

REMOTE MONITORING SYSTEM OF BREATHING AND GAS LEVELS, FOR PATIENTS RECOVERED FROM COVID-19

Arsenio Manuel Minaya Urquidi, Juan Diego García, Valentina Rita Villarroel-Beltrán, Luis Marcel Barrero Mendizábal, Silvia Cecilia Tapia Siles

ABSTRACT

This project presents the development of a mask to measure the respiratory rate (RR) and data related to air quality, in conjunction with a mobile application that collects information and then stores it in a database. The information collected is processed and delivered to doctors for the control and monitoring of their patients. This is because recovered COVID-19 patients are usually, not systematic enough, to record the information requested by the local doctors who treat them. We also take into account the low availability of specialized equipment in the field of respiratory monitoring. RR was measured with a temperature sensor and a microphone. Fast Fourier Transform and Machine Learning algorithms were used which together formed an entry-level Sensor Fusion to have a more reliable response. The results of the RR measurements obtained from sensor fusion have a standard deviation of 5.97 and an exact estimate in 67% of the tests. Because the materials are popular globally, this project is easily replicable in low-resource countries.

Keywords: Respiratory Rate, Smart-Mask, Air Quality, COVID-19, FFT, Machine Learning, Sensor Fusion.

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