

## TESIS APPROVAL FORM

JUDUL: THE DESIGN AND DEVELOPMENT OF SIGN LANGUAGE TRANSLATOR USING WEB TECHNOLOGY (SIGN LANGUAGE TRANSLATOR)

SESI PENGAJIAN: 2011/2013

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**THE DESIGN AND DEVELOPMENT OF SIGN LANGUAGE TRANSLATOR  
USING WEB TECHNOLOGY (SIGN LANGUAGE TRANSLATOR)**

MUHAMMAD AIMAN BIN AHMAD NORDIN

This report is submitted in partial fulfilment of the requirements for the  
Bachelor of Computer Science (Interactive Media)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY  
UNIVERSITI TEKNIKAL MALAYSIA MELAKA  
2013

## DECLARATION

I hereby declare that this project report entitled

**THE DESIGN AND DEVELOPMENT OF SIGN LANGUAGE TRANSLATOR  
USING WEB TECHNOLOGY (SIGN LANGUAGE TRANSLATOR)**

is written by me and is my own effort and that no part has been plagiarized  
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## DEDICATION

First of all, I would like to dedicate my dissertation work to my family and many friends. A special feeling of gratitude to my loving parents Ahmad Nordin and Ku Nor Izah because without moral support from them may not be able to complete my undergraduate project up to this point.

Thanks also go to my friends over the years has given me encouragement when I was weak.

Thank you very much to my supervisor who's always be patient and encouraging me to finish my Final Year Project, Wan Sazli Nasaruddin Saifudin. Also I would like to thanks to other lecturer that help and give me some ideas to complete my Final Year Project.

Last but not least, I hope my final year project will be approved by my supervisor. Thanks to God for guiding my life.

Thank You.

## ACKNOWLEDGEMENT

Assalamualaikum w.b.t first and foremost, I would like to thank Allah s.w.t and my parents for the support and encouragement given over the years. For my fellow friends I want to say thank you very much for given me support when i was weak. To my supervisor, Mr. Wan Sazli Nasaruddin Saifudin, thanks for all guidance and all comment that help me to improve my Final Year Project.

I also would like to thanks staffs and technicians of the Faculty of Information and Communication Technology for their help in offering me the resources in running the program. Completing this project is a requirement for Final Year Degree Project. Here, I can say that this report is to assist students to analyze the project requirements and can identify the strengths and weaknesses in this project.

Thank You.

## **ABSTRACT**

This report is about developing Sign Language Translator using Web Based Application. Web Based is not a strange thing anymore in this era. This application has been adopted around the world. This application will help user to translate basic word that use in daily life into 2D and video sign language. There is a comparison between a few translator applications that already in the market in this report. Hopefully this translator application will help a bit much in learning the sign language and can be applied in daily life.

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**LIST OF ABBREVIATION**

<b>ABBREVIATION</b>	<b>DESCRIPTION</b>
CAD	Canadian Association of the Deaf
ASL	American Sign Language
PSM	Projek Sarjana Muda
2D	2 Dimension
3D	3 Dimension
MySQL	My Sequel
PHP	Hypertext Preprocessor

## CHAPTER I

### INTRODUCTION

#### 1.0 Introduction

This chapter briefly describes the background of the project and the problems that trigger the idea to develop this project. This will include project background, objectives, problem statement, research questions, project framework, project scope and the importance of these projects to provide an understanding of what this project is all about.

#### 1.1 Project Background

Now days, gap between normal and deaf people very far. Based on research from Canadian Association of the Deaf (CAD), a statistic shows that 1 out of every 25 Canadians has impaired hearing [1]. The number of deaf people in China is a staggering 72 million [2]. Many people don't know about sign language and don't know how to communicate with deaf people. This causes them to feel left out and looked down with their lack of imperfection at the same time ashamed to face the community. In developing this Sign Language Application, I will use web based platform to come out

with the solutions. Tools that are involved in developing this application are Adobe Dreamweaver, Adobe Illustrator and Wamp Server.

The main objective of developing this application is to learn the basic word that will help normal people to communicate with deaf people. As overall, the expected outcomes from this project will be a web application that translate from word and convert into sign language. The user has to type the word in the provided space and the sign language will appear in 2D sign language. This application will be in online web based.

