CHAPTER 8
CONCLUSION AND FUTURE SCOPES

8.1 CONCLUSION

The work presented the various control methods for damping the oscillations by FACTS devices. The Lyapunav energy function results in IEEE 9-bus system with UPFC devices verify the enhancement of stability margin during line-faulted contingency. The IEEE 9-bus system with two FACTS devices (SVC, TCSC) is simulated in this thesis. Due to the uncoordinated control of the devices the system has the oscillations in the output. Therefore, coordinated control strategy is introduced that tune the parameters of the controller simultaneously, and adapts the parameters according to system conditions. Therefore, instead of fixed parameter controllers, ANFIS technology is proposed that adapts the parameters of the Neuro fuzzy inference system and simulated in three machine test system. The high overshoot and settling time of the generator output clearly depicts the necessity of the controller by advanced algorithm. To capture the dynamics of the system, ARNFIS is preferred due to its dynamic mapping potential, and short term memory. The ARNFIS algorithm by batch learning is implemented in three machine test system and compared with ANFIS algorithm. The tabulated results clearly demonstrate the decrement of the sum of the squared error deviation by using an ARNFIS algorithm than ANFIS algorithm. Still the system has the oscillations in the output. Therefore, to further enhance the performance, online learning and ACO-NPU based ARNFIS algorithm is proposed for three machine test system. The simulated results demonstrate the efficiency of ACO-NPU optimized ARNFIS algorithm. The result is compared with other optimization algorithm available in the
literature. The algorithm can be implemented in real time for dynamic control of the plants. The future scope of the proposed work is as follows

1. The present work can be extended to Power system with various types of FACTS controllers such as Static Compensator (STATCOM), Unified Power Flow Controller (UPFC), and Interline Power Flow Controller (IPFC).

2. The system investigated has been limited up to a three machine power system. It would be desirable to extend the proposed approach for larger and more realistic systems.

3. Stability problems of a distribution network integrated with various types of distributed generation sources and FACTS devices could be examined and FACTS based auxiliary controller could be designed for improving the stability in presence of different types of distributed generations.