

Internet of things based real-time coronavirus 2019 disease patient health monitoring system

ABSTRACT

The coronavirus disease (COVID-19) outbreak has led to many infected worldwide and has become a global crisis. COVID-19 manifests in the form of shortness of breath, coughing and fever. More people are getting infected and healthcare systems worldwide are overwhelmed as healthcare workers become exhausted and infected. Thus, remote monitoring for COVID-19 patients is required. An internet of things (IoT) based real-time health monitoring system for COVID-19 patients was proposed. It features monitoring of five physiological parameters, namely electrocardiogram (ECG), heart rate (HR), respiratory rate (RR), oxygen saturation (SpO₂) and body temperature. These vitals are processed by the main controller and transmitted to the cloud for storage. Healthcare professionals can read real-time patient vitals on the web-based dashboard which is equipped with an alert service. The proposed system was able to transmit and display all parameters in real-time accurately without any packet loss or transmission errors. The accuracy of body temperature readings, RR, SpO₂ and HR, is up to 99.7%, 100%, 97.97% and 98.34%, respectively. Alerts were successfully sent when the parameters reached unsafe levels. With the proposed system, healthcare professionals can remotely monitor COVID-19 patients with greater ease, lessen their exposure to the pathogen, and improve patient monitoring.