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FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

BORANG PENGESAHAN STATUS LAPORAN  
PROJEK SARJANA MUDA II

Tajuk Projek : LIMIT VOCAB DATA SELECTOR

Sesi Pengajian : 

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Dedicated to my mum, dad and my lovely family

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## ABSTRACT

This project is a hardware project where the system can select data from speech input. This project involves the channel selector appliance via speech input. PIC is used to store several instructions according to the user. This instruction will be programmed into the PIC and will be tested whether it produce the same output with the speech input. The main objective of this project is to design a limited vocab data selector for the industry and replaced the manual channel selector nowadays. This project is also to design and build a prototype of a limited vocab data selector and to provide an overview implementation in industry to student. This project required a voice recognition module as an input. A speech registration/recognition processing section is responsive to a speech input signal to be registered or recognized from a microphone to selectively subject the speech input signal to a registration or a recognition processing, in which upon the registration processing the speech input signal is allowed to be stored as recognition data and upon the recognition processing the speech input signal is compared to the recognition data stored.

## ABSTRAK

Projek ini merupakan sebuah projek dimana sebuah system yang beroperasi dengan menggunakan suara pengguna. Projek ini melibatkan pengawalan suis pilihan dengan menggunakan suara atau arahan daripada pengguna. Litar bersepadu digunakan untuk menyimpan beberapa contoh arahan berdasarkan kehendak pengguna. Objektif utama projek ini adalah untuk merekacipta projek ini untuk menggantikan suis pilihan manula yang terdapat dipasaran pada masa kini. Selain dari itu,turut menghasilkan prototaip untuk projek berkenaan. Projek ini menggunakan modul 'Voice Recognition' sebagai input kepada projek ini. Modul ini bertindak untuk mengenalpasti suara dan arahan daripada mikrofon dan membezakannya dengan arahan yang telah disimpan dahulu

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# CHAPTER I

## INTRODUCTION

### 1.1 Project Overview

Technology is a broad concept that deals with human as well as other animal species' usage and knowledge of tools and crafts, and how it affects a species' ability to control and adapt to its environment. The human species' use of technology began with the conversion of natural resources into simple tools. Recent technological developments, including the printing press, the telephone, and the Internet, have lessened physical barriers to communication and allowed humans to interact freely on a global scale. However, not all technology has been used for peaceful purposes.

Nowadays, technology became an important thing for all humans in their daily life. Technologies also give make humans daily life became more easily and comfortable. Before this, every system was controlled manually and then was upgrade by using the remote control. To make humans life more easily, this project was proposed. By using this product human can controlled the system by using voice command. It is very useful and user friendly especially for them who are unable to move like normal people.



This project is a hardware project where the system can select data from speech input. This project involves the channel selector appliance via speech input. PIC is used to store several instructions according to the user. This instruction will be programmed into the PIC and will be tested whether it produce the same output with the speech input.

It is important to learn how to store the instruction in the PIC. It is also important to know how to trigger the PIC to switch the appliances channel according to the speech input. The controlled module system is controlled using programmable microcontroller (PIC). The PIC can be program using Micro C software or C programming.

## **1.2 Objective**

The main objective of this project is to design a limited vocab data selector for the industry and replaced the manual channel selector nowadays. This project is also to design and build a prototype of a limited vocab data selector and to provide an overview implementation in industry to student.

## **1.3 Scope of Project**

The scope of this project is to understand Module and how voice command system works. Secondly is how to use the voice command system to remotely turn ON and turn OFF appliances. Study and understand how the speech input can switch the channel selector and the range between the products and users. Design software which is C program to interface the hardware. Then construct the program to make sure that program operate as desired.

