VOICE RECOGNITION (SPEECH ANALYSIS USING MATLAB)

Project report is presented in partial fulfillment for the award of the
Bachelor of Electrical Engineering (Honours) (Instrumentation)
UNIVERSITI TEKNOLOGI MARA

JAMILAH BINTI BUNANJIN
Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR

ACKNOWLEDGEMENT

In the Name of Allah

Most Gracious Most Merciful

I would like to thank to my project supervisor, Puan Kamariah Bte Ismail who deserved most credit for her continuous inspiration, kindness, support, concern and guidance in giving ideas and assistance in this project.

I would also like to express my thanks to Puan Puteri Aidawati for her time and effort in proofing this thesis.

I am also indebted to the various help and discussion offered by lecturers, staff, classmate and friends. And deepest gratitude to my mother and family for their support and concern in project.

Jamilah bte Bunanjin
Faculty of Electrical Engineering
Universiti Teknologi MARA
Shah Alam.

ABSTRACT

Speech signal processing and analyzing is an important research. In this project the signal is processed and analyzed to determine whether it is voiced or unvoiced signal by using autocorrelation method.

The data used are word 'SAYA' and 'DIA'. From word SAYA, the frames that can be produced from 11900 samples are 25 frames of data. While for word DIA, the frames that can be produced from 4500 samples are 17 frames of data with each frame (from word SAYA and DIA) uniformly having 300 samples. The length of each frame is the same.

To determine whether the signal is either voiced or unvoiced is by analyzing at the peak of autocorrelation function on the error signal. If the second peak is 30% higher than the first peak, so it is declared as 'voiced' and if the peak is less than 30% from the first peak, so it is declared as 'unvoiced'.

MATLAB is used to find the comparison between the input data (original data) and new data (filtered data) and also to find the peak of autocorrelation function from the signal.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 Introduction

Communication one of the important activity in human life. Reason for communicating is to deliver information. Mail, copy, electromagnetic wave, free space or electrical signal can be used to send information.

Voice is the most important method to communicate with one and other. A lot of study, analysis, assumption, and designing done on the voice signal. One of the most popular is on speech recognition. Speech is a simple communication and it is a form of sound. Sound can give information.

Voice analysis is one of the estimation analyses from speech signal. For voiced or unvoiced, pitch period and power density in form of glottal pulse are the important parameters in this analysis. Sentences are build using a basic word with every word contain a vowel and consonant.

Voiced signal containing a data or information and the voice measurement can be detected from the oscilloscope by additional of microphone, whereby the signal is instantaneous amplitude of voice signal strength. More strength of the signal will yield high amplitude and weak voice signal can give low amplitude. Voice signal have a different frequency variation, The frequency is in the range of 20Hz up to 20kHz.

Unvoiced signals contain no data. The characteristic of unvoiced are reverse from voice characteristic. Furthermore the unvoiced consist of a source of noise and the waveform is periodic or random in nature.