CHAPTER 8

CONCLUSION

8.1 DISCUSSION ON THE CONTRIBUTION TO THE THESIS

This thesis employs artificial intelligence techniques to design robust decentralized power system stabilizers. One of the primary requirements of a good decentralized method is that the resulting PSS should be robust enough to wide variations in system parameters, at the same time being computationally manageable. In the present work robust PSS is designed for SMIB system, 4-machine 10-bus system and 10-machine 39-bus system.

This thesis examines the effect of phase compensation in producing a component of electrical torque in phase with the rotor speed deviations. The eigen value based objective function subject to a set of constraints based on stabilizer parameters, was formulated by using state space model of the system.

It is found that the designed PSS provides good damping enhancement for various operating conditions of the system. The PSS parameters are tuned with in the given limits by using SA, PSO and TS techniques.

In this thesis the responses of the system are compared based on settling time, peak amplitude and computational time. Since all the above
techniques are random search, the PSS designed based on TS is having better performance than PSSs designed based on SA and PSO.

8.2 SUGGESTIONS FOR FUTURE RESEARCH WORK

In this study PSS is designed for system with constant impedance load. The work can be further extended by considering voltage dependent loads.

The AI based optimum design of PSS proposed in this thesis is an interesting area of research. The emerging meta-heuristic techniques like differential evolution, bacterial foraging algorithm, new PSO, velocity relaxed PSO, bees algorithm and dynamic relaxation are attracting much attention in the recent years. The above techniques may be used for robust design of adaptive PSS.