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The “Wireless Sensor Network” research area is a fast-growing domain, demanding the highest efficiency level during data transmission. This research work, "MALICIOUS NODE AND MULTIPLE ATTACK DETECTION ALONG WITH SECURED DATA TRANSFER IN WSN, " focuses on transmitting data more securely and Energy efficiently. The security for data transmission is implemented at three significant levels, viz, at Node Level, Network Level, and through Data Encryption using Modified Onion Routing Algorithm. The research is also successful in handling Indeterminacy in energy consumption.

At WSN Node Level, Malicious nodes, are detected through a fuzzy Entropy-based trust model. Most significant 10 types of Active and Passive attacks in WSN at the Network level are detected using the Intuitionistic Fuzzy Rule Inference System. The Data being transmitted is protected through bio-science-based routing techniques. The energy consumption during transmission is efficiently handled by checking the energy consumption of the node at every level and choosing the optimum route to reach the destination, without any loss of data.

This research work is compared with all the existing data and the research work and thus proved to be the Optimum WSN malicious node detector