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IOT Based Paralyzed Patient Health Monitoring System

Manoj Dhondiram Patil*[1], Sanika Ravindra Sonavane*[2], Omkar Dilip Shewale*[3], Vishwajit Jaywant Pawar*[4], Tejas Shrikant Mangavate*[5]

*[1] Associate Professor, *[2-5] UG Students,
Department of Electrical Engineering, Annasaheb Dange College of Engineering and Technology, Ashta, Sangli, Maharashtra, India
mdpatileps@gmail.com[1], sanikasonavane14@gmail.com[2]

ABSTRACT

The Paralyzed Patient Monitoring System is a key healthcare innovation designed to improve quality of life and healthcare management for individuals suffering from paralysis or severe motor impairment. This system uses advanced technology and sensors to continuously monitor and provide real-time data on the patient's vital signs, body position and environmental conditions. The primary goal is to ensure the safety and well-being of paralyzed patients while offering valuable insights to healthcare providers and caregivers.

Keywords: Paralyzed Patient, Technical Writing, Internet of Things.

I. INTRODUCTION

The Paralyzed Patient Monitoring System is an innovative medical device created especially to address the unique needs and challenges experienced by individuals with limited movement or paralysis. Because paralysis often results from neurological diseases, spinal cord injuries, or other medical disorders, it often requires lifelong care and monitoring to ensure the safety and well-being of people affected. This system is being created as a holistic strategy to support caregivers, empower patients, and raise the bar for medical professionals' care.

II. Block Diagram

A network of sensors, including as accelerometers, pressure, temperature, and heart rate monitors, will be included into the system. This cutting-edge technology combines wireless connection, data processing, and sophisticated sensor technologies to offer complete real-time monitoring of patients who are paralyzed. Enhancing patient safety, raising the standard of care, and assisting caregivers and healthcare professionals in giving prompt, individualized support are the main objectives.

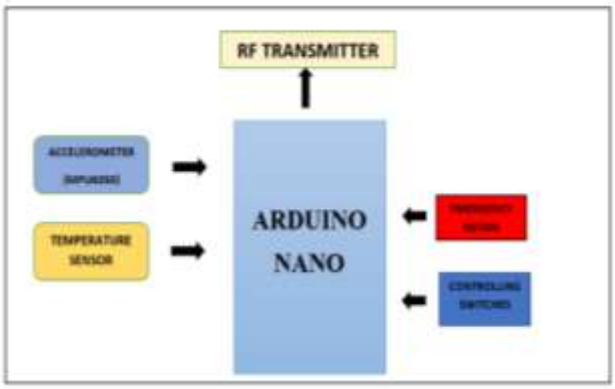


Fig. Block Diagram of Transmitter

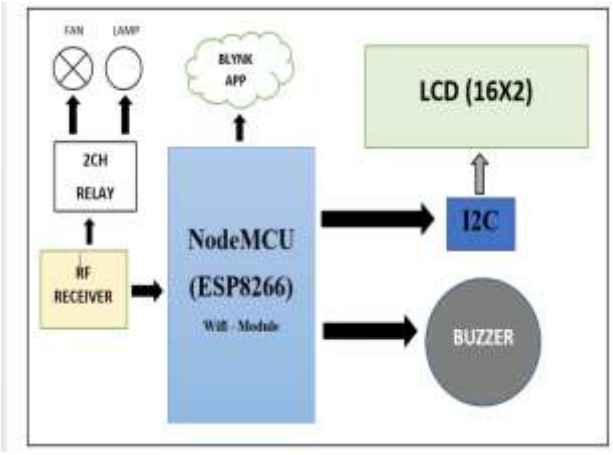


Fig. Block Diagram of Reciver

III. PRAPOSED SYSTEM

Patients who are paralyzed will be given wearable technology, including smart clothing or prostheses, which have sensors integrated into them to track their bodily movements and vital signs. Data from these devices will be wirelessly sent to a central monitoring platform. Realtime data collection from sensors and wearable devices will be received, processed, and analyzed by the centralized platform. The software will identify trends, abnormalities, and possible health hazards using machine learning techniques.

The patient's blood pressure, oxygen saturation, temperature, and heart rate will all be continually monitored by the system. An warning requiring quick attention will be triggered by any deviations from the expected values. Modern motion sensors are able to identify subtle changes in the patient's body posture and movement, which helps to avoid falls and ensures prompt care in the event of pain or pressure ulcers.

To guarantee that the patient is in a cozy and secure environment, the system will also keep an eye on the lighting, humidity, and temperature of the room.

When crises, major changes in health, or important events occur, caregivers and healthcare professionals will get real-time alerts and messages on their mobile devices or central monitoring station.

Transmitter

Data Reporting and Storage: The recipient maintains a record of past patient data for reporting and trend analysis needs. These data may be used by healthcare professionals to tailor treatment plans and make educated decisions.

User Interface: Typically integrated in the central monitoring platform, the user interface allows healthcare practitioners to access real-time data, patient information, and alerts. This interface can be accessed with a web browser or specialized applications.

Receiver

Central Monitoring Platform: Usually, the receiver is a remote monitoring center or a transmitter central platform housed in a medical facility. This platform analyzes data in real time after receiving it from many patient transmitters.

