IOT BASED ADVANCED MEDICAL ASSISTANCE

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LITERATURE SURVEY

Seema S Kanagond - Dept. of E & C, KLEIT, Hubballi India, Smart assistive device, 2020 IEEE International Conference on Distributed Computing, VLSI, Electrical Circuits and Robotics (DISCOVER), 30-31 October 2020

With improvement in technology, there have been attempts to utilize the new technology in various areas to improve the quality of human life. There is a paradigm shift in health care sector with technology invention. The main objective of the work proposed in this paper is to provide an assisting device for senior citizens who have talking and moving disabilities. A smart assistive device can support senior citizens that is operated based on touch screen. The system consists of Arduino Uno, 433MHz RF transmitter and receiver, 2.4- inch TFT LCD touch shield, 16*2 LCD module and I2C module. Elderly people can communicate family members by using TFT touch shield for their essential needs. This will help caretaker to respond accordingly. This system is helpful not only for elderly people but also dumb and bedridden people to communicate with other members of the family.

P.Ranjana - Department of Computer Science and Engineering, Hindustan Institute of Technology and Science, Chennai India and Elizabeth Alexander - Department of Computer Science and Engineering, Hindustan Institute of Technology and Science, Chennai India, Automatic Medicine Reminder System, 2018 IEEE International Conference on Computational Intelligence and Computing Research (ICCIC), 2018

In today's life, human beings face difficulty to keep in mind the medicines they required to take. This paper proposes a model of automatic medicine reminder and apothecary system. This system can relieve unevenness in taking recommended dosage of pills on time prescribed by the doctor and switch from ways primarily reliant with the memory of the human being insignificant regulation, hence people can be freed doing wrong things due to human error like taking pill at different time with incorrect dosage. Various medicine boxes exist in the market. The proposed medicine box would help people who are under medication mainly for old persons to take the medicine on time without forgetting. It also continuously monitor the people's health condition like Blood pressure, ECG through the tensors kept at home and inform them to take necessary action. A person's life can be saved by this system. Human effort can also be decreased by this health alert and medicine remainder.

Maresova, Petra; Tomsone, Signe; Lameski, Petre; Madureira, Joana; Mendes, Ana; Zdravevski, Eftim; Chorbev, Ivan; Trajkovik, Vladimir; Ellen, Moriah; Rodile, Kasper, Wearable devices, Current Alzheimer Research, Volume 15, Number 10, 2018, pp. 975-983(9), 2018

In the nineties, numerous studies began to highlight the problem of the increasing number of people with Alzheimer's disease in developed countries, especially in the context of demographic progress. At the same time, the 21st century is typical of the development of advanced technologies that penetrate all areas of human life. Digital devices, sensors, and intelligent applications are tools that can help seniors and allow better communication and control of their caregivers. The aim of the paper is to provide an up-to-date summary of the use of technological solutions for improving health and safety for people with Alzheimer's disease. Firstly, the problems and needs of senior citizens with Alzheimer's disease (AD) and their caregivers are specified. Secondly, a scoping review is performed regarding the technological solutions suggested to assist this specific group of patients. Works obtained from the following libraries are used in this scoping review: Web of Science, PubMed, Springer, ACM and IEEE Xplore. Four independent reviewers screened the identified records and selected relevant articles which were published in the period from 2007 to 2018. A total of 6,705 publications were selected. In all, 128 full papers were screened. Results obtained from the relevant studies were furthermore divided into the following categories according to the type and use of technologies: devices, processing, and activity recognition. The leading technological solution in the category of devices are wearables and ambient non invasive sensors. The introduction and utilization of these technologies, however, bring about challenges in acceptability, durability, ease of use, communication, and power requirements. Furthermore, it needs to be pointed out that these technological solutions should be based on open standards.

Naveen Kumar Chitkara University, Surya Narayan Panda Chitkara University, Preethi Pradhan Chitkara University, Rajesh Kumar KaushalChitkara University, Monitoring via remote, 2018

In recent years, a lot of research work has been done to transmit vital parameters of the patient using IOT (Internet of Things). The information related to Patient is sent by means of WBAN (Wireless Body Area Network) and sensors to the healthcare database. This has been shown a great potential to transmit vital parameter of the patient at a remote location. Remote monitoring of patient(s), including vital signs, sound and video is to be transmitted, particularly when a patient is in transit. By transmitting the imperative parameters of the patient to a specialist diminishes, the ideal opportunity for starting treatment and permits the emergency crew to be better prepared. This will facilitate a doctor to make a diagnostic conclusion.

Hayley Robinson, Bruce MacDonald & Elizabeth Broadbent, Assistance through robots, International Journal of Social Robotics volume 6, pages575–591, 2014

This review aimed to identify the areas of need that older people have, and the available solutions. In particular, the robotic solutions are explored and critiqued and areas for future development identified. The literature was reviewed for factors that influence admission to nursing home care, and for technological solutions to these factors. The main issues facing older people are physical decline, cognitive decline, health management, and psychosocial issues. Robots exist that may meet some of the identified issues but gaps where robots could be developed include delivering

interventions to prevent physical decline occurring and robots with multiple functi ons, including a range of cognitive stimuli and health education. To reduce barriers to acceptance, robots designed to provide physical and healthcare assistance should have a serious appearance. On the other hand animal-like robots can address psychosocial issues and function like pets. While smart phones and computers can offer some solutions, robots may promote adherence due to a social presence. Robots are being developed to address areas of need in older people, including physical, cognitive, medical and psychosocial issues. However more focus could be placed on developing preventative interventions, multifunctional robots, greater educational content and motivational aspects of appearance and interaction style.