## **1.2 Problem Statements**

The idea of developing this application is people mostly cannot understand when they communicate with the deaf and impaired hearing person. Besides that, most of the people doesn't know how to use sign language and doesn't have a proper class for sign language learning. This application will help and assists people to learn the sign language in different style. At the same time, this application also acts as a translator where people type a word and it will translate into video and 2D sign language. In this way, it is much more helpful n quick rather than looking or learning from paper.

### **1.3 Objectives**

The objectives play an important role for developer. Each project must have objectives to achieve the goals. The objectives of this project are:

- a) To study how user interact with the sign language learning application.
- b) To build a prototype application to help user understanding sign language.
- c) To investigate acceptance of user towards the sign language learning application.

### **1.4 Research Questions**

- a) Currently, how normal people learn sign language?
- b) What are the ways that you can study to be used to develop this application.
- c) How many ways to investigate acceptance of user toward the sign language application.

### **1.5 Project Scope**

The scopes of this project are divided into two mains sub topic which is Target user and Limitation of the project.



### **1.5.1 Target User**

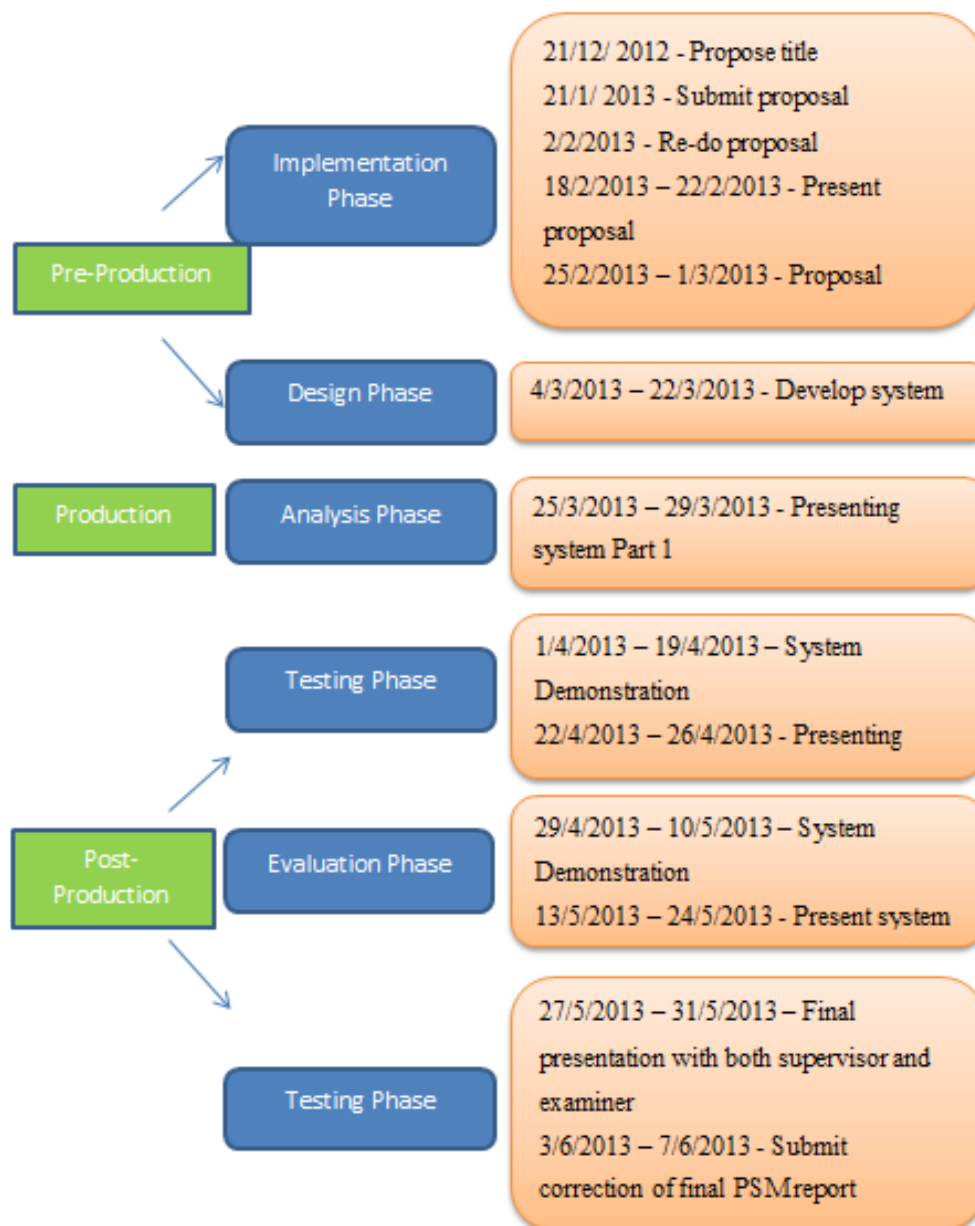
This project is especially for are all levels of society. This project is to produce animation that help those who doesn't know how to use sign language and for people just about to start learning sign language. This animation also can used as an alternative tool to help teacher in the process of attracting students to learn about sign language.

