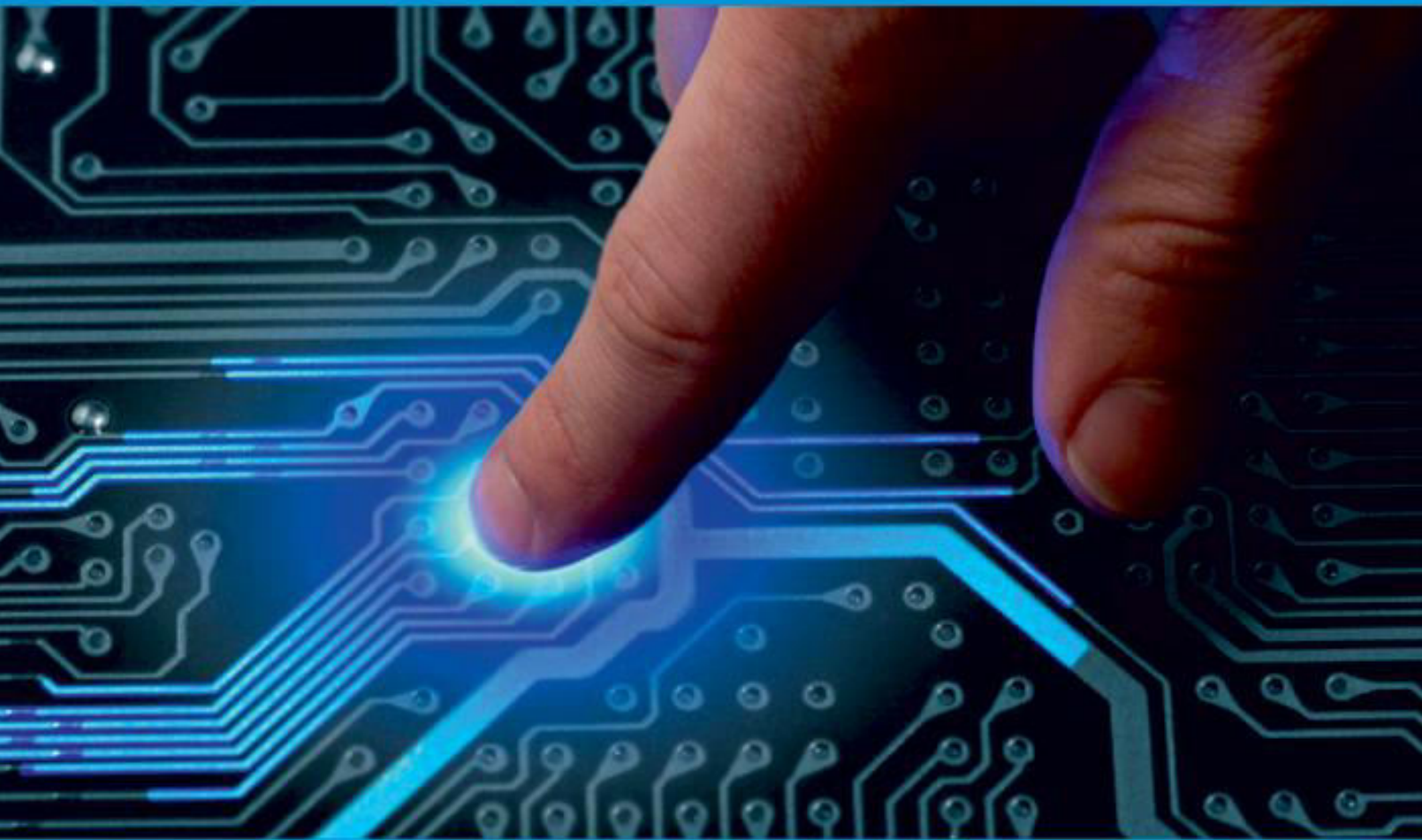




**IJIRCCE**

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

**Volume 10, Issue 5, May 2022**

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 8.165**



9940 572 462



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# E-Monitoring and Home Care Practice System using IoT as Path Source

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**ABSTRACT:** Over the last decade, there has been a surge in the use and research of in-home monitoring systems to assist older adults with dementia and their caregivers. The current study concentrated on a monitoring system that used motion sensors and Internet connections with one-way communication capabilities. Only a few studies have looked into and compared the perspectives of older adults and caregivers on such monitoring systems. The current study's goal was to investigate older adults' and caregivers' perspectives on in-home monitoring systems using an IoT platform and an Android app.

