(IJRMST) 2018, Vol. No. 5, Jan-Jun **e-ISSN: 2455-5134, p-ISSN: 2455-9059**

FEASIBILITY OF USING INTERNET OF THINGS (IOT) IN THE EFFICIENT HEALTH AND MEDICATION MANAGEMENT

Jahnvi Gupta
Student, University Institute of Engineering and Technology, Panjab University, Chandigarh, India

ABSTRACT

Robust health monitoring, a fast and intelligent framework to screen the patient automatically using IoT, collects the state data through these frameworks, incorporating the patient's pulse and sending an emergency alarm to the patient's primary care physician with his present status complete clinical data. This would assist the specialist with checking his patient from any place, and the patient sends his health status directly without visiting the emergency clinic. The sensor generates raw data, which is then stored in the database for future analysis. Some specialists for clinical purposes can later analyze this stored data. It is mandatory to keep records of patient's data in the database to analyze it in the future.

I. INTRODUCTION

The population of older people in the world is constantly increasing both in urban and rural areas. These types of devices don't bother them. There is a need for devices which are IoT based that helps to monitor the health of senior citizens. And helps in monitoring their fitness without going anywhere. These types of devices generate lots of data. The basic test addressed in this paper is to send clinical benefits data adequately inside the limitation of the current association system, especially in remote region.

It is mandatory to monitor the health of senior citizens continuously. Doing so requires some efficient health monitoring devices, which allows healthcare personnel to monitor their health. This allows senior citizens to keep themselves at home. Such a system must perform a task such as monitoring heartbeat, temperature, glucose level, and lung capacity. If, in any case, it detects any unusually in these parameters, it sends an alert to medical staff.

These days, IoT based application attracts the medical and health care domain. Many devices have designed with the help of IoT, and such devices are senior citizen health monitoring, Wireless diabetes detector, lung capacity detector. Consistent with treatment and prescription at home and by medical services suppliers is another actual planned application. In this manner, different clinical devices sensors consider specific devices as excellent devices or feature building a core of the IoT.

(IJRMST) 2018, Vol. No. 5, Jan-Jun **e-ISSN: 2455-5134, p-ISSN: 2455-9059**

IoT-based medical care systems are designed to reduce costs, increase personal satisfaction, and improve clients' experience. According to the viewpoint of medical care suppliers, the IoT can lessen device vacation through far off arrangements. In such a way, this paper contributes by Classifying existing IoT-based clinical benefits network channels into three examples and presenting a blueprint of each.

II. TECHNIQUE AND PHYSICAL

The iHome design are presented in Fig. 1. It contains three primary things: 1) intelligent healthcare benefit; 2) Management of drugs, and 3) Integration in the cloud

1) Intelligent healthcare benefit : When the fingertip is placed on the sensor, it starts sending the heartbeat every second. The sensor readings are obtained through raspberry pi and can show them on a screen. Data received through Raspberry pi and forwarded to the remote Pc and displayed in LCD for further investigation. If the sensor transmits an unusual heartbeat within the sequence of 10 minutes, the device imedbox send an alert to health personal and let them know the patient's condition. Then the health personnel will then decide whether to set an emergency to allow the relative to know about the situation.

Heartbeat sensor

How fit you are

Pulse changes between people. An average grown-up man has an average beat of 72 every moment when in rest. Sportspeople have a lesser heartbeat than lazy people. Heartbeat rates vary from individual to individuals. An average grown-up man has an average beat of 72 every moment when in rest. Players have a lower pulse rate (roughly 90 seconds each moment) yet show enormous varieties. The pulse rises during activities and returns gradually to the rest consistency after work out. A sign of wellness is when one can utilize the rate at which the pulse gets back to normal.

2) Management of drugs: It helps trained professionals and family members check if they are following the recommended treatment on time by RFID names and RTC related to the Raspberry Pi and assign the message to the patients and look at subject matter experts and family members if there is any surprising behaviour occurred.

3) Integration in the cloud :
The heartbeat sensor data readings and timing history are stored in a cloud server for future reference. The medical personnel can see the records and analyze whether the patient is taking the proper medication at the scheduled time regardless of being in a remote area.

