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**UNIVERSITY OF MORATUWA
SRI LANKA**

**STUDY AND IMPLEMENTATION OF MODERN NOISE
CANCELLATION TECHNIQUES**



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*Submitted in partial fulfillment for the Degree of Master of Engineering in
Electronics and Telecommunications*

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DECLARATION

This work presented in this dissertation has not been submitted for the fulfillment of any other degree.



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A handwritten signature in black ink, appearing to read 'T Anandarajah', positioned above a horizontal line.

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A handwritten signature in black ink, appearing to read 'Dileeka Dias', positioned above a horizontal line.

Dr (Mrs.) Dileeka Dias
Supervisor

DEDICATION

To my parents for their encouragement.

To my wife Vaitheky for her patient and understanding.



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ABSTRACT

“Study and Implementation of Modern Adaptive Noise Cancellation Technique” consists of two major parts: “analysis and simulation” of noise cancellation algorithms and implementation of one of the algorithm using DSP hardware. The analysis and simulation work is divided into two major categories: LMS algorithms and RLS algorithms. In this project, three variants of the LMS algorithm and standard RLS algorithm are analyzed. The simulation results and the program listing are listed in the appendices. An evaluation kit with the ADSP 2181 processor is used to implement the algorithm. The assembly language code for implementation is listed in the Appendices.

Adaptive Noise Cancellation is used to remove background noise from useful signals. This is an extremely useful technique where a signal is submerged in a very noisy environment. The usual method of estimating a signal corrupted by additive noise is to pass the distorted signal through a filter that tends to suppress the noise while leaving the signal relatively unchanged. Adaptive noise cancellation is performed when there is no prior knowledge of the signal and the noise sources or when the noise is within the signal bandwidth.

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