CHAPTER 7
CONCLUSION AND FUTURE WORK

7.1 CONCLUSION

3G and beyond wireless networks are designed to handle multimedia rates. The call establishment delay and jitter are the significant QoS parameters for most of the real time calls. The schemes in thesis are fast, efficient and can be used for both single and multi code assignment. Most of the schemes in thesis outperforms existing schemes in either code blocking or call establishment delay or both. For most of the proposed single code assignment schemes the vacant code used for assignment occurs at a location where future calls rejection is minimum. On the other hand, for multi codes a lower number of rakes used are preferred to reduce complexity. Both AVC and TD schemes reduces call establishment delay in locating optimum code while maintaining required QoS. The scheme that assigns slots for OVSF and NOVSF codes reduces code blocking along with call differentiation on the basis of priority. Again, a code is assigned, which reduces code blocking for real time calls.

The calls integration scheme reduces wastage capacity (internal fragmentation) as it favours non quantized rates. Two single and one multi code assignment schemes are described. Voice calls are given priority over non real time calls. The multiplexed data call can be buffered if required till a vacant code is available. The QoS of data calls is affected as different calls are integrated on same code.

The call elapsed time scheme which handles data calls with almost zero code blocking but higher waiting time in queue, utilizes elapsed time of ongoing calls for new call assignment. Reassignment scheme is also given which reassigns calls to other parts of code tree requiring lesser code searches for reassignment as compared to DCA [25]. An immediate neighbour assignment scheme which checks only immediate code before assignment is also given and is used for multiple codes. The results and simulations verifies the superiority of proposed schemes.

7.1 FUTURE WORK

In this thesis, we introduced the notion of those schemes which reduces call establishment delay while maintaining optimal and sub-optimal code blocking probability which leads to efficient utilization of OVSF codes available capacity at BS. The effective capacity assigned
to users at a time should meet QoS requirements requested by the users which limits further code assignment. The resource reservation and admission control can be designed, based on the effective capacity that can be assigned without affecting QoS requirements of ongoing calls. Also, the fast AVC and TD scheme can be combined with existing FSP to increase speed of call assignment process further. Index updation of TD scheme can be made adaptive to call arrival rates. The use of multiple rakes along with the code sharing facility can be used to make real time call blocking close to zero. The code sharing (time sharing) is the complicated task and may require lot of effort. To optimize the assignment of code slots for different order of priority within priority users the present work can be improved. Work can also be done to bring fairness in all schemes, i.e. all call rates share the total capacity of code tree equally.

4G systems require transmission of multimedia services with higher capacity requirement which inevitably implies an increase in data rate. Orthogonal frequency and code division multiplexing (OFCDM) technique has shown promising results in achieving a high data rate while simultaneously combating multipath fading. OFCDM comprises of orthogonal frequency division multiplexing and two-dimensional (2D) spreading. 2D spreading helps to achieve diversity gains in both time and frequency domains. The 1 dimensional OVSF codes correlation properties are poor then 2D OVSF codes. Work can be done to design assignment schemes for 2D OVSF codes.