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IOT Medical Apps That Address Clinical Difficulties For Transmission Calculations

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Abstract - Machine learning (ML) and the Internet of Things (IoT) both have a variety of uses, one of which is in the medical field. Electronic healthcare systems have exceeded traditional patient service techniques as a result of the fast growth and spread of the internet. The Internet of Things (IoT) is the technology that connects patients and medical staff to the most cutting-edge environment for medical equipment. Applications of machine learning and Internet of Things devices might range from monitoring temperatures remotely to automating mechanical processes. IoT solutions are also attracting significant attention in the field of medical care applications because to the potential for cost savings, ease of use, and increased patient satisfaction. For intelligent and one-of-a-kind solutions, the most recent applications for IoT medical care that have been researched and are now tackling issues in the clinical setting are required. For the sake of data transmission calculations, specialized, transportable, and implantable Internet of Things model devices were studied. The natural replacement of a human biological component that has been destroyed is made possible by technologies.

Keywords- IOT, ML, Medical Care, Edge Computing, clinical.

1. INTRODUCTION

The Internet of Things is a cutting-edge technology that is making headway in countries all over the globe. Because of the enormous strength and capacity of the internet of things (IoT), we are able to connect to any network or service at any time and from any location. The consequences of the Internet of Things (IoT), which is developing into a powerhouse for next-generation machines, are now being felt in the modern business environment. The Internet of Things is helping companies and academics find solutions. In order to make the most efficient use of available resources, they connect with smart devices and smart objects by using the existing infrastructure of the internet. Additionally, it might broaden the range of benefits and services provided by intelligent systems. under addition to machine-to-machine (M2M) interactions, the serial connection that exists between the network and the devices that are used to provide exceptional services is also under jeopardy. As a consequence of this, any program that is based on the Internet of Things may soon enable automation. The control of traffic congestion, smart city solutions, waste management, security, structural health, emergency services, retail, logistics, smart healthcare, and industrial control are just some of the IoT-based application areas that already have smart solutions in place or will soon develop them. Other areas

include waste management, security, structural health, and emergency services.

People used more traditional means to communicate with their physicians, such as the telephone, in-person visits, or text messaging, before the advent of the Internet of Things (IoT) in healthcare, also known as the Internet of Healthcare Things (IoHT). When using this old approach, it was difficult for hospitals or medical staff to follow or monitor a patient's health in real time, and it was also difficult for patients to get real-time therapy. Patients also had a difficult time receiving treatment.

Inclusion is required for both the IoHT domain and medical services. Because they enable patients to do remote monitoring as well as self-monitoring, IoT-enabled gadgets have brought about profound changes in the healthcare business. There is a two-way exchange of information on the patient's health between the patient and the doctor.

The patient may need to adjust their goals for the future and participate in activities that are more suitable for their present state of health. IoHT has improved patient satisfaction and engagement, while also making the doctor-patient connection easier to maintain and developing it further. It's possible that a remote health monitoring gadget might cut a patient's length of stay in the hospital and save money on their medical bills. Additionally, it could improve treatment results and cut down on the number of times patients have to be readmitted to the hospital. Through the innovation of new tools and improved communication between doctors and patients, the Internet of Things is having a significant influence on the healthcare industry. The infrastructure of the IoHT incorporates a wide range of applications that might be of assistance to patients, physicians, families, and institutions.
IoHT for patients consists of a broad array of wearable technologies that are easily available to the general public. These technologies include fitness bands, smartwatches, and other wirelessly linked devices (such as blood pressure monitors, heart rate monitors, glucometers, and many other similar devices). Innovative technologies such as these are used in the process of carrying out targeted surveillance. With the aid of these smart gadgets, we are able to create reminders for a variety of different things, including our daily calorie intake, activity check-in days, changes in blood pressure, appointments, and more. When it comes to IoHT for physicians, the many wearable devices and other home-based monitoring technologies make it possible for the physician to monitor the health of the patient in a more efficient manner. In the event that the patient has a medical emergency, information about the patient is sent to the patient's family members as well as the doctor so that we can make the most informed decision possible. IoHT for families enables members of the family to communicate about a patient's condition in real time. By using wearable technology and other smart wirelessly equipped devices, we are able to identify persons of any age, including young children and old people, at any time and from any place. During a moment of crisis, information is sent to us in real time so that we may plan and execute a variety of preventative actions, respond appropriately, and protect the lives of those we care about. In the case that we are discussing IoHT for hospitals, we may be able to automate many of the system's operations by using sensor-based smart technologies. The Internet of Things makes it possible to perform monitoring in real time of a wide variety of medical equipment, including nebulizers, oxygen pumps, wheelchairs, and defibrillators, amongst other nursing aids. Additionally, it is possible to monitor the whereabouts of the medical staff in real time. By enabling the use of hygiene monitoring equipment for the purpose of

