

Universiti Teknologi MARA

**Stuttering Detection using
Backpropagation Neural Network**

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ABSTRACT

Stuttering or Speech Disorder is a symptom which the flow of speech is disrupted because there is often repetition or extension of sound, syllables or words, sometimes there is also doubt and cessation of speech. About more than 70 million people worldwide are stutterers that's one in every 100. In Malaysia, there has a lot of alternative ways to improve stuttering problem such as meet with therapist. But to consult with expert require expensive payment. There have many system that include to identify the stutter voice. It is very difficult to find the alternative way to get the accuracy for identify that the stuttering voice. Stuttering detection is the system that able to identify the speech disorder. This system also collects voice pattern (voice data) of normal voice and stutter voice and all voice data will be to training with Backpropagation Neural Network (BPNN) for classify the stuttering problem. In this study, the process to detect speech disorder using Fast Fourier Transform (FFT) as features extraction and BPNN as classification. The objective of the study are to identify the suitable method to detect the stuttering, to design an architecture for stuttering detection and to develop a prototype that is able to detect speech disorder. In the first step, every data collection will be go to filtration phase which is pre-process the data collection such as de-noise, windowing and silence removal. After the pre-processing phase, the data will be to the next phase is features extraction for reduce the useless resources and after that classification phase is the final phase that is to classify the normal voice and stutter voice. In this step, MATLAB is used in development of prototype stuttering detection. It is hope that this project will give an opportunity and believe that this prototype will improve the effectiveness in stuttering identification.

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CHAPTER 1

INTRODUCTION

This chapter begins with discuss about background of study, problem statement, research objective, research scope and research significance of Stuttering Detection using Backpropagation Neural Network.

1.1 Introduction

Speech disorders can affect a person's ability to talk, understand, read, and write. Children may develop speech disorders due to conditions that affect brain development before, during, or after birth. Adults may improve speech disorders due to stroke, traumatic brain tumour, or brain damage. A person with a speech disorder could have their speech interrupted by sounds, words, and syllables that are prolonged, repeated, or avoided. Stuttering is a sample of fluency impairment.

Stuttering is a speech disorder that involves frequent and significant problems with the normal fluency and flow of speech. According to the literature, about 5% of children (1 in 20) ages 2 to 5 will build some stuttering during their childhood. It may last for several weeks to several years. According to DoSomething.org (n.d) More than 70 million people worldwide are stutterers that's one in every 100. In the US, more than 3 million people stutter. Stuttering is more in boys than girls. It also tends to stick at into