IoT and Big Data in Indoor Environment Monitoring for Assessing the Risk of Respiratory Disease Transmission, such as COVID-19 and Sick Building Syndrome (SBS)

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Abstract

Indoor air quality plays a crucial role in maintaining human health and preventing the spread of diseases. Amidst the COVID-19 pandemic, the significance of monitoring indoor air quality has risen, as it helps mitigate the risk of disease transmission (Mumtaz et al., 2021). Various studies have been conducted to define the risk levels of contagion in indoor spaces, considering environmental factors such as carbon dioxide (CO2), particulate matter under 10 and 2.5 micrometers (PM10 and PM2.5), relative humidity, and temperature. These studies ascertain the risk levels based on the value ranges of these environmental variables.

This research proposes a comprehensive system for data acquisition, processing, and storage with the primary goal of streamlining data collection and ensuring its availability for analysis and the development of Machine Learning models. By implementing this system, it will be possible to effectively monitor indoor air quality in real-time and take preventive measures to reduce the risk of infection. As people spend a significant portion of their day indoors, whether at home, work, or public spaces, providing a safe and healthy breathing environment is essential. The proposed Big Data system serves as a vital tool in achieving this goal and promoting overall well-being in indoor environments across Mexico.

Keywords

Big Data, COVID-19, Covid Prevention, Data Analysis. Data Cleansing, Information Technologies. Monitoring Variables

Mumtaz, R., Zaidi, S. M. H., Shakir, M. Z., Shafi, U., Malik, M. M., Haque, A., ... & Zaidi, S. A. R. (2021). Internet of things (IoT) based indoor air quality sensing and predictive analytics—A COVID-19 perspective. Electronics, 10(2), 184.