maintaining a clean environment, the infrastructure of the IoHT helps to safeguard patients against infection. The IoHT system offers functions for asset management, such as automatic temperature and humidity control for freezers and monitoring of pharmaceutical inventories.

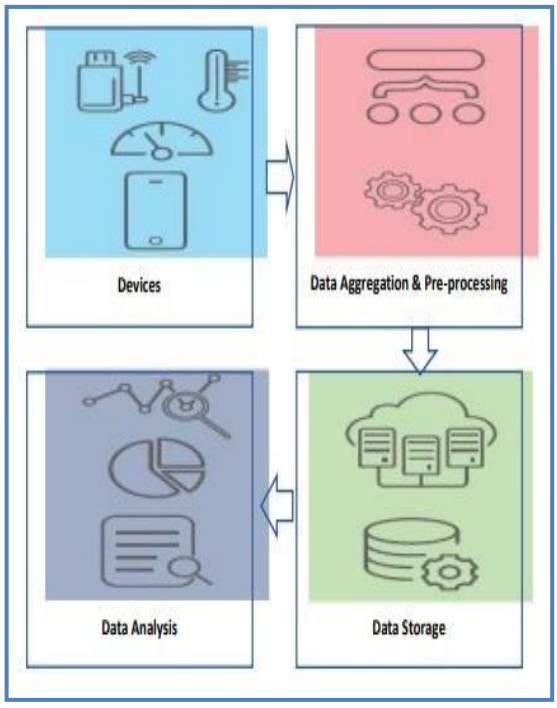

Figure.1. Stages Of IOT Solutions

known as the four stages that make up the standard IoHT infrastructure, is used in the process of developing medical solutions. Figure 1 depicts the IoHT's fundamental operating mechanism. Construct the intelligent system for the IoHT in such a manner that the input is seen or processed at one point, and the outcomes are made at a different one.

Installing a variety of heterogeneous networked devices, such as actuators, sensors, monitors, cameras, detectors, and so on, and collecting data from them is the first step in the process. In the second stage, information is gathered in the form of analog or digital signals from a range of sensors or sensor-enabled devices. This information is then processed and accumulated into numerical form for future research. The digitized and aggregated data must then be pre-processed and standardized before moving on to the next phase. After then, the data that has been updated is either transferred to a physical place or uploaded to a health database that is stored in the cloud. The last step of processing data involves the use of complex analytics in order to give efficient solutions and decision-making.

IoHT researchers have shown over the course of the last several years a strong focus to tackling a broad variety of problems and difficulties that are present in the real world. There are now a number of services, pieces of software, and prototypes on the market that are geared on making the healthcare business more operationally and economically efficient. Interoperability, the development of new applications and services, networking platforms and architectures, the introduction of new services, and an increase in the level of security are all essential elements of smart healthcare, according to the findings of recent IoHT research trends. [10] A wide variety of organizations and countries from all over the world are now working to produce several standards and guidelines for the use of IoHT technology. As a consequence of this, a complete understanding of the research being done on IoHT right now will likely be beneficial to a great number of future researchers and stakeholders. One of the most significant developments in the field of information technology was the technology known as wireless sensor networks (WSN), which also had a significant impact on the growth of internet of home technology (IoHT)-based services. The development and use of energy-efficient communication technologies, such as IP-based sensor networks based on 6LoWPAN (IPv6-based low-power wireless personal area network), is the current trend in the field of communication technology. This trend is expected to continue in the near future.

