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A Review on Cloud Computing Application in the Healthcare Industry

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ABSTRACT

Cloud computing is a trending terminology used now days. Cloud word is inspired from the symbol of cloud used to represent Internet in conventional diagrams. This paper is a review on Cloud Computing application in the Healthcare Industry and also given a touch to Internet of Things (IOT) as well as mHealth (Healthcare through Mobiles) Application. Nowadays, a latest tendency in medical Industry is to apply daily therapeutic checks and other medical utilities from the infirmary to the domicile surroundings. The proposed system consists of an assortment of bio-sensors connected to the victim. Sensors examine and save the reports and store it to the database available on a cloud. The cloud based skeleton for fetching and diagnosing the Parkinson patients that will enable medical industry to develop in short supply of resources. In next review A intelligent-Smart "IOT-based healthcare big data storage system" is proposed that is controlled by own. The motive is to protect patients' medical record, has separate rights to use in ordinary and critical circumstances, and manage smart way to save the records in big data storage system. Cognitive computing demonstrates the implementation of individual and machinery overlapping in which computers work on improvement of decision making capability. MHS provides medical services through mobile communication equipments. The system has mainly two objectives first is to works on MOBILE corresponding to Medical Industry and second is the availability of patient's record and accessibility to mobile applications at all the time and in all places. The author presented a wide-ranging psychotherapy of necessities, including probable custom scenarios, user requirements, secretarial and security agendas and infrastructure components. The primary goal of mHealth application's, is make availability consistent, realistic and proficient agenda in advancement of medical data security issues. The adoption of cloud computing in the medical field can recover enlarge mutual agendas in healthcare organizations and provides a secure medical system. The research paper is a review on recent research papers.

1. Introduction

Cloud computing is a trending terminology used now days. Cloud word is inspired from the symbol of cloud used to represent Internet in conventional diagrams. Cloud computing can defined as interconnection of various networks to share relevant data and information via Internet. It is an integration of various clouds (network) in the world. The cloud computing has a significant place in the field of industry as well as it becomes very popular in the medical industry these days, attracted every healthcare organizations universally. Collaboration of medical industry and cloud computing benefitted to professionals related to this field. The hospitals or medical institutions can accumulate and retrieve data remotely from anywhere at any time. The medical services get data without delay and concern the obligatory care without wasting a minute. Live consultation with experts through video conferencing makes possible for doctors to treat the patients in healthier mode as well as it provides a comfort ability to long-suffering to share their discomfort with doctors frankly. By this mean Authorities can utilize the cloud computing in medical industry to grasp a clean and extremely comprehensive figure of the situation.

Internet of Things (IoT) makes life smarter. For example maintenance of smart AC's while driving your car or even controls your washing machines without human intervention. The exiting news is that Internet of Things (Iot) also able to save your life. The question arises here HOW? Suppose anyone have a sudden heart attack and if one has smart mobile application then it will help to inform the nearest Ambulance automatically. It provides the First Aid facility at door step. Another thing is by using IoT the ICU receives the signals to update according to the patient's emergence. Cloud Computing avail the domain experts opinions and reviews about health conditions of the sufferer. [1]

Nowadays, a latest tendency in medical Industry is to apply daily health check-ups like Blood Pressure, Level of Sugar test, cholesterol, uric acid and many more from homes. Consequently, it is recommended to launch advance systems in the healthcare field to extend highly developed healthcare methods and keep them into practice for unproblematic concern of patients with full potential. An archetype representation for medical systems that combines the features of Internet of Things (IoT) and cloud computing. This is a real time application that taking the health factors to examine and concluding the results. This system has a variety of detectors connected to the patient's body. Sensors read and record the data and transmit it to the cloud server. Taking decisions on stored data is the responsibility of cloud server. Different cloud slave nodes for hosting the various anchors related to medical industry are governed by master cloud. [2]

An ailment called Parkinson's disease (PD) which effects patient's stability, verbal communication, behavior and ability to

take decisions and consciousness. In a research paper reasons behind this disease and all favorable actions are defined. The Parkinson's disease (PD) is the rigorous neurological disease in the world. A cloud computing based architecture is proposed for finding and paying attention to the tolerant of specified disease. It will provide this gathered data to officials and avail the required medical facilities to the patients. This system proves very helpful in rural areas where people are not very aware about these kinds of sufferings. But the Internet facility is must to have to use this system. Authorities can communicate with patient with the help of cloud computing easily. By using this system PD patient can also approach the specialized doctors effectively beyond their limits. The supposed system contributes valuable commencements in the field of medicine and in the well-being of the society. [3]

