Chapter 6
Conclusions and Future Scopes

6.1. Conclusions

Throughout the Chapters before in the thesis, an inevitable development of new algorithms of varied forms applicable to linear discrete-time interval systems is presented. These algorithms are stated to be computationally effortless and uncomplicated to access and in addition, the promise to retain the dynamic characteristics of model stability is asserted.

Moreover, the reduction methodology developed may be good for one practical system and not for other. But to state are the new algorithms for *Model Order Reduction of Discrete-time Interval Systems*.

The methods in this thesis are in two folds

a) *Routh Approximation* approach

b) *Assorted* approach

The examples justify the superiority of the algorithms based on the well acknowledged performance tools.

Few of the algorithms pose limitations also, but can be rectified in future work.

However, among the proposed algorithms for discrete-time interval systems, *few* are appealing for their prolongation to real-time implementation namely

- ✓ Simplified Interval Structure
- ✓ Advanced Routh Approximation (*A-RAM*)
- ✓ Extended Direct Routh Approximation (*E-DRAM*)
- ✓ Classical Differentiation Approach

6.2. Future Scopes

Ceasing of the present work opens an avenue for the possibilities of the future scope that can be pursued in further studies in this field. Model order reduction for interval systems both in discrete and continuous time domains are active field. Any potential development leads to an immediate alleviation of the reduction technique based on the easy access and computational simplicity. Here enumerated are fewer ideas that can be further worked on;

a) Prolongation of the work discussed in the thesis to the real-time systems,

b) The design of controllers that derive more approximate models of the higher order systems, in order to pose the exact step response tracking and

c) Rectification of the limitations observed in the developed algorithms.

At this point, the proposal of an appreciable amount of algorithms concludes the thesis *Model Order Reduction of Discrete-Time Interval Systems*. The anticipation of this work is contributed towards the control community.