



Medbot - An Helper To The Patients

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Abstract- Humans are the best creature that god has ever created. They play a vital role in the development of nation and also new technologies. But the real concern is about the health of humans. The people of today are facing many health issues, mainly anxiety, stress, sudden rise in body temperature, etc. A large number of humans are prone to various kinds of diseases because of lack of care and lack of dietary foods. So, caring should be done in such a way that no individual should seek doctor's help for such mediate level health issues. The proposed system to properly monitor the health of the rest-cure patients and also family members. The rest-cure patient is monitored with sensors that are kept near them, which observes and records the temperature and BP. The objective is to give an automated solution to improve the caring of every individual person's health in a family and to provide medication and also helping them by developing an AI based robot.

Keywords- AI(Artificial Intelligence), sensors, Bayesian network, MPC(Model Predictive Control), Decision tree algorithm, NLP (Natural Language Processing), RNN (Recurrent Neural Network).

I. Introduction

The modest and top most companies and restaurants are using robot in the usage welcoming and as a chat bot. There are various works related to medical field robotics but majority focuses on the surgery. But the paper provides healthcare solution by using advanced technologies like AI and RNN. The advancement in sensor technology has made sensors more powerful, cheaper and smaller in size, which has lead to a large scale deployment of the sensors. Thus, many sensors already in use and is prognosticated that their usage and deployment will grow rapidly in the next few decades. Ultimately, these sensors will generate huge amount of data and these data will be of no value if we don't analyze, interpret and understand it. The sensor's data needs to controlled, collected and exchanged between physical devices and here is where IOT plays its role. IOT connects the smart devices embedded with wearable sensors around us and communicates spontaneously with each other. Less human intervention makes IOT a crucial technology for automation. With the world moving towards automation, it is essential that everything stays connected to the internet but involves less man power for ease of access to data. Now, with the sensors giving the necessary data

linked via IOT, it is now required that process this data in a way that significant information is obtained. Huge amount of data is to be stored and also the monitored data rate must be updated so as to provide as an evidence or as a report at the time of emergency and here is where neural network plays a crucial role, which acts as a neuron as like human neuron to robots. Decision tree algorithm is also used in this system. It plays a vital role in deciding medication needs to be provided. The core element of automation is machine to machine communication which is efficiently performed with the help of IOT, AI and Bayesian network. NLP is used basically to understand human's instruction or query or interaction with bots. This paper consists of four sections. Section I gives introduction to the technology used and algorithms used-AI, NLP, Bayesian network, and sensors. Section II presents related work of papers in the field of medical assistance bot. In section III, The proposed architecture for medical assistance bot using RNN. Section IV concludes the paper explaining the future works and research possibilities.

II. Related Work

The objective of medbot is to provide the correct diagnosis and treatment for humans when they feel ill by properly monitoring their BP. There are various related works based on medic assisted bot but mostly related to surgery.^[1] Dr. Bernadette keefe have proposed a system which is used to stay touched with doctors by communicating through the bot by patient. The number of animals in the form are recorded and the conditions are set accordingly for each animal to prevent diseases and help the farmers. ^[2] Few researchers at Toyohashi University in Japan have developed a bot named Terapio, which acts as a assistance for nurses by carrying things to the patients. It also has EMR of every individual patient. Context as defined by ^[3] Moxi, a medical assistance based robot is developed to help nurses and not to replace them. They have been developed to assist nurses and also friendly.^[4] Xiaoyi, an AI powered robot, developed by Chinese people is designed to capture and analyze patient information.

There are three approaches to build a context-aware application and they are

- a) No application-level context model**
- b) Implicit context model**
- c) Explicit model.**

The features of context-aware are:

Presentation:

The information and users needs to presented to the end user can be decided with the help of context.

Execution:

The tasks that need to be executed automatically based on the conditions given by context.

Tagging:

The context needs to be tagged with the sensor data for processing and understanding.

Context annotation is plays a vital role in context-aware computing research. There are two types of context:

Primary context:

Information that is retrieved without using existing context and performing any kind of sensor data fusion operations (e.g. GPS sensor readings as location information).

