24/7 General Medicine Vending Machine

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Abstract - Medical facilities available in metropolitan cities and towns are much reachable by the people compared to the people in the rural areas and villages. Getting medicines from the medical stores is a time taking process and medical stores may or may not available all the time. So, this can be considered as the manual process. Automatic pill dispenser is the technique which can reduce the wastage of time. Due to insufficient transport facilities in many places people are not easily approachable to the hospitals. Senior citizens and physically challenged person find difficult to travel and also feel exhausted to wait in the queue for a long time to consult a doctor.

Keywords: **Raspberry Pi***, GSM, Vending Machine;*

I. Introduction

24/7 General medicine vending machine, is a device that can send out medicines. Device can fetch out the medicines automatically for the basic common symptoms find the medicines provided by the machine are only for the timely relief and in emergency case, the person has to get professional medical assistance. People at rural places cannot get access to medicines that are providing to them freely by the government. The aim of this project is that people would be able to access the medicines via patient kiosks in public places such as pharmacies, malls, bus / railway stations, on highways, areas where medical stores are limited. Regular replenishment can help in knowing the requirements in the region but also ensure availability of medicines 24x7. This device is aimed to be helpful for the illiterate and underprivileged sectors of India.

V. Literature Review

In "ZhardEM Medicine Vending Machine"[1], The aim of the project was to implement a business idea that would provide a solution to a particular problem with use of microcontrollers, in particular Arduino or Raspberry Pi. One of the constantly overlooked problems in the Nazarbayev University is the absence of twenty-four-hours medicine provider. There is a medical center, but it does not work at night, and the only pharmacy is located not in the main dormitory. Thus,the medicine vending machine is designed to fill this gap.The types of medicine that are to be offered do not require a prescription, therefore there is no need for a medical specialist and special permissions. Also, the number of products offered will be small and consist only of the most frequently used medicament types that can be usually found in a first-aid kit.

In "All Time Medicine and Health Device"[2], a prototype of the All Time Medicine and Health device was developed for people in need of medicines and health-care. It constists of a vending machine to provide drugs prescribed by a doctor for anyone who requests it. Raspberry-pi, a single board computer is used for the operation of the vending machine. The are two parts of this system a physical vending machine, and a online interface for doctors to provide prescriptions electronically and a database to store patient information and prescriptions. To get the medicines one must authenticate himself by providing his user credentials. There are two interfaces for the portal, an android application and a website, users can access either and check all their details after yielding their user credentials.

In "Any time medical assistance and medicine vending machine using machine learning"[3], the main aim was to make a device that can be installed in public places and could be accessed by anyone at anytime of the day. The naïve bayes algorithm was used to classify the data. And basic health measurement equipment were to be placed in the machine, like a simple blood pressure, blood sugar and temperature measurement devices. This system is to be linked to a vending machine to dispense respective medicines. It's basic aim is to treat small medical ailments and and to give first aid.

In "Automatic Medicine Vending Machine"[4], the basic aim is to dispense medicine based on the user's requirements. The is a smart card system for authentication, the information from the user's smart card and his/her keyboard input is sent to the microcontroller for processing. Then with the help of the motor drivers present on the machine.

Medicines are placed in separate compartments, and when needed the motors from the respective compartments which the user's requested medicines are present and those medicines are wielded to the user.

In "An IoT based Intelligent Medicine Box"[5], A modern health care and in addition to this intelligent home monitoring, controlling embedded system capable of taking care of the patients from all aspects, covering personalized medication, vital signs monitoring. The project gives an experimental idea of patient's health condition and monitor environmental conditions and controlling. The platform involves an open-platform-based intelligent medicine box with enhanced connectivity and interchange ability for the integration of devices and services, Intelligent pharmaceutical packing with communication capability enabled by Zigbee and actuation capability enabled by functional materials and, flexible and wearable bio-medical sensor device enabled. The proposed platform devices with in-home healthcare services for improved user experience and service efficiency. The feasibility of the implemented Health platform has been proven in field trials and if any vital signs recognized then gives alert to predefine care takers through SMS alert and monitor the conditions continuously with an IP address of WIFI.

II. Methodology

The system has microcontroller Raspberry pi which is an 8-bit RISK microcontroller board which controls the functionality of all the component in the system. The system is connected with the hardware components like RFID module, Keypad module, LCD module,
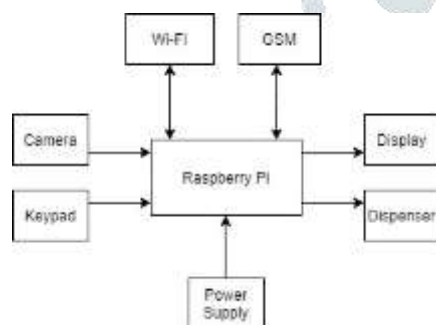
GSM module, Wi-Fi module and Dispenser. Pharmaceutical administering procedure is done in four stages.

1. Confirmation of enrolled client.

2. Choice of required pharmaceutical.

3. Installment.

4. Gathering of asked for pharmaceutical.

An intelligent pillbox system based on IoT has been designed and developed to avail medicine 24/7 in most of the places where it is not possible to have pharmacy stores like highway, shopping mall, country side area etc.

The main objectives of the purposed system are:

- The camera will scan the medicine name from the description.

- It will promote ethicality, only the medicine which is prescribed by the doctor will be dispensed.

- If the user will not have sufficient balance, the system will ask the user to recharge the card.

- The system will send a notification to the higher authority if the medicine will get over.

- We can send an emergency notification to the nearest hospital if someone is in danger with the help of pillbox.

III. Flowchart

- The system will dispense the medicines as per the prescription.

- The camera will scan the medicine name from the description .

- User needs to carry out the identification process to access the system.

- The input will be provided by the user through the keypad. The medicine dispensing function is fully controlled by the motor drivers.

- The user can then pick up the medicine from the outlet.

- The process will be fully automatic with least manual support. (Most of the procedure has been carried out on its, user just have to give the input and take the dispensed medicine. All the features are automated that's why it is called as intelligent system)

- The main objective of the project is to develop a system to deliver medicine 24x7.

IV. Predicted Outcome

- First the machine will shows WELCOME TO ALL TIME MEDICINE 24X7 .

- The camera module will activate and the user is prompted to show the prescription to the camera.

- If the requested is available the request is passed, else service is denied and an error message is shown.

- The pharmaceutical is administered, then outstanding parity in the record of the client is shown.

VI. Results

Snapshot1 : Prototype Model

Snapshot 2 : Device Output/Input

VII. Future Scope

Our project is eco-friendly and does not causes any pollution and it is a new invention many practices are being carried out to make it uses for many fields The following new features may be added to improve performance of the Automated medicine dispensing machine:

- Implementation of system using NFC card: Currently we are implementing the system camera and we could use NFC card instead.

- Delivery of OTC medicine and first aid along with prescribed medication.

- In current system only prescribed medicines are dispensed but in future user can dispense medicine which does not require prescription like medicines that relieve aches, pains, and itches and first aid.

- The pillbox will accept coin payment. Currently, the payment is being carried out using smart card and those who don't have it can't purchase medicine from the pillbox. But in future cash accepting module will be implemented which will use to concept of image processing from the reorganization of the coin

VIII. CONCLUSION

The 24/7 General Medicine Vending Machine offers a flexible and simple solution for extending basic healthcare to all places, at a very moderate cost. The machine will dispense prescribed medicine. The machine adds an intelligent medicine unit, which sends a refill notification message to the nearest pharmacy when the number of medicine strips decrease below a certain level. The intelligent pillbox is technically feasible to all the peoples. It will be very helpful and it gives ease of access. It is sales person-less service which will be based on camera. It is important to consider how the technology may affect quality of medication delivery and use.

IX. References

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