### **1.5.2 Limitation of the project**

This project is to apply element of 2D and video to translate from word. It only covers alphabet, number and basic word that we use in daily life. The maximum word that user can enter is only 3 words. This application can only open in web browser.

## 1.6 Project Framework

This is the project frame work that been used in developing sign language application.



**Figure 1.1 : Project Framework**

## **1.7 Project Significance**

This project title is “Sign Language Translator”. The goal for this project is to translate word into 2D and video using web based as a medium in which to help people to learn sign language. This project will be more interactive compare to traditional technic which is using dictionary or by learning through books. These are one of the new approaches in implementing and introduce the new technology in the process of learning the sign language in more attractive and better understanding.

This method will give better solution to translate and learn sign language without making the user feel bored. Combination of multimedia tools to learn will make the lesson more interesting and effective by using attractive colors, graphic and video. By developing this project, it will also hire additional benefits for everyone especially teachers as it can be used as an alternative tool to their students in the process of learning sign language.

### **Summary**

This project will be developed using web based on the problem statements, objectives, scope and project significance are described. This project will have limitation in number of word in the library, which only covers alphabet, number and basic word. This project can be uses as a reference for future generation. It is not only intended for learning purposes but is also hope to be a better way in the process of attracting people who love to learn about sign language.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.0 Literature Review**

This chapter will describe about the literature review. A literature review is an evaluate report information found in the literature research to the related area of study. The review will describe, summarize, evaluate and describe the literature. This literature review will be done after the scope and the project had been determined to collect as much information about the project. The information such as methodology, tools, techniques and will be extracted from previous research, discussion with the supervisor, internet resources, journals and books.

