CHAPTER 8

SCOPE FOR FUTURE WORKS

The upshot of this research will lead to some possible future directions in the field of MIMO autotuning using relay feedback test. The following extension areas are proposed as follows:

- Modeling, identification of closed loop and control using relay feedback response have been proposed for 2-by-2 and 3-by-3 MIMO systems whose individual transfer functions are of FOPDT type with different time delays. It can be extended to other 2-by-2 and 3-by-3 MIMO systems in which model structures between different input and output variables having different structures.

- In the present work proposed modeling and identification of 3-by-3 MIMO systems are implemented for benchmark processes through simulation. This real time implementation can also be extended to bench scale 3-by-3 experimental setup.

- In the present work modeling using ideal and biased relay feedback tests is done for 2-by-2 and 3-by-3 MIMO process. This can be extended to 4-by-4 MIMO process as well as real time implementation on bench scale 4-by-4 experimental setup.

- Extension of proposed method to MIMO process with unequal number of input and outputs or non square MIMO systems.
- Detailed study on different MIMO systems using different interaction measures.

- Design of two optimal PI controllers that minimize a cost function consisting of four weighted terms (desired from setpoint 1 to output 1 and from setpoint 2 to output 2, undesired from setpoint 1 to output 2 and setpoint 2 to output 1).