

## **A hybrid approach for seamless and interoperable communication in the internet of things**

### **ABSTRACT**

Reliable and resource-aware communication is a challenging task in Internet of Things (IoT) networks. In these networks, seamless and interoperable communication among member devices is a challenging task that becomes more complex with the simultaneous communication of two or more devices with a centralized controller, that is, a cluster head or a gateway module. While addressing this challenge, existing approaches suffer from excessive packet collision, bandwidth consumption, packet loss, latency, and unnecessary waiting for the TDMA slots. In this article, a hybrid communication approach is proposed to resolve most of the aforementioned challenges. Initially, a dynamic TDMA approach is presented to permit simultaneous and interoperable communication among multiple devices and their controller modules. The proposed approach allocates a variable number of time-slots to the IoT devices. For the time-slot allocation, an enhanced RTS/CTS mechanism is devised to allow seamless communication with a minimum possible latency, waiting time and bandwidth consumption. A case study of the proposed approach in a real-world IoT scenario is also presented. The simulation results verify the effectiveness of our proposed approach.