

IoT-Based Patient Health Monitoring and Emergency Alert System

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Abstract: *Healthcare monitoring has become increasingly important in modern society, particularly for patients with chronic illnesses, elderly individuals, and those requiring continuous supervision. Traditional monitoring systems are often limited to hospital environments, restricting mobility and delaying emergency response. With the advancement of Internet of Things (IoT) technologies, it is now possible to design portable, real-time health monitoring systems that transmit patient data wirelessly to caregivers and healthcare providers.*

This project proposes an IoT-based patient health monitoring and emergency alert system using the ESP32 Wi-Fi microcontroller, MAX30100 heart rate, DHT11 temperature and humidity sensor, and a 1.8" TFT (SPI-ST7735) display. The system collects vital health parameters, displays them locally, and transmits the data to the Blynk IoT platform for remote monitoring. Emergency alerts are generated when abnormal conditions are detected, ensuring timely intervention.

The system is cost-effective, portable, and efficient, offering real-time monitoring and emergency response capabilities. It demonstrates how IoT can revolutionize healthcare by reducing risks, improving patient safety, and enabling faster medical intervention.

Keywords: Patient Health Monitoring, Internet of Things(IoT), ESP32 Microcontroller, MAX30100 Sensor, DHT11 Sensor, 1.8" TFT display, Blynk IoT Platform

