Automated medicine dispenser

Abstract—
The advent of technology has revolutionized healthcare, and one such development is the Automated Medicines Dispenser (AMD). These new technologies are quickly gaining recognition for their ability to overcome critical challenges in medicine, reduce prescriptions, improve patient compliance, and improve quality of care. . Health care costs Discuss its features, benefits and implications:

Autonomous drug dispensers are intelligent and user-friendly systems integrated in healthcare facilities with hypocritical changes, Internet of Things (IoT) sensing, artificial intelligence, interacting intelligence and research using chemicals. and the integrity of the continuous solution.

Keywords—template, Scribbr, IEEE, format

I. INTRODUCTION

Automated Drug Dispensers (AMD) are at the forefront of the healthcare revolution, where technological advances are redefining healthcare and AMD stands for a unique combination of innovations that are changing the way drugs are administered, dispensed and dispensed. and that matter. Adherence to long-term medication in health care has become a key driver of this smart policy. Embracing cutting-edge technology, AMD promises to solve these problems with unprecedented accuracy and efficiency.

In this new age the population is increasing rapidly this our device will help to reduce the burden of nurses and extra stress of the guardians. Our device also helps to make a connection between the doctors-patient relation.

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A table heading (using the "table head" style) appears above a table. This will automatically number the table for you. Any footnotes appear below the table, using the "table footnote" style. Footnotes are indicated by superscript lowercase letters within the table. An example of a table can be seen in Table I, below.

II. OBJECTIVE OF THE PROJECT

The Automated Medication Dispenser (AMD) will serves a very important role in medical healthcare it is aimed to solve various challenges related to taking medication on time, and it will help to improve the quality of patient care.
Objectives of an Automated Medication Dispenser:
1. Improving medication: This device will help to give the patient the medication at the correct time which will help in fast recovery and help for less loss of skipping the medication.
2. Reduce cost: The main objective of AMD is to be affordable for everyone that is why we are using cheap but good quality of components and keeping the cost less than the market's average.
3. Alert Message: AMD is available in two variants one is with Wi-Fi and other is without Wi-Fi, the Wi-Fi variant will send notification to the guardian when the medication is dispensed in the container.
4. Give caregivers peace of mind: Automated medication dispenser will help to give carefree experience for the guardian and for the patient, it will help to give the peace of mind to our patients and loved ones.

III. . LITERATURE REVIEW

[1]. In today's fast running world we can sometimes get too busy with the life that we can forget taking medicine at time ,which is not good for our health. Advanced technologies have emerged as promising solutions to address these issues. These technologies are designed to fit a variety of challenges in healthcare, especially in the field of drug administration. Newer solutions include smartphone apps for medication reminders, smart pill dispensers that activate dosage plans, and electronic health records that allow healthcare professionals to track and monitor medication compliance and even, health staff through telemedicine platforms The business has expanded, enabling remote guidance and support. These technological advances provide a range of

tools to improve the accuracy and precision of medication delivery, improve patient outcomes and enhance overall health care.

[2]. Medication adherence is a major concern in the healthcare industry, affecting several stakeholders including physicians, healthcare systems, and insurance companies. This issue is important because drug abuse or misuse can have serious consequences for the health and well-being of this vulnerable population, and one of the main problems faced by elderly patients is the complexity of treatment. Many seniors have multiple chronic conditions, each requiring their own treatment. Several medication works effectively when it is taking at right time some medication are labeled and some look identical which sometimes can be a problem with elderly people which is not good.

[3] These two factors emerged as the most helpful factors for older medicine box users. • Dosage: Seniors often experience complex medication use that includes taking multiple medications at different times of the day and in different dosages, so a pillbox that provides clear dosage forms are invaluable. This can be rooms that can hold different numbers or colors and labels to make it easier to find the right number for each occasion. • Physical and mental impairment of the user: Many older people face physical and mental challenges, such as arthritis, visual impairment, or memory problems, which can have made it difficult to manage their medications on their own An effective pillbox will catch these disorders and easy-to- open. Classrooms, large clear letters, and should be designed with features such as alarms or reminders to motivate the user to take their medication

