

ABSTRACT

Wireless networks which were once a rarity has now become commonplace especially in situations where traditional wired networks were deemed unsuitable. However, these networks are known to suffer problems of poor connectability which results in low performance and high packet losses. Many problems in a wireless network could be attributed to congestion of the medium and the mobility of the mobile nodes because this results in false reports of link availability and therefore increases TCP retransmission timeouts.

In this thesis, an effort has been made to introduce fuzzy logic control into the MAC layer of an IEEE 802.11b wireless network model to diagnose the link between nodes based on the distances and relative velocities between communicating nodes. The proposed logic control predicts whether the nodes are still (and will remain) in communicating range and consequently attempt to reestablish a link between nodes and alleviate the false availability problem. Implementation of the proposal was developed and completed using the '*ns*' network simulator. Results of simulation tests show that the fuzzy logic control increases the amount of packets transferred around 7% whilst maintaining the level of overhead traffic. The number of packets dropped during delivery is also reduced by around 4%, thus giving a higher delivery ratio of packets.