In next review an intelligent-Smart **IOT-based healthcare big data storage system** is proposed that is controlled by own. The objective of this system is to guarantee the protection of crucial health record of patients. It has separate rights to use in ordinary and critical circumstances, and manage smart way to save the records in big data storage system. The medicinal IoT healthcare network encrypts the record files and travel to the cloud, providing a sub sectional policy to use the warehouse by employees and higher authorities. A secure system to avoid the dilemma of conventional admittance phenomena that permits the certified identity to access patient's susceptible medical data, as well as provides the first-aid hospitality according to the requirement of patient. In this project 2-way approach is suggested to control the system first is opted for normal situations and another can be chosen in case of emergency. In ordinary situations, the hospital staff have the accessibility to fetch the data in regular mode; in urgent appliance, patient's medical history can be gain using a **secret-key method**. **Deduplication method** is introduced in the system to overcome from the redundancy of data files. As big data is a major issue to resolve in current scenario. That way this is a highlighting feature of this smart system. [4]

Another review is on Cognitive Computing Revolution. **Cognitive computing** demonstrates the implementation of individual and machinery overlapping in which computers work on improvement of decision making ability. The cognitive computing scheme produced huge quantity of data instantaneously to give solutions of particular questionnaires and giving custom-made intellectual recommendations. To support medical interns in enhanced handling of diseases, and recovered the patient conditions. **Cognitive computing** emerges the human brain with machinery by means of medical assurance to respond corresponding to decision making in an efficient way. The systematic literature review (SLR) is trying to approach this convergence. This paper provides comprehensive details of the preceding research linked to cognitive computing in medical arena. The SLR pays attention on its approaches, application areas, outcomes, protocols, achievements, and weaknesses to connect the healthcare community and cognitive computing. The major output of the SLR include directions used for the enhanced consumption of cognitive computing in healthcare domain protocol on prospect investigation, barriers faced by researchers, strengths and the how cognitive computing effects healthcare system model. This study concludes with administrative abbreviations and comprehensive cloud computing limitations. [5]

The next section of this review paper include about the study of **MHS** (Mobile Healthcare System). As mobile devices or other communicational equipments are very popular these days, it also plays an important role in the field of healthcare industry. As usage of mobile phones increase, the trend of mobile based applications also increases. **Mobile healthcare system** (MHS) is becoming a sizzling matter in academic world and healthcare field. MHS defines as giving the medical facilities with the help of mobile network components. . The system has mainly two objectives first is to works on MOBILE corresponding to Medical Industry and second is the availability of patients record and accessibility to mobile applications at all the time and in all places and hiding of irrelevant description. The system faces many obstacles like limited storage capacity of a mobile phone, required high power consumption and in capabilities of communicational MHS devices. The idea of **cloud-based MHS** has been suggested in recent times. Mobile Healthcare System saves the data in cloud that will raise secrecy and discretion issues. The authors present an effective public key that does not need a certificate secure encryption method that will provide confidentiality to the user's data. [6]

Another review is about a mobile application based on Natural Remedies that is implemented using cloud computing. The proposed system is helpful for those people that posted their disease on the internet and trying to find out their natural solutions based on home remedies and herbal medicines. This system initiate towards the well being of general crowd. This system applies data mining approaches to investigate the appropriate reasons behind particular disease posted by users and suggested corresponding medicinal plants relating to it. To buffer the retrieved information the ontological structure is used to increase on the whole system effectiveness. Currently, founders find cloud environment as a boon whether used as a resource for storing or knowledge sharing. In this proposal, on the whole center of attention is applying text mining techniques to the biomedical literature, to expose information related to the curative of disease based upon the properties of medicinal plants. This system domain provided benefit to healthcare industry as it allows physicians to pay attention on two-way care of the patient. [7]

Next review is based on Mobile Health (mHealth) applications. The primary goal of mHealth application's, is make availability consistent, realistic and proficient agenda in advancement of medical data security issues. The data related to medical industry like Patient's record files, medical history, chronic diseases record is highly confidential and has to handle sensitively. Programmers of applications are typically unfamiliar, and users are unaware of where their data is being stored and how is being maintained. This application proposed the security and privacy needed in the system. These protection claims need to be fulfilled for the acceptance of mHealth applications among users and developers. The emphasis of this research is to provide secure mHealth architecture, and the primary goal is to recommend a logical, convenient and competent model to advance the security of private medical data of users with mHealth applications. This architecture comprises two layers: a **Security Module Layer** (SML) and a **System Interface Layer** (SIL). The first SML layer keeps check on security issues and the second layer SIL provides the interfaces to SML layer. The framework is counted

in terms of competence and Performance. Competence is calculated by running the application with appropriate test set of variables, while performance is evaluated with the help of performance comparison in terms of power consumption, memory utilization and processor speed. The outcome of the experimental comparison announced the practicality of the proposed framework. mHealth applications protects the data against a wide range of attacks with negligible overhead, successfully. *[8]*