(IJRMST) 2018, Vol. No. 5, Jan-Jun **e-ISSN: 2455-5134, p-ISSN: 2455-9059**

III. RESULTS AND DISCUSSION

1) Overview : A pulse fluctuation analysis can be performed in light of the recorded ECG signal from Bio-Patch and can consistently release the client's pulse data. At the point when a steady new heartbeat is recognized, the iMedBox will trigger a warning. On the off chance that the patient's exceptional heart condition has not recovered inside a particular period, e.g., 10 min, the iMedBox will subsequently pass on a text to the expert portraying the situation. The expert will then pick whether to contact the patient's relatives or pass on the case to a crisis. The IoT clinical consideration association or the IoT network for clinical consideration is one of the essential parts of the IoT. It maintains permission to the IoT as a point, works with the transmission and social event of clinical data, and enables clinical benefits changed correspondences as shown in Fig 1, which pictures a circumstance where a patient's health inside are discovered using advantageous sensors, and clinical gadgets joined to their body. Captured data is then flawed down, set aside, stayed aware of, and set aside data from various sensors and machines that become significant for assortment. Considering investigation and group, specialists can screen patients from any space and react moreover.

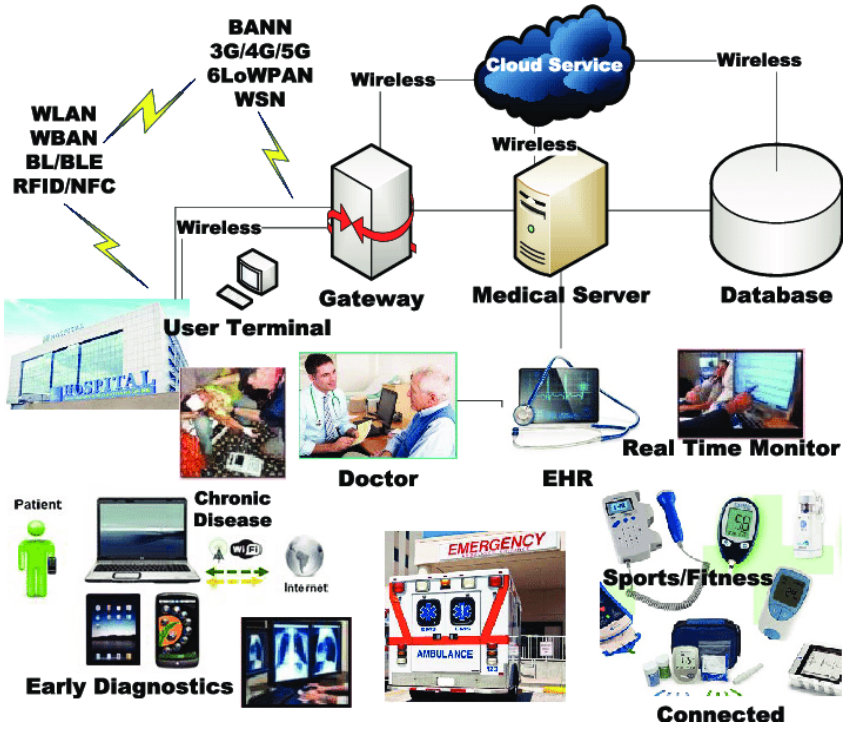

Fig 1: Remote monitoring in wearable's and personalized health care

2) Literature Work: Geng Yang et al. (2014), A keen privately settled arranging and iHome Health IoT is proposed and executed. In particular, the scene incorporates redesigned accessibility with an open-source-based shrewd medicine box and similarity for the compromise of gadgets and frameworks savvy clinical grouping (iMedPack) with correspondence limit enabled by RFID and

actuation capacities allocated by suitable materials and a versatile and wearable biomedical sensor contraption engaged by the cutting edge inkjet printing advancement and system-on-chip.

Pescosolido et al. (2016)present an occurrence of a cloud-put together web worker that depends concerning a "home framework" for the collection of data from a heterogeneous arrangement of gadgets, giving a significant level portrayal of the proposed structural model of the initiated openings according to the market viewpoint, and of how it very well may be utilized by specialist co-ops and medical care applications designers remembering subtleties for how the webserver Application Programming Interfaces (API) is executed in our case.

Hassanalieragh et al. (2015) Improvement in the field of medication, from the stream, post facto, dissect and-treat responsive perspective to a proactive construction for representation of ailments at a beginning phase, joined with the evasion, and in the overall arrangement of wellbeing as opposed to the illness, then engage personalization of treatment and the leader's options centered around particularly to the specific conditions and needs of the individual finally help with decreasing the cost of clinical consideration while simultaneously further creating results. In this paper, the creator includes the odds and hardships for IoT in understanding this thought of things to happen to clinical consideration.

Byung Mun Lee (2014) propose the requirements for the design of the clinical study model to be offered on the open IoT stage as the clinical benefits organization are given to customers or patients an accessible IoT stage was proposed. The location is planned as a self-administration model for unrelieved (constant) infections. However, it can stretch out the engineering to have distant health checking capacities.

