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IOT Based Inplantable AI Pill(Tablet) Development

for Medicine Tracking

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***Abstract*— The development of an IoT-based, ingestible AI pill for medicine tracking is a groundbreaking concept with significant potential to enhance patient adherence and monitoring in healthcare. This abstract provides a concise summary of the key aspects involved in the development process. The proposed solution revolves around a pill or tablet embedded with sensors, a microprocessor, and wireless connectivity. The pill tracks medication ingestion, collects relevant health data, and communicates with external devices such as smartphones or medical servers. An AI algorithm analyzes the gathered data, enabling real-time monitoring and generating insights for medical Professionals**

Index Terms— **Ai Pill IoT based, wireless sensors, Arduino Microcontroller, External devices such Smart phones and watches.**

I. INTRODUCTION

The development of an IoT-based, ingestible AI pill for medicine tracking is a groundbreaking concept with significant potential to enhance patient adherence and monitoring in healthcare. This introduction provides a concise summary of the key aspects involved in the development process. The proposed solution revolves around a pill or tablet embedded with sensors, a microprocessor, and wireless connectivity. The pill tracks medication ingestion, collects relevant health data, and communicates with external devices such as smartphones or medical servers. An AI algorithm analyzes the gathered data, enabling real-time monitoring and generating insights for medical professionals. Seamless Connectivity: Establish wireless connectivity for the pill to communicate with external devices, such as smartphones or medical servers. The objective is to ensure seamless data transmission and accessibility for both patients and medical professionals. User-Friendly Interface: Create a user-friendly interface, such as a mobile application, to allow patients to receive medication reminders, track their adherence, and view their health data. The objective is to empower patients to actively participate in their treatment and selfmanagement.Data Security and Privacy: Implement robust security measures to protect patient data and ensure privacy compliance. The objective is to safeguard sensitive health information throughout the data collection, transmission, and storage processes.

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PROPOSED SYSTEM

The proposed system is an IoT-based, ingestible AI pill for medicine tracking. It automates medication tracking, collects real-time health data, and provides AI-powered insights for healthcare professionals. With wireless connectivity, it enables seamless data transmission and personalized medication reminders for patients. The user-friendly interface empowers patients to actively participate in their treatment. The system ensures privacy and data security while complying with regulatory requirements. It improves healthcare efficiency and facilitates collaborative decision making between patients and healthcare providers. Overall, the proposed system offers a comprehensive solution for enhanced medication adherence and monitoring.

II. Block Diagram

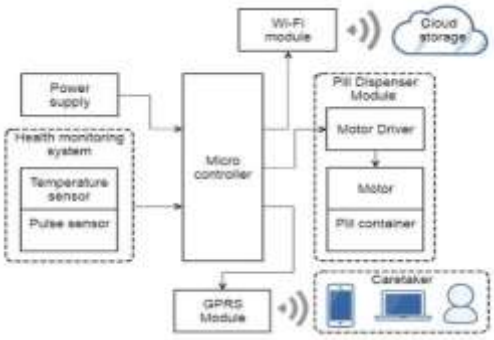

Fig 1-Block Diagram

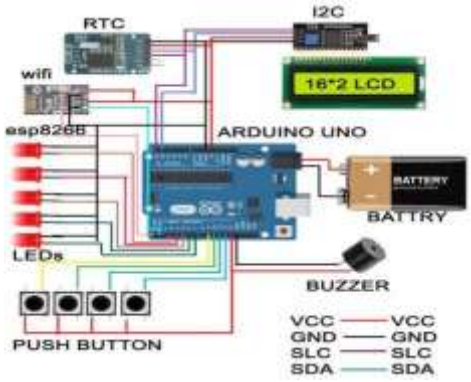

Fig 2- Main Block Diagram

III. COMPONENTS DESCRIPTION

A.Arudino UNO

The Arduino Uno is a microcontroller board based on the ATmega328, featuring 14 digital input/output pins, 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It can be connected to a computer via USB cable or powered with an AC-to-DC adapter or battery. The Uno differs from previous boards by not using the FTDI USB-to-serial driver chip and instead uses the Atmega16U2 (Atmega8U2 up to version R2) as a USBto-serial converter. The board also has a resistor that pulls the 8U2 HWB line to ground, making it easier to put into DFU mode. The Uno board has new features such as 1.0 pin out, stronger reset circuit, and replacing the 8U2 with Atmega 16U2. The name "Uno" signifies the upcoming release of Arduino 1.0, which will serve as the reference versions of Arduino. The Uno is the latest in a series of USB Arduino boards and the reference model for the Arduino platform.

