Low-cost IoT based wearable respiratory sensor for Covid-19 patients

ABSTRACT

The three main Covid-19 symptoms are shortness of breath, coughing and fever. Currently, most of the patients who tested positive for COVID-19 are selfquarantined at home. Unfortunately, some home quarantine Covid-19 patients are brought in death to hospital. Therefore, e-health remote patient monitoring systems are needed. Although many e-health monitoring systems are proposed by the researcher, not many dedicated systems are suitable for COVID-19 specifically. Mostly do not have a respiratory rate monitoring function. Furthermore, many e-health devices in the market only feature local data storage and do not include Internet of Things (IoT) integration. In this work, we proposed a low-cost IoT based respiratory sensor for home quarantine Covid-19 patients to monitor the respiratory rate. The measured respiratory rate will be transmitted to Google Clould via WiFi connection and the user can read it through their computer or smartphone. Alert message will be generated if the respiratory rate reaches an unsafe threshold. The proposed device was tested with five samples and gave a 100% accuracy on respiratory rate measurement. The proposed prototype cost is much lower than the other respiratory monitoring devices in the market. The proposed device could reduce the mortality of home quarantine Covid- 19 patients.