[4]. Around the world, lots of folks got hit by COVID-19, and it's been a real doozy, just like those past outbreaks like SARS-CoV-1, flu, MERS, and that Ebola scare back in 2014. It's a tough deal, especially for our healthcare heroes. The World Health Organization wanted all "global emergency" on us because this virus is spreading like wildfire. And to make things even trickier, some places are running low on healthcare workers. But guess what? The world of IoT and robots is blowing up, and they're jumping in to help our healthcare peeps. These robots are like web-surfing champs, following pre-set commands and getting stuff done. They're here to back up the nurses and doctors and minimize human contact. We've got a bunch of these bots in India already. The Ko robot's got trays for chow and essentials, and the coot can do live chats with patients. Then there's Karmi Bot, a 3-foot-tall cutie hauling food and meds, and Zai Medic, a 4-footer bringing grub and medicine to patients. Oh, and don't forget those hands-free drug-delivery bots— they're a thing now.

IV. . RESEARCH GAP

Available items:

• The approach prioritizes affordability.
• It tries to avoid imposing a heavy financial burden on users.
• Simple and easy to use:
• The devices are made of simple materials.
• It is designed to be easy to use for a wide variety of individuals, including
those who may not be tech savvy either.
• It focuses on delivering a simple and user-friendly interface.
• Performed program:
• Unlike some other projects with advanced features, this project offers a more
focused approach.
• In particular, it avoids many users with little technical background.
• The primary focus is on pharmaceuticals.
• Scalability and Productivity:
• The program is highly scalable, which means it can easily be modified and
extended for different needs.
• It is designed for easy mass production.
• Careful material selection ensures efficiency and cost-effectiveness in the
manufacturing process.
This allows the solution to reach more people and benefit more patients and parents
who want a hassle-free and affordable medication management system.

V. RESEARCH METHODOLOGY

Raspberry Pi
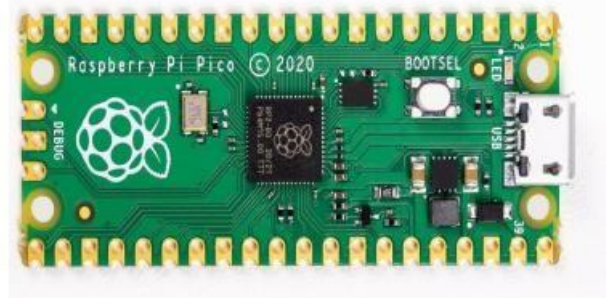
Raspberry Pi Pico is a microcontroller board computer. But unlike its sibling, the Raspberry Pi, which is designed for general Linux use, the Pico is a purpose built solution for low-end devices and specialized systems.

Here are some of the main features and specifications of the Raspberry Pi Pico.

1. Microcontroller: is built across the RP2040 microcontroller advanced through the Raspberry Pi foundation. The

RP2040 makes use of a twin-middle ARM Cortex-M0+ processor, making
it appropriate for a huge variety of photos programs.

2. GPIO pin: percent has 26 GPIO (general enter / output) pins that may be used for numerous digital and analog enter / output operations. those clamps include sensors, LED indicators, etc. can be used to attach Surveillance with other devices.

3. USB connection: Pico can be used and programmed via the USB port. It can act as a USB host (such as a keyboard or mouse) or a USB host to connect other devices.

4. Power supply: This board can be powered by a microUSB port, supports a variety of electronic devices, and is battery powered.

5. Low cost: Raspberry Pi Pico is an inexpensive way to build microcontrollers and can be used by many hobbyists, developers, and students.

Pushbutton x2

Pushbutton x2" usually refers to using two pushbuttons for different purposes in an
IoT project or device. IoT applications typically use sensors, input devices, and
actuators, and pushbuttons are often used as input devices to trigger specific actions
or communication with IoT systems ." It can be used in IoT applications for different
scenarios:
1. User Interface: Two pushbuttons on IoT devices can act as user interfaces for
controlling or configuring the device. For example, one push button could turn
the device on or off, while another could perform tasks or other settings.
2. Mode selection: The pushbutton x2 can be used to select different operating
modes or settings on the IoT device. Each pushbutton press can cycle through
different modes, such as adjusting the temperature on a smart thermostat or
selecting lighting settings on a smart LED controller.
3. Security or authentication: In some IoT applications, two pushbuttons can be

