Chapter 2

Related Works

2.1 INTRODUCTION

Mobile P2P Technology plays vital role in applications like health management and Education etc. A promising platform provide solutions for the situation aware, context aware and environnement aware on a mobile healthcare system. The literature gathered is limited to the work related to the research carried out.

2.2 EXISTING HEALTH CARE SYSTEMS FOLLOWED IN DIFFERENT COUNTRIES

The existing mobile technologies for healthcare followed in JAPAN is a 3G wireless device (www.lifewathcer.com) which records and transmits Blood Pressure (BP), weight. It is a Life watcher to Diagnose Diabetes, obesity, BP level etc. The Health portfolio collates daily, monthly and yearly data’s.

Jun Dong, Jia - wei Zhang, Hong - hai Zhu, Li - ping Wang, Xia Liu, Zhen - jiang Li (2012) provided solutions for doctors in CHINA through their mobile devices to access patients database. Shanghai Remedical and Jiao tong University engaged in providing remote cardiovascular diagnosis, provide services through phones and iPad. Doctors monitor patient’s vital signs and direct provision of care via mobile tele medicine.

The HEALTH BUDDY system in SINGAPORE is a Mobile based application which provides possible treatments (www.singhealth.com.sg) based on medical symptoms. Sing health is a system with over 40 different medical specialists. Electronic medical records (e-medical records) exchange and sharing is possible here between different countries through mobile phones and i-pads.

Josh Nesbit (2010) in MALAWI is to text in medical information for rural patients. The institute of healthcare improvement’s (IHI) in SOUTHAFRICA provides an efficient, interactive and fast tracking public health service by improving critical services.
2.3 HEALTH & HOSPITAL MANAGEMENT

Lu S H, Lai KC, Yang D L, et al. (2010) provide patients personnel healthcare at home by reducing the aides at hospitals. A grid system is integrated here with P2P resource sharing mechanism. Setyono A, Alam M, Eswaran C. (2011) mentioned a way to stream audio and video files over the network service provider through multimedia messaging service (MMS). The mobile telemedicine system uses MMS technology but dependence on the network service provider. Health Professionals can stream the data’s any time anywhere. Sukanesh R, Rajan S, Vijayprasath S, et al (2010) stated that modern lifestyle stress has become a major contributor for cardiac arrests. A prior information to the patients using wearable sensors about their health conditions can be provided by mounting GSM technology on the patient monitoring systems in advance.

Wac K, Bults R, Van Beijnum B, et al (2009) designed a system through body sensor networks for tele monitoring and tele treatment through mobile communication. This system is analysed to perform a continuous service through a proper network infrastructure which are suitable for all mobile health care applications. Yan H, Huo H, Xu Y, et al (2010) developed a system for old age home users to monitor 24 hours without disturbing their daily activities. This system with multi sensor capable of retrieving all the information about the patients. Mixed positioning algorithm is used to find availability of patients. SMS and E-mail are sent to patients mobile device to recall about their prescriptions and food what they have to take.

Tahmina Tahsin, Lazeeb Faiz Choudhury, Md. Lutfur Rahman (2008) focused on the key area using P2P applications for message passing and file sharing. Here JXTA is compared with other open source network tools like Gnutella and KaZaA for performance. Nkosi, M. & Mekuria, F. (2010) stated that the main disadvantage of mobile devices are low battery backup and lacks in implementing multimedia health applications. Since this model is based on cloud which include sensor signal processing, patients can subscribe and avail the cloud services. Alago andz, F., Valdez, A, Wilkowska, W., Ziefle, M., Dorner, S. & Holzinger, A. (2010) described about mobile electronic health and enhancement in healthcare applications with mobile technology where complexities can be
reduced with concentration on cost effectiveness. The cultural context where old age people are considered in this system is more efficient with high reach.

Alinejad, A., Philip, N. & Istepanian, R. (2012) used 4G technology for mobile health care applications with very fast data transfer. Ultra sound video transmission is followed here with a comparative analysis along with experimental analysis. High speed uplink packet access is also used in the test bed for improving solutions. Alqudah, Y. & AlQaralleh, E. (2012) designed a web based health monitoring system where patients can be remotely monitored. Patients can also access their health records. This methodology uses a digital stethoscope for recording heart rate. Doctors monitor and collect key indicators or set alarm without the use of hospital infrastructure to store data’s centrally. Kranen, P., Muller, E., Seidl, T., (2008) designed a framework for aging people which provides excellent medical service for all. But it has a drawback due to difficulty in use body sensors by patients. This system also remotely monitor the patients. Data mining and data management techniques are used in this frame for ease of use in health care for patients.

