CHAPTER 9

CONCLUSION AND FUTURE SCOPE

9.1 CONCLUSION

To enable wireless heterogeneous networks for providing better QoS, certain load balanced intelligent vertical handover algorithms are proposed. The proposed IVHDA algorithm fulfills QoS requirements of audio, video, and data in terms of packet loss, round trip time, and handover delay as recommended by 3GPP. IVHDA is integrated with ATC-PBR algorithm using Naïve Bayes classifier. This classifier output helps to identify the application types and its QoS requirements. The QoS requirements of the application traffic are mapped with application profile. Then the traffic is routed based on the user preferred interface to offer reduced service cost for end users and better load balancing between UMTS and WLAN service providers. The proposed EFIL algorithm proactively detects intruders and avoids further communication with the illegitimate AP. EFIL also reduces the call dropping rate, blocking probability as well as unnecessary handover.

The proposed Co-Operative Decision Making algorithms offers better load balancing and minimizes connection block outs in UMTS-WLAN environment. In addition to that, the cooperative decision making helps to improve QoS by reducing handover delay. CDMLB algorithm also plays an important role for the service provider to balance their loads even during peak
hours which results in better utilization of their valuable resources. The Proposed IP-CRE technique reduces the connection block outs, improves the utilization of small cells as well as provides balanced HetNet environment. The proposed VH-APA algorithm establishes secured and reliable connectivity among various wireless personal medical devices. The implementation of VH-APA adds intelligence to WPMDs in overcoming the threats of data integrity and data loss due to wireless attacks. It ensures Wireless Co-existence of the WPMDs in the WLAN environment providing data reliability.

9.2 FUTURE SCOPE

IVHDA can be enhanced to minimize the power consumption as well as resource utilization to extend the active life time of mobile devices as well as to improve user’s QoS requirements.

ATC-PBR work can be extended to reduce the load on the decision engine by routing IP traffic based on the policy and synchronizing schedule of users. User’s profile and usage pattern can be learned using unsupervised learning algorithms instead of using rule based MADM in the decision engine as a future work.

There is a future scope for EFIL to modify the mechanism to reduce the load on HLR/HSS to provide enhanced security with minimal signalling cost in heterogeneous environment.

Co-operative decision making for load balancing in wireless heterogeneous networks, can be integrated with a tight and robust connectivity engine for service continuity during handover using proxies.
Only download link interference is considered in the proposed IP-CRE work. Future scope will be to explore and propose suitable mechanism to reduce the uplink interference and to consider the uplink scenario with power control and developing suitable dynamic association algorithms. In addition to the above, there is a scope for exploring techniques for improving energy efficiency in HetNets.

Detailed probing on the selection of appropriate predefined backup switching channel could improve the performance of VH-APA to enhance reliable communication among WPMDs. Improved power optimization and increased battery life time can be achieved by making use of ultralow power microchips integrated with ultralow power wireless access technologies like Bluetooth Low Energy.

Feasibility of integrating dynamic programming techniques in association with the proposed handover algorithms and the benefits of integrated techniques can be explored further.