Data Analysis: To analyze the data received from the transmitters, the receiver unit uses machine learning techniques and data analytics. Based on the patient's vital signs and motions, it looks for abnormalities, trends, and possible health hazards.

Alert System: When the receiver notices crucial occurrences, aberrant vital signs, or changes from baseline data, it sends out alarms and notifications. Healthcare professionals and caregivers get these notifications via a variety of communication methods, including SMS, email, and mobile devices.

IV.PERFORMANCE ANALYSIS

An explanation of the parts and connections of a system for sending and receiving signals, such as data, audio, video, or other types of information, can be found in a transmitter and receiver diagram. Numerous industries, including networking, electronics, and telecommunications, frequently utilize these diagrams.

In order to prepare the input signal for transmission, it frequently passes through many phases of signal processing, such as amplification, filtering, modulation (for wireless transmission), or other processing.

When transmitting a signal wirelessly, a modulator is employed to enforce the carrier wave input signal. Radio transmission requires this technique, known as modulation. The input signal is forced onto a carrier wave using a modulator if the signal is being conveyed wirelessly. Radio transmission requires this technique, known as modulation.

This comprises all the circuitry and electronics such as oscillators, amplifiers, and control circuits needed to process and send the signal. In order to run its electronic parts and deliver power to the modulator, processing stages, and signal source, the transmitter requires a power supply.

The receiver antenna in wireless communication picks up incoming electromagnetic waves. There is no antenna in systems that are wired. Signal processing is applied to the received signal, which may have been distorted or muted during transmission goes through signal processing stages to enhance or filter it.

In wireless systems, the modulation process carried out by the transmitter is reversed by a demodulator, which retrieves the original signal from the carrier wave. Like with the transmitter, further signal processing may be used to filter and amplify the received signal, among other things.

This is the signal that has been processed and is prepared for usage by the system or device at its destination. It might be a signal that is audio, video, data, or some other kind of information. The output device is where the signal that was received ends up. It might be an audio speaker, a visual display, a data interface, or any other gadget made to make use of the information it has received.

V. RESULTS

In the event of an emergency or if the patient falls to the ground, the information will be displayed automatically and a continuous warning sound will be generated by a buzzer.

Fig .LCD Display - Emergency

Depending on what the patient requires, the performance will be presented. The accelerometer will sound an alert and indicate that they need food if it is configured to determine angle.

Fig. LCD Display - Need Food

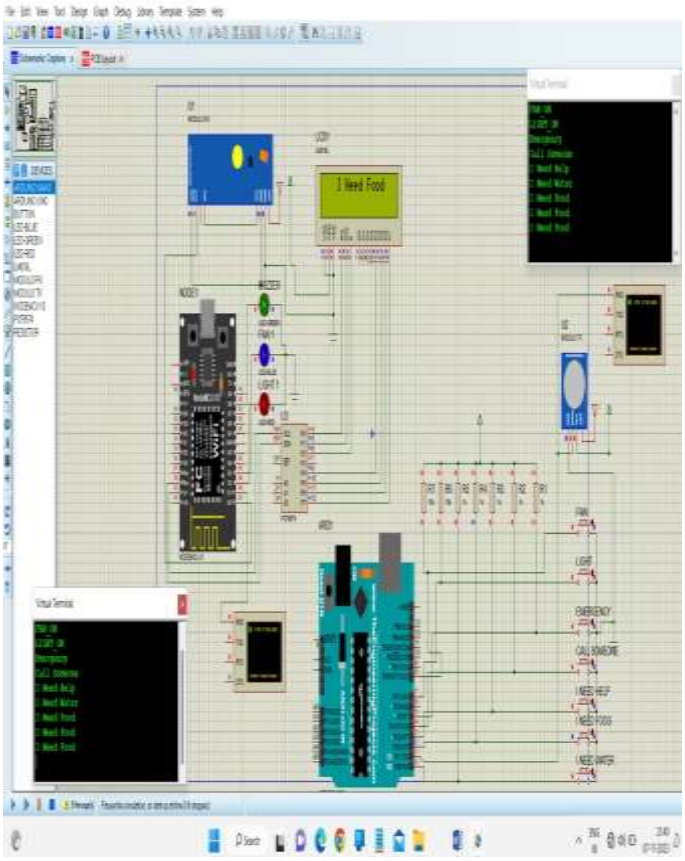
The outputs that are shown will help patients get what they need. They will be alerted if the angle changes in response to their needs, which might be water or medications.

Fig. LCD Display - Need Water

Depending on what the patient requires, the performance will be presented. The accelerometer will sound an alert and indicate that they going to toilet if it is configured to determine angle.

Fig.LCD Display - Going to Toilet

VI. SIMULATION



VI. CONCLUSION

A paralyzed patient monitoring system is an essential tool for guaranteeing the wellbeing, safety, and health of those who are confined to a wheelchair or other physical disability. This system uses a variety of sensors, data processing, and communication technologies to provide caregivers and healthcare practitioners immediate warnings and ongoing monitoring.

Paralyzed patient monitoring systems play a crucial role in offering people with restricted mobility allencompassing care and assistance. They provide a better standard of living, lower the chance of problems, and enhance the general health of both patients and the people who care for them. Globally, patients and their families are benefiting from the continual development and use of these technologies, which is advancing healthcare and home care practices.

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