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Intelligent Medicine Recognition System for Chronic Patients using Raspberry pi

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Abstract – *Now a days the count of chronic patients with number of health problems has increased and it happens because of the amount of drug increases in patient's body because of having lots of medicines as well as wrong medicines. Therefore I am going to implemented medicine recognition system for patients having more than one disease. The proposed methodology will help chronic patients to take right medicines on right time as per the advice from doctors and it also prevent them from taking wrong medicines. And it will be more suitable for elderly patients in terms of good health and healthy life. The system consist of medicine recognition device, an android app on mobile and cloud based platform. The system can effectively work to reduce the amount of drug taken by the chronic patients from wrong medicines.*

***Key Words*: Chronic disease, Medicine Recognition, android app, cloud based platform, Raspberry pi.**

1. INTRODUCTION

At present, the chronic disease has become growing threat in the world. The current report of WHO gives us idea about rising conditions of chronic disease. WHO reports elaborate that overall 80% of people in low-income countries are going through chronic disease. And this threat has become challenge for all the doctors and health organizations.

This disease is mostly found in elderly peoples because of low immunity system and they have become easy food for this threat. Therefore it has become more hazardous for elderly patients. So to overcome this problem the system is helpful for the patients and it is going to help them to take right medicines at right time. And thus it results in minimizing the count of death as well as reducing the drug content in patient's body.

The Drug content plays an important role in patient's life as it directly going to affect on their health. Increased drug content in patients body will results in unexpected death of patients. So it is important to work on this particular area. Therefore this system will going to help us to look over with the same and to overcome the problem.

This system will provides us daily report of patients medicine intake.so it will help us to monitor patient's growth. As well as it is also going to help doctors to check whether the patient is taking right medications or not. So in this way the system will become useful to reduce death rate.

2. LITERATURE

The paper describes the obstacles in patients monitoring systems for chronic disease managements. As the chronic disease mostly find in elderly patients the system provides the usability as per patients' requirements which is based on wireless networks to tackles such challenges. The system also describes the plan with terms and conditions to tackle the difficulties. This system is using gadgets used by patients for tele monitoring. Television system and Cell phones are going to play major role in tele monitoring. Television can become poor platform in terms of usage and integration. So to overcome this problem the system is using cell phone with good internet connection that we can call it as Smartphone. The system has been tested on 22 users and also does questioning to get feedback for the system. The system is concentration on finding technology based problems and providing solutions to tackle them. [1]

The paper clears the ideas about the identification of medicine box. And represents a methods for each and every stages required for the concept and the three stages of identification are bar code, text and feature matching techniques. It will help aged as well as near blind persons to take medicines without any difficulty. The system informs them about the medicine it focuses on area like drug used then drug content. For identification this system is using mega pixel camera to monitor medicine box. The concepts having success rate of 80% in medicine box recognition. [2]

The paper provides pill feature extractor to divide them based on their shape and color. They have used three classifiers namely KNN, SVM and Bayes to assess feature extractor. The results shows that this is a magnificent feature extractor for the extraction of drug capsule pictures and they can be implant in real-time applications due to their speedy processing. The focus of this paper is to work on the identification of pills using the printed information which has printed on the pill. [3]

The paper gives an idea about the rise in the use of IOT (internet of things) technology to reduce the pressure on healthcare systems because of increased amount of chronic

disease. This survey describes the challenges faced by the healthcare IOT in the area of safety, privacy, relevancy and flaws. The focus of this survey is on use of sensors for monitoring health parameters. Paper also suggest a model of application in future IOT healthcare systems. Also it contribute in recognizing all important aspects of an end-to-end Internet of Things healthcare system, and presents a general model which can be applied to all IoT-based healthcare systems. [4]

This paper gives a detailed study of Faster Region based convolution neural networks (R-CNN) used for the object detection. It also describes the region proposal network (RPN) which is fully convolution network used by Faster R-CNN. The paper shows integration of both RPN and R-CNN into single network by splitting their convolution property. The paper also describe algorithmic change computing proposals with a deep convolutional neural network results in graceful and successful solution. The paper also provides observation that faster RCNN to give rise to region proposals. As it also build the RPN by putting extra convolutional layers that concurrently revert region bounds. [5]

This paper elaborate the user satisfaction detection system. In which the two multimedia contents will be checked that are speech and facial image of user. The satisfaction results will be declared in three outputs which are satisfied, not satisfied and indifferent. So this paper make a use of interactive media to get the signals from users. The signals are nothing but speech and images. The speech and facial image of user are captured and then send it over the cloud network and then examine. An automated home is provided with interactive media sensors for getting the signals. The result will be share with the appropriate stakeholder's. The system provides 93% accuracy in satisfaction detection. [6]

The system developed is smart phone based medication adherence observation systems. Used to get patients movement data during pill intake. The system introduced smart watch application which get data from inertial sensors to observe the sequence of movement done during person's pill intake. For data storage system makes use of Amazon Web Services. And for examination it uses Apache Spark. This paper elaborates concepts which overcomes the problem of poor pill adherence which is harmful for the person's health. [7]

The paper represents an idea about the human action monitoring to observe the status of patients and elder persons for healthcare. It clears the concept of R3D (recurrent 3D convolution neural) network which is used to withdraw features for human action recognition. Person's movement can be identified by enabling well organized and precise monitoring of human behaviors, which can show multipart complications attributed to inequality in point of view, nature of person, resolution and movement speed of individuals, etc. [8]

Paper provides a system for nurses and workers in hospitals to monitor and analyze overall activities of patients by wearing wellness tracker. The system includes four stages nothing but gathering of data, accession of data, transformation of data, and customize health monitoring scheme. For the accession and collection of data from number of monitoring devices this paper has provided some data preparing plans. This system permits individuals to deeply observe their vital signs and inform medical staff about the change occur. System successfully works on eliminating the problem of human error, time and cost. [9]

The paper represents an idea about intelligent health diagnosis technique which make use of automatically generated ontology and web based personal health record. System also provide patients diagnosis progress result, which can be used to monitor progress of disease by observing change in symptoms. The system also provides patients progress information which is used to observe the progress and changes in patients' health. This system is assessed by comparing the existing symptoms results. The assessment result shows the improved accuracy and sends the information to healthcare [10]

This paper presents a medication revolution monitoring system which is based on collective sensing technique. This system make use of a medicine bottle that encloses a combination of a switch sensor, a MEMS accelerometer, a load cell, and a wireless interface. The medicine bottle was developed using 3D printer and used it with sensors for the medication adherence observation applications. The system provides results which gives monitoring of the developed multi-sensor system for pill intake. [11]

3. CONCLUSION

Now a days a lot of people, including elderly people, are suffering from chronic diseases. And it's leading them to take multiple medicines at a time and therefore the drug content in the patient's body is increasing rapidly and it resulted into the rapid death of patients. Therefore, to overcome this problem I am going to develop medicine recognition system which will help them to take right medicines at right time. And also prevent them from taking wrong medicines.

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