2. LITERATURE SURVEY

The Internet of Things (IoT) is a relatively new technology that is undergoing fast development. The intelligent things that make up the Internet of Things serve as the fundamental constituents of all IoT-based smart pervasive frameworks. The application market for Internet of Things technology is significant and well recognized to be in the healthcare industry. The Internet of Things (IoT) is contributing to the expansion of what is known as the Internet of Healthcare Things (IoHT), which is the present healthcare system and has amazing potential on all fronts, including the technological, the social, and the economic fronts. Significant technological advancements have been made in several areas of the Internet of Healthcare Things (IoHT), including topologies, platforms/architectures, taxonomies, service models, and application frameworks. In addition to that, this research analyzed the existing condition of IoHT-based solutions as well as market developments. This topic included an analysis of research on the Internet of Healthcare Things (IoHT), which brought to light a number of issues and challenges that needed to be resolved in order to successfully integrate healthcare technology with IoT modernization.IoHT networks, which are among the most essential and basic components of the IoHT infrastructure, serve as the backbone of the system by enabling data transmission and reception between the different smart devices as well as healthcare communication. This is made possible by the fact that IoHT networks are among the most important and fundamental components of the IoHT infrastructure. The findings of an in-depth examination of the topology, architecture, and platform of the IoHT are shown in Figure 2, which may be found in this section.

The topology of the IoHT network is an essential part of the overall IoHT network. It involves a number of responsibilities, such as the physical design of the devices, determining whether or not they are suitable for the applications, activation, and scheduling of work hours. The Internet of Health Things (IoHT), as it is often referred to, is a network that connects a variety of distinct health gadgets via the use of a centralized health server. There are various options for wired and wireless connectivity available. By working together to accomplish preset or specialized tasks within the same application area, these connected smart health gadgets provide the infrastructure for the Internet of Health Things (IoHT). It's possible that the infrastructure of the IoHT will be made up of a lot of different medical devices, all of which will work together to complete their tasks through the communication channel.

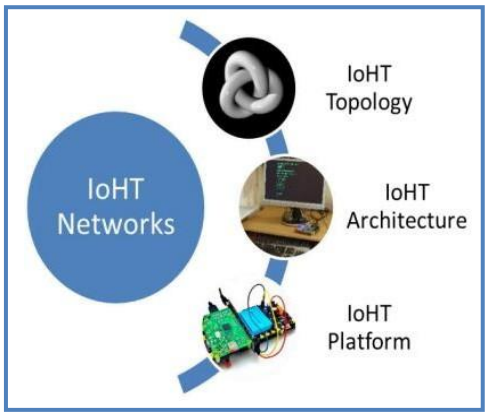

Figure.2. Typical IoHT Networks

Because of the nature of these communication routes, both the delivery and the response of data may be recorded. Service providers have access to these many communication channels. To put it another way, numerous service providers are responsible for maintaining these communication pathways. These service providers not only provide their services but also ensure the necessary level of protection for the whole communication connection. Network security is very

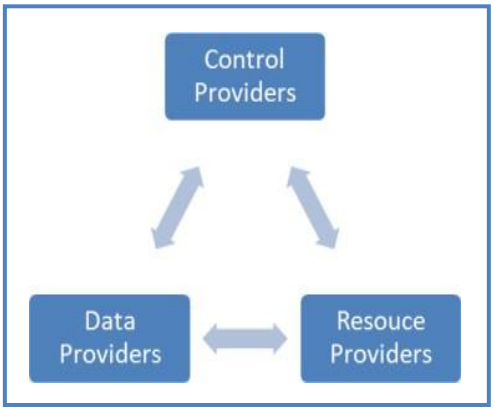

Figure.3. IoHT Topology

important since the data that is stored on the IoHT network is a component of an individual's electronic health records. These records include private information about the individual that should not be disclosed to the general public. After the data collected from a variety of medical devices have been analyzed at the location where the service is provided, the information is then made available to the appropriate authorities or users. The common IoHT structure is composed of sensor-based devices, the actions they do, and the processes they go through. These sensor-based smart devices can communicate with one another via wireless or wired connections, and they may also interact with one another through these channels of communication. The structure of the IoHT is shown in Figure 3, and it includes the data, control, and resource sources that are provided by the three organizations.