Another review that I conduct in relation to cloud computing and healthcare industry is in field of Medical Imaging. Medical Imaging is a advanced area of interest for researchers. In the area of medical imaging, there are so many telemedical services are introduced. It is difficult to say which is the most suitable according to different aspects like absolute and widespread approach. This paper proposed a approach to intend and accomplishment of a worldwide proposal for imaging medicine. The author presented a wide-ranging psychotherapy of necessities, including probable custom scenarios, user requirements, secretarial and security agendas and infrastructure components. Comparison of multiple usage scenarios correlated to medical imaging data in practice, research and learning applications, certain options common have been acknowledged. On behalf of this study, a system framework applies two key concepts: **Service Oriented Architecture (SOA) and Virtual Organizations (VO)**. The first component SOA permits to divide the functionality of the system into numerous discrete building blocks, promising elasticity and consistency. The second component VO defines the cooperative model for all participating medical organizations. The approach is approved by an ICT platform called TeleDICOM II which implements the proposed architecture. Finally, the platform is compared with similar frameworks and available on the market. [9]

2. Conclusion

The collaboration of cloud computing in medical field is necessarily a beneficially commencement. By using the application of Cloud computing there is a wide scope of mount in the field of healthcare. Cloud-based applications having the feature of homogeneously will bring observable reward to doctors, domain experts, patients, physicians, insurance companies, pharmacies, imagining centers, etc. when exchange of information across world medical organizations acquiring healthier consequences. Therefore, the adoption of the cloud computing in healthcare field is following increasingly. However with increase in the commencement of these two sectors some obstacles are also arrived due to security and privacy issues. Barriers such as protection concerns will rise due to the framework of cloud-computing model. All the way through execution of paramount protocols in the configuration and development will optimistically produce a opportunity to growth of the cloud computing in medical industry, despite all of the lacking. The adoption of cloud computing in the medical field can recover enlarge mutual agendas in healthcare organizations and provides a secure medical system.

References

[1] https://www.cloudcomputing-news.net/news/2016/jul/28/six-key-benefits-cloud-computing-healthcare-industry/

[2] SubasishMohapatra, SuchismitaMohanty, SubhadarshiniMohanty “Smart Healthcare: An Approach for Ubiquitous Healthcare Management Using IoT” 2019 https://doi.org/10.1016/B978-0-12-818146-1.00007-6

[3] Khondaker Abdullah, Al Mamun “Cloud based framework for Parkinson’s disease diagnosis and monitoring system for remote healthcare applications” 2015 https://doi.org/10.1016/j.future.2015.11.010

[4] “Privacy-preserving smart IoT-based healthcare big data storage and self-adaptive access control system” 2018 https://doi.org/10.1016/j.ins.2018.02.005

[5] Rajat Kumar Behera, Pradip Kumar Bala, Amandeep Dhir (Indian Institute of Management Ranchi, Ranchi, Jharkhand, India) “The emerging role of cognitive computing in healthcare: A systematic literature review“ 2019 https://doi.org/10.1016/j.ijmedinf.2019.04.024

[6] MimiMa, Muhammad KhurramKhana, JianhuaChen “Certificateless searchable public key encryption scheme for mobile healthcare system” 2017 https://doi.org/10.1016/j.compeleceng.2017.05.014

[7] NiyatiKumari Behera, G.S. Mahalakshm “] A Cloud Based Knowledge Discovery Framework, For Medicinal Plants From PubMed Literature ” 2019 https://doi.org/10.1016/j.imu.2019.100226

[8] Muzammil Hussain, Ahmed Al-Haiqi, A.A. Zaidan, “A Cloud Based Knowledge Discovery Framework, For Medicinal Plants From PubMed Literature” 2018 https://doi.org/10.1016/j.imu.2019.100226

[9] Łukasz Czekierda, Filip Malawski, Przemysław Wyszkowski, “] A security framework for mHealth apps on Android platform” 2015 https://doi.org/10.1016/j.cose.2018.02.003

[10] Holistic approach to design and implementation of a medical teleconsultation workspace https://doi.org/10.1016/j.jbi.2015.08.007

