SMART PILL VENDING SYSTEM FOR RURAL POPULATION WITH FAULT TOLERANCE

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Abstract: Medical technology has improved tremendously in the last few decades. India's development in the medical field is almost on par with those of developed countries. Caring of the aged and physically challenged persons are a serious concern in the developing countries. Family members are responsible for the care and management of them. In the modern age, it is difficult for family members to be available all the time to support them. Any Time Medical Assistance and Medicine Vending Machine is one such approach to help them take their medicines. Hence this will be the major advantage to the people living in the rural areas for whom they cannot get the medicines like cities. Hence further improvement of the project is that we have to create this like vending machine in all the states in hospitals. In that people can get their medicines, These Database has been monitored by the Doctors, so they are always monitored the patient and Doctors will give better treatment with the help of Database.

1. INTRODUCTION

The growing modern age has also brought with it the dawn of the age of numerous types of diseases. The use of medicine to maintain and regain physical and mental health has been growing at a rapid pace. The doctors prescribe different type of medicine for one particular type of illness. Today it has become common for a person to take at least one type of pill at regular interval each day. So Such as India's development in the medical field is almost on par with those of developed countries. It is available only to metropolitan cities and towns. This vast development did not reach all the tribes and remote villages. It is a convenient, faster and safest withdrawal at anytime and anyplace. The problem arises when there is need of some medicine in urgent and either when drug stores are not open or drug is not available in stock, especially during night time, also they cannot take first-aid medicine on their own here we have doctors to treat them immediately with the first – aid medicine. Any Time Medical Assistance and Medicine Vending Machine is one such approach to help them take their medicines.
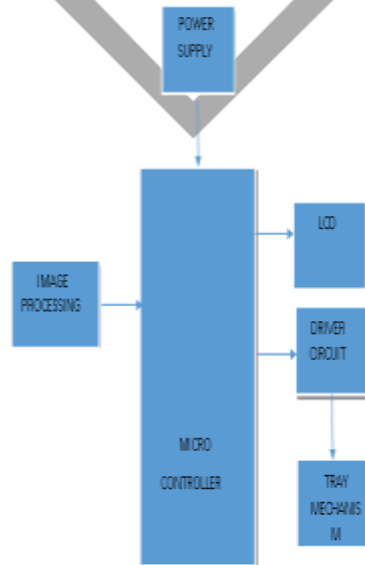
EXISTING SYSTEM

Medical facilities available in metropolitan cities and towns are much reachable by the people compared to the peoples in the rural villages. Senior citizens and physically challenged person find difficult to travel and also feel exhausted to wait in the queue for a long time
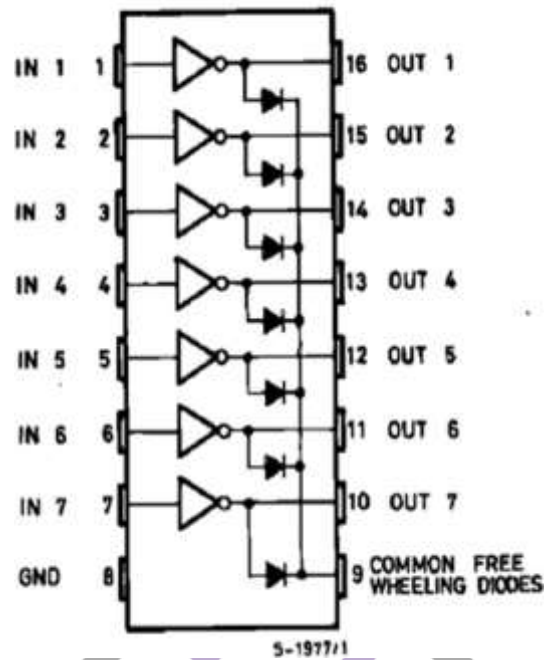
I. PROPOSED SYSTEM

In our proposed system, we are using medical ATM where the people can get medicines. Here we are using camera to find the prescription details by using MATLAB. Once the image processing is over then the data will be given to the microcontroller and now the controller will give respective tablets to the person with the help of driver circuit. All the process are controlled and monitored by the microcontroller and all the status will be displayed in the LCD.

BLOCK DIAGRAM

HARDWARE REQUIREMENTS
1. PIC16F877A MICRO CONTROLLER

The term PIC, or Peripheral Interface Controller, is the name given by Microchip Technologies to its single – chip microcontrollers. PIC micros have grown to become the most widely used microcontrollers in the 8- bit microcontroller segment. The PIC16F877A CMOS FLASH-based 8-bit microcontroller is upward compatible with the PIC16C5x, PIC12Cxxx and PIC16C7x devices. It features 200 ns instruction execution, 256 bytes of EEPROM data memory, self programming, an ICD, 2 Comparators, 8 channels of 10-bit Analog-to-Digital (A/D) converter, 2 capture/compare/PWM functions, a synchronous serial port that can be configured as either 3-wire SPI or 2-wire I2C bus, a USART, and a Parallel Slave Port.

BLOCK DIAGRAM of PIC16F877A

2. DC MOTOR

A DC motor is designed to run on DC electric power. Two examples of pure DC designs are Michael Faraday's homopolar motor (which is uncommon), and the ball bearing motor, which Is (so far) a novelty. By far the most common DC motor types are the brushed and brushless types, which use internal and external commutation respectively to create an oscillating AC current from the DC source so they are not purely DC machines in a strict sense.We in our project are using brushed DC Motor, which will operate in the ratings of 12v DC 0.6A which will drive the flywheels in order to make the robot move.