The providers of data are the ones in charge of collecting information from patients, while the providers of control are the ones in charge of managing the data. In the context of data analysis, a "resource provider" may refer to a person, an organization, or a set of objects that provides a resource. It is possible that a person is the origin of the resource. It is only possible to communicate in both directions if the person responsible for providing control and the person responsible for providing the resource are the same person. The management of data in real time is a component of this idea, which also includes monitoring. The underlying technological infrastructure of the Internet of Things This component is necessary for the IoHT network to function in the appropriate manner. This design includes a number of tasks, such as the establishment of an appropriate hierarchical model for the application-centric healthcare domain and the integration of physically installed devices with application software. These are only a few of the responsibilities. These two pursuits make up a relatively little amount of the total design. The primary architectural paradigm of the IoHT may be seen shown in Figure 4.

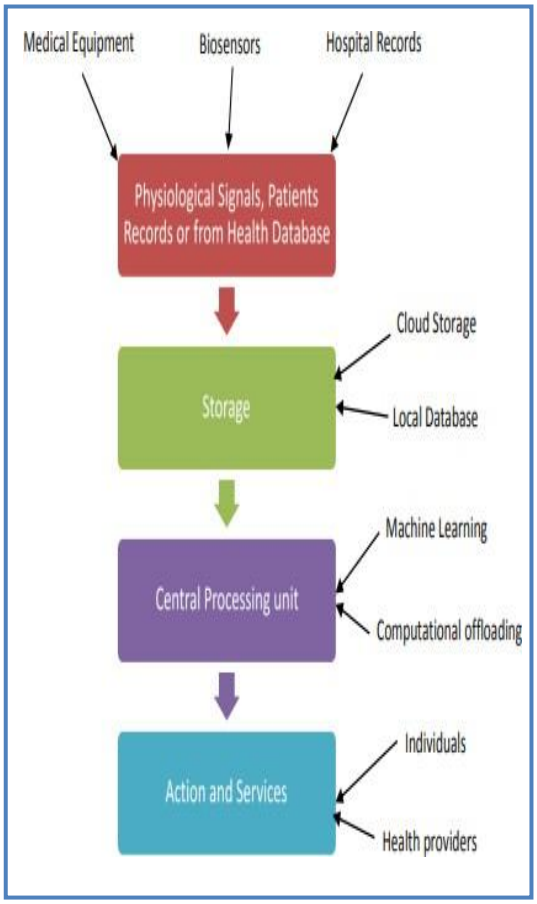

Figure.4. IoHT Architecture

For the purpose of data collection, this fundamental IoHT network architecture makes use of a number of devices that are either intelligent or sensor-based. Input data may come from a variety of sources, including but not limited to medical devices, biosensors, wearable sensors, intelligent devices, and electronic medical records. Patients' medical records, health databases, and psychological indicators are all examples of these types of data sources. If the message is received directly from the device or from the health records, a copy of the data is saved in a local or cloud database. If the message is obtained from another source, such as the health records, the data is not preserved. The central processing unit will analyze the data when it has been received, and then determine what the output will be. In order to carry out the computation, either computation offloading methods or machine learning algorithms are used. The user or the healthcare practitioner is notified of the findings as soon as the computation is finished. We require the appropriate security mechanism at every point, from the sensing or data collecting stage all the way to the service stage, since any unauthorized access might gravely jeopardize not only the individual's health but also the smart healthcare system.

3. CHALLENGES AND ISSUES IN IOHT

The use of cutting-edge technology is not without its share of challenges and worries. There is potential for a wide range of issues at each level, beginning with the development stage and continuing through the deployment stage. Beginning with the stage of design and moving on to the stage of execution, we are confronted with a great number of challenges and obstacles as we construct the infrastructure for the IoHT. The creation and implementation of infrastructure for the internet of things is a challenging task. Interoperability across systems, reliability of software, computational intelligence, awareness of context, privacy, and security are only few of the challenges it must overcome. When it comes to the field of medicine, software is largely responsible for easing the connection between various pieces of hardware and various pieces of medical equipment.

