Wireless Data Collection Against COVID-19

A joined initiative in Singapore is developing an open-sourced system that wirelessly collects oxygen levels data from pulse oximeters and presents it on a dashboard, aiming to boost COVID-19 fight.

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Availability of well-structured, easy-to-read health data is essential in healthcare, especially during the pandemic. At the same time, collection and presentation of such data may be resource-consuming, so automating these processes can be highly beneficial as it allows frontline staff to attend to more urgent matters while still being updated on monitoring results.

A team of researchers from Singapore is aiming to eliminate current inefficient methods of manual data collection and processing with a wireless system, which comprises Bluetooth-enabled pulse oximeters to obtain, wireless nodes to capture and Wi-Fi network to transfer the data, as well as a dashboard where all the information is presented to the end-user.

The idea behind the project is to measure the level of oxygen saturation in the blood with oximeters to see if an individual may suffer from 'silent hypoxia,' a condition without any visible symptoms, such as shortness of breath, but potentially dangerous.

The monitoring process includes a user taking measurements with an oximeter for 30 seconds while being within six meters of a wireless node. From the node, the data are transferred to the cloud via Wi-Fi stations and then is aggregated on a single integrated dashboard displaying the names and oximeter readings of each user. The dashboard is accessible from multiple devices such as a smartphone or computer.

In addition, there is a system of text messages in place notifying the user about their readings. In case of any abnormality, the user is prompted (more than once, if needed) to repeat the measurement. If the result again deviates from normal, the user is recommended to contact healthcare staff for further examination.

Piloted in a construction company's dormitories for two months, the project has shown the possibility to test users four times a day with a compliance rate of above 85 per cent. Any external intervention was minimal.

According to the researchers, the system can also be deployed in community care facilities. In the future, more sensors could be added to the system, e.g. for measuring temperature, to enrich the collected data.

Source and image credit: National University of Singapore

Published on : Thu, 5 Nov 2020