Smart Hospital: A Medicine Dispenser Machine with Interaction of Doctor and Patient

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Abstract— With an increasing population in rural areas, many diseases may occur easily and can spread to others quickly. The aim of this paper is to develop the rural villages with smart hospitality. we have proposed a system that the patient can be in interaction of doctor when the doctor is in far away also. A small machine which recognize the basic information like checking the patient's temperature and heartbeat and primary diseases of patient and sends it to doctor. The doctor diagnoses the disease on seeing the patient information or data and sends the medicine for it.(ie) The patient is enquired about the diseases and the computer automatically diagnoses an output and sends a data to the doctor sitting at the server side. After receiving the list of medicines from the doctor, the machine automatically dispenses the medicine to patient.

Key words: Automatic dispenser machine, Heartbeat sensor, Temperature sensor

I. INTRODUCTION

An ideal technology-based health care system would be capable of fully integrating the technical and social aspects of patient care and therapy and permit a patient or a medical device implanted within the patient to communicate a remote computer system provider respective of the location of the patient, the remote computer system. While clinicians will continue to treat patients in accordance with accepted modem medical practice, developments in communication technology are making easy for patients to communicate from far distance with affordable cost and independent manner with on time.

Prior art methods of giving clinical medical services are generally limited to in-hospital For example, if a physician must review the performance parameters of an implantable medical device ("IMD") in a patient, it is required that the patient have to visit a clinic or hospital where the review can accomplished. If the medical conditions of a patient have to continuous monitoring then the patient may have to remain at the hospital. Additionally continuous monitoring of patient by the machine is restricted. Due to increased population with implanted medical devices, ever more hospitals, will be required to provide in-hospital to such patients, thus escalating healthcare costs. So ATM like setup is provided in all villages to give treatment for primary disease.

II. EXISTING SYSTEM

With the present advancements and the ongoing research on the improvement of the people health, the usage of information technology and the artificial intelligence is much essential to make a greater impact on the people health care system. In India many implementations have been done for automotive clinics using various databases and EMR's which has helped to increase the health care of the people.The current conditions of physical infrastructure, staff, access and usage, critical gaps and requirements in infrastructure and services related to health infrastructure in India is of major concern and of utmost importance[1].

Using the interactive voice response (IVR) technology, the existing hospital phones can be configured to act as automated answering machines, which give required instructions to the patients to book appointments for doctor, provide guidelines[2].

This existing paper is about the patient can be able to get medical treatment from far away doctor using the image processing method called optical character recognition.[3]

III. PROPOSED SYSTEM

The main goal of this paper is to provide primary medical facilities in all the rural regions and also to dispense the appropriate medicine for the primary disease by pill dispenser mechanical setup.

Proposed architecture and implementation

The block diagram of the proposed architecture is shown below
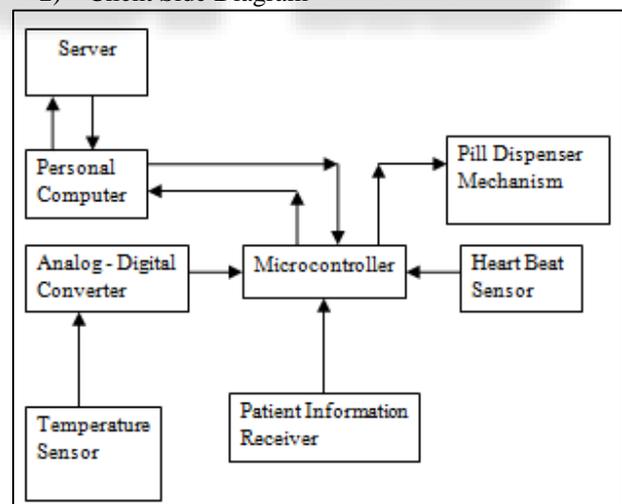
1) Main Block Diagram
2) Client Side Diagram
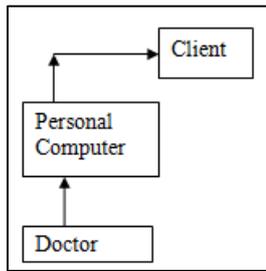

Fig. 1:

A. *Server Side Diagram*
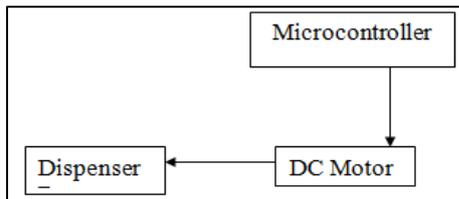

Fig. 2:

B. *Pill Dispenser Mechanism*

Fig. 3:

IV. WORKING

Output from temperature sensor is given to analog to digital converter. The digital Temperature output and heart beat sensor is given to microcontroller. Then voice counseling is made using VB talking engine. The response given by patient using key press and sensors output is given to PC from microcontroller .The PC sends the patients data base to the server where the doctor is available.

