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Remotion: Supporting System for Paralysis Patient using ESP 8266 Sensor

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ABSTRACT: The majority of paralysis sufferers have difficulty communicating as well as moving certain body parts. An automated paralysis patient healthcare system can be incredibly valuable to these individuals. It's a computerized healthcare system. By moving any part of their body that can move, a disabled person can utilize this technology to display a message on an LCD panel. This strategy is also useful when the patient is left alone, and no one is available to provide care.

KEYWORDS: Patient Monitoring, Heart rate detection, Wireless Communication, Transfer Email.

I. INTRODUCTION

The IOT based paralysis patient health care system is a system designed to help the patient convey various messages to doctors, nurse, or his/her loved ones sitting at home or office over the internet. The system makes use of a microcontroller based circuitry to achieve this functionality. A paralysis patient supporting system typically involves a combination of technologies and services designed to assist individuals with paralysis in managing their daily activities and improving their quality of life.

II. LITERATURE SURVEY

"IoT-Enabled Real-Time Health Monitoring System for Paralyzed Patients" by Sangeethalakshmi et al. (2022) This study presents an IoT-enabled real-time health monitoring system tailored for paralyzed patients. Utilizing wearable sensors, the system continuously tracks vital signs and transmits data to a cloud server via Wi-Fi. Advanced machine learning algorithms analyze this data to detect anomalies, triggering alerts to caregivers when necessary.

"IoT-Based Healthcare Monitoring System for Paraplegic Patients" by Srikanth et al. (2020) This paper proposes an IoT-based healthcare monitoring system specifically tailored for paraplegic patients. Through a network of sensors, including those monitoring heart rate, blood pressure, and respiratory rate, the system ensures continuous health monitoring. Data is securely transmitted to a cloud server for remote access by caregiver.

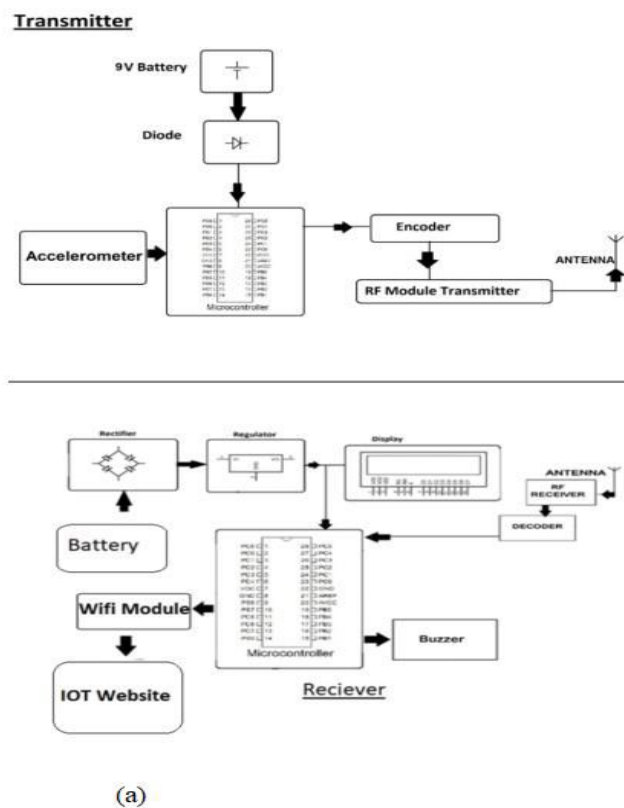
"IoT-Based Solution for Paraplegic Individuals to Communicate with Physicians via Internet" by Jadhav et al. (2018) This paper proposes an IoT-based solution empowering paraplegic individuals to communicate with physicians via the internet. Through wearable devices equipped with motion sensors, data on movements is collected and analyzed to generate signals for physician communication, enhancing patient autonomy and healthcare accessibility.

"Assisting Paralyzed Patients using Flex Sensor" by Lakshmi et al. (2020) This study introduces a system utilizing flex sensors to assist paralyzed patients. Flex sensors attached to fingers measure flexion, enabling control of devices such as wheelchairs through servo motors. Additionally, a voice recognition module allows patients to interact with the system using voice commands.

III. METHODOLOGY

To address the specific needs and challenges of paralysis patients, a comprehensive approach is recommended: Conduct interviews with healthcare professionals, caregivers, and patients to understand their monitoring system requirements thoroughly. Document functional requirements, including monitoring parameters, user interface specifications, and data management capabilities. Evaluate available technologies such as wearable sensors, IoT devices, and mobile applications, considering factors like accuracy, comfort, battery life, and compatibility. Select appropriate sensors and devices based on the target population's needs and preferences. Choose a suitable platform for data storage, processing, and analysis, ensuring scalability and security. Integrate the monitoring system with electronic health record (EHR) systems, tele medicine platforms, and other healthcare IT systems to facilitate seamless data exchange and collaborative care. Implement standard interfaces and protocols like HL7 and FHIR to ensure interoperability with third- party systems and promote informed decision- making.

