An Estimation of QoS for Classified Based Approach and Nonclassified Based Approach of Wireless Agriculture Monitoring Network Using a Network Model

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Wireless Sensor Network (WSN) can facilitate the process of monitoring the crops through agriculture monitoring network. However, it is challenging to implement the agriculture monitoring network in large scale and large distributed area. Typically, a large and dense network as a form of multihop network is used to establish communication between source and destination. This network continuously monitors the crops without sensitivity classification that can lead to message collision and packets drop. Retransmissions of drop messages can increase the energy consumption and delay. Therefore, to ensure a high quality of service (QoS), we propose an agriculture monitoring network that monitors the crops based on their sensitivity conditions wherein the crops with higher sensitivity are monitored constantly, while less sensitive crops are monitored occasionally. This approach selects a set of nodes rather than utilizing all the nodes in the network which reduces the power consumption in each node and network delay. The QoS of the proposed classified based approach is compared with the nonclassified approach in two scenarios; the backoff periods are changed in the first scenario while the numbers of nodes are changed in the second scenario. The simulation results demonstrate that the proposed approach outperforms the nonclassified approach on different test scenarios.

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