**ABSTRACT**

Wireless Sensor Networks (WSNs) are among the very promising solutions for several practical applications. Currently, WSNs have also found their application in the case of industrial scenarios, even for crucial applications. There are two significant requirements for an efficient deployment of WSNs such as energy efficiency and reliability. In this paper, robust model is proposed to enhance the energy efficiency in IEEE 802.15.4 sensor networks. The robust model is tending to restrict collisions and optimizing the access parameters without changing the existing architecture of MAC protocol.