With a significant increase in the world's elderly population and the resulting health problems, finding technical solutions to this problem has become a pressing necessity, particularly in the field of health care. Based on the Internet of Things, this project proposes an e-health system for monitoring the health of the elderly (IoT). The system is built on an IoT platform and an Android app that serves as a server, allowing for the collection of health parameters from the elderly on a regular basis. This Android app allows the elderly and their families to monitor their health as well. By evaluating this system, we discovered that the majority of users find it useful, simple to use, and easy to learn, implying that our proposal has the potential to improve the quality of health care for the elderly.

**KEYWORDS:** IoT, Android, Elderly monitoring, patients

## I. INTRODUCTION

The challenges that caregivers of the elderly with chronic diseases face are always complex. In this context, mobile technologies have been used with promising results, but they frequently have limited functionality, are difficult to use, or do not provide the necessary support to the caregiver - resulting in declining usage over time. As a result, we created the Mobile System and IoT device for Elderly Monitoring. The goal is to monitor patients with functional loss and improve caregivers' communication with health team professionals by informing them about data related to the patients' daily lives and providing the health team with better tools.

Technology has become an essential and integral component of modern life, influencing how we all live and work. Technology, for the most part, has a positive impact because it helps us manage and control our daily routines. However, modern technology can help in other areas, such as overcoming the numerous challenges that health and social care face. Many areas of research and technology contribute to assistive solutions, and numerous trials are conducted to determine their feasibility. Several domains have been utilised to enable and improve the use of assistive technologies within the home. This aims to help people by allowing them to achieve their daily goals. The ability to identify human activities from acquired sensory data is the primary function of any system. This is accomplished by applying meaning (usually in the form of medical insight) to observations and immediately updating in the app, which is done by the fixed time that is already programmed in the system.

The global population has grown significantly, owing largely to medical progress, while the number of elderly people who require more care is growing. The emergence of an ageing population is quickly becoming a growing public health concern in many countries. Healthcare costs are constantly rising, and service quality does not meet the needs of modern society. One possible solution to these challenges is remote real-time health monitoring. Monitoring patients remotely has several advantages, including lower relapse rates, cost savings for patients, and convenience.

The development and refinement stages, as well as an evaluation of the Mobile System for Elderly Monitoring, are presented in this project. The overall goal of this system is to improve caregiver-health professional communication in order to improve daily care for elderly patients. On the one hand, by updating the information in the app, it assists and supports caregivers in managing care activities.

This system is integrated with the IoT device and the Android app; once the time is set in the system, the racks that contain the medicine according to the time are opened immediately; after some time, the racks will be closed and it will lock itself until the assigned time or alarm is announced. This can assist people in remembering and taking the

medicine from the assigned rack, and the status of the medicine taken can be updated in the android app, allowing them to easily know the daily status. The pulse rate device created here can record the pulse rate, which can also be recorded in the Android app.

## II. RELATED WORK

[1] International conference on applied internet and information technologies (2016)] proposed an e-health care system for doctors to monitor patients' vital physiological parameters from any location[2].

[3] Delivering home healthcare through a cloud-based smart home environment (CoSHE)] presented the CoSHE cloud-based smart home environment for a home healthcare wearable unit, a private cloud, and a robot assistant. The CoSHE system collects physiological, motion, and audio signals from residents using non-invasive wearable sensors, providing information about the residents' daily activities and location in the home[4]. Comprehensive health data are made available to caregivers and caretakers via a web application built on the system's cloud server. The system also includes a hydration monitoring application for continuous monitoring of the patient's water consumption levels and daily fluid requirements. The system uses acoustic data collected from microphones and body activity context derived from a smartwatch accelerometer to monitor hydration.

[5] Smart home automation system for the elderly and disabled using XBee [International Journal of Smart Home, 9 (4) (2015), pp. 203-210]. proposed a wireless remote-control home automation system for the elderly, handicapped, elderly, and disabled individuals[6]. The system was created for people who have difficulty moving, controlling, and monitoring essential home appliances. The system allows users to control or monitor appliances via a remote control device that sends orders wirelessly via XBee trans-receivers. The remote control has control buttons for various appliances and an LCD for message notifications. A wooden prototype version was used to implement the proposed system[7].

