

# A Review on IOT based Telemedicine Health Care System

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**Abstract**— In every developing country the enhanced health care system is important. The system which treats diagnosis of the patient with telecommunication technology and information technology to provide clinical health care from a distance is called as "Telemedicine" system. The telemedicine are in high demand. It saves life in critical case and emergency situation. It provides features like live video streaming, chat boxes, automatic prescription generation and push notification is re-included. In the world, demand for medical service is increasing because of aging and increasing in the population. The telemedicine is remote delivery of the health care services, such as health assessments or consultations over the telecommunication allows health care provides to evaluation of diagnose and treat patients without the need for an person to visit. IOT based telecommunication is kind of medical practice that collects a transfer patients information using sensor and communication network. Most of the countries trying to spread and introduce telemedicine service to decrease the budget for this service. Where all the doctors are concerned about the security of telemedicine and they should be reinforced for spread use of telemedicine.

## 1. INTRODUCTION

The history of the telemedicine started in United States in 1997. In 2011 in America 20 states are introduced law for Telemedicine. Even though European countries tried to construct a Telemedicine but they were not successful. Telemedicine system is disease management interactive health care delivery system comprised of a secure Internet server and a database. Adoption of telemedicine solutions or services has surged since this study was first conducted in

2014 from roughly 54 percent in 2014 to 71 percent in 2017 said the reports.

## 2. LITERATURE SURVEY

In paper [1] the author et al., Mee Ja Chang explains about the Strategy to Reinforce Security in Telemedicine Services. In this paper author gives more importance to telemedicine security, with wired and wireless networks. Security in wireless network, safe data transfer methods, patient monitoring and compression technologies. Authentication, confidentiality, integrity, and nonrepudiation can be achieved by encryption. However, access control can only be realized by using access control facilities such as firewalls, IPS and security policies.

In paper [2] the author explains telemedicine system interaction with the cloud architecture continuous more and more interoperable system of information exchange network are required to fulfill their designated role, communication and system play a significant role in the coming days integration. In Telemedicine API recommendation, API that calm by the client or a smart tools with other system of communication of the proposed hub of a particular java script object notation (JSON) message and a calling end points hub with the server generates a message in the JSON format.

In paper [3], the author explains the Efficient Bio-key Management scheme for Telemedicine Applications Development of telemedicine based healthcare application presents different novel challenges like reliable real time data transfer, timeliness, and energy and power management. Sometimes exposing health information may result in a

person losing his job or make it unworkable to obtain insurance protection. Various sensors are implicated in the human body to measure the vital signs like ECG, EEG, EMG, BP, glucose level etc. Sometimes sensors transmit the patient information to a medical expertise using wireless technology. The crucial real-time medical information must be well sheltered against attackers and security. The sender, receiver also repeats the procedure to observe the ECG signals, sample the signal and extract the first 256 feature co-efficient. In paper [4], the author explains about the Telemedicine Network Using Secure Techniques and Intelligent User Access Control. In this paper the author briefly explains about the telemedicine network, telemedicine portal and about the security. Some advanced features are now built on most common telemedicine system. The most potential to increase to access to healthcare by the popular living. The developed countries clear objectives on development of telemedicine application that supports their population. The main role of this network is to give access to images, signs and medical finding generation from smaller hospitals. Another important goal of the telemedicine portal that is a secure web tool development to access the enter patient data available in a relational database.

In paper [5] Chanchal Raj, Chaman Jain, Wasim Arif explain in every developing country the enhanced health care system is important. The telemedicine are in high demand. It also saves life in critical case and emergency situation. The telemedicine is remote delivery of the health care services, such as health assessments or consultations over the telecommunication allows health care provides to evaluation of diagnose and treat patients without the need for an person to visit.

In paper [6] the author explains how we can use CDMA based mobile embedded system in healthcare system. In this paper author gave more importance to the wireless communications technologies for helping the patients in the easiest way and process of data collection and transmission of the CDMA-based mobile telemedical system. CDMA networks includes the four main parts according to the mobile telemedical system: Medical information nodes (MIN), Wireless Device License (WDL), Medical information center, and specialist computer system. Different modules are used in this approach like CDMA module, GPS module, Heart Rate module, Electrocardiogram (ECG) module and Photoplethysmograph (PPG) module.

