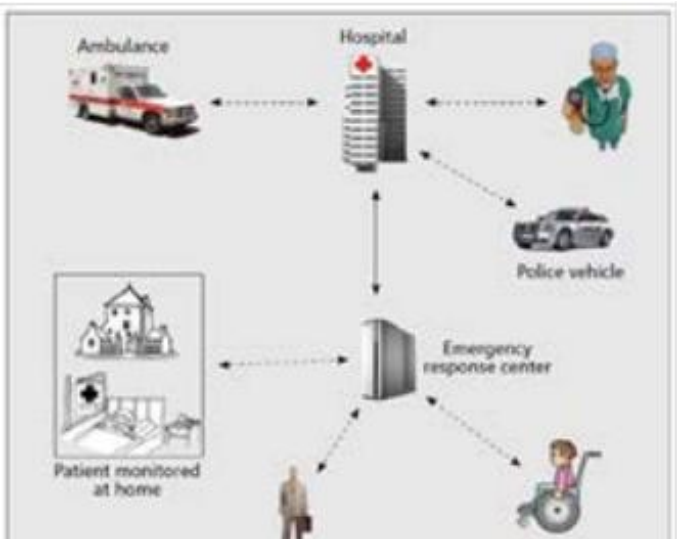


Fig. M-Healthcare System

2. LITERATURE SURVEY

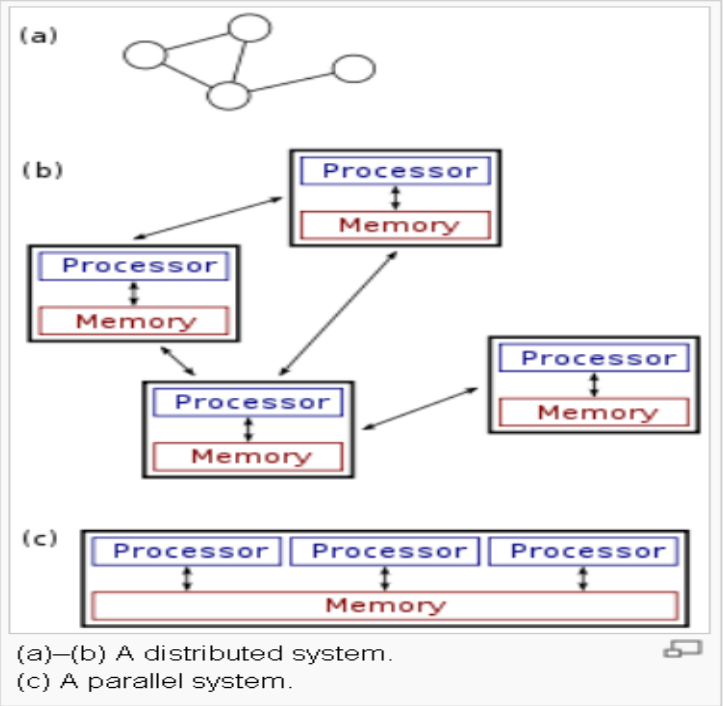
Literature survey is the most important step in software development process. Before developing the project or tool it is necessary to determine the time factor, economy and strength. One things are satisfied it helps to development software in right way. Once the programmer start building the tool the programmers need lot of external support. This support can be obtained from senior programmers, from books or from websites.

A. Parallel and distributed computing

Distributed systems are groups of networked computers, which have the same goal for their work. The terms "concurrent computing", "parallel computing", and "distributed computing" have a lot of overlap, and no clear distinction exists between them. The same system may be characterized both as "parallel" and "distributed"; the processors in a typical distributed system run concurrently in parallel. Parallel computing may be seen as a particular tightly-coupled form of distributed computing, and distributed computing may be seen as a loosely-coupled form of parallel computing. Nevertheless, it is possible to roughly classify concurrent systems as "parallel" or "distributed" using the following criteria:

- In parallel computing, all processors have access to a shared memory. Shared memory can be used to exchange information between processors.
- In distributed computing, each processor has its own private memory (distributed memory). Information is exchanged by passing messages between the processors.
- "A distributed system is a collection of independent computers that appear to the users of the system as a single computer."
- "A distributed system consists of a collection of autonomous computers linked to a computer network and equipped with distributed system software."
- "A distributed system is a collection of processors that do not share memory or a clock."

