EE-MAC: Energy Efficient-Medium Access Control for Periodic Applications in Border Surveillance Wireless Sensor Networks

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Abstract—This paper propose the energy saving algorithms for medium access control in wireless sensor network to improve energy saving and increasing packet delivery ration for periodic applications in border surveillance wireless sensor networks. Since the data dissemination is periodic, the data update can be scheduled so that all nodes in virtual cluster must tightly synchronize their transmission to avoid collision. S-MAC [1] and D-MAC [2] schedules should be modified to satisfy the power cost of data delivery. Our implementations of this paper proposed the wake-up algorithm, the delay wakeup algorithm, and topology based the virtual group schedules. The results show that our proposed algorithms perform better than S-MAC and D-MAC in terms of energy efficiency and packet delivery ratio.

Keywords — medium access control (MAC), border surveillance wireless sensor networks (BSWSNs), energy efficiency (EE), and packet delivery ratio (PDR).

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