In paper [7] the authors, W. P. Santamores et al, explains about improving heart failure care by using telemedicine system. Here author approaches Internet-telemedicine to provide a cost effective means to deliver preventive medicine. Heart failure is a growing health problem, with major impact on healthcare costs, mainly due to frequent hospitalizations. The most recent Heart failure guidelines have emphasized the role of daily monitoring of body weight and vital signs. There are two different ways telemedicine can be use are as follows: patient and provider use of telemedicine system.

India is country in South Asia. India is the 7<sup>th</sup> largest country by area, despite being one of the fastest growing economic in the world but, poverty is the significant issue in

India. All though 75% of the people in India live in rural area and 78% of the doctors live in city. Hence Telemedicine is good health care system in India. Remote analysis and monitoring services and electronic data storage significantly reduce health care services for saving money of the people and the insurance company

Solution to the future enhancement of stabilization and complex full fledged medical service for defective integration. The telemedicine system of the future offers multi platform availability information accessed by the handhelds such as stand alone the systems personal computers, tablets and smart phones. The telemedicine information system of the future has to support the modern technologies like IOT. IOT is the network of devices capable of connecting the environment of other devices through environment these devices are equipped with sensor that enables these devices to collect data from this physical environment.

It remains future work to do energy analysis and implement neural network approach to secure medical data communication for telemedicine application. The entities are new enabled to pass their examination to the telemedicine portal. To approach the system must be constructed some rules that is based on string transformation. We consider that it's a true user, if the distance is greater than the predefined, the system consider a false user. Evaluation and development is needed to improve the quality on results. And along with new developments, health professionals will receive training and support to improve the software use. Finally providing a high impact on the population welfare as a whole.

In CDMA mobile embedded system there are two sets of proposal experiments. The first set of experiments studies the effectiveness of the CDMA module. The second set of experiments studies the performance of heart rate module. ECG module is used to reflect the emotional heart electrical activity and is the process of recording the electrical activity of the heart over a period of time using electrode placed on the skin. PPG is a non-invasive technique that using a volume measurement of blood. Mobile telemedicine employs advanced concepts and techniques from the field of electrical engineering, computer science, biomedical engineering and medicine to overcome the restrictions involved in conventions telemedicine and realize an improvement in the quality of service of medicine.

A telemedicine system provides a framework for chronic medical management that facilitates patient-physician communication, personalization, and education. Recently several meta- analyses have shown that disease management programs for heart failure patients supported by TLM are not only effective but also economically advantageous. Benefits are substantiated with a 30-35% reduction in mortality and 15-20% decrease in hospitalization. The use of the TLM allows for early identification of symptoms or signs of heart failure and prompt intervention.

### 3.CONCLUSION

Telemedicine is a valuable tool that patients can use to be evaluated and treated by health care provides from whenever they may be. Telemedicine services are services are often

offered at lower costs and make availability for some to obtain health care easier to achieve.

It remains future work to do energy analysis and implement neural network approach to secure medical data communication for telemedicine application. The entities are new enabled to pass their examination to the telemedicine portal. To approach the system must be constructed some rules that is based on string transformation. We consider that it's a true user, if the distance is greater than the predefined, the system consider a false user. Evaluation and development is needed to improve the quality on results. And along with new developments, health professionals will receive training and support to improve the software use. Finally providing a high impact on the population welfare as a whole.

#### 4.COMPARISON TABLE

	NETWORK	METHODS USED FOR THE WORKING	ADVANTAGE
1	Strategy to reinforce the security in the telemedicine.	Safe data transfer, patient monitoring and compression technologies.	Authentication, confidentiality, Integrity.
2	Telemedicine system.	Proposed hub of particular java script object notation(JSON)message and calling end point hubs with server.	It reduces healthcare cost, enhances traditional face-to-face medicine
3	Effective bio-key management scheme for telemedicine.	Development of the telemedicine based on the healthcare application.	Very few advantages and more challenges are faced like reliable real time data transfer,timeliness,energy and power management,losing of jobs, no insurance protection.
4	Telemedicine network using secure technologies and intelligent user access control.	Telemedicine network, telemedicine portal and security.	The most potential to increase the access to healthcare by the popular living development which supports population.
5	Telecommunication	Health assessments or consultation over telecommunication.	Healthcare provides evaluation of diagnose and treat patient without a person to visit.
6	CDMA based mobile embedded system.	Wireless communication used technologies, Mobile telemedical system, wireless device license and specialist computer system.	Helps the patients in easiest ways and also helps in processing of the data.

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