"Distributed systems are a term used to define a wide range of computer systems from a weakly-coupled system such as wide area networks, to very strongly coupled systems such as multiprocessor systems."



(a)–(b) A distributed system.
(c) A parallel system.

The figure on the right illustrates the difference between distributed and parallel systems. Figure (a) is a schematic view of a typical distributed system; as usual, the system is represented as a network topology in which each node is a computer and each line connecting the nodes is a communication link. Figure (b) shows the same distributed system in more detail: each computer has its own local memory, and information can be exchanged only by passing messages from one node to another by using the available communication links. Figure (c) shows a parallel system in which each processor has a direct access to a shared memory. The situation is further complicated by the traditional uses of the terms parallel and distributed algorithm that do not quite match the above definitions of parallel and distributed systems; see the section Theoretical foundations below for more detailed discussion. Nevertheless, as a rule of thumb, high-performance parallel computation in a shared-memory multiprocessor uses parallel algorithms while the coordination of a large-scale distributed system uses distributed algorithms.

3. PROPOSED METHODOLOGY

In our proposed system aims at the security and privacy issues, and develops a user-centric privacy access control in m-Healthcare emergency. Advantages Shift from a clinic-oriented, centralized healthcare system to a patient-oriented, distributed healthcare system Reduce healthcare expenses through more efficient use of clinical resources and

earlier detection of medical conditions Challenges Performance, Reliability, Scalability, Quality of service, Privacy, Security and more prone to failures, caused by power exhaustion, software and hardware faults, natural disasters, malicious attacks, and human errors etc.

4. IMPLEMENTATION

A. *Algorithm*

Privacy-preserving Scalar Product Computation

procedure PPSPC PROTOCOL

2: Input: U0's binary vector _a = (a1, a2…….. an) and Uj's binary Vector _b = (b1, b2…….. bn), where n ≤ 26

3: Output: The scalar product _a · _b =_n

i=0 ai · bi

——

4: Step-1: U0 first does the following operations:

5: choose two large primes α, β, where α is of the length |α| = 256

bits and β > (n + 1) · α2, e.g., the length |β| > 518 bits if n = 26

6: set K = 0 and choose n positive random numbers

(c1, c2, c3… cn) such that_n i=1 ci < α− n

7: for each element ai ∈ _a do

8: choose a random number ri, compute ri · β such that |ri · β| ≈

1024 bits, and calculate ki = ri · β − ci

9: if ai = 1 then

10: Ci = α + ci + ri · β, K = K + ki

11: else if ai = 0 then

12: Ci = ci + ri · β, K = K + ki

13: end if

14: end for

15: keep (β, K) secret, and send (α,C1, C2,C3,…… ,Cn) to Ui

——

16: Step-2: Uj then executes the following operations:

17: for each element bi ∈ _b do

18: if bi = 1 then

19: Di = α · Ci=_α2 + ci · α + ri · α · β, if ai = 1;ci · α + ri · α · β, if ai = 0.

20: else if bi = 0 then

21: Di = Ci= α + ci + ri · β, if ai = 1; ci + ri · β, if ai = 0.

22: end if

23: end for

24: compute D =_n

i=1 Di and return D back to U0

——25: Step-3: U0 continues to do the following operations:

26: compute E = D + K mod β

27: return E−(E mod α2) α2 as the scalar product _a · _b =_n

i=0 ai · bi

28: end procedure

B. *Modules*

1. *Health Monitoring in M-Healthcare*

In this module, each mobile medical user's personal health information (PHI) such as heart beat, blood sugar level, blood pressure and temperature and

others, can be first collected by BSN, and then aggregated by smart phone via Bluetooth. Finally, they are further transmitted to the remote healthcare center via 3G networks. Based on these collected PHI data, medical professionals at healthcare center can continuously monitor medical users' health conditions and as well quickly react to users' life-threatening situations and save their lives by dispatching ambulance and medical personnel to an emergency location in a timely fashion.