[8] Described a remote health monitoring system that uses mobile phones to collect blood pressure readings from patients. Values recorded on mobile phones are supplied and displayed to doctors or caregivers via the system's web interface[8]. Doctors can remotely monitor and manage the patient's condition using the system, as well as provide feedback to the patient.

[9] Proposed a second-generation RFID-based E-healthcare management system. The system for monitoring the patient's medical condition and communication between the patient and the doctor or health care provider, as the case may be, uses video conferencing calls over the internet[10]. The system can also collect and transform data in order to handle medical emergencies. Temperature, blood pressure, and heart rate are obtained from the patient via a body sensor attached to a specific part of the patient's body. In addition, the system keeps a healthcare database of the user's profile and medical history[11].

## III. PROPOSED METHODS

- ✓ This paper proposes an e-health system for monitoring the health of the elderly based on the Internet of Things (IoT), which is regarded as one of the most promising technological revolutions of our time.
- ✓ IoT is actively used to monitor patients' health care in order to improve their quality of life. Its technology provides a structured and competent approach to improving human wellbeing and health.
- ✓ This system allows many connected devices to provide services and includes an Android app to instantly update the status.
- ✓ The arranged racks containing the medicine can be assigned according to the timings for the use of the elderly or bedridden people and can update the status and rack opened according to the time setting.
- ✓ The patient's pulse rate will also be updated in the app, which is linked to the device and can be used to easily monitor the patient.

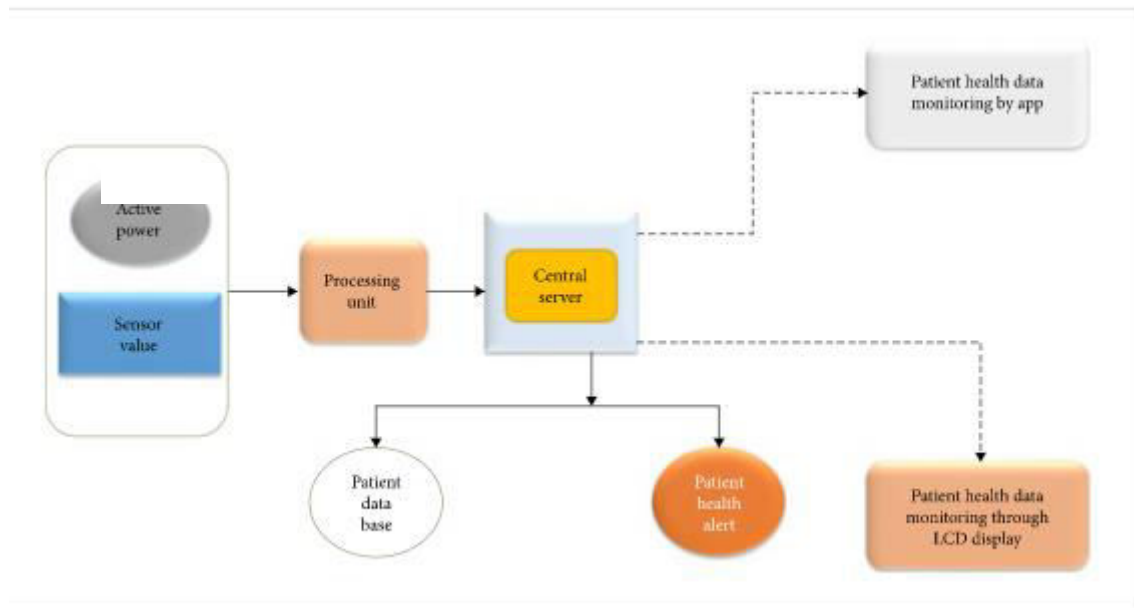


Fig: Block diagram of the system

#### Hardware Components that re used in the system

Node MCU  
Electromagnetic Lock  
LED  
Relay board  
Jumper wires  
9 volt power supply

#### IV. CONCLUSION

Elder care technologies in smart home platforms Through continuous monitoring, smart homes can provide comprehensive information about the overall health status of the elderly. The energy requirement of the smart home system is a major concern for its smooth operation. Low power consumption and high energy efficiency are critical for the smart home, particularly for long-term monitoring devices and mobile systems. Advanced battery technologies and low-power electronic components can be used to extend the system's operating time. Researchers could also work on developing and integrating efficient energy harvesting technologies to meet the energy needs of wearable and mobile systems in the smart home.

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**Impact Factor: 8.165**



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