7.1 CONCLUSION

WSN is a promising research area with a number of attractive application domains ranging from environmental monitoring to health care application. The energy is one of the key factors for the secure communications among the nodes in WSN. One of the significant requirement in sensor networks life time is the regulation of the security aspects with respective to energy.

In this research work an efficient routing scheme based on energy harvesting has been proposed for WSN. The novelty of the proposed routing scheme is using nature inspired intelligence scheme. The experimental study has been carried out using the sample size of 200 nodes and the performance optimal for well configured homogenous network. Moreover the proposed routing scheme works well during path loss and capable to reorder the harvesting node which reveals the novelty of the proposed scheme.

The proposed contributions lead to the achievement of enhanced energy efficient routing using route max table in WSN. The routing table is formed using a communication flow model with node area and node count. The
efficiency of the proposed energy efficient routing is illustrated through the experimental setup having eleven sensor nodes with one server. The overall performance analysis with respect to various parameters such as energy consumption, packet life time, scalability etc is much better than the existing energy protocols.

This research study continues with designing the EDIN in WSN. In this research work we have the calculated the energy density and residual energy is calculated which extend the life time of the network. Here the isolated node sends out information to the sink node based on energy density of node and network which saves the energy of the network. The proposed EDIN algorithm is implemented in MATLAB and the performance is compared with LEACH, REACH-IN, and RIN algorithm. The experimental results shows that, the proposed EDIN is much better than existing algorithm with respective to alive node, energy level and network life time.

The overall performance of the proposed three routing protocols is exhibited through ROC curve plotted for different mean area and functional operational rates. From the experimentation, it is clearly observed that the energy based harvesting scheme and EDIN routing scheme are more efficient in terms of other existing routing scheme.
7.2 FUTURE WORK

In future, the work can be extended to support for other supplementary networks such as IoT, IoE, 6LowPAN etc. Further, we are planning to incorporate machine intelligence in future for autonomous routing in sensor nodes during group coordination. In future, the problem to increase stable region in sensor networks can be solved. Further, the proposed routing schemes can be enhanced to future direction in the field of agriculture.