LA-Mobicast: A Learning Automata Based Mobicast Routing Protocol for Wireless Sensor Networks

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Abstract:

The spatiotemporal character of mobicast in sensor networks relates to obligation to deliver a message to all the nodes that will be present at time t in some geographic zone Z, where both the location and the shape of the delivery zone are the functions of time over some interval (t_{start}, t_{end}). In this paper a learning automata based mobicast protocol for sensor networks to support applications which require spatiotemporal coordination has been proposed. The proposed protocol which we call it LA-Mobicast uses the shape and the size of the forwarding zone to achieve high predicted accuracy. The proposed protocol use learning automata to adaptively determine the location and the shape of the forwarding zone in such away that the same number of wake-up sensor nodes be maintained. The proposed protocol is a fully distributed algorithm which requires lesser communication overhead in determining the forwarding zone and the mobicast message forwarding overhead. In order to show the performance of the proposed protocol, computer simulations have been conducted and the results obtained are compared with the results obtained for five existing mobicast protocols. The results of comparison show that the proposed protocol outperforms existing mobicast protocols in terms of slack time, message exchange, node involved and guarantee percent.

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