Energy efficient path reconstruction in wireless sensor network using iPath

ABSTRACT

Wireless sensor networks operate through commonly self-organized sensor nodes to transfer data in a multi-hop approach to a central sink. In order to support fine-grained diagnostic analysis and optimize the performance level of the networks, the reconstruction of per-packet routing path is essential. However, in large-scale networks, the performance levels of the current path reconstruction method decline rapidly, with loss of links. An efficient approach to fully comprehend the complex internal behavior of network is through the reconstruction of the routing path of each received packet at the sink side. This paper discussed the added of energy efficiency parameter to enhance the inference Path (iPath). Thus, the iPath by added the energy efficiency enables the reconstruction of the per-packet routing paths of large-scale networks, by providing a stable and efficient route to exchange messages between source and destination in a timely manner. This work uses iterative boosting algorithm to find an alternative path with less distance and energy consumption. To achieve energy efficiency, it compresses the packet information by using GZIP tools in JAVA. Energy efficient iPath (E-iPath) is evaluated with several variations of nodes in WSN deployments as well as large-scale simulations. The findings demonstrate that E-iPath surpasses other current approaches such as EEPMM. E-iPath has accomplished low transmission overhead which it has reduced 13% of the energy consumption and has gained significant reconstruction ratio compared with iPath.

Keyword: Wireless sensor networks; Path reconstruction; iPath; Energy efficiency