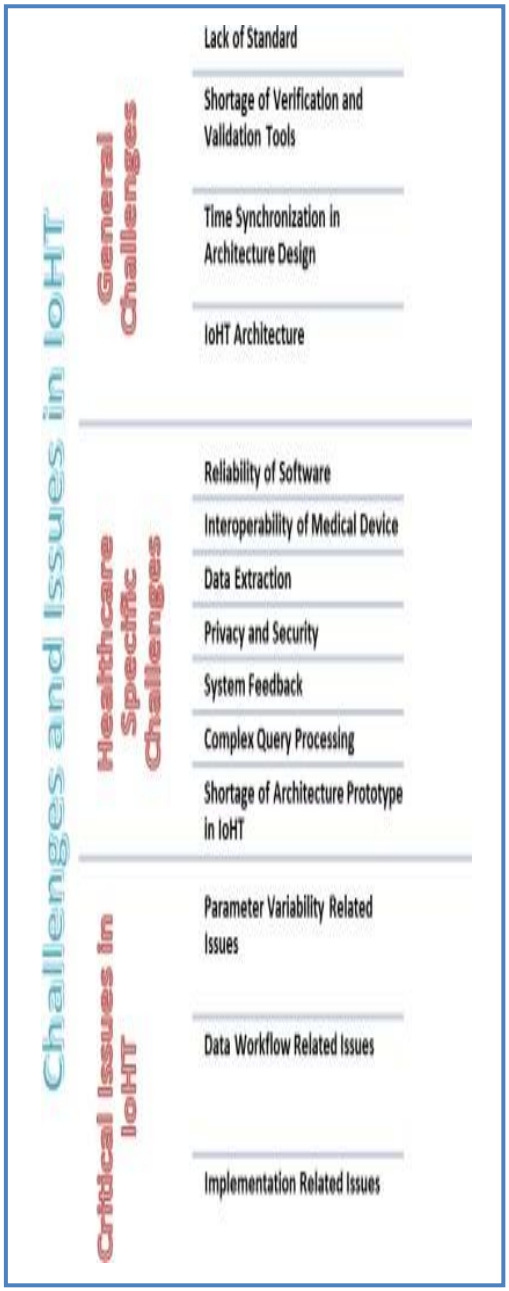

Figure.5.Challenges and Issues in IoHT

In this part of the article, we categorized the various worries and challenges into two distinct groups. In the first part of this discussion, we classified the many difficulties into two distinct groups: global problems and healthcare-specific concerns. The second part provides a concise overview of the primary challenges associated with the establishment of IoHT infrastructure. The many worries and challenges that are connected to IoHT are shown in figure 5.

Unmet Obligations and Expectations Developing a brand-new system is an endeavor that is both challenging and time-consuming. It is more difficult since there is no clear standard to follow to when building a system that is both acceptable and efficient. This makes it more challenging. In the field of healthcare, efficient management of the three issues of privacy, security, and safety measures is essential, since they are considered to be of the utmost importance. Several other standards might be used in order to solve these problems. It is common knowledge that within the scope of smart healthcare, data is exchanged between the patient and the doctor, and that this sharing is integrated with varying degrees of protection on both sides. On the other hand, how are we supposed to figure out the precise nature of the breach of the data privacy or confidentiality policy? As a consequence of this, consistency is essential in order to address these events in an effective manner.

Lack of Verification and Validation Tools: In the field of intelligent healthcare, the absence of Verification and Validation Tools creates a number of difficulties that must be overcome. You are able to link the WSN to a cloud-based paradigm by using the ACPS software, which stands for Advanced Cloud Protection System. In spite of the fact that there are a variety of effective domain-specific simulation tools available, the IoHT infrastructure is not an appropriate fit for them. We require functional tools that are compatible with the sensor-based lattice of the smart healthcare infrastructure in order to build IoT-based intelligent healthcare systems or IoHT infrastructure.

The synchronization of timestamps is one of the most challenging and important duties that the IoHT infrastructure must perform, and the design of the architecture takes this into account. To put it more simply, it is essential since time is of the essence in the medical profession. It is challenging because it requires interaction with the cloud and gathers data from a significant number of devices or sensors. Time synchronization has become an absolute need in today's connected world due to the abundance of real-time data generated by the many sensors included into IoT infrastructure. It will be helpful in the development of software for precise healthcare, which will eventually make it possible to conduct real-time analyses and to provide treatments to a large number of patients through the internet.

The architecture behind the Internet of Things During the process of designing the design for the IoHT, we are going to have to deal with the complexity of computer and physical concerns such as system structure, time management, process integration, standards, and proper data. Because of this, we need a universal architecture that is capable of effectively addressing both the computational issues and the concerns of the physical delicacy. It will be essential in the development of intelligent healthcare systems that are based on real-time data in the future.

Software Reliability: Software is an essential component of any and all medical devices and equipment. Through the use of software, we are able to activate a wide variety of features and exert control over

the operation of a tool. Additionally, software is used to ensure that patients and medical equipment engage with one another via communicating with one another. As a result, there is a need for software that not only addresses the problem of security but also enhances the productive capacity of the smart system as a whole.

Data Extraction: The use of medical technology allows for the collection of a wide range of physiological parameters relating to patients. It's possible that additional information about patients might be gleaned from their physiological indicators. In addition to this, it helps in the early detection of newly developing illnesses and the creation of prospective emergency response measures. As a direct consequence of this, it may be challenging to extract complex and essential physiological data from patients. It is essential to derive these parameters using a tactic that is able to solve the issue at hand.

When it comes to developing the system, addressing concerns about privacy and security are two of the most essential and challenging issues. Given the need of maintaining patient privacy while still ensuring that their data is secure, this is a challenging issue. Medical records for any patient should not be removed from the database under any circumstances. The only people who should have access are the patient and any clinicians who are worried about them. Because of this, there is a need for two separate security measures; the first one must be carried out by the physician, and the second one must be carried out by the data transmission technology. Patients are at risk of experiencing considerable injury when their privacy is violated, which is against the standards of medical ethics.

Complex Query Processing: Complex query processing is one of the challenging power-related duties that has to be properly managed to avoid potential problems. It is well knowledge that the heterogeneous network of biosensor devices that make up the Internet of Things may be connected through either wired or wireless connections. In order to carry out inquiry operations, a battery is necessary for a wireless sensor. Every time a query is processed, a little amount of battery life is lost. We are able to reduce transmissions by combining exhaustive searches with predictions based on the context of the communication. In order to foretell an impending illness, many physiological signals are gathered via the use of challenging questions. As a consequence of this, rather of searching through the whole database, we need a sophisticated query processing system that can only pull out the relevant information.

According to the findings of this study, there may be some substantial difficulties that need to be solved before such a healthcare system can be implemented. As a direct consequence of this, the total performance of the system that is based on the Internet of Healthcare Things will improve. This section provides a concise overview of the primary challenges that need to be solved in order to develop intelligent solutions for the healthcare industry.

Concerns Regarding the Variability of the Parameters The system that is built on IoHT now contains fewer variables as a result of the reduced functionality it provides. IoHT-based systems, as a consequence, provide a more limited selection of service options. As a direct consequence of this, modifying the various parameters is essential in order to enhance the general performance of such systems. The believability of the context-aware system as a whole may be improved by the addition of a number of different aspects. concerns about the process involving data—Managing data flows has never been an easy task, but it is much easier with

modern technologies. Because it contains personal information about a person, which is not allowed to be disclosed to the general public, it became increasingly challenging in the healthcare profession. As a direct result of this, the architecture of the IoHT should be built in such a way that the flow of data between the various IoT-based systems and devices can be effectively regulated. In addition to this, it will assist us in improving the system's functioning in general. Concerns About Implementation- Several healthcare techniques that are based on the Internet of Things are still in their infancy. While some infrastructure projects based on IoHT are now up and running with the absolute minimum of resources, others are still in the design and implementation phases. Practical implementation is crucial if one want to build complex and effective solutions that are appropriate for the circumstances of the actual world. It makes it easier for us to discover any issues that have not been fixed and need additional investigation. Due to the intricacy of the situation, dealing with the reality of a way of life that is always shifting may be a challenging challenge.