2.4 CONTINUING MEDICAL EDUCATION (CME)

Mei, P. Y, Jun, Z. X. & Li, L. (2010), used WAP push technology for knowledge update. This can be used among the health professionals for updating their knowledge to serve rural health centres better and this is still an open research. Bachmann, L. Cantoni, L. Coyne, J. Mazzola, L. & McLaughlin, E. (2010) mentioned that in european countries continuing education has become a part of the work related activities concerned to the professional ethics. Many course materials are available online where health professionals can learn with initiation. The e-learning tool “Moodle” used here. This will frame the learning objectives and outcomes of the learning methodology for the target audience (professionals) according to the instructional module and learning tutorial.

Bamidis, P. Nikolaidou, M. Konstantinidis, S. & Pappas, C. (2007), designed a modern informational communication system named “GEROM” with the help of health faculty combined with european partners for promoting the needs of the elderly people. The methods of learning followed here are self- adaptive and personalised learning with interdisciplinary curriculum as a high end of technology.
D'Alessandro, M., Galvin, J., Choi, J., Erkonen, W., & Crist, L., (1997) designed Continuing Medical Education (CME) to update knowledge. Here doctors manually undergo training at a central area with the facilities like Digital Virtual Library and Virtual Hospital. An efficient and effective paradigm was designed as a test bed network for delivering lectures in the CME. Experimental evaluation of the system is seamlessly cooperative with clearly identified success.

2.5 EMERGENCY HEALTHCARE

Kim J, Kim D, Jung S, et al. (2009) provide a system for emergency telemedicine using network software/ network management software for emergency situations like natural disaster. The tool is used to communicate between the disaster areas and the hospitals. It is an efficient system in case of emergency communication based on the performance analysis. Lim H, Choi S., (2005), designed a virtual data storage to store huge data especially the pictures captured by the doctors a new revolution for health care industry. Shin D. (2011) designed a health information system to overcome the issues like avoidance of duplicative and unnecessary testing in the hospitals which takes a long time and wastage of manpower and other efficiencies. This will benefit most of the patients. Toninelli A, Montanari R, Corradi A (2009) speaks about remote patient monitoring with location based service. Emergency management issues and technological issues were discussed here. Registered Mobile users can discover available services through secured semantic discovery from mobile health care networks. Zhou F, Cheng F, Wei L (2011) illustrates Hospital Information Exchange (HIX): a cloud based service where doctor and patient interaction done regularly. It is an integration cloud health information and mobile health information where patients share their information. It's based on the public interest to store their information by cloud service provider with use of mobile and cloud technology. Dasgupta, A., (2010), described through a system where GIS plays an important role in health care by updating timely data’s through the geospatial map.

Lee, CN, Chu, YT, Cheng, L. (2011) developed a mobile platform for self-diagnosis and testing which includes a self-information database and specialised information database for storing the data’s. It’s a system to provide a scheduling mechanism for patients to consult the physicians. The quality of service improved
here due to performance, diagnosis with hospital and consultant
doctors.

Istepanaian, R. S. H. & Zhang, Y.-T. (2012) used 4G technology for
multimedia messages to mobile devices without data loss through a cross culture
approach for fast access. Kyriacou, E., Pattichis, M., Pattichis, C., Panayides, A.
& Pitsillides, A. (2007) transmitted patients are health records, bio signals,
medical images video files with reliable mobile communication for health care
in emergency situations. Still there are many unsolved research issues.

mechanism to treat patients who are not using the advanced technology.

proposed a system in America called med-book which provides the facility to
store patients information and a platform for exchange information about patients
with the billing service for the treatments. Its software as a service built based on
open source technology which can run on iPhone and iPad of the patient.

Adibi, S. (2012) believes that BlackBerry with enterprise service and the
associated infrastructure provide practical solutions for electronic, mobile health
and mobile 2 mobile (M2M) implementations in emergency situations. Liang, X.,
with privacy preserving mechanism. It illustrates transmission of patients data
more accurately and help the nearby through mobile healthcare social networks
(MHSNs). Once an emergency happens, the personal digital assistant (PDA) of
the patient runs the PEC to collect the emergency data including emergency
location, patient health record, as well as patient physiological condition. Patient’s
neighborhood is intimated immediately in case of emergency.

