CHAPTER 3

SYSTEM ARCHITECTURE

3.1 OVERALL SYSTEM ARCHITECTURE

The overall system architecture of the proposed routing schemes is given in Figure 3.1.

![Figure 3.1 The overall system architecture](image-url)
3.2 CENTRAL COORDINATOR MODULE (CCM)

This module is the base module which handles all the other modules. This module is present in all the nodes of network. Moreover, this module works differently at different situations. The incoming data packets, request packets and reply packets are handled by this module. When the source sends the route request to the CH, the CCM decides whether to call Secure Routing Module or Reliable Routing Module depending on the requirement of the network.

3.3 RELIABLE ROUTING MODULE

The reliable routing module is used to route packets through the paths which are more reliable. There are three different sub phases. The first one is called as route discovery phase, which is called when there is no route available for the destination. Route discovery phase returns all the paths between the source and the destination. The second one is called as reliability computation phase, where the reliability of the different paths that exist between source and destination are computed. The final one is the route maintenance phase. This phase is called when the existing path is no longer valid.

3.4 SECURE ROUTING MODULE

Secure routing module is called by the CCM when the users of the network want secure routing. In order to provide secure routing, four different sub phases are used. The first one is called pre-processing phase that extracts the information from the arriving packets. The extracted information is stored in a table along with the address of the node. The control is transferred to appropriate phase after the pre-processing is over.
The second one is called as clustering phase which consists of two sub systems. The first sub system is used for cluster identification that uses two methods for identifying clusters. The first method is based on competitive neural network and is useful in non-overlapping conditions. This method is little inefficient in overlapping conditions and the need for a new method arises in such conditions. The second method is based on Fuzzy C-Means method and is very useful in overlapping condition. The second sub phase is used for clusterhead election. Once the clusters are identified, the CH election sub system is called for electing CH.

The third one is called as routing phase. The routing phase contains two sub systems. The first one is called as Intercluster Routing System, which takes care of the intercluster routing operation. The second one is called as Intracluster Routing System that is used for intracluster routing.

The fourth one is called as intrusion detection phase. The intrusion detection phase contains two sub systems. Both the systems are based on modular neural network that analyzes the incoming data packets to detect two types of attacks. The first type of attack is called as false route request attack and the second type of attack is called false route reply attack. When the packet is found to be the intruder packet, the IDS drops the received incoming packet.