UNIVERSITY of RWANDA

ACEIoT

A DECENTRALIZED BLOCKCHAIN-BASED AIR POLLUTION SPIKES MONITORING FRAMEWORK OVER INTELLIGENT IoT EDGE NETWORKS

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Abstract:

Air pollution spikes have been causing harm to human beings and the environment. Most exposure to Air pollution spikes has demonstrated a significant impact on mental health, especially children at an early age. That lead to suicide or depression. Previous research concentrated on air pollution in general. Existing monitoring systems do not consider Short-term air pollution peaks. This research presents the co-design of the hardware and software for IoT to monitor air pollution spikes for a short duration in real-time monitoring. The system comprises two technologies like edge computing to capture short-term exposure and a mathematical model for distribution in analyzing the captured data. This system ensures the presence of the spikes start and end for each pollutant. Monte Carlo simulation has been used in this research to predict the next spike of each pollutant. Artificial Intelligent is proposed to analyze immutable data for a short-term prediction. After the analysis, legislators based on intelligent contracts created using blockchain to reduce pollution based on its source.

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