## 1.4 Methodology

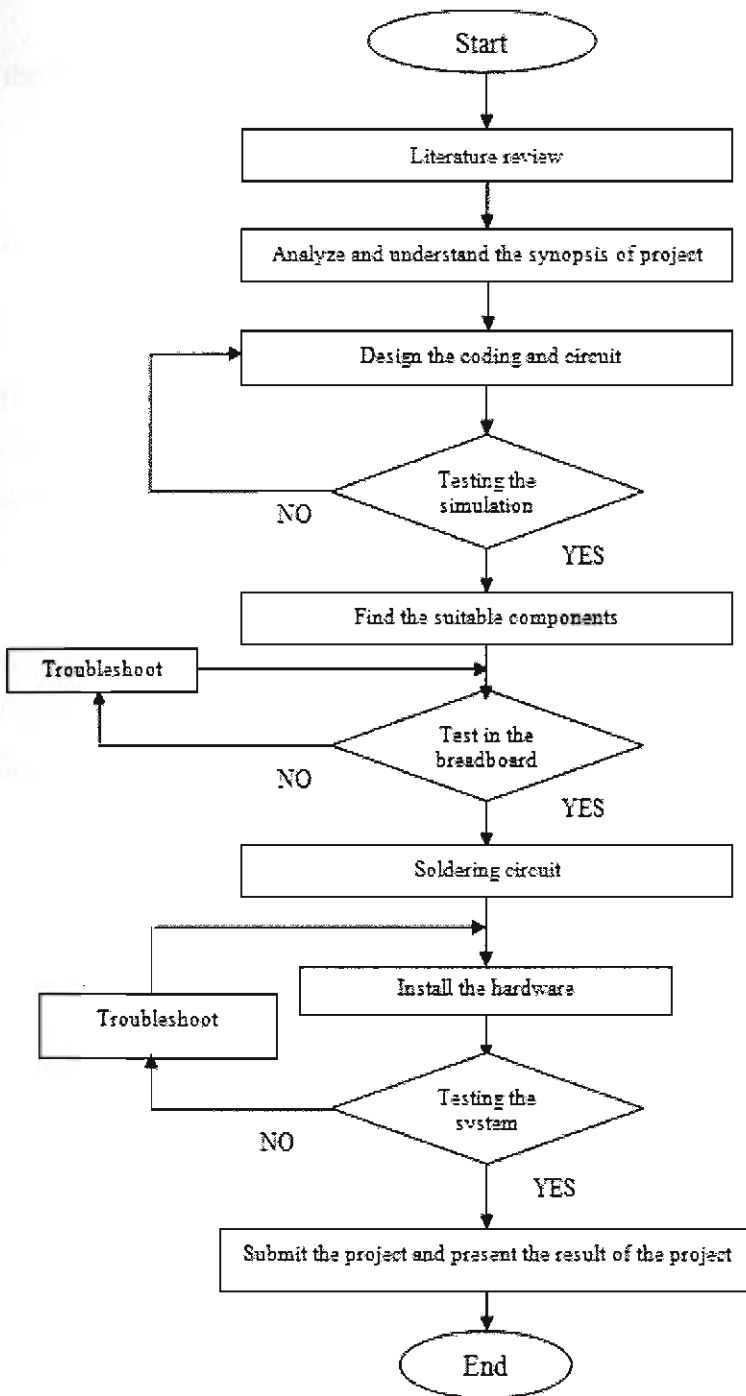


Figure 1.1: Project methodology overview

## 1.5 Report Outlines

This PSM Report consists of six chapters. The following chapters are the outline of the implementation of limited vocal data selector .

Chapter I discuss briefly about overview of the project such as introduction, objectives, methodology and thesis outlines.

Chapter II contains the research and information about the project on several important concepts of dynamic feedback swing control, technology and tools used in the study. Every facts and information, which found through journals or other references, will be compared and the better methods have been chosen for the project.

Chapter III including detailed about software, coding and modeling of the limited vocab data selector. Simulation results, analysis, observation and discussion of the performance of the output are presented in. all these methodology should be followed to get a better performance.

Chapter IV including detailed about the hardware design involved schematic diagram, PCB layout, and components required.

Chapter V describes more about the discussion, and project findings. The result is presented by figures or plotted graph. Also consist of how the components will complete the tasks.

Chapter VI is about the conclusion of the project and the future recommendations.

## CHAPTER II

### LITERATURE REVIEW

#### 2.1 Speech Recognition

A speech registration/recognition processing section is responsive to a speech input signal to be registered or recognized from a microphone to selectively subject the speech input signal to a registration or a recognition processing, in which upon the registration processing the speech input signal is allowed to be stored as recognition data and upon the recognition processing the speech input signal is compared to the recognition data stored.

A speech record/reproduction processing section is responsive to the speech input signal from the microphone to subject the speech input signal to a record/reproduction processing, in which upon the record processing the speech input signal is recorded as a record signal and upon the reproduction processing the record signal is delivered as a reproduction signal. A speaker is supplied with the reproduction signal and the recognized information is provided to the user through this speaker.

A control section is provided, in accordance with a registration or a recognition mode designation signal, for setting the speech registration/recognition processing section to the registration or the recognition processing and for setting the speech

record/reproduction processing section to the record or the reproduction processing corresponding to the registration or the recognition processing at which the speech registration/recognition processing section is placed.

### **2.1.1 A speech recognition system comprising:**

A microphone means for producing speech input signals of various users, to be registered or recognized. Speech recognition and registration means responsive to a speech input signal from the microphone means, so as to subject the speech input signal to either a registration or a recognition processing, in which upon the registration processing.