2.6 SECURED HEALTHCARE

Maibaum N, Mundt T. (2002) discussed about Peer to peer aspects of sharing
patient’s records via Bluetooth and IrDA which has practical impacts to control
and share the datas with security and data protection. But reliability is missing
due to lack of large data transmission. Baliga, J., Ayre, R., Hinton, K. & Tucker,
R. (2011), designed a cloud framework with information and communication
technology with energy conservation. Total energy consumed in cloud computing
is taken as major tasks.
AL Zain, M., Pardede, E.Soh, B. & Thom, J. (2012), opted for multi cloud which provides high security cloud computing that plays a major part in all domains where it is of low cost and high data access. In single cloud transferred data’s are not highly secured. Guan, L., Ke, X., Song, M. & Song, J. (2011) proposed a mobile cloud computing approach where it is highly informative and accessible for health industry. Jerry Gao, Ph.D., Krishnaveni Edunuru, Jacky Cai, and Simon Shi- m (2005), proposed two dimensional protocols for security which supports peer to peer communication and Bluetooth. This also enables secured transactions between payment server and mobile clients.

Torkestani, S., Julien-Vergonjanne, A., & Cances, J., (2010), considered Infrared inside the hospital to monitor the patients. A line of sight model proposed in the hospital to develop stastical distributions where transmitter and receivers are used for patients care. Performance has been evaluated for different data’s with mobile monitoring. Gaeta, M., Orcluoli, F., Paolozzi, S., & Salerno,S(2011) defined ontology based shared distributed knowledge management with integrated information across cross platforms. They build exact ontology and relavent ontology and make comparasions with the text documents and taken some real world context to prove some experimental evaluations.

Ekonomou,E., Fan, L., Buchanan, W., & Thuemmler, C., (2011), presents a cloud health care system which integrates the present conventional. A high level security and access rights mechanism in the cloud environment is proposed here. Experimental evaluauations proven that cloud health care is more useful for patients and health professionals.

Marc Domingo-Prieto, Joan Arnedo-Moreno, Jordi Herrera- Joan comarti (2010) created a simple P2P applications over mobile devices with limitations over the network connections. The default security level is provided with the network service provider.

2.7 M - LEARNING

Luanrattana, R. (2011) provides evidence based learning where it provides good experimental solutions in effective learning and financially good which reflects the resources. Database is the key concept for searching queries for the students. Practically it’s a tough task to implement the technological change often. Practices
with online guide for learning which includes lack of monitoring and evaluation procedures. Learning culture and training has diverse financial implications.

Yi, C. (2010), designed e- lesson based on XML. The drawback is that all mobile devices can’t deal the documents directly. More ever these cannot adapt according to the mobile environment by recognising the device and change the contents accordingly. So they have designed a module to integrate a new method ELML where all the learning materials can work efficiently and seamlessly.

Shih, Y. (2005) enhanced the advancements of Mobile technology for foreign languages in a very effective way to make the learners, very fluent. With the improvement in 3G learning made easy through audio and video files. Yang, Q. (2010)’s Student Study Technology used JXTA rendezvous (RDV) to distribute e-learning student materials student nodes individually. Razek, M. & Bardesi, H. (2011) followed adaptive learning methodologies among students which includes hearing, seeing visualising, acting, reflecting and are focused to discuss with rules. Mobile learning options with individual personalization increased based on experimental evaluation.

Rodrigues, J., Sabino, F. & Zhou, L. (2011) suggested that several online social networks have increased to improve e-learning methods and to overcome its limitations as personnel learning inbox. On evaluation this system has proved its great performance but has delay in online video tutorials and live streaming of lectures. Li, S. -C. & Chun, K.-K (2011) produced two methods of learning: teaching based learning and Problem (query) based learning. In teaching based faculty learn new methodologies and new techniques. In query based learning students discuss with each other and decide what to learn for the learning objective. Miao, G. (2012) illustrates the methods of mobile learning with various wireless technologies. Ubiquitous learning is one where students can retrieve study materials. RFID based learning is another based on location.

Jiranantanagorn, P. Good win, R. & Mooney C (2012) gave the students a model where they can learn from anywhere and anytime. This model was analysed in Thai public university where both social and technological issues were considered. This system has content authoring tools without live streaming of data’s.