4. MACHINE LEARNING IN HEALTHCARE

Machine learning is another another of the transformative technologies that we have available. Learning by machine refers to the process of using algorithms that are able to learn from experience. The advancement of machine learning is being driven in large part by the ready availability of vast amounts of data as well as very affordable processing power. Learning by machines is accomplished by the analysis of past data collected by the machines. There will now be a formula. To put it another way, data is often the source from which machine learning is developed. Finding patterns in the data and being able to use those patterns to derive meaningful conclusions is the objective of master learning. Learning by machine is an all-encompassing, multidisciplinary methodology that, among other things, places an emphasis on statistics and algebra as well as data collection and processing. One of the fundamental approaches to artificial intelligence, known as machine learning (ML), is the process of gaining knowledge from data. Because this part of the research is at the trunk of the tree and encompasses a myriad of branches and sub-branches, we are not giving the computers any specific instructions for where to look. The many types of machine learning are broken down further in Figure 6. To begin, there is learning under supervision. C.D. Learning Based on Rewards, also known as Unsupervised Learning.

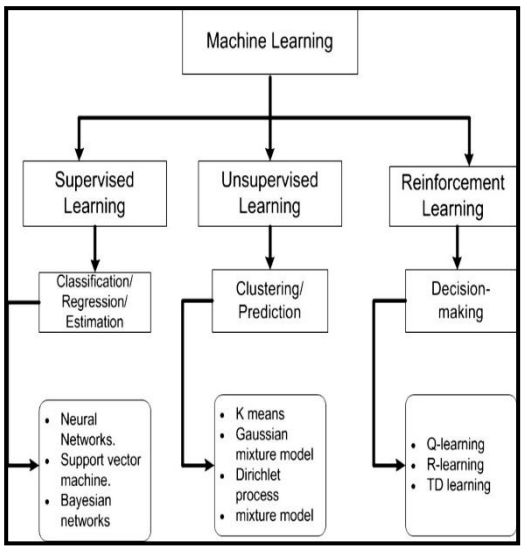

Figure.6. Machine Learning Classification Techniques

- The use of machine learning in several aspects of healthcare Using techniques of machine learning makes it possible to distinguish between complex and extensive patterns in the data and records. This technique lends itself very well to the use of therapeutics in patients whose proteomics and

genomes have reached an advanced stage. Additionally, it may be used in the diagnosis and early detection of various disorders. In the field of medical technology, deep-learning algorithms are used to provide recommendations for preferable care procedures in order to develop a preferred patient treatment plan. Machine learning in the pharmaceutical industry has several applications, including the following:

- The diagnosis and classification of the condition; the development of individualized behavioral or therapeutic interventions;

- the examination of test results from medical examinations, radiography and radiation therapy, intelligent electronic health reporting (HER), and the prediction of disease epidemics.

5. MACHINE LEARNING ALGORITHMS IN IOT

The authors conducted research on and provided specifics on an intelligent home-based wireless medicine box that was equipped with an android (Health-IoT) application in order to enhance communication between patients and physicians. The intelligent medication box that alerts users when it is time to take their medicines is one of the features that will be included in the planned platform. The apparatus provides wireless internet connectivity and has the capability of transmitting medicine reminders to the Android mobile smartphone carried by the patient. Because of the automatic warning provided by the device, the patient is given the appropriate medication at the appropriate time. In addition, the designated guardian will get SMS warnings whenever any important signals undergo a change. During the time when their study is developing a system or framework for monitoring the pharmaceutical consumption of patients. It offers frameworks for the dispensing of prescription drugs and the documenting of prescription histories, much as the International Journal of Pure and Applied Mathematics does. The program recommends that the patient be given certain cautions. In the case that there is an error, the medical staff will often detect any missing injections, and the notion of eMedicare avoids the issues that were previously linked with earlier methods. This more advanced technology is easier to use, lighter, more compact, and less expensive, all while delivering improved accuracy. If older individuals utilize the method that has been proposed, it may be simpler for them to remember to take their medications at the appropriate times, particularly those who have diabetes. It is becoming more important to discover new ways to provide assistance to elderly people in their day-to-day activities as the global population of people aged 60 and over continues to rise. This is due to the fact that the Internet of Things would make it possible to provide treatment that is more individualized, preventive, and collaborative. This would add a new dimension to the healthcare system that is already in place. This research not only enhanced emergency alarm systems but also provided senior citizens with an opportunity to monitor and record vital health data in real time via the Internet of Things. According to the findings of the research, a bracelet that could be connected to a cloud server may be used to monitor and assist elderly people. The end goal is to establish itself as a wireless networking solution that can be successfully used in business settings. Several different sensors, including electroencephalography (EEG), have been used in order to investigate the capabilities of a Brain Machine interface. Think about using a diffusion tensor, which is a kind of

