

An Investigation into the Applications and Benefits of Internet of Things (IOT) Technology in the Health Care Sector

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Abstract

The Internet of Things (IOT), an emerging technology that combines software sensing and communication devices as an event activity, has drawn academics and practitioners to create fictitious novel solutions. The IOT in healthcare applications, its advantages, and overcoming the difficulties associated with implementing the most recent technological advances are the only topics covered in this essay.

Keywords: - *Internet of Things (IOT), Healthcare, Innovative Solutions, Adaptation of Change in Technology, Cloud Computing*

INTRODUCTION

The daily advancements in information technology have inspired researchers and practitioners to create novel solutions in a variety of disciplines. With need-based software, sensing, and communication devices, IOT devices are widely used in the healthcare industry. The IOT made it possible for the healthcare system to monitor a number of medical characteristics using intelligent sensors, computer networks, remote servers, and

cloud computing, allowing it to both diagnose ailments and offer basic treatment recommendations. Additionally, IOT-enabled research is crucial in fields where various computer science and engineering approaches will be used to provide answers to real-world medical problems. As a result, this paper contains a review of the literature on IOT-enabled applications to address problems in the healthcare sector as well.

EMERGENCE OF IOT

The Auto ID Center at the Massachusetts Institute of Technology coined the term "IOT" in 2003 to advance applications including work automation, communication system procedures, error reduction, and quick results. In reality, IOT is a combination of computer and sensor-based technologies, including sensors, wireless networks, embedded systems, object IDs, and Nono technologies. Interaction, communication, and processing are enabled among connected devices because of this combination.

LITERATURE REVIEW

A medical nursing system (MNS) based on IOT architecture (2G–3G), RFID sensors, wifi, and blue tooth for data transfer was described by Chao Hsi Huang et al. [1]

The connection between the m-health sector and 5G and m2m (machine-to-machine) technologies was represented by Willian D. de Mattos et al. [2] Iuliana Chiuchisan et al. presented an intelligent system for decision making in the literature for Parkinson's infection testing and neurological disorders using IOT concepts. This system not only supports but also helps the doctors with prescriptions for medical treatment,

diagnosis, and tracking of patients' improvement progress. [3] In their research, Dr. Salah S. Ali Majeed et al. suggested creating a low-cost, IOT-based device that functions primarily as a medical sensing device to track patients' physiological parameters. According to P. Chavan et al., the main goal of this research was to create an Android application for the healthcare sector combining the IOT and cloud computing concepts. [5] In response to the growing trend in IOT and its need, Harshal Arbat and colleagues set out to build a new tool. A focus is placed on maintaining patient health in the field of mobile health practise by tracking heart rate value. A smart health band measures this HR value. When the results exceed the acceptable level, a customised message will be sent to his family or friends. [6] K.M. Chaman Kumar et al.'s research presents a new technique for monitoring patients with OSA (obstructive sleep apnea), which is also useful for disorders that are comparable to it. [7] Chetanya Puri and colleagues sought to give a fresh perspective on cardio signals. The cardiac patient will receive warming in the first stage. This also includes the prompt identification of the patient's severity and a diagnosis. [8] Vivek Chandel et al. discovered a method to continuously track

the patient's health using IMUS (inertial measurement units). This is used in conjunction with an accurate and upgraded algorithmic steps system for sensing patient events for accurate diagnosis. [9]

IOT APPLICATION IN HEALTH CARE

Medical devices have seen significant changes as a result of technological advancements, transitioning from traditional wired equipment to wirelessly programmable devices. The medical IOT system is a complex setup that includes a number of mechanisms, including medical equipment, smart sensors, network gateways, cloud computing, big data, and clinical information systems. Simply put, the medical IOT is a system made up of monitoring devices that remotely record patients' health parameters. The system

then analyses the recorded data and gives the clinical staff information they can use to assess the patients' current health conditions and take immediate action when necessary. Glucose level monitoring, electrocardiogram monitoring, magnetic resonance imaging (MRI), heart rate monitoring, and CT scanning are the most typical examples of IOT services in healthcare. Nowadays, smart phones are used to manage practically all high-tech electrical equipment. These phones come with a wide range of healthcare applications, such as non-contact measuring sensors that use image analysis techniques. Nowadays, a normal smart phone is capable of identifying conditions including asthma, chronic obstructive pulmonary disease (COPD), issues with the respiratory system, heart rate, and oxygen saturation level, among others.

BENEFITS OF IOT IN MEDICAL DOMIAN

Sr.	Benefit	Ref.
1.	Make life more convenient Outcome of patient is improved Management of diseases is real - time Life quality is Improved Care for patient is increased together with cost reduction. Ultimate benefit is healthier and longer lives, Maximum diseases preventive. Major change in health of patient will make an automatic alert which will save lives with timely care.	14
2.	Medication is on time. Patient care will be intimated to family members.	1
3.	Advancement in treatment Cost affordability	8
4.	Doctors can manage patients records easily.	12
5.	Patients remote monitoring using cloud computing.	5
6.	Big data and IOT for chronic patients monitoring.	15

We have discussed only those benefits which are most recent, emerging and expanding very quickly in the field of medical IOT healthcare

CHALLENGES OF IOT:

1. Intelligence in Medical care [1]
2. Data Integration [1]
3. System Predictability [5]
4. Interoperability Technical Challen
5. Measurement and diseases scability
software implementation of medical
analytic schemes [13]
6. Security challenges [13]

CONCLUSION AND FUTURE WORK

An emerging trend is the use of smart healthcare systems to monitor patient medical data using tiny sensing devices to gather data across a network in real time. In order to get better results, there has to be constant contact and communication between different devices and liveware. Numerous research problems have been found, and it is anticipated that they will soon develop into significant research trends. It is anticipated that this study would be helpful for academics and industry professionals in helping them comprehend the enormous potential of IOT in the medical sector and identify significant hurdles in the internet of medical things.

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