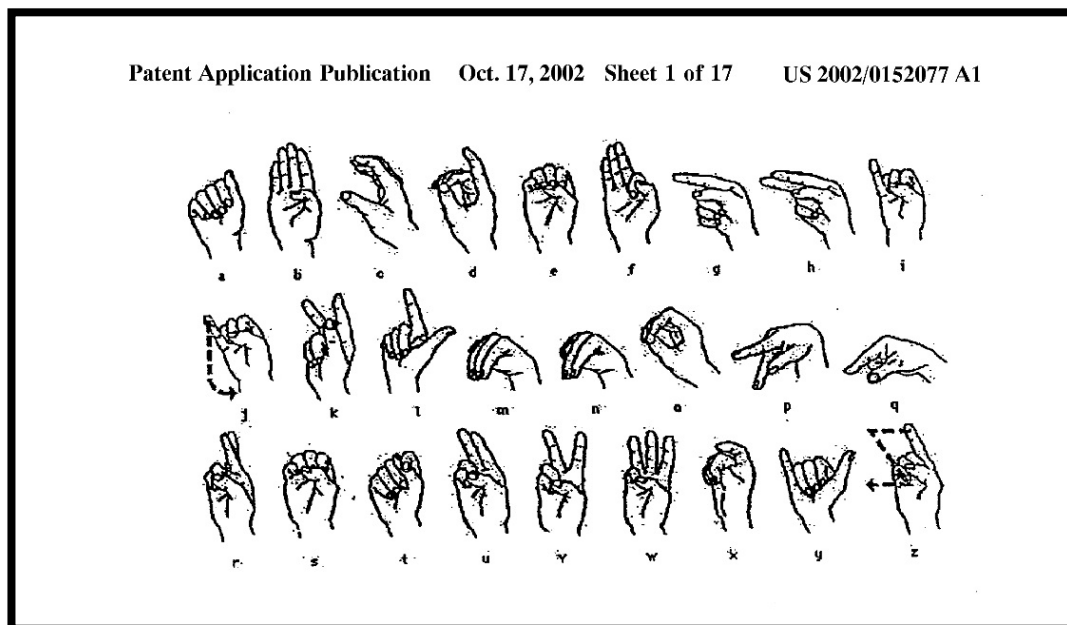
#### **2.1 Area of study**

These days, computers require multiple applications for diversified uses, not just focus on work or games, but it has become the medium for learning to be more effective and efficient. In some cases, computers can enhance certain kinds of learning activities by engaging the learner more deeply in the material through interactive tasks. Sign language is the main focus in this area of study. Sign language have been use to all kind

of people to communicate with deaf person, either if you not deaf, you can also can learn it.

According to article Sign Language Translator by Randall R. Patterson (2002) [3], Personal Communication skills are very important and it is the key to a successful life. However, millions of human suffer from listening abilities and impaired speaking. A majority of these people use hand sign language to communicate. Letters are formed by using hand, thumb, wrist and finger combinations. American Sign Language is the fourth most commonly used language, it is not known to many people. It becomes very hard to communicate with people who doesn't know any sign language. The process of communication would become much easier if user of American Sign Language had an application tools or device that could translate from sign language to audible or written words.

Therefore, it will be very useful for people who have disabilities talk, in particular, an American Sign Language interpreter to translate spelling using their fingers into audible speech or readable text. Therefore, what is needed is hardware / software, cost effective system that is easy to translate American Sign Language alphabet to text characters that appear clear to read or blast to hear. This invention provides a system.



**Figure 2.1: American Sign Language pattern that have been use today**

Researched by Kin Fun Li, Kylee Lothrop, Ethan Gill, and Stephen Lau (2011) [4] state that with the wide popularity and accessibility of the internet, a web based ASL translator is ideal to learn so that they can communicate with the hearing impaired. Web and server used to archive the signs of pre-recording and processing of signals recorded through motion capture devices, there are many potential applications. Translator can be used as an aid for hearing impaired to communicate or as a teaching tool for those who want to learn sign language.

Despite a common misconception, sign language is native, fully accessible language for the deaf, with their own unique syntax and grammar. There are few types of sign language depend on the country and region. According to Sara Morrissey and Andy Way (2005) [5], every country has its own sign language and this language may vary slightly from region to region as the spoken dialect. In recent years, more and more countries sign language was first recognized officially in the countries where it is used, as it is the primary means of communication for the deaf.

## 2.2 Current Systems/ Tools/ Output

From an observation that I made, the teachers from special school still using books and picture to teach student how to communicate in sign language. In this way, it is quite difficult to be understood by students of special because it is less interactive. Compared to the technology today, the way of teaching and learning has been lagging behind. There are a variety of methods can be used for teaching and learning in more effective ways. This is because, students that have the hearing problems who require more attention and interactive to understand.

From the observation, there is not much sign language application that had been built. For example [www.signingsavvy.com](http://www.signingsavvy.com) [6] it is a good application, but it is for commercial purpose. It shows a demo from the video and it also gives description to the word that we are searching for. Sadly, you have to subscribe and register as a member to use it.