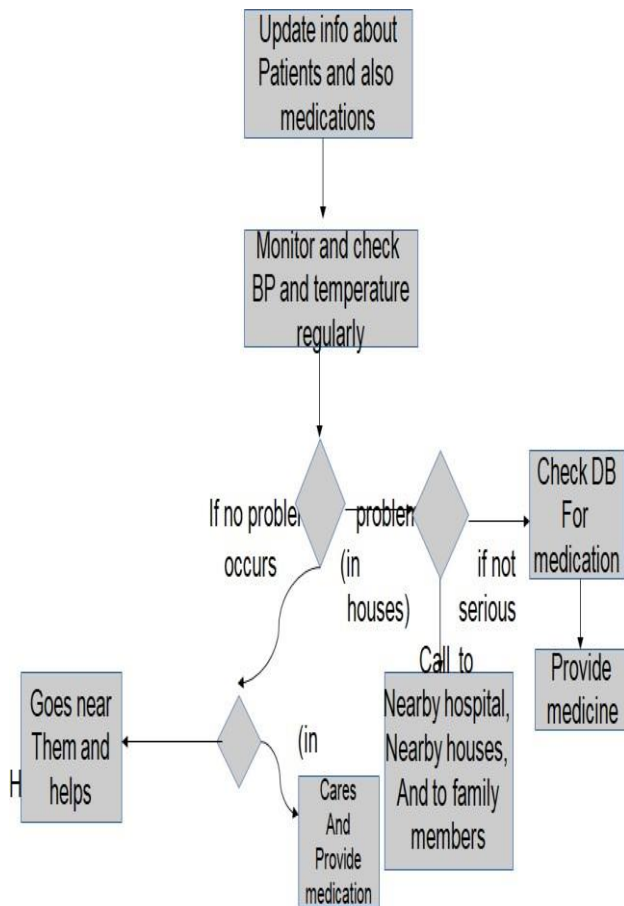
Secondary context:

Information that can be computed using primary context. The secondary context can be computed by using sensor data fusion operations or data retrieval operations such as web service calls (e.g. Distance between two sensors is identified by applying sensor data fusion operations on two raw GPS sensor values).

Although there are various papers that propose architectures for healthcare management system, but they mainly concentrate on surgical fields and also to store information.

The paper focuses on providing a complete healthcare system that is developed using a AI based robot which closely monitors the family members or rest-cure patient by using wearable sensor tags that are connected with IOT.

III. Methoology



The details of the family members or patients are registered and updated in a database. The sensor is used to collect information like their temperature, and blood pressure, current vital conditions that is, the ability of the patient to be in normal condition. This information will be known as raw sensor data and it is stored in a database which resides in a cloud. These data which are stored can be retrieved neural network and is processed o provide medication or update database accurately. Now, we are going to use open source software called node.js which is based onJavaScript.

This software is used to initiate an interaction between the user (farmer) and the device through the administrator by sending an voice message. All communication activities are carried out be voice commands or by passing message.

Initially, each person or patient data has been uploaded in database which specifies the health issue, BP, temperature rate, health condition, and weight. The data acquired via the sensors, is the first phase of management and this data is stored in a database. This database is kept in a cloud for efficient usage of memory. The acquired data is represented in a way the end-user (farmer) can understand, known as **context modeling**.

This high level context information needs to be processed to give low-level sensor data and it is called the **context reasoning**. Whenever it is found that there is a change in the health condition of the human or rise in temperature, the sensors and the robot who is monitoring the sensor data. Now, the change in the state of the human health needs to be informed to the family members or doctor which is done by sending an XML message. Moreover, this information will also help the doctor to identify how much will be the possibility for the patient to survive.

All these data are finally updated in the database after taking the necessary actions. The proposed system is very efficient as it gives timely and precise information about the health condition of the humans which is the need of the hour to save them in order to maintain a balanced natural cycle.

IV. Conclusion and future work

Sensors being available at low costs and more power are very useful for accurate collection of necessary data.

IOT and AI is promisingly paving a bright future for automation because of its ability to connect all the physical devices to the internet with less human intervention. NLP is a perfect technology to train and to retrieve data. The system proves to be time efficient and a straightforward approach for processing complex data.

The future research aims at elaborating the computing methodologies and algorithms for AI and NLP and other use cases of Internet of Things which will enhance the automation process. The system can further be optimized for more effective implementation by identifying the metrics involved to solve the security issues.

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