Fengou et al. (2013) proposed the e-Health telemonitoring framework, which has a few segments performing information collection, information knowledge and information execution. The researcher expanded the ETSI/Parlay designing with new help capacity highlights and sensors, profiling, and security instruments. The proposed framework serves to the predictable compromise, inside the e-Health organization structure, of various workplaces given by both the key figuring establishment and correspondence, similar to the patient's profile and setting sensor associations.

David Lake et al. (2013) the data-driven IoT point of view is included as the creators explicitly depicted the data stream from sensors to direct entries and focus and toward the finish to cloud-based data vaults. The creators have moreover perceived focus guidelines and industry bodies where eHealth-M2MIoT standardization is in progress. They proposed a plan and design that upholds the development and giving the frameworks.

Charalampos Doukas et al. (2012) Offers a phase reliant upon Cloud Computing for compact and wearable clinical benefits sensors on the board, showing how the IoT point of view applied to

inevitable clinical consideration. The creator proposed a Cloud-based system those arrangements with the sensor data. The wearable material sensors accumulate biosignals from the customer (like a heartbeat, ECG, oxygen drenching and temperature, etc.), development data (every single through accelerometer) and critical data (like region, incorporating temperature, activity status, etc.)

Wei Zhao et al. (2011) proposed a combination of web innovation and Technology on IOT that incorporates the actual world and nonexistent space on a typical stage to decrease the imperatives of fanciful space and give mind-blowing, different, and progressed administrations zeroing in on individuals, which have not been accomplished. This paper dissects the chance and related issues of offered that best in class types of assistance for human health the executives in reality and examination bearing of clinical innovation on IoT. The likely heading for the combination of Internet innovation and innovation on IoT, body sensor organization, and data administrations is recommended.

Robert S. H. Istepanian et al. (2011) present another amalgamated idea of the Internet of m-health Things (m-IoT). m-IoT is another idea that coordinates with the functionalities of IoT and m-health being for other and inventive future applications. On a fundamental level, m-IoT presents another medical care availability worldview for future Internet-based medical care benefits that interconnect IP-based correspondence innovations, such as 6LoWPAN with arising 4G organizations. This paper will introduce overall m-IoT engineering dependent on 6LoWPAN innovation for estimation of internal heat level to act as an illustration for medical services application.

Jaraet al (2010) Suggests how IoT advancement is applied in a medication structure to look at medications to recognize the Adverse Drugs Reaction (ADR), extreme effects of medication excipients, burdens, sensitivities, and contraindications identified with liver and renal flaws and dangerous accidental impacts during pregnancy. The structure gives a redesigned way to aid specialists in drug supporting and clinical decisions like this. The course of action presented relies upon scanner label ID developments and NFC (Near Field Communication), which offer been composed of all things considered contraptions like progressed cells, PDAs and Personal computers.

Abdellah Chehri et al. (2010), The maker evaluates delicate sensor network plans for e-healthy applications. The researcher described an overall structure plan of e-Health application revolved around the association between a couple of parts of the system, for example, body Sensor Network (BSN), Zigbee, intelligent house and clinical call local area. This plan subject to the different complementary far off correspondence access networks between the patient and the system through WiMax, UMTS, and the Internet.

Deng Dazhi proposed a system subject to the foundation of coal mine endeavours composed creation computerization control structure, and coal mine undertaking should make the essential electromechanical equipment and working conditions informational index, then use GIS insight electronic stuff the leader's network to information supervise and screen the electromechanical supplies, similar to this figure an examination on the prosperity status of the electromechanical kinds of hardware, ultimately following the weaknesses and likely risks in these provisions and perform required help.

IV.CONCLUSION

In general, An IoT-based wise home-driven medical care stage (iHome framework), which consistently associates the smart sensors appended to the human body for observing for everyday drug the board. This venture can lessen the patient's migraine to visit a specialist each time he needs to check his heartbeat rate. Using this implementation, both patients and doctors saved their time and also, the doctor can quickly deal with an emergency with multiple patients.

REFERENCES

[1]. Pang, "Technologies and architectures of the Internet-of-Things (IoT) for health and well-being," M.S. thesis, Dept. Electron. Comput. Syst.,KTH-Roy. Inst. Technol., Stockholm, Sweden, Jan. 2013.

[2]. Q. Zhu, R. Wang, Q. Chen, Y. Liu, and W. Qin, "IOTgateway: Bridging wireless sensor networks into Internet of Things" in Proc. IEEE/IFIP 8th Int. Conf. Embedded Ubiquitous Comput. (EUC), Dec. 2010, pp. 347352.

