CHAPTER 7
CONCLUSION AND SCOPE FOR FUTURE WORK

7.1 CONCLUSION

In this thesis the causes of congestion, their impacts on the performance of the networks are discussed. Also the types of congestion control schemes and the congestion avoidance procedures are outlined. Many congestion control techniques such as Drop tail, RED, REM, AQM, and AVQ are discussed to control the behavior of the queue. The effectiveness of specifying the queue behavior in terms of linguistic (fuzzy) variables is studied. The proposed Fuzzy enabled Active Queue Management (F-AQM) scheme is experimented with a simulation setup for varying number of sources of data and is shown that it outperforms the existing methods such as AVQ, Drop tail, and RED. Also the setting of ECN bit enables the marking of packets rather than dropping them. The marking of packets notifies the sources of data about the incipient congestion in the network there by adjusting the flow rate to avoid congestion. It is observed that the number of dropped packets is reduced when ECN bit is set. A similar procedure is followed with the Fuzzy enabled Differentiated Services (FDS3) RED queue and is shown that it outperforms the existing methods DS RED queue management scheme. Also the effect of queue size is studied.

The effect of discriminating the congestion losses from random wireless losses is studied using a biased queue management. Also TCP source in general follows the Linear Increase and Multiplicative Decrease (LIMD) model for congestion control which has to take care of the efficiency and fairness. But it converges to the equilibrium state slowly.
Hence an improved version of LIMD for fast convergence is studied that impacts positively both efficiency and fairness. The optimization of LIMD during the convergence procedure enables the algorithm to converge faster and to achieve higher efficiency, and at the same time, is highly responsive to congestion.

7.2 SCOPE FOR FUTURE WORK

Recently the introduction of wireless services in Internet posed many challenges in dealing with losses which are to be distinguished from the congestion losses. Though the proposed work and other works in the literature addresses these issues, still the detection of losses and reacting to the unpredictable environment is difficult job. More focus may be made on these issues as the future is going be of fully connected without wires.