2. ***Body Sensor Network***

In this module, Body area network (BAN), wireless body area network (WBAN) or body sensor network (BSN) are terms used to describe the application of wearable computing devices. This will enable wireless communication between several miniaturized body sensor units (BSU) and a single body central unit (BCU) worn at the human body. Deploy wearable sensors on the bodies of patients in a residential setting continuously monitor physiological signals (such as ECG, blood oxygen levels) and other health related information (such as physical activity).

3. Web portal and database server application

This is the main web application responsible for monitoring and managing the entire operation of the proposed system, First part of this module will deal with patients device and get all reading and store it into database for future utilization, Second part of the module will be a web application which let the doctor view the the patients statistics over the mobile device.

3. Mobile application

Mobile application has been designed by keeping the idea of remote statistics monitoring of patients connected to the monitoring device and alert generation for doctor in emergency case.

4. Report Generation

In this module, Health care center generate crystal report from the database collection for future reference.

5.Results:

A. Medical User Registration

Patient or user will first enter all his details such as personal details, family background, previous illness or operations history, contact, etc .

B. **Medical User Login:** After registration patient or user can login from here.

User will add contacts of doctor nearby to his locality or whom he/she consults generally. An acknowledgement message will be sent to added doctors. Contact details of nearby ambulance personnel and hospital will be maintained by the user.

6. CONCLUSIONS

In this paper, we have explained about development of mobile health care system which describes some issues related medical field .Mobile health care system helps to alert medical organizations on proper timing. Mobile health care system is cost efficient and quality based on particular patients. GSm technologies used in this mobile health care system. The wireless medium develops a wireless emergency healthcare system for an environment that integrates with several technologies such as RFID, GSM, and GPS. Monitors the location based rapid search for patients and performance related issues are focused. Multimedia based health care system provide rich multimedia

support.Privacy preserving schemes are analyzed which provides the efficient e-health care system by providing privacy and security.

REFERENCES

[1] D. Kornack and P. Rakic, "Cell Proliferation without Neurogenesis in Adult Primate Neocortex," Science, vol. 294, Dec. 2001, pp. 2127-2130, doi:10.1126/science.1065467.

[2] M. Young, The Technical Writer's Handbook. Mill Valley, CA: University Science, 1989.

[3] R. Nicole, "Title of paper with only first word capitalized," J. Name Stand. Abbrev., in press.

[4] K. Elissa, "Title of paper if known," unpublished.

[5] M. Conti and M. Kumar, "Opportunities in opportunistic computing," IEEE Computer, vol. 43, no. 1, pp. 42–50, 2010.

[6] W. Du and M. Atallah, "Privacy-preserving cooperative statistical analysis," in Proc. of ACSAC '01, 2001, pp. 102–111.

[7] Rongxing Lu, Member, IEEE, Xiaodong Lin, Member, IEEE, and Xuemin (Sherman) Shen, "SPOC: A Secure and Privacy-preserving Opportunistic Computing Framework for Mobile-Healthcare Emergency" IEEE Tran on Parallel and Distributed System, , vol. 24, no. 3,pp. 614-624, March 2013.

[8] Y. Ren, R. W. N. Pazzi, and A. Boukerche, "Monitoring patients via a secure and mobile healthcare system," IEEE Wireless Communications, vol. 17, pp. 59–65, 2010.

[9] J. Vaidya and C. Clifton, "Privacy preserving association rule mining in vertically partitioned data," in Proc. of ACM KDD'02, pp. 639–644.

[10] R. Lu, X. Lin, X. Liang, and X. Shen, "Secure handshake with symptoms-matching: The essential to the success of mhealthcare social

[11] network," in Proc. BodyNets'10, Corfu Island, Greece, 2010.