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Title: Software Defined Network–Internet of Consumer Electronics for Intelligent Self-Powered Gas Sensor Monitoring

Author: Maity S.P.; Banerjee A.; Chakraborty C.; Singh S.

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Abstract: Detection of harmful gases and their real-time monitoring in closed and open environments find applications such as safety in industrial settings, health monitoring, air quality tracking, etc. This article discusses the issue in the framework of an Internet of Consumer Electronics (IoCE). The model integrates Internet of Things (IoT)-based low-cost self-powered sensor deployment for gas sensing and software-defined network (SDN)-driven control, leading to SDN-IoCE. Reliable transmission of gas sensing data is essential and done through a reconfigurable intelligent surface-aided underlay cognitive radio network. Radio frequency energy harvesting is done for self-powering of sensor nodes. Two deep Q-networks are used, where the first one ensures seamless connectivity on gas sensing data transmission, while the other one performs its time-critical analysis. The proposed SDN-IoT architecture achieves 33-s- and 46-watt-lower values in delay/latency and energy consumption, respectively, over existing work.



URL: <https://ieeexplore.ieee.org/document/11229933>

