A NOVAL APPROACH TO ADAPTIVE NOISE CANCELLATION FOR SPEECH SIGNAL USING WAVELET BASED GRAZING ESTIMATION OF SIGNAL METHOD

Dr. S. Manikandan
Professor
Department of Electrical & Electronics Engineering
Balaji Institute of Technology & Science
Warangal, Telegana, INDIA.

A NOVAL APPROACH TO ADAPTIVE NOISE CANCELLATION FOR SPEECH SIGNAL USING WAVELET BASED GRAZING ESTIMATION OF SIGNAL METHOD

Publishing Rights ℗ : VSRD Academic Publishing
A Division of Visual Soft India Pvt. Ltd.

ISBN-13: 978-93-86258-57-1
FIRST EDITION, JUNE 2017, INDIA

Typeset, Printed & Published by:
VSRD Academic Publishing
(*A Division of Visual Soft India Pvt. Ltd.*)

Printed & Bound in India

VSRD ACADEMIC PUBLISHING
A Division of Visual Soft India Pvt. Ltd.

REGISTERED OFFICE
154, Tezabmill Campus, Anwarganj, KANPUR–208003 (UP) (IN)
Mb: 99561 27040, Web: www.vsrdpublishing.com, Email: vsrdpublishing@gmail.com

MARKETING OFFICE (NORTH INDIA)
Basement-2, Villa-10, Block-V, Charmwood Village, FARIDABAD–121009 (HY)(IN)
Mb: 98999 36803, Web: www.vsrdpublishing.com, Email: vsrdpublishing@gmail.com

MARKETING OFFICE (SOUTH INDIA)
340, FF, Adarsh Nagar, Oshiwara, Andheri(W), MUMBAI–400053 (MH)(IN)
Mb: 99561 27040, Web: www.vsrdpublishing.com, Email: vsrdpublishing@gmail.com

PREFACE

This Text book is very helpful for Electrical, Mechanical, Electronics Engineers to develop Noise control applications in aircraft, Machines and headphone devices.In this book is introduced a new concept of Noise reduction application with simple graphical methods by using wavelet based adaptive alogirthms.Its reduced the complexity of algorithms writing and implementation problems. This is very helpful to write thesis and implementation of Real Time applications in all the scholars. Its mainly used aircraft applications during very high noise problems. This Research content having for Literaure Survey, Neural Network Concepts, DSP Processor, Matlab 7.0 Implementation is used for designing of ANC. Its easily understand the Research concepts from low level to High level Scholars.

✍ *Dr. S.Manikandan*

ACKNOWLEDGEMENT

It gives me a great pleasure to complete and submit this thesis entitled “**A Novel Approach To Adaptive Noise Cancellation For Speech Signal Using Wavelet Based Grazing Estimation Of Signal Method”** ”, within a stipulated time. It has been my earnest effort to contribute for the future generations in the educational and research pursuits in the field of Electronics and telecommunication and hope that this work may open door for years to come.

I am immensely grateful to the Chancellor **Mr. Vinod Tibrewala**, JJT University, Rajasthan, India for giving me the opportunity to undergo this highly specialized and unique course and also express my thanks to vice chancellor **Prof. D. D. Agarwal,** JJT University, Rajasthan, India for his invaluable support to complete this research work.

To complete this small piece of work, I have many helps, suggestions and guidance from various corners of the country. I fervently express my gratitude to my supervisor, **Dr. N. Rajasekar**, Professor, School of Electrical Engineering, VIT University, Vellore, under whose precious guidance, support and encouragement this work is being completed smoothly. He helped me in various ways from the very beginning and always ready to guide me at no cost. I am indebted to thank him for his invaluable support.

I cannot find words, enough to thank **Mr. P. Gopinath**, Personal secretary to the chancellor JJT University, Rajasthan, who has helped me at all stages of my work by providing me with timely criticism and recommendations, especially during the last few weeks in their busy schedule of works.

I would like to thank **Administrative and Technical Staff Members** of the JJT University, Rajasthan, who have been kind enough to advise and help in their respective roles.

I am indebted to record my sense of appreciation to **Mr. J. Ilango**, Chairperson, King College of Technology, Namakkal, Tamilnadu, who provided me all possible helps and supports throughout my research work.

Last, but not least, I would like to dedicate this thesis to my family, my wife **Dr. S. Subathradevi** and my childrens **M. Arun karthick**, **M. Shivani**, for their love, patience, and understanding they allowed me to spend most of the time on this thesis.

I offered my thanks to the Almighty God for giving me good health and other blessings to carried out this work. He is the supreme guide to my life and the glory for the glory of the Lord forever and ever.

✍ *Dr. S. Manikandan*

LIST OF ABBREVIATIONS

ABBREVIATION	FULL FORM OF ABBREVIATION
DSP	Digital Signal Processors
ANC	Active Noise Cancellation
FXLMS	Filtered-X Least Mean Square
IIR	Infinite Impulse Response
FIR	Finite Impulse Response
RLS	Recursive Least Squares
FFT	Fast Fourier Transform
LMS	Least Mean Squares
ANN	Artificial Neural Network
HVAC	Heating, Ventilation and Air Conditioning
EVM	Evaluation Module
SNR	Signal to Noise Ratio
PSNR	Peak Signal to Noise Ratio

ABSTRACT

This thesis introduce the reducing the content of noise present in the received Speech signals for wireless communication medium by using Wavelet based Grazing Estimation of Signal (WGES) Method. The received signal is corrupted due to mixing of white Gaussian noise. This proposed method is designed based on the superposition principle with eight possible cases. By conducting multiple possible cases of signal movement the noise signal is moved to opposite direction of original signal. This output is cascaded with wavelet transforms techniques with compare the available control algorithms output error signals. Compared to other available control algorithms the proposed method is Simple to implement, yields good performance and converges quickly. This proposed technique is implemented using Matlab software and DSP processor .This computer output simulation results confirm the effectiveness of our proposed algorithm.

C O N T E N T S

LIST OF FIGURES

LIST OF TABLES