E. Broadbent, R. Stafford & B. MacDonald, Guidance through robot, International Journal of Social Robotics volume 1, Article number: 319, 2009

The rapidly ageing population is placing increasing strain on healthcare services. Robots have been proposed as a way to assist people to stay healthy and safe in their own homes. However, despite the need for such assistive devices and the success of some healthcare robots, other robots have had a poor response. This article reviews the literature about human responses to healthcare robots and summarises the variables that have been found to influence responses. It may be possible to increase acceptance of healthcare robots by properly assessing the needs of the human user and then matching the robot's role, appearance and behaviour to these needs. Because robots have limitations in their abilities, another way to increase acceptance may be to modify the expectations of users to better match robots' abilities. More research needs to investigate potential users' needs and expectations in specific situations and whether interventions to increase the match between robot and human can increase acceptance.

Divya Ganesh - Department of Electronics and Communication Engineering, Sri Sairam Engineering College Chennai India, Gayathri Seshadri - Department of Electronics and Communication Engineering, Sri Sairam Engineering College Chennai India, Sensors with Artificial Intelligence, 2019 International Conference on contemporary Computing and Informatics (IC3I), 12-14 December 2019

The advancements in medical science and technology has resulted in an increased life span thus the mortality rate of the elderly has greatly decreased. The elderly often gets cognitively impaired and require urgent medical services which when left unnoticed may lead to fatal consequen ces. Due to lack of social care support for these adults, there arises the need to develop cost-effective assistive healthcare technological solutions for taking care of the elders and giving them the best tech-friendly experience. Intelligent homes, an environment of sensors with artificial intelligence integrated with home appliances, can provide the best solution for continuous and remote monitoring of the health of the persons. This helps elders to control various devices, also get immediate attention from the family members, healthcare assistants and/or have frequent visit to hospitals. Basically, an intelligent bed can help elders to prevent the occurrence of bedsores and falling off from bed by monitoring the position of the person while they are in b ed. The latest Google Duplex Artificial Intelligence (AI) will be used as a voice-controlled speech recognition system, a personal assistant, to respond to the commands given by the person. We use Internet of Things (IoT) to establish the connectivity between the appliances, the user and his/her network. The major element of this system is a Raspberry Pi which will collect the data from the sensors and interprets

them to manage the home appliances like light, fan, door, alarm (in case of emergency), manage phone calls, television, and other home appliances. There is also an emergency module which has sensors attached to the body of the person which helps the caretakers, relatives or friends to know about the health of the person. It continuously monitors the body conditions of the person and alerts his/her network in case of emergency.

Akhilesh Agrawal - Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Science Wardha India and Vedant Yede - Dept. of E and TC Engineering, Y. C. College of Engineering, Nagpur India, Pill reminder, 2021 Fifth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), 2021

When it comes to loved ones, humans strive to keep them fit and healthy at all times. But what if they forget to take their medicine and become ill as a result? Hence, many patients require medication at the health care center, and it is difficult for us to remind each patient to take medicine at a specific time. Traditional way requires lot of human effort to remind the patient to take medicine. But in this digital era, humans make use of machines to do certain works. Pill remainder has a wide range of uses, including use by patients at home, doctors in hospitals, and a variety of other settings. This paper presents a working of advance pill remainder setup, which can remove asymmetry in taking medicine dosages and remind the patient to take medicine at prescribed time and particular number of dosages. In this approach, the users are switching from human memory to automated supervision.

Adriana Alexandru; Dora Coardos; Eleonora Tudora – auth, IOT based remote monitoring, 2019 22nd International Conference on Control Systems and Computer Science (CSCS), 28-30 May 2019

In the context of a fast aging population and of its increasing need for healthcare and assistance, ubiquitous usage of Internet of Things (IoT)-based smart applications can mitigate the consequential social burden. Connected sensors and devices inside the seniors' home produce a signi ficant amount of data about them and their daily activities. IoT and Big Data Analytics (BDA) are an important mean to derive knowledge and support for improving the life conditions for the older adults by increasing the role of Information and Communication Technology (ICT) for accomplish this goal. IoT analytics can aid in personalizing applications that benefit both elderly people and the ever-growing industries that need adapt their offer to the consumer's profiles. This paper presents a new platform th at enables innovative analytics on IoT captured data from smart residences of elderly people. A solution based on the use of fog nodes and cloud system is suggested in order to afford data-driven services and to manage the complexity and provision of the n ecessary resources for online and offline data processing, storage, and analysis. The requirements and the design of the platform architecture are underlined. We propose an architecture of a platform based on fog computing nodes coupled with cloud computing that offers an efficient near real time processing of the big data resulted from IoT system that provides insights and data processing and analysis facilities into cloud. This integrated design has an important impact on time sensitive applications by ad dressing the latency issues of cloud.

P.A. Harsha Vardhini; M.Shiva Harsha; P.Naga Sai; P. Srikanth, Smart medicine box, 2020 12th International Conference on Computational Intelligence and Communication Networks (CICN), 25-26 September 2020

Medicine consumption has increased by a drastic rate and has become a common practice by every person. With the tremendous growth in the medical field technology, many dreadful diseases are being cured. Evolution of IoT provides various solutions for the major challe nges faced by health systems. Development of smart homes and smart cities with e-medicine health services strengthened the concept of patient centric IoT based health eco system. Reminding self for timely consumption of medicine is necessary. Memory Impairment known as amnesia in medical terms is the memory loss or unusual forgetfulness. For elderly patients, having a problem of remembering the schedules for their medicine intake, proposed medicine assistive system keeps in track of the medication schedule reminds the intake at the specified time. Cost effective smart medicine box is designed and implemented that even illiterates, elderly and poor people can also afford and easily make use of it.