CHAPTER 6

CONCLUSION AND FUTURE WORK

6.1 CONCLUSION

The performance of the Ad hoc on-demand Distance Vector routing protocol was studied and simulation was developed to model multimedia wireless networks. The Poissonian nature of multimedia packets was incorporated in the simulation. A Poisson variable generation engine was used to specify the sizes of the media packets. The generated packets were ported to AODV simulation. The simulation results were tabulated and corresponding graphs were also drawn. From the results it could be concluded that certain optimization could be done to the protocol to reduce the increasing delay and control packet overhead with increasing number of nodes. Further, it was also observed that in most cases, AODV worked well with dynamic link conditions, mobility and imposed low memory overhead in achieving on-demand routing for ad hoc wireless networks.

Modeling interference in wireless ad hoc networks and providing interference awareness to routing is the one of the strategies to improve the network routing performance. Here the physical interference model and interference graph method were used to model the interference. From the locally available node information the SIR value was computed and the concurrent links were estimated using Interference graph method with which the interference aware routing was carried out. The results of the above mentioned methods were obtained and the performance was evaluated by
means of simulation. The proposed method based on the passive measurements showed increase in the throughput of receiving packets when compared with the existing AODV routing protocol.

Despite the extreme support from the network and data link layer protocols a strong support from the wireless physical layer is required, because without it the line of sight connectivity is impossible. Conventional DOA estimation methods like MUSIC and ESPRIT are computationally expensive and cannot be used to track DOA of the target. Hence, a low computational complexity DOA tracking algorithm was used for tracking DOA. In this regard, DOA estimation algorithms like MUSIC, ESPRIT and adaptive beam forming algorithms like LMS, SMI were implemented in MATLAB. The result showed that the DOA tracking algorithm was able to track the DOA of the desired target accurately. From the time complexity analysis, it was clear that the burden in tracking the signal source had been reduced from $O(n^3)$ to $O(n^2)$. Thus by utilizing this light weighted DOA Tracking, the wireless physical layer could perform on a par with the higher layer protocols.

6.2 FUTURE SCOPE

From the literature it is clear that one is yet to achieve a desired radiation pattern for the exact requirement. But a lot of research and experimentation are moving towards the desired target and some mile stones have been arrived; still there is a long way to go in regard to the smart antennas. The future plan is to integrate various layer functions like interference aware routing, Beam-forming media access control and the DOA tracking algorithm in a cross layer manner in the wireless multi hop networks by co-simulating MATLAB with any of network simulator that supports multiple antenna and evaluating the performance. Finally, the algorithms can be embedded with the mobile operating systems protocol stack and in a smart
antenna based mobile hardware. Also, the work can be extended by providing DOA tracking support for tracking targets in Multi User-MIMO beam-forming.