

Table of Contents

Acknowledgements	iii
Abstract in Thai	iv
Abstract in English	v
List of Figures	viii
Chapter 1 Introduction	1
Chapter 2 Preliminaries and basic concepts	11
2.1 Notations	11
2.2 Type of matrix	12
2.3 Several discrete-time neural networks system with time-varying delay	12
2.4 Preliminaries	14
2.4.1 Autonomous system	14
2.4.2 Nonautonomous systems	16
Chapter 3 Robust stability criteria of discrete-time neural networks with time-varying delay	19
3.1 Robust stability criteria of LPD neural networks with time-varying delay	19
3.2 Robust Stability of stochastic LPD neural networks with time-varying delay	33
Chapter 4 Global stability criteria of nonlinear discrete-time systems with time-varying delay	48
4.1 New discrete type inequalities and global stability of nonlinear difference equations	48
4.2 Global exponential stability of nonlinear discrete-time neural networks with time-varying delays	52

Chapter 5	H_∞ filtering problem for nonlinear discrete-time neural networks with time-varying delay	57
5.1	Stability analysis	58
5.2	H_∞ filter design	65
Chapter 6	Conclusion	72
6.1	Robust stability criteria of LPD neural networks with time-varying delay	72
6.2	Robust Stability of stochastic LPD neural networks with time-varying delay	74
6.3	New discrete type inequalities and global stability of nonlinear difference equations	75
6.4	Global exponential stability of nonlinear discrete-time neural networks with time-varying delays	76
6.5	H_∞ filtering for nonlinear discrete-time neural networks with time-varying delay	77
Bibliography		79
Vita		83