IV. BLOCK DIAGRAM



V. WORKING FLOW CHART

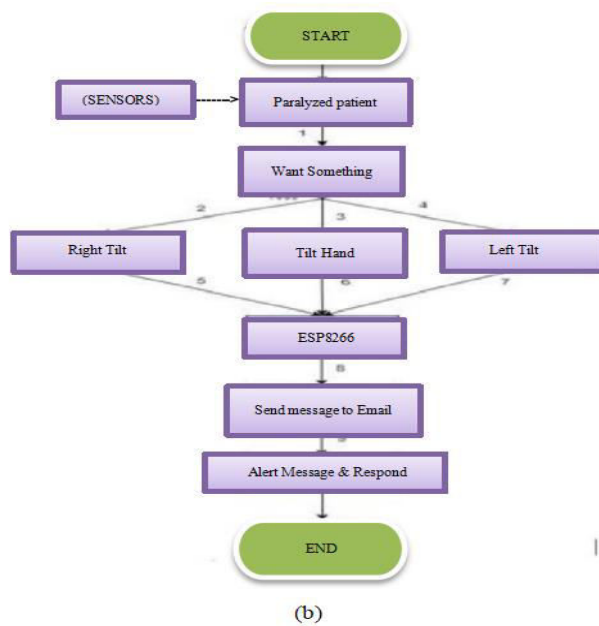


Fig. 1 Text Detection and Monitoring (a) Transmitter & Receiver (b) Working Flowchart

VI. EXPERIMENTAL RESULTS

Figures shows the results of text detection from the system functions by understanding the user's tilt direction and monitoring real-time vitals. The device is used to demonstrate how it works by holding the thing in the fingers of the moving hand. The user only needs to tilt the device at a specific angle to send a message. This approach was designed to safeguard the safety and health of paralysis patients by giving immediate assistance.

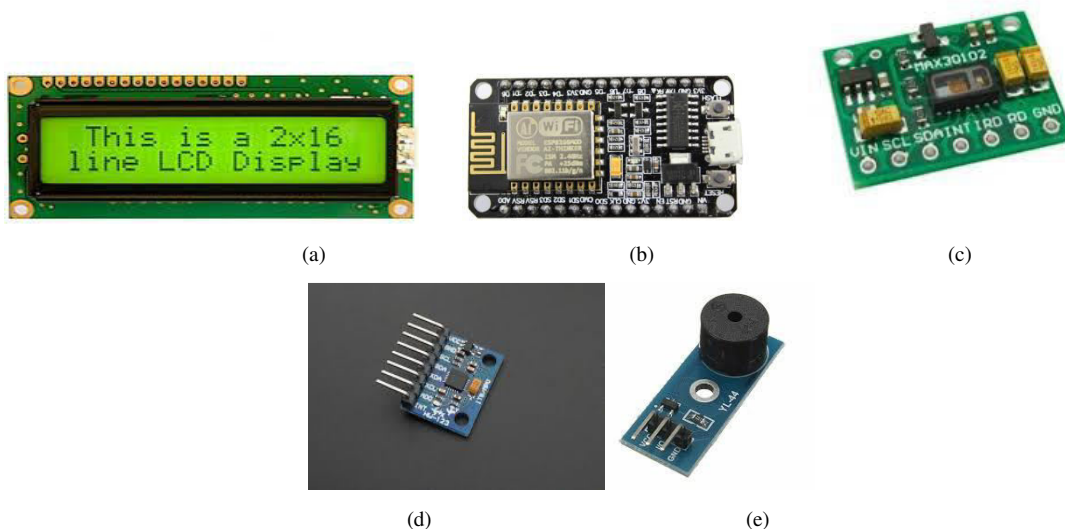


Fig. 2. Text Detection and monitoring (a) LCD Display (b) ESP8266 (c) Max30102 (d) HW123 (e)Buzzer

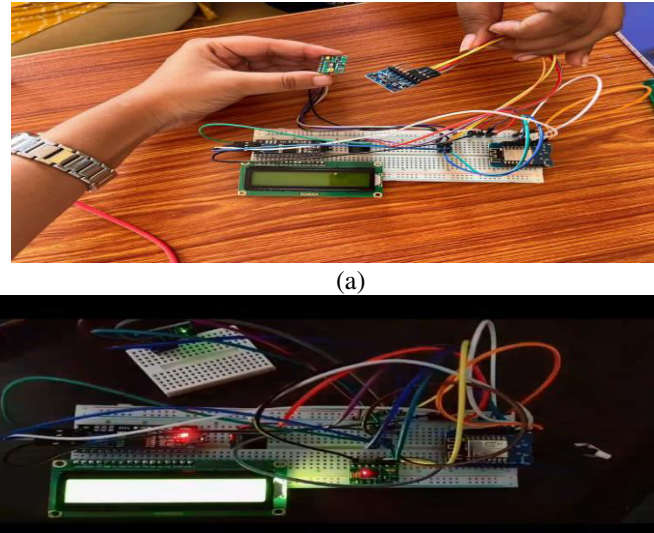


Fig. 3 Text Detection and Monitoring (a) Circuit Connection (b) Working Condition

VII. CONCLUSION

The device exhibits promising capabilities in detecting falls and signaling for necessary assistance. However, there is a need for further refinement and customization to align with individual requirements. Implementing threshold algorithms can enhance the device's accuracy and resilience. Additionally, considerations for various medical conditions of the user must be integrated into the device's design. Ongoing research endeavors are exploring optimal methods for fall detection and prevention, with the sensors highlighted in this paper offering a foundational approach that can be augmented for improved system performance.

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