3. DRIVER CIRCUIT

The ULN2003 is a monolithic high voltage and high current Darlington transistor arrays. It consists of seven NPN Darlington pairs that feature high-voltage outputs with common-cathode clamp diode for switching inductive loads. The collector-current rating of a single Darlington pair is 500mA. The darlington pairs may be paralleled for higher current capability. Applications include relay drivers, hammer drivers, lamp drivers, display drivers (LED gas discharge), line drivers, and logic buffers.The ULN2003 has a 2.7kW series base resistor for each Darlington pair for operation directly with TTL or 5V CMOS devices.

4. LCD

The most commonly used LCDs found in the market today are 1 Line, 2 Line or 4 Line LCDs which have only 1 controller andsupport at most of 80 characters, whereas LCDs supporting more than 80 characters make use of 2 HD44780 controllers. Most LCDs with 1 controller has 14 Pins and LCDs with 2 controller has 16 Pins (two pins are extra in both for back-light LED connections).

SOFTWARE REQUIREMENTS

INTRODUCTION:
Python used for general purpose programming, created by Guido Van Russio and first released in 1991. An interpreted language, Python has a design philosophy that emphasizes code readability and a syntax that allows programmers to express concepts in fewer lines of code than might be used in languages such as C++ or Java. The language provides constructs intended to enable writing clear programs on both a small and large scale. Python interpreters are available for many operating systems, allowing Python code to run on a wide variety of systems. C Python, the reference implementation of Python, is open source software and has a community-based development model, as donearly all of its variant implementations. C Python is managed by the non-profit Python Software Foundation.
• Opencv : Image Processing library mainly focused on real-time computer vision with application in wide-range of areas like 2D and 3D feature toolkits, facial and gesture recognition, Human- computer Interaction, Mobile robotics, Object identification and others.
• Numpy and Scipy Libraries :
• For Image Manipulation and Processing.
• Sckikit

Provides lots of algorithms for image processing.
• Python Imaging Library (Pil)

To perform basic operations on images like create thumnails, resize, rotation, convert between different file form.
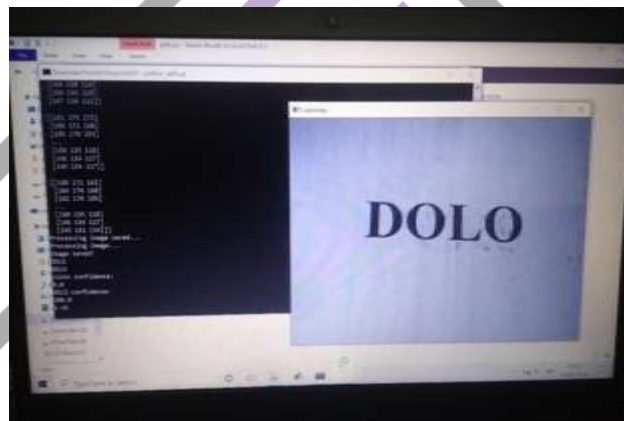 Block Diagram of smart Pill vending Machine
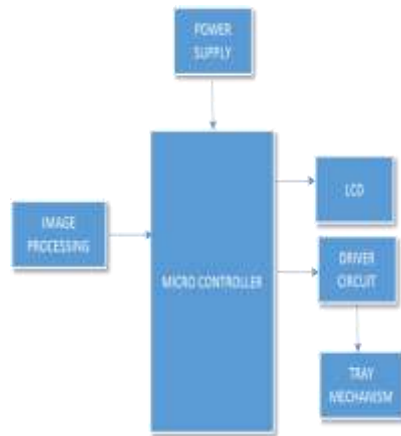
RESULTS AND ANALYSIS

PYTHON OUTPUT

Here the data is collected from the patient Prescription i.e the parameters of the patient Medicine Prescription is collected through the camera and it has been display.

HARDWARE OUTPUT

The Hardware Component PIC Micro Controller which is Connected to the laptops which is act as a inputs. The Program is dumped in the controller analyses all the conditions of the patient prescription.

REFERENCES

[1] Marie T. Brown, MD and Jennifer K. Bussell, MD, "Medication Adherence: WHO Cares?", Mayo Clin Proc. 2011 Apr; 86(4): 304314doi: 10.4065/mcp.2010.0575

[2] Cramer JA, Mattson RH, Prevey ML, Scheyer RD, Ouellette VL, "How often is medication taken as prescribed? A novel assessment technique", Erratum in JAMA 1989 Sep 15; 262(11): 1472.

[3] Machine Ying-Wen Bai and Ting-Hsuan Kuo, "Medication Adherence by Using a Hybrid Automatic Reminder" IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, USA, 2016.

[4]   John K. Zao ; Mei-Ying Wang ; Peihsuan Tsai ; JaneW.S. Liu, "Smart phone based medicine in-take scheduler, reminder and monitor" 12th IEEE International Conference on E-
Health Networking Applications and Services (Healthcom), 2010
[5]   Deepti Ameta, Kalpana Mudaliar , Palak Patel , "Medication Reminder And Healthcare – An Android Application", International Journal of Managing Public Sector Information and Communication Technologies (IJMPICT) Vol. 6,No. 2, June 2015 DOI : 10.5121/ijmpict.2015.6204 39
[6]   Vasily Moshnyaga, Masaki Koyanagi, Fumiyuki Hirayama, Akihisa Takahama,