rsfMRI, in order to view and gather data from the brain of an epileptic patient. The proposed plan calls for the use of cutting-edge technology, namely a computer that offers a context-aware approach in real time. This is accomplished by the tracking, analyzing, and monitoring of the brain using both invasive and non-invasive technologies. This helps in the early diagnosis and treatment of epilepsy, regardless of whether the epilepsy was caused by surgery or not. This investigation's major objective is to determine whether or not a "ictal start" may be anticipated. A significant amount of research is necessary to achieve these one-of-a-kind needs because healthcare systems require a network architecture that can allow quality of service provisioning for video and other time-sensitive applications. In the article, we examined how machine learning may be used in the medical field. The use of machine learning will quickly revolutionize the healthcare industry. The future of healthcare will be drastically different as a result of machine learning (ML) and artificial intelligence (AI), but the performance of machine learning and AI Decision Support Systems (DSS) should provide some insight into the issues that patients and medical staff face. Significant efforts are being put out by major companies such as Enclitic, MedAware, and Google to develop artificial intelligence and other forms of technology for use in the healthcare sector. It takes a significant amount of time to develop into a competent healthcare practitioner. The currently available efficiency as well as accuracy will rise thanks to advancements in artificial intelligence and machine learning. It is possible that the use of such technology can speed up the process of enhancing healthcare services and reducing healthcare costs for a larger number of individuals. The Internet of Things as well as two big data technologies (healthcare analytics) were the primary points of concentration throughout the article. Big data, abbreviated as BDA, is the product of the concurrent development in the computer science subfields of Big Data and Analytics. These two subfields work together to provide a standardized method for data management. Business personnel make up the bulk of consumers of big data. This is due to the fact that an organization is capable of transmitting, creating, and exchanging large volumes of structured and unstructured data. The Internet of Things (IoT) is a system that allows different electrical and sensor-based things that are physically linked to one another to store data and transfer that data to one another.

6. CONCLUSION

The healthcare industry is one of the sectors of the modern economy that is expanding at one of the highest rates, and as a result, medical care is becoming more expensive. It is becoming more obvious that improved patient-physician interactions are essential, despite the fact that the government is spending more money than ever before on healthcare. The use of big data and artificial intelligence are two examples of technologies that have the potential to aid patients and providers in providing better care at reduced costs. In this particular field, the initiative has already been taken up by a number of different businesses and organizations. It helped facilitate the move toward therapy that is evidence-based and focussed on the patient. The data has already been collected; the only thing left to do is figure out how to present it. Both supervised and unsupervised learning rely largely on the tools and data that may be used to categorize data into various categories. Unsupervised learning relies on this classification more than supervised learning does. When it comes to choosing decisions, humans often exhibit poor judgment, and sometimes the truth will play a role in this process. In contrast to humans, machines do not base their

decisions on their feelings in the same manner that we do. People's identities, moral values, levels of worldly knowledge, political and religious convictions, and other factors may all have a role in the choices they make. The information that is necessary to teach computers how to make decisions will be gathered with the help of these components. These constituent parts There is a possibility that it will be challenging to provide a guarantee that the data used for learning is as unbiased as is humanly conceivable. The client's health will benefit from overcoming the obstacles posed by ML and IoT. This article's objective was to provide an overview of the Internet of Things (IoT) and machine learning (ML) applications in the healthcare system, as well as their applications in customized health care, as well as a few other significant works and the authors' perspectives on their results related to this topic. In addition to this, it investigated the challenges and concerns that were encountered by digital health care, as well as the potential solutions to these problems.

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