[3]. I. Gronbaek, "Architecture for the Internet of Things(IoT): API and interconnect," in Proc. Int. Conf. SensorTechnol. Appl., Aug. 2008, pp. 802807.

[4]. Yang, Geng, Li Xie, MattiMäntysalo, Xiaolin Zhou, Zhibo Pang, Li Da Xu, Sharon Kao-Walter, Qiang Chen, and Li-RongZheng. "A health-IoT platform based on the integration of intelligent packaging, unobtrusive bio-sensor, and intelligent medicine box." IEEE transactions on industrial informatics 10, no. 4 (2014): 2180-2191.

[5]. Pescosolido, L., Berta, R., Scalise, L., Revel, G.M., De Gloria, A. and Orlandi, G., 2016, September. An IoT-inspired cloud-based web service architecture for e-Health applications. In Smart Cities Conference (ISC2), 2016 IEEE International (pp. 1-4). IEEE.

[6]. Hassanalieragh, Moeen, Alex Page, TolgaSoyata, Gaurav Sharma, Mehmet Aktas, Gonzalo Mateos, BurakKantarci, and SilvanaAndreescu. "Health monitoring and management using internet-of-things (iot) sensing with cloud-basedprocessing: Opportunities and challenges." In Services Computing (SCC), 2015 IEEE International Conference on,pp. 285-292. IEEE, 2015.

[7]. B. M. Lee, "Design requirements for IoT healthcare model using an open IoT platform," Computer, vol. 4, p. 5,2014.Volume 1 | Issue 1 | July-August 2016 | www.ijsrcseit.com

[8]. M. Fengou, G. Mantas,D. Lymberopoulos,N.Komninos, S. Fengos,and N. Lazarou, "A new framework architecture for next generation ehealthservices," Biomedical and Health Informatics, IEEE Journal of,vol. 17, no. 1, pp.9–18, 2013.

[9]. D. Lake, R. Milito, M. Morrow, and R. Vargheese, "Internet ofthings: Architectural framework for ehealth security" Journal of ICT Standardization, River Publishing,vol. 1, 2014.

[10]. Doukas, Charalampos, and IliasMaglogiannis. "Bringing IoT and cloud computing towards pervasive healthcare." In Innovative Mobile and Internet Services in Ubiquitous Computing (IMIS), 2012 Sixth International Conference on, pp. 922-926. IEEE, 2012.

[11]. Zhao, Wei, Chaowei Wang, and YorieNakahira, "Medical application on internet of things." In Communication Technology and Application (ICCTA 2011), IET International Conference on, pp. 660-665. IET,2011.

[12]. Istepanian, Robert SH, AlaSungoor, Ali Faisal, and Nada Philip. "Internet of m-health Things "m-IoT"." In Assisted Living 2011, IET Seminar on, pp. 1-3. IET, 2011.

[13]. Jara, Antonio J., Alberto F. Alcolea, M. A. Zamora, AFGómez Skarmeta, and Mona Alsaedy. "Drugs interaction checker based on IoT." In Internet of Things (IOT), 2010, pp.1-8. IEEE, 2010.

[14]. A. Chehri, H. Mouftah, and G. Jeon, "A smart network architecturefor e-health applications," in Intelligent Interactive Multimedia Systems and Services. Springer Berlin Heidelberg, 2010, pp. 157–166.

[15]. Dazhi, Deng. "Research on coal mine electromechanical equipment closed-loop management system based on IOT and information technology." In Artificial

Intelligence, Management Science and Electronic Commerce (AIMSEC), 2011 2nd International Conference on, pp. 5101-5104. IEEE, 2011.

[16]. P. Patierno. (2014, June) "IoT Protocols Landscape".Online.Available:http://www.slideshare.net/paolopat/io-tprotocols-landscape

[17]. Y. Chen and R. Sion, "Costs and security in clouds," in Secure Cloud Computing. Springer, 2014, pp. 31–56.

[18]. M. Valtonen. (2010, March) "The bitrate limits of HSPA+ enhanced uplink "Online.Available:http:// omnitelecom.s3.frantic.com/2011/0 5/the bitrate limits of hspa enhanced uplink.pdf

[19]. S. Saguna, A. Zaslavsky, and D. Chakraborty, "Complexactivityrecognition using context-driven activity theory and activity signatures,"ACM Transactions on Computer-HumanInteraction (TOCHI), vol. 20,no. 6, p. 32, 2013.