At the server side, doctor examine the data base provided by client side PC and sends the prescription to client side PC. Then the data signal is given to microcontroller which matches the received data ASCII code with ASCII code programmed already in microcontroller. If the code matches microcontroller sends the instruction to relay driver circuit which enables one of the two relay to drive the motor in forward direction and the appropriate pill is dispensed out. Then the driver circuit makes theanother relay to enable the motor to run in reverse direction and dispenser will close.

V. KEY INTERFACING

In this module, firstly key pad is directly interfaced with a Microcontroller. It is directly given as input to the microcontroller Pin and Maintained at +5v where the other terminal is connected to the gnd. When the user presses the key the Microcontroller pin is pulled down to low level(gnd) whereby the Microcontroller recognizes that the Key is pressed. When the microcontroller scans the input it automatically makes the pin High for next Key Scan.this key interface is used for the patients to enter their personnel details and the primary diseases of patient.

VI. TEMPERATURE SENSOR

In this module, the patient is checked for their temperature whether it is normal or not. The LM35 series is used as temperature sensors. The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the celcius temperature. After getting the temperature value, it is then send to doctor side for verification.

VII. HEART BEAT SENSOR

In this module, the patient is checked for their heart beat whether it is normal or not. In this proposed system, infrared heartbeat sensor is used for measuring heartbeat for the patients. After getting the result by the machine it is sent to doctor side.

VIII. PILL DISPENSER

In this module, the microcontroller receives the report to dispense the medicine for the patients. the data signal is given to microcontroller which matches the received data ASCII code with ASCII code programmed already in microcontroller. If the code matches microcontroller sends the instruction to relay driver circuit which enables one of the two relay to drive the motor in forward direction and the appropriate pill is dispensed out. Then the driver circuit makes the another relay to enable the motor to run in reverse direction and dispenser will close.

IX. MICROCONTROLLER

In this module, the microcontroller receives the data from temperature sensor, heartbeat sensor, and primary diseases details from patient through key interfacing. after send data to doctor side, the doctor sends the medicine details to microcontroller and the microcontroller will dispense the medicine through pill dispenser.

X. SERIAL COMMUNICATION

In order to make two devices communicate, whether they are desktop computers, microcontrollers, or any other of integrated circuit, we need a method of communication and an agreed-upon language. Here we use serial communication to communicate doctor side and patient side.
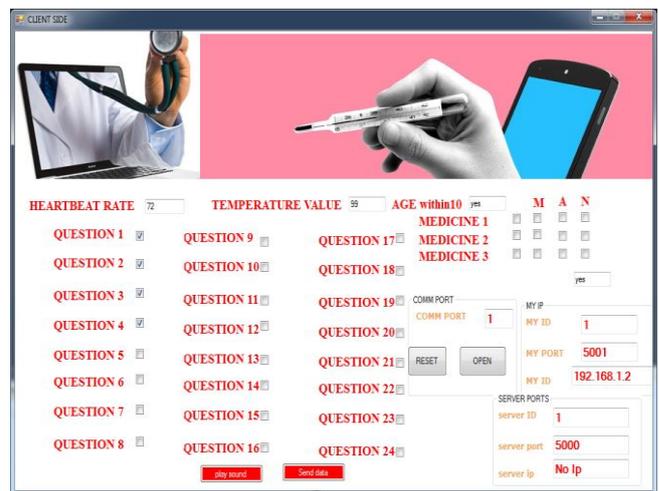
A. *Patient side*

Fig. 4: Patient Side
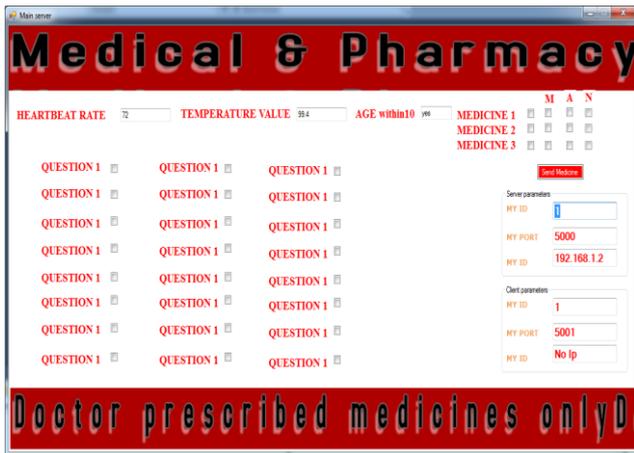
B. Doctor side

Fig. 5: Doctor Side

XI. CONCLUSION

From this paper it can be concluded that easy way of detecting diseases from patient through a machine and also used to measure temperature and heartbeat which in turn it helps doctor to diagnoses diseases from far away place. sensors also do a great deal in detecting and provide necessary information to doctor. Thus this method helps to provide treatment for patient in simple way.

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