The speech input signal is allowed to be stored as recognition data and upon the recognition processing, the speech input signal is compared to the recognition data which has been stored and a central processing unit which performs speech recognition processing based on the results of comparison. Wherein said speech recognition and registration means comprises a plurality of speech recognition circuits which are connected between a corresponding number of variable characteristic circuits and speech registration RAM's respectively where a plurality of modified speech patterns are stored for each word or each clause.

Modified speech patterns including, as the characteristics of the speech, the magnitudes of sound volumes, the varying lengths of sounds, the variation of sound intervals, the husky or somewhat masked voices. Each of said variable characteristic circuits is comprised of an amplifier of a different amplification factor and different bandpath characteristic, a set of resistors and a mode designating switch, respectively. To allow the speech which is input through said microphone means in a speech registration mode to be prepared as a variation pattern so that it is stored as such in the speech registration RAM of the corresponding speech recognition circuit, such that when a user inputs his speech through said microphone means it is supplied respectively through said variable characteristic circuits to said speech recognition circuits where the

input speeches are compared to the speech patterns which have been registered in the respective speech registration RAMs.

## **2.2 Speech Recognition Control Telephone Apparatus**

A speech registration/recognition processing section is responsive to a speech input signal to be registered or recognized from a microphone to selectively subject the speech input signal to a registration or a recognition processing, in which upon the registration processing the speech input signal is allowed to be stored as recognition data and upon the recognition processing the speech input signal is compared to the recognition data stored.

A speech record/reproduction processing section is responsive to the speech input signal from the microphone to subject the speech input signal to a record/reproduction processing, in which upon the record processing the speech input signal is recorded as a record signal and upon the reproduction processing the record signal is delivered as a reproduction signal. A speaker is supplied with the reproduction signal and the recognized information is provided to the user through this speaker.

A control section is provided, in accordance with a registration or a recognition mode designation signal, for setting the speech registration/recognition processing section to the registration or the recognition processing and for setting the speech record/reproduction processing section to the record or the reproduction processing corresponding to the registration or the recognition processing at which the speech registration/recognition processing section is placed.

### 2.2.1 Background Of The Invention

This invention relates to a speech recognition system with an accurate recognition function, and in particular, to a system as one kind of data input device with an accurate recognition function which can eliminate any recognition error.

A conventional speech recognition system of this type comprises a microphone for inputting speech, a speech recognition circuit for registering and recognizing the speech input signal from the microphone, a central processing unit (CPU) for reading a recognition output from the speech recognition circuit and allowing data corresponding to the recognition data to be transmitted to a speech synthesizer via a data bus, a speech synthesizer for receiving data from the CPU and synthesizing the speech from the data, and a speaker for outputting the speech which is synthesized by the speech synthesizer.

According to this system, the user can input data and give an instruction without using his hands, and in fact, it proves very useful when applied to an input device. In this system, however, whether or not the recognition output from the speech recognition circuit is wrong is ascertained by the output of the speech synthesizer. Only predetermined speech patterns are written with respect to the speech synthesizer, placing some restriction upon the speech inputs through the speaker. Since the input speech does not always coincide with the registered speech patterns, it is difficult for the user to ascertain their coincidence. This causes uneasiness in the user. During the speech registration process, it is necessary to register the speech input at a predetermined address position in a memory of the speech recognition circuit, thus involving a cumbersome operation.

Furthermore, since with respect to a respective word or clause one kind of speech pattern is registered for comparison with the speech input, even if the same user inputs his own speech, it is not often successfully recognized due to ambient noise and the delicately varying speech input characteristic. Where, in particular, the speech

recognition system is employed as an input device for a mobile station such as in a moving vehicle, the speech is liable to be varied due to the acoustic circumstances within the narrow confines of the vehicle compartment and the traffic noise on the road, resulting in a poor recognition percentage.

Where the speech recognition system is used as the input device for automobile telephones, the telephone set per se never has a speech recognition ascertaining function and, therefore, it is not possible for the user to ascertain that the speech input has been correctly recognized, unless it is sent back from a central station.

### **2.2.2 Summary Of The Invention**

It is accordingly an object of this invention to provide a new and improved speech recognition system with an accurate recognition function, which can momentarily ascertain speech input on the basis of speech patterns initially registered at the time of registration and can register speech input in a memory at any desired address position as well as providing auditory confirmation of the recognition, thus assuring ease of operation by the user.

According to this invention a telephone apparatus as provided in which first subscriber's names and corresponding phone numbers were keyed in. Subsequently a user is requested to train the system to recognize the entered names. For each utterance the speech recognition unit generates user-specific templates which can then be referred to during voice dialing operation.

### **2.2.3 Brief Description Of The Drawings**

These and other objects and features of this invention can be understood through the following embodiments by reference to the accompanying drawings in which: