

ABSTRACT

Wireless Cooperative networks are in advance an increasing interest in information and communications technologies, since such networks can progress communication capability and provide a productive environment for the enlargement of context-aware services. In general, cooperative communication is defined as a generalization of the relay communication where several sources act as relay nodes for each other and it allows distributed nodes to cooperatively transmit the signals to the destination together and coordinate their resources for improving the information transmission quality.

Cooperative communication depending on relaying nodes have become as a promising approach to maximize spectral and power efficiency, network coverage and to minimize outage probability. Cooperative communication enables in efficient utilization of communication resources by permitting nodes in a communication network to coordinate with each other in information broadcast and it is an emerging technique for future communication systems.

In this research work, cooperative communication schemes were first surveyed and their advantages in improving system capacity and diversity were discussed. Consequently a distributed relay node selection and assignment technique are proposed for cooperative wireless network. This technique uses SNR based relay node selection scheme called as Threshold based selection cooperation (TRSC) and optimal based relay node selection schemes called as Best Expectation Method (BEM). First one selects relay nodes based on SNR and the second one chooses the relay nodes based on

channel capacity and available bandwidth. Then the cooperative relay nodes selection phase selects the common relay nodes from both the schemes and then they get established. Next, the Cooperative relay node assignment for a node is accomplished by using the Capacity Flow Ratio(CFR). Here the relay node is assigned with CFR value, until the scheme reaches the last node of reliable node. Finally, Decode and forward (DF) technique is used as channel coding scheme to transmit the computed data to the destination.

An Adaptive Decode and Forward (ADF) relaying scheme with Min-Max algorithm is also proposed in cooperative wireless networks for best relay node selection. Once all the relay nodes are collected, then the best relay nodes are selected using ADF. Finally estimation of BER for best relay node is carried out based on the Min-Max algorithm.

At last, the performance of the proposed technique is evaluated and it is proved that ADF with Min Max algorithm shows better BER performance when compared to existing methods.