

From the above Table- 2 it has been observed that, at the end of simulation there are alive nodes in the network whereas in DEEC all the nodes die. In RCEEC, time taken by the first and the tenth node to die in the network increases by approximately 300 rounds.

In addition, RCEEC attains a decrease in the number of packets that are transmitted to CHs. This in turn enhanced network lifetime and increases sustainability of the network.

In the proposed RCEEC protocol results show that No. of packets sent to CHs reduce as compared to DEEC as shown in Figure (1) .This results in energy conservation of non-participating (idle) nodes. Total energy of the network increases giving rise to greater number of alive nodes (Fig. 2) and less number of dead nodes (Fig. 3) per round.

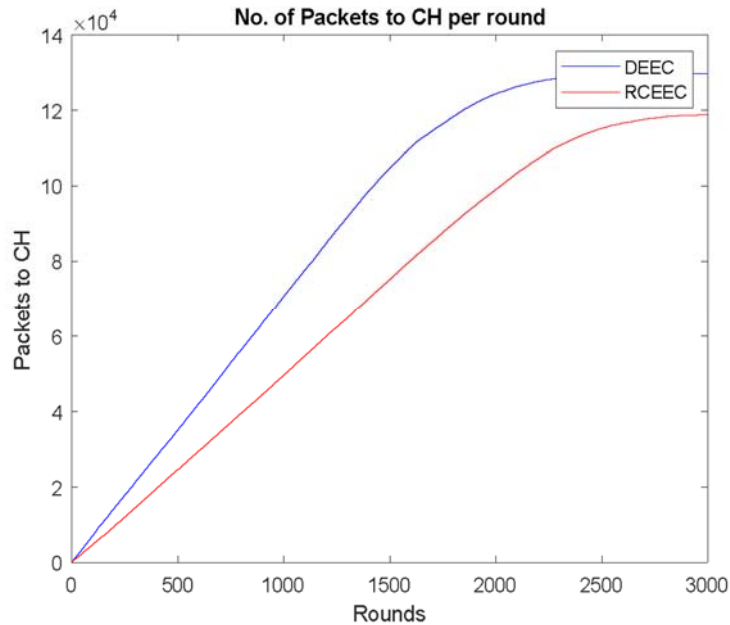


Fig. :-1 No. of packets to CH per round

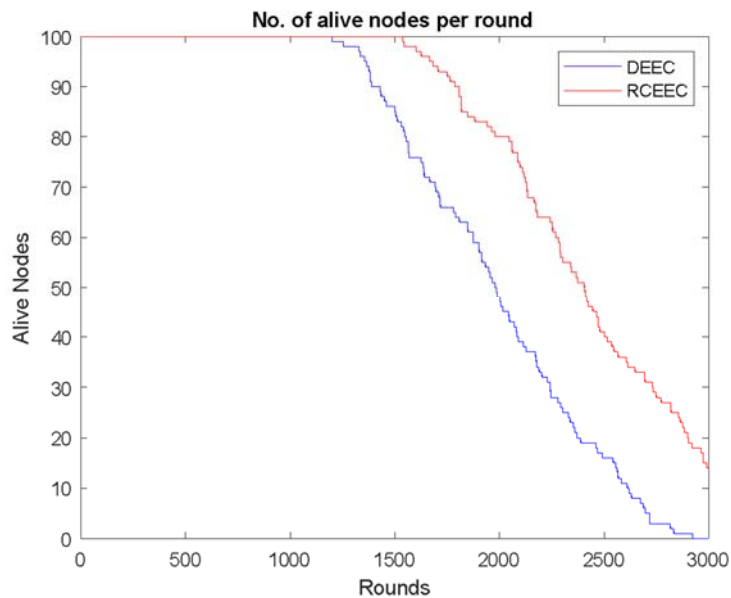


Fig. :-2 No. of alive nodes per round

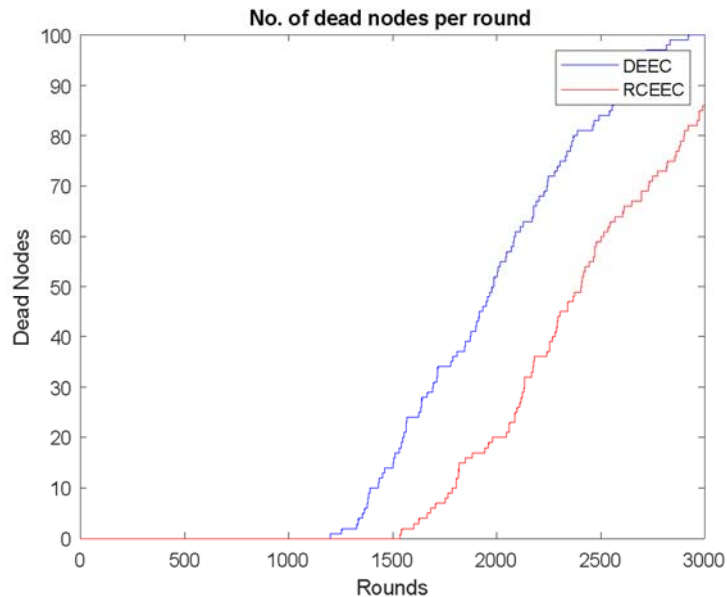


Fig. :-3 No. of dead nodes per round

In this approach numbers of CHs are kept consistent as in the earlier works [2],[4]. There is no significant change in the number of packets sent to the BS as this approach concentrates on reducing only intra cluster communication. Though in RCEEC a slight increase is shown in the number of packets to BS, it can be attributed to longer network lifetime. The stability period (Time lapse between the start of execution and the exhaustion of the first alive node in the WSN) of the network has increased by approximately 300 rounds.

6. Conclusion

Smart people living in smart cities are surrounded by innumerable tiny IoT devices that work together to form heterogeneous wireless sensor networks sharing vast array of trivial and non-trivial information at the tips of their fingers. It gives rise to the problem of Big Data lying untouched and consuming important resources. In clustering protocols there are redundancies at two levels- Inter Cluster and Intra Cluster. This protocol RCEEC addresses the problem of intra cluster communication by controlling the transmission packets from nodes to CH. It in turn reduces the amount of data transmitted in the whole sensor network. Simulation results show that it reduces the number of packets in transit saves energy, enhance network lifetime and make the network resilient. RCEEC attains decrease in number of packets that are transmitted to CHs. This in turn enhanced network lifetime and increases sustainability of the network. Results show that RCEEC surpasses its predecessor DEEC with reference to energy efficiency, network lifetime and controlling intra cluster traffic.

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