part of the security system. For example, a user may need to press two buttons
simultaneously as a two-factor authentication method to gain access to a secure
IoT system or device.
4. Emergency or Reset: one pushbutton can act as a constant control input, while
the other can be indicated for emergency situations or to trigger a system reset
on the IoT device.
5. Redundancy and Security: Two pushbuttons can be used to provide a safety
or redundancy feature, where both buttons need to be pressed to perform an
important function, to help prevent accidental or unauthorized operations the
edge of the road.
The specific use of "Pushbutton x2" in an IoT project will depend on the needs and
functionality of the device.

Jumper Wires

Jumper wires are simple, flexible wires used to make electrical connections between
components in electronics and power applications, such as around integrated circuits,
sensors, switches, and other electronic devices on breadboards or prototype circuit
boards important for prototyping and experimenting with electronics There is a part.
Jumper wires are generally made of thin, insulated and flexible materials, usually coated
with protective coatings of copper or aluminum, plastic or rubber.
Here are some of the basic characteristics of jumper wire and their uses.
1. Coloring: Jumper lines are often color coded to help identify purpose or function.
Common colors include red for electrical connections, black for grounding, and
various other colors for signaling processes.
2. Breadboarding: Jumper cables are commonly used with breadboards, which are
pattern boards with mesh holes that accept electronics and facilitate quick and
temporary attachment.
3. Connection: Jumper wires connect components on a breadboard by inserting one

end into a hole or tube and connecting the other end to the edge of another
container, creating an electrical circuit.
4. Prototyping: Widely used in the development and test phases of electronics
projects, it allows designers to quickly reconfigure and reconfigure connections
without soldering, simplifying the testing and debugging process.
5. Yarn Types: Jumper yarns come in a variety of styles, including male-to-male,
male-to-female, and female-to-female yarns. The male connectors have an
external pin at one end, the female wires have tubes, and the male and female
wires are both types of wires.

anode (+) | cathode (-)
flat side
short lead

Esp32

Esp 32 is a microcontroller board just like raspberry pi Pico which has GPIO, PWM,
UART, I2C pins. This board can be used to make various types of IOT projects it has
Built in WIFI AND Bluetooth. We are using WIFI from esp32 to send a notification
on my devices. We can code with micro python and with Arduino ide as well.
Some specifications of this board are: Single or Dual-Core 32-bit LX6 Microprocessor
with clock frequency up to 240 MHz 520 KB of SRAM, 448 KB of ROM and 16 KB
of RTC SRAM. Supports 802.11 b/g/n Wi-Fi connectivity with speeds up to 150
Mbps. Support for both Classic Bluetooth v4.

LED x2
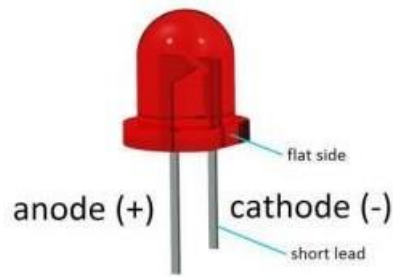
5. ""LED x2" refers to a pair of light emitting diodes (LEDs) commonly used in electronic circuits or applications. L
ED is a semiconductor device that uses electric current to produce light. Usin
g "LED x2" means adding two more LEDs.
It can be used in many ways depending on the project environment. Here are some
options:
1. Indicator lights: Two LEDs are often used as indicator lights to provide visual
or status information. For example, in an electronic device, one LED may indicate
the presence of current, while another LED may indicate an electrical connection
or a function such as a battery.
2. User interface: Flags can be used to display information or perform user action
s in the user interface. For example, on a client, one LED will indicate job complet
ion and another LED will indicate job completion.
3. Binary State: In some applications, two LEDs can indicate dual status. For exa
mple, one LED may indicate an "on" or "active" state, while another LED may ind
icate an "off" or "inactive" state.
4. Feedback: In communication services or IoT applications, two LEDs can
provide feedback to the user. One LED can indicate success or positive, while
the other can indicate failure or error status.
5. Directional Information: Two LEDs can be used to provide directional
information in navigation or navigation systems. For example, one LED
indicates a left turn, and the other indicates a right turn.
6. Dual-color or RGB LEDs: Instead of two different single color LEDs, "LED
x2" can feature a single dual-color LED or RGB (red-green-blue) LED hybrid
and produce multiple colors can the intensities of different ways These
LEDs are commonly used.
Servo motor x3:-
"Servo motor x3" refers to three servo motors usually used in electrical or mech
anical machines. Servo motors are a special type of motor designed to control po