Fig 3- Arduino Board

B.LCD(Liquid Cristal Display)

A liquid crystal display (LCD) is a flat, color or monochrome display device with a column of liquid crystal molecules suspended between two transparent electrodes and two polarizing filters. These filters allow

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light to pass through one filter without blocking the other. LCD displays are commonly used in microcontroller devices to output visual information. They are inexpensive, easy to use, and can produce readouts using the 5X7 dots plus cursor. For 8-bit data buses, the display requires a +5V supply and 10 I/O lines, while for 4-bit data buses, it requires supply lines and 6 extra lines.

Fig 4-LCD

C. IR Sensor

It Represents Infrared Sensor. An IR sensor in an electronic instrument that is utilized to detect certain development of an item by utilizing heat created without anyone else. An IR sensor can be dynamic or aloof. A functioning IR sensor continues discharging IR beams and when it doesn't get back the quantity of beams it has reflected; it distinguishes an article. An inactive IR sensor is the one that identifies the items without radiating the IR beams by straightforwardly detecting the article from the temperature.

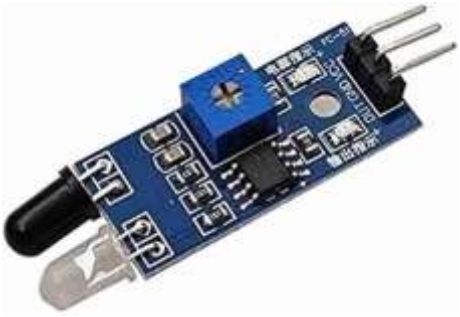

Fig 5 -IR Sensor

D.Battery power Supply

A battery is a type of linear power supply that offers benefits that traditional line-operated power supplies lack: mobility, portability and reliability. A battery consists of multiple electrochemical cells connected to provide the voltage desired.The most commonly used dry-cell battery is the carbon-zinc dry cell battery. Dry-cell batteries are made by stacking a carbon plate, a layer of electrolyte paste, and a zinc plate alternately until the desired total voltage is achieved. The most common dry-cell batteries have one of the following voltages: 1.5, 3, 6, 9, 22.5, 45, and 90. During the discharge of a carbon-zinc battery, the zinc metal is converted to a zinc salt in the electrolyte, and magnesium dioxide is reduced at the carbon electrode. These actions establish a voltage of approximately 1.5 V.

Fig 6- Battery

F. AI Pill

The Ai pill tablet is used to measure the temperature, ph levels , blood levels and other real time measurements

Fig 7-AI pill tablet

VII. OPERATION

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The pill dispenser loaded by the patient himself or by somebody helps the patient. The Entered details of medicine are kept within the cloud database and reminders are set. The system can read the details which saved in the database and generates the reminder to the user to require medication an transmits notice message to the mobile application. The system provides alerts once it's time to take medication. These details are regularly updated automatically from the cloud.

1.If the patient takes the pills and opens the lid, the IR detector connected to the lid can find that the lid is opened and therefore will send the output to Arduino which is able to stop the reminder. This can be recorded that the patient has taken his medication with success.

2.In case the patient fails to require the drugs or refuses to, the lid won't open and therefore the reminder can automatically stop after a pre-set time and can be placed on snooze. If someone once more misses the drugs, the output can be sent to the mobile application and send a message to the patient reminding him that he has missed

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VIII. RESULT

The pill dispenser loaded by the patient himself or by somebody helps the patient. The Entered details of medicine are kept within the cloud database and reminders are set. The system can read the details which saved in the database and generates the reminder to the user to require medication and it transmits a notice message to the mobile application. The system provides alerts once it's time to take medication.These details are regularly updated automatically from the cloud.

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. Fig:8-The Number or react vs Different age people

IX. CONCLUSION we have demonstrated a mobile application that generates alarm signals to remind a patient to take medication. We focus on helps patients and improving the monitoring system. The application Medicare is easily accessible. Combination of a sensing system with android application helps us to measure how well a patient can take their daily medication in real-time. The availability of sensors and other medicinal services gadgets (IoT) work better in consideration of patients.It allows real-time monitoring. Better compliance in terms of the taking of medicine can be acquired with the use of our proposed framework. This framework assures the security of the patient, prevent wrong dosages, support medication adherence. As a future work, we are wanting to improve our drug update framework by presenting extra highlights utilizing portable application and incorporate other services. A data-sharing feature between patient and health care professionals would also be developed. Voice-alert notification is being

consider ed as part of the future works; a system that will not only send notification however also read the content of the notification alert to the listening of the patient.

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