**MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Document

**Vietnamese Sign Language Recognition**

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| **Capstone Project code** | VSLR |

-Ho Chi Minh City, 17/05/2015-

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# Definitions, Acronyms, and Abbreviations

|  |  |
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| **Name** | **Definition** |
|  |  |
| VSLR | Vietnamese Sign Language Recognition |
| LCD | Liquid crystal display |
|  |  |

# Report No. 1 Introduction

## Project Information

* Project name: **Vietnamese Sign Language Recognition**
* Project Code: **VSLR**
* Product Type: **Embedded system**
* Start Date: **May 11th, 2015**
* End Date:

## Introduction

Nowadays, the communication is the way people can understand each other, is the way people can express their ideas, their thoughts to others. As we know, speaking is the most common way to communicate in life. However, to dumb person, they still need to communicate with others so they have a different way to expose themselves, it is called hand sign language or dumb language.

In this project, we want to develop a device that can help dumb person communicate with not only another mute but also everyone. The device can capture hand signs and then recognize them into text or sound with the same meaning.

## Current Situation

When you want to talk to a dumb person or when a mute wants to present his / her ideas, presentations in a meeting but you are not able to get their signs. Furthermore, when two dumb persons talk to each other but they are from different countries, they have distinct hand sign language, which way can they understand each other? Obviously, there are some ways, they can write out what they want or they can use some signs that are familiar to the daily life, and they can even hire a translator to interpret.

## Problem Definition

*The following disadvantages of current situation:*

* Handwritten: Time consuming to write out all content is very high.
* Using familiar signs: Without time consuming, the accuracy of the content is not high.
* Hand sign language translator can not respond the instant needs of communication. Moreover, the price for hiring a translator is very costly.

## Proposed Solution

To meet the needs of users we offer a solution based on translating hand signs into content and then show them.

Our system is a small device with a camera to capture hand signs and then translate them.

*In more detail, our system has the following functions:*

### **Feature functions**

* The system detects your hands, keeps track them and then analyzes the captured images into content.
* Showing the translated content for users on text and sound.
* Learning sign language hand for people who want to know about the language in order to better communicate with dumb people.

### Advantages and disadvantages

*The advantages and disadvantages of the proposed solution:*

* Advantages:
  + Quick and easy communicate for dumb person.
  + Train for person who don’t know about mute language.
  + Standardized for hand sign language.
  + People get used to the dumb language easily.
* Disadvantages:
  + In some cases, this solution does not work really exactly with the hands have weird characterize.
  + This solution needs stable environment (light, background) and some accessories.
  + This solution can not solve the problem about hand motion language.

## Functional Requirements

*Function requirements of the system are listed as below:*

### Tracking hand

* Allow users can move the hand in range area but the system still works correctly.

### Hand recognition

* The system analyzes the images which is captured by camera, then detects and recognizes the hand sign on these images into content.

### Showing the content

* The translated content is shown not only on text but also on sound.

### Learning hand sign

* Users select and learn words existed in the system with images express the hand gesture.

### Controlling System

* Allow users can turn on / off the system by the power button.
* Users can select functions by hand signs.
* Users can perform operations of fuction by hand signs.

### Controlling power

* System uses battery power gives users more flexibility in using.
* Combined with controlling the battery capacity that helps users to use the most effective.

## Role and Responsibility

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Full Name | Role | Position | Contact |
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*Table 1: Roles and Responsibilities*