sition, speed and power. You're dealing with a process that requires a lot, as they

are frequently used in robotics, automation, remote controlled vehicles, and many other applications that require precise and repeata

ble motion control. Independent or simultaneous control of different products or

axis functions.

1. Here are some examples of how "Servo Motor x3" can be used in various applic

ation

Robotic arm: Three servo motors in the robotic arm control the shoulder, elbow

and wrist, allowing the arm to perform complex tasks accurately

PTZ Camera Mount: For PTZ camera mounting, one servo motor controls horiz

ontal panning, the second handle controls vertical tilt, and the second can be use

d for key or

zoom.

Aircraft control: Three servo motors can be used to control ailerons, elevators an

d rudders to complete the control of remote-controlled aircraft or drones.

2. Articulated Robots: Articulated robots can use three servo motors to control the

movement of the base, arms and end effectors (clamps).

3. 3D printer or CNC machine: A 3D printer or CNC (computer numerical control)

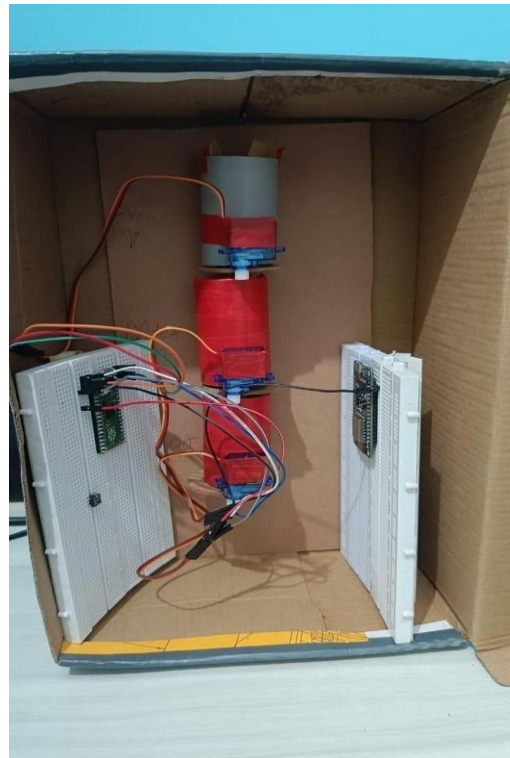machine uses three servo motors to determine the head or cutting axis X, Y and

Z..

4. Multi-Axis Camera Gimbal: Three servo motors can be used to turn

photography and photography pro with the multi-axis camera gimbal.

VI. WORKING OF SERVO MOTOR

We are using 3 servo motors connected to raspberry Pi pico to start working with servo motors first we have to connect the power input from the microcontroller which are 3.3v power, V Bus ,VSYS and 3.3v from raspberry Pi pico. To control the movement of the servo motors we have to connect the pwm pins to GIPO pins in the raspberry Pi Pico which are G0, G1, G2 these pins will help to control the motors as in project we are moving the servo motors in a specific angle at specific time and we also have to give ground to our servo motors. We are moving our servo motors from 0 to 35° angle at a specific time like first servo motor will move to 0 to 35° then after this second motor will start moving to 0 to 35° then the third motor will start moving from 0 to 35° and in the

end the first motor will come back to it's original position which is 0 degree. After this loop we can use push buttons which are connected to raspberry Pi Pico and can control the second servo and the third servo to go back to their original position which is 0 degree after we finish re- filling our medicines to our device. After the third servo comes back to it's original position the loop will start again and this process will carry on.

VII. PROTOTYPE OF SYSTEM:

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VIII. CONTACT INFORMATION

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