EE 4745 – Neural Computing

Project 2: Noise Cancellation using Adaptive Filter

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# Introduction

# Mean square error

Following equation 10.12, the mean square error can be written as follow:

## Eigenvalues and eigenvectors of the Hessian

## Minimum point

## Contour plot

# LMS algorithm

## Maximum stable learning rate

## Algorithm implementation

To apply the LMS algorithm to this problem, we’ll consider a bias b = 0 and start with a initial point (or initial weight): . Each following weight will be determined as follow:

Where:

* e(k) is the difference between the noise added to the signal (actual target) and the output of the adaptive filter:
* is the learning rate; we’ll take as imposed but any value respecting the maximum learning rate condition should allow the algorithm to converge
* is the input vector:

The stopping condition of the algorithm will be: .

## Results

# Noise change

# References

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