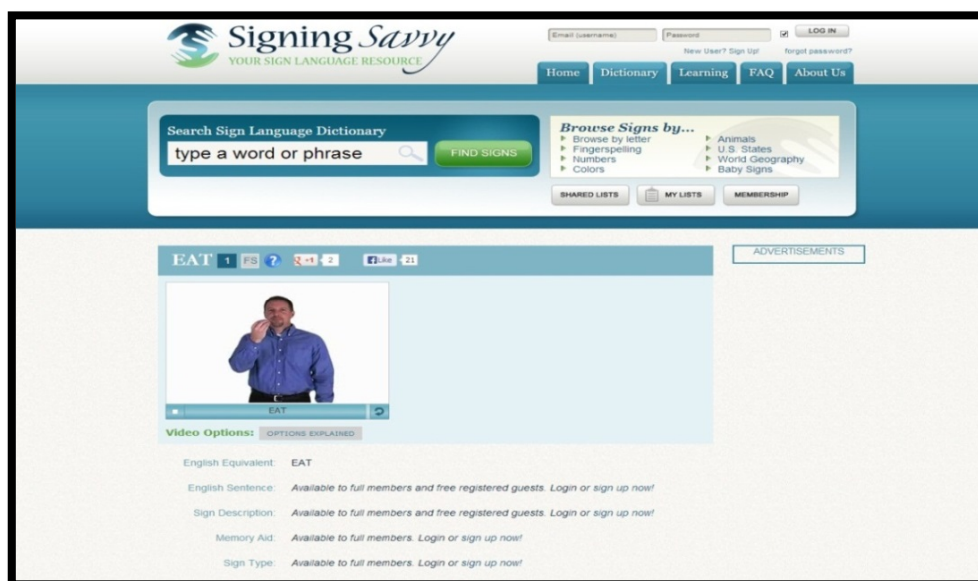


Figure 2.2: Example of Sign Language Application from Signing Savvy.

Google have launched a new sign language interpreter app for hangout for the deaf and hard hearing. It will allow those who prefer sign language to invite interpreters to speak and sign for them during hangouts. It is like a video call, but it use in different way. Compared to normal video call, we talk in it to communicate with each other and it will produce sound. In this new app, there is no sound. Just use the hand gesture to communicate between interpreter and sign language speaker.

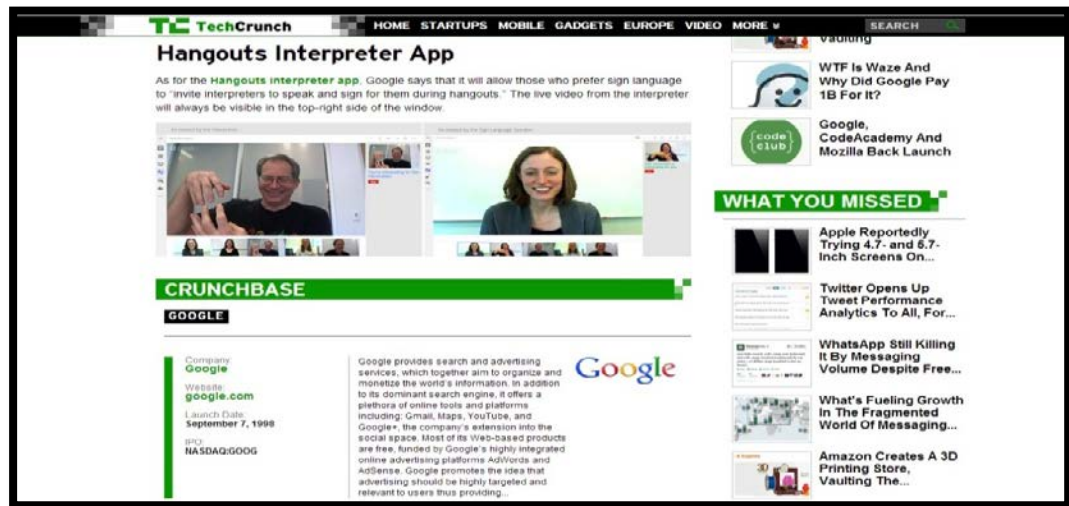


Figure 2.3: Sign Language Interpreter using hangout from Google.

### 2.3 Comparison of Existing System

Table 2.1: Comparison of existing system

Existing system	Sign language application that will be developed in PSM
<ul style="list-style-type: none"> <li>• Have to subscribe to use it</li> </ul>	<ul style="list-style-type: none"> <li>• Free Application</li> </ul>
<ul style="list-style-type: none"> <li>• Not organized</li> </ul>	<ul style="list-style-type: none"> <li>• Simple and organized</li> </ul>
<ul style="list-style-type: none"> <li>• Cover thousand of words</li> </ul>	<ul style="list-style-type: none"> <li>• Only basic words</li> </ul>
<ul style="list-style-type: none"> <li>• Describe the meaning of the word</li> </ul>	<ul style="list-style-type: none"> <li>• Does not describe</li> </ul>
<ul style="list-style-type: none"> <li>• Can communicate live with people</li> </ul>	<ul style="list-style-type: none"> <li>• As a translator only</li> </ul>
<ul style="list-style-type: none"> <li>• Need a plug in</li> </ul>	<ul style="list-style-type: none"> <li>• Dont need a plug in</li> </ul>