"Medicine Locator" in Medical Store Using Voice Commands: A modern Health Care Device

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Abstract: Medicine plays vital role in today's life and hence the medical store. There are extreme numbers of medicines are present in medical stores and the sizes of the most of medicines are very small. Hence it is difficult to find the exact medicine easily at lager crowd.

This causes wastage of the time and manpower also. Using advanced technology we can create the system which provides the automation in medical store.

The paper presents the system which helps to find the location of desired medicine by glowing that particular compartment where the desired medicines is present using voice commands.

Keywords: Android phone, Android application, Microcontroller AT89C51, Wi-Fi module ESP8266, LED.

I. INTRODUCTION

There is huge need and importance of medicines in day today life. So pharmacies and medical stores have to face the problem of increasing crowd.

So medicine distributor has to provide not only an appropriate medicine but also in time. Normally seller has to remember the places of medicines in the store which is hard to remember and also time consuming and it is difficult to handle the medical by single person.

In large medical store owner need workers to handle this kind of problem. Hence we proposed a system which will overcome all above problems and also reduce the requirement of extra workers and to provide simplicity in medical store.

So our proposed system

"MEDICINE LOCATOR" in Medical Store Using Voice Commands. A modern Health Care Device will find the medicine in store by simply speaking the name of the medicine and also display the stock information.

II. SYSTEM METHODOLOGY

A. Problem Identification

Medicine distributors interact with countless patients, doctors on daily basic. Medical stores faces problems of increased crowd so medical distributor has not only job to provide medicine but also it is in time and seller has also remember the place where the medicine is stored and it is time consuming and owners needs the workers to handle this kind of problems. So here we proposed system to provide solution for the medical stores.

B. Proposed Work

Initial idea of this project is to develop pharmacy field using automation. The concept of this project is to reduce human effort and provide solution to the medical store.

Medicine locator' provides the information of the medicine where it is placed in store and also this system display name of medicine, prize, expiry date on handset.

In our proposed system we developed android application in mobile where user speaks the name of medicine. In given system microcontroller is used to make system chip which work at 5V.

It also includes Wi-Fi module which is used to make connection between mobile phone and microcontroller. Finally LEDs indicate where the medicine is placed.

III. BLOCK DIAGRAM

Fig 1 is Block diagram of proposed system "MEDICINE LOCATOR USING VOICE COMMANDS". This system contains Android phone, Microcontroller, Wi-Fi module, and several LEDs.
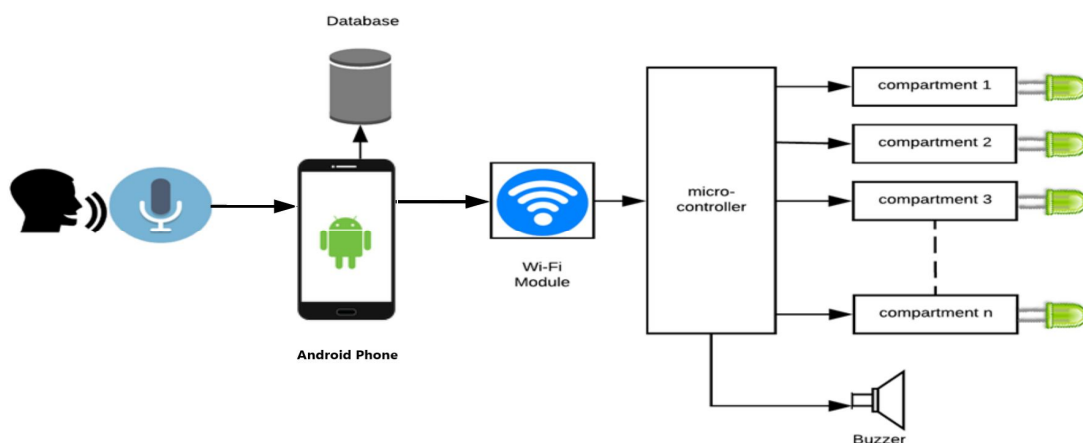

Fig 1. Block Diagram of given system Medicine Locator

A. Android Phone contains special application called 'Medicine Locator' which converts voice input into strings and send signal to the microcontroller which leads to turn on LED placed at medicine compartment. Android application also contains database which helps to show information of desired medicine on display.

B. In our system we use microcontroller AT89C51, which take input from the Android phone through the Wi-Fi module and according to the input it will glow LED in a compartment which contains medicines.

C. ESP8266 Wi-Fi module will establish connection between the Android application and Microcontroller.

IV. SYSTEM IMPLEMENTATION

"MEDICINE LOCATOR" contains microcontroller, Wi-Fi module, LED, mobile phone containing app. Android is a one of the best platform for develop on new application. In this android device the voice is converted into text and mobile is also used as a display device. Wi-Fi module is used to establish wireless connection between and mobile phone and the microcontroller. Microcontroller is used to turn ON LED in specified compartment regarding to user command.

A. Hardware Implementation
Hardware side of the medicine consist of Microcontroller AT89C51, Wi-Fi module ESP8266, and several LEDs.
The microcontroller is the main component which takes voice input from the mobile and according to this input it turn on the LED at medicine compartment. The Wi-Fi module is used to establish connection between microcontroller and the android phone. Wi-Fi is connected to microcontroller serially through UART.

B. Software Implementation
Given system contains an android application which is developed using the "Android studio". This app converts the input voice command into text. For this purpose 'Google's text to speech API' is used.
The programming of the microcontroller is developed using "Keil µVision". Microcontroller 8051 is programmed in such a way that it can turn on LED at the compartment where the desired medicine is placed.

C. Algorithm
1) Start
2) User speak the name on medicine on microphone which is connected to personal computer.
3) Computer will check that medicine in the database and send the data to microcontroller using Bluetooth module
4) If medicine is present then microcontroller will turn on LED of specific compartment in which medicine present
5) If medicine is not present then microcontroller will turn on the buzzer.
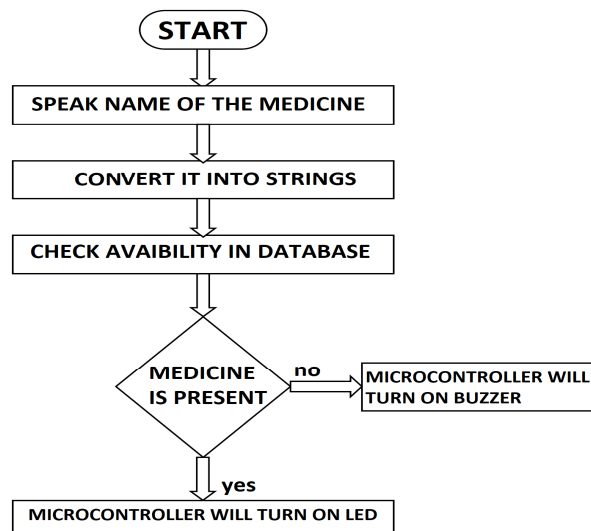6) Stop

D. Flow chart

Fig. 2 Flow chart of given system 'Medicine Locator'

E. Components in Hardware System

1) *Microcontroller (AT80C51):* Microcontroller provides intelligence to any system.8051 is 8 bit family of microcontroller developed by Intel in the year 1981.8051 microcontroller was also referred as "system on a chip" because it has 128 byte of RAM, 4kbyte of ROM, 2 timers, 1 serial port, and 4 port on single chip. Microcontroller 8051 receive input from the personal computer through Wi-Fi module and according to the input signal it turns on LEDs or BUZZER in medicine compartment in medicine stores.

2) *Wi-Fi Module:* In our system Wi-Fi module is used to connect personal computer and microcontroller wirelessly. Here we using ESP8266 Wi-Fi module. The ESP8266 is a low cost Wi-Fi microchip with full TCP/IP stack and microcontroller capability. Microcontroller 8051 communicates with ESP8266 module using UART having specific baud rate. It works on a Serial Communication principle.

3) *Power Supply:* Power supply is essential part of the any electronic system. In given system power supply converts AC into DC and provides it to the microcontroller, Wi-Fi module and LEDs.

V. RESULTS

Fig-3 is our proposed system Medicine Locator which contains compartments of medicine placed with separate LEDs for separate compartment. Fig-4 shows the hardware used in given system. Fig-5 is the snapshot of the android application specially developed for our system. And Fig-6 shows the working output of the proposed system.

Fig. 3 Presentation model of 'Medicine Locator' containing Hardware, Medicine Compartments and Android phone.
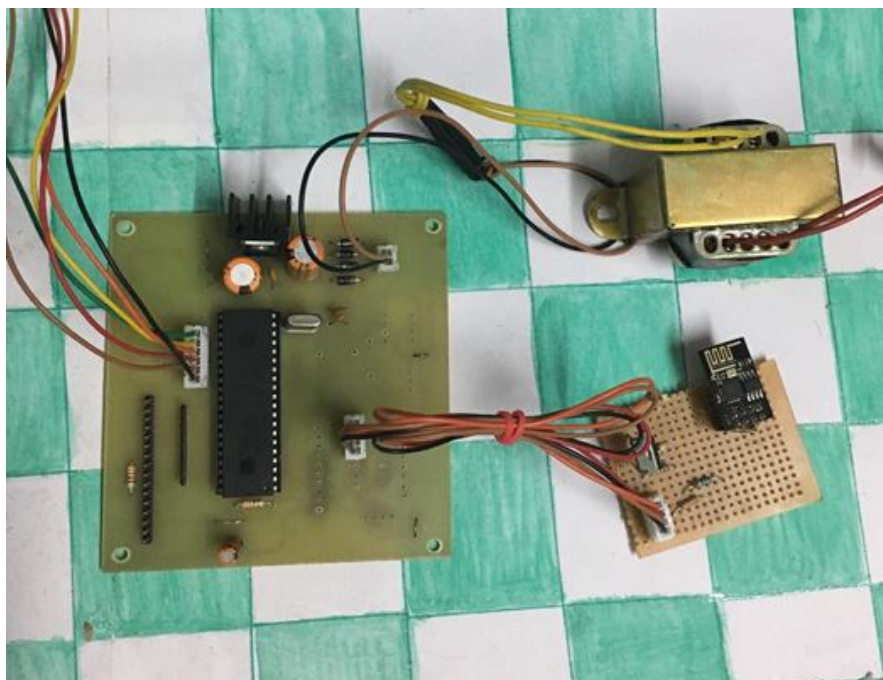
Fig. 4 Hardware used in given system 'Medicine Locator'

Proposed system 'Medicine Locator' contains the Android phone which have specially developed android application which takes voice input from user which is name of the desired medicine. This system includes several compartments with LEDs containing different medicines. Fig.4 shows the hardware components used for given system. Medicine locator contains Microcontroller AT80C51, Wi-Fi module ESP8266 and power supply. Microcontroller will take input from the android phone. Wi-Fi module will helps to establish the connection between microcontroller and android phone. After taking input from the phone microcontroller will turn ON the LED at the desire medicine compartment. Fig-5 shows the snapshot of the Android application which is specially developed for the proposed system. Android application will convert voice input from user into the text with the help of Google's Text to speech API. Android phone will send the signal according to the given input to the microcontroller through Wi-Fi module which leads to turn on the LEDs at compartment containing the Medicines.

Fig-6 shows the final working of our proposed system. The LED at compartment of the medicine named 'Gumex' is turned on when the name of medicine 'Gumex' is pronounced in front of the phone containing our Android application.

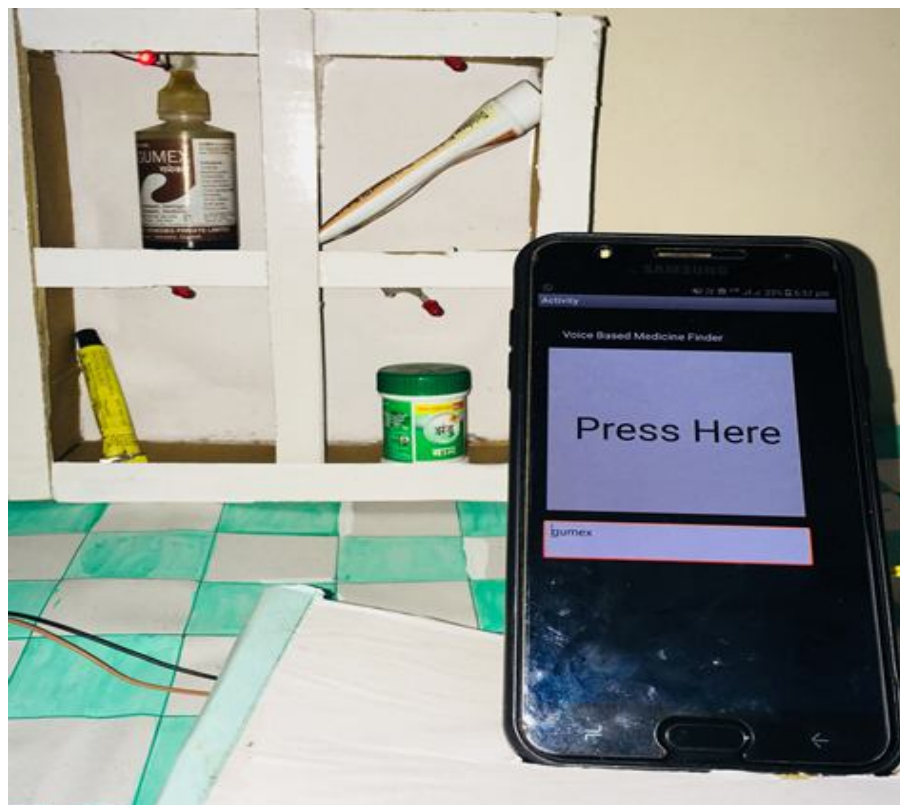Fig. 5 Snapshot of Android application

Fig. 6 Image showing LED turned ON at 'Gumex' medicine compartment when 'Gumex' pronounced in front of phone

VI. CONCLUSION

Medicine locator in Medical Store using voice commands' provides the location of the medicine where it is placed in store and also this system display information of regarding on handset. Given proposed system develops automation in pharmacy field. This project reduces human effort and requirements of extra workers. This system locates appropriate medicine in very less time which provides efficient delivery to the customer.

In our proposed system we developed special android application in mobile where user speaks the name of medicine. In given system microcontroller is used to make system chip which work at 5V. System also includes Wi-Fi module which is used to make connection between mobile phone and microcontroller. LEDs placed across the compartments of medicine will helps to find desired medicine.

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