CONTENTS

Chapter 1 :Introduction.....1

1.1:History and background of EEG……..……2
1.2:Neurophysiological basis of EEG……..…….....3
1.3:Human brain……...……...5
1.4: Brain wave classification……..…...8
1.5:Electrode positioning……..…..10
1.6:EEG signal conditioning……..….12
1.7:Artifacts…….……...14

Chapter 2 : Literature review:- 17
2.1 : Artifacts Removal using SVD…….17
2.2 : Artifact Removal using ICA……18
2.3 : Artifacts removal using Adaptive Filtering:……20
2.3.1:DWT(Discrete Wavelet Transform):…….……22
2.3.2:LMS(Least mean squares):…….……23
2.4:Artifacts removal using Neural Network:…….……..26
2.4.1:Artificial Neural Network……..…….26
2.4.2Mathematical Interpretation:……29

Chapter 3 : Proposed Method 30

3.1: Method:……...…….30
3.2 :Mathematical Interpretation:……..31
3.3 : Learning mechanism:……32
3.4 : Learning algorithms:……33
3.4.1:Levenberg marquardet learning algorithm:…….....33
3.4.2:Scaled Conjugate Gradient learning algorithm:……..….34
3.4.3Resilient backpropagation learning algorithm:……36
3.5 : Activation Function:……..37
3.5.1:Linear activation function:…….…37
3.5.2:Sigmoidal activation function……37

Chapter 4 : Results and Discussions..... 38

4.1:Signal to Noise Ratio(SNR):……..…39
4.2:Mean Square Error:……40
4.3:Correlation:……..…40

Chapter 5 : Conclusion 44

References ….....45