

An Enhanced Event Prediction Technique for Wireless Sensor Networks

By

Amira Emad Anis Hamdan

Supervisor

Prof. Ali Aldahoud

ABSTRACT

Wireless Sensor Network (WSN) has been extensively considered as one of the most significant technologies for the twenty-first century, including wireless communications and electronics. It has received a great attention in environmental monitoring, commercial and industrial applications because of its technical development in communications and low-power usage of embedded computing devices.

Although there are numerous advantages of WSNs, however, there are also some challenges and difficulties that face this important technology such as the needed time and accuracy for event detection. Convoing the data in WSNs to the base station needs relatively long time and an actor on a network usually cannot reach the event position accurately. Moreover, in mobile actor environments, source node usually requires a long time to send the message to the actor.

This research proposes a new optimization approach which explores the use of Artificial Bee Colony Algorithm (ABC) in reducing the delay of an actor in a network to arrive the active node quickly and in enhancing the accuracy of event detection in WSN. A new model has been developed based on the proposed algorithm, where the actor can detect the event position more accurately within a shorter time and therefore the overhead on the network will be reduced and the broadcast will be decreased

compared with the other existing works in the process of event detection. The research has shown that the applied ABC algorithm achieved effective results in terms of accuracy and the needed time for event detection comparing with the other optimization algorithms. After implementation this work in Matlab, It proved that enhance efficient reached around 0.92.