FACULTY OF COMPUTING, INFORMATION & TECHNOLOGY (FCIT)

Software Requirement Specifications

Wireless Gesture Communication System

Project Code	WGCS
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Document History

Version	Name of Person	Date	Description of change

Distribution List

Name	Role

Document Sign-Off

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Version	Sign-off Authority	Sign-off Date

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1. Introduction

1.1 Purpose of Document

The purpose of this document is to come up with a detailed Information about the system architecture and its design.

1.2 Intended Audience

Intended Audience:

> Project Supervisor

> Project Coordinator

> Project Team Leader

> All the intrested people who wants to join the team to do the future work on this product.

1.3 Abbreviations

WGCS = Wireless Gesture Communication System.

AIML = Artificial Intelligence Machine Learning.

Pyo= Pyo connect Software Application.

1.4 Document Convention

The font used is Times New Roman. Headings' font size is 16 and for subheadings it is 12(both in bold and italics).

2. Overall System Description.

WGCS is the wireless gesture communication system which hand muscle gestures are recorded through arm band using sensor that transfer the signals to the embedded system via Bluetooth the processing engine of the embedded system generates the result in voice with the help of speakers through this process the hand gestures can be converted in voice.

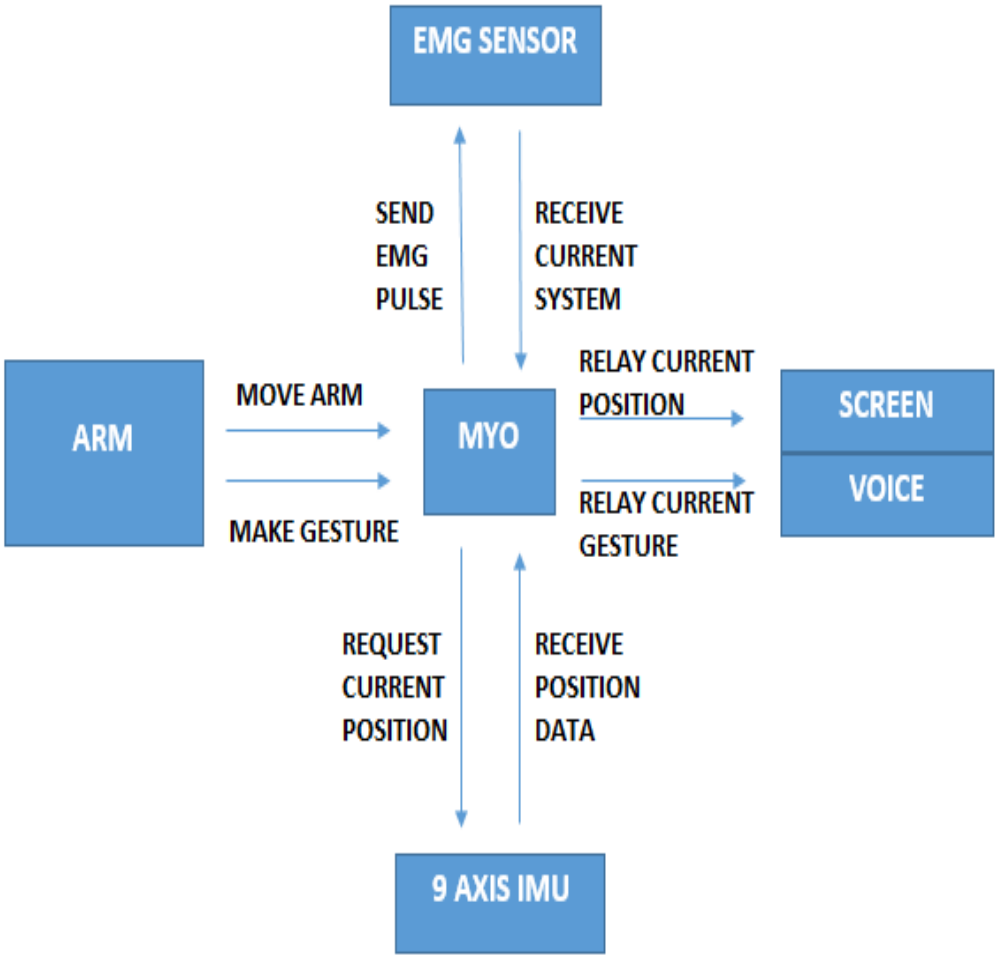

Figure 1: Logical Architecture of WGCS

2.1. Project Scope.

. This project will help us understand us basics of sign language and we will be able to learn more about technologies and evolution of muscle sensor and its usage in other places as well.

- **2.2. Project Objectives.**
- **This project helps dumb people to communicate easily.**

> They can carry this product anywhere anytime easily.
> They can use it without plugging it.
> The person does not have to learn anything additional to use this product.
> Dumb people will be able to communicate with everyone in daily life in general public stores, shops and in places where most people are not aware about the sign languages.

2.3. Stakeholders

In this project we have following main stakeholders

1. Mute Peoples
2. Project Supervisor
3. Project Members
4. All those persons who want to extend the project in future

2.4 Operating Environment

Propose project will design to help the dumb people to communicate in our society and easily express their feelings

2.5System Constraints

The two important component armband and the Raspberry pi 3 are the ones on which the entire system depends upon.
The Armband catches the electrical signals of the muscles and sends it to the raspberry pi wirelessly.
The raspberry pi 3 processes the signals and understands the gesture performed. Hence failure of these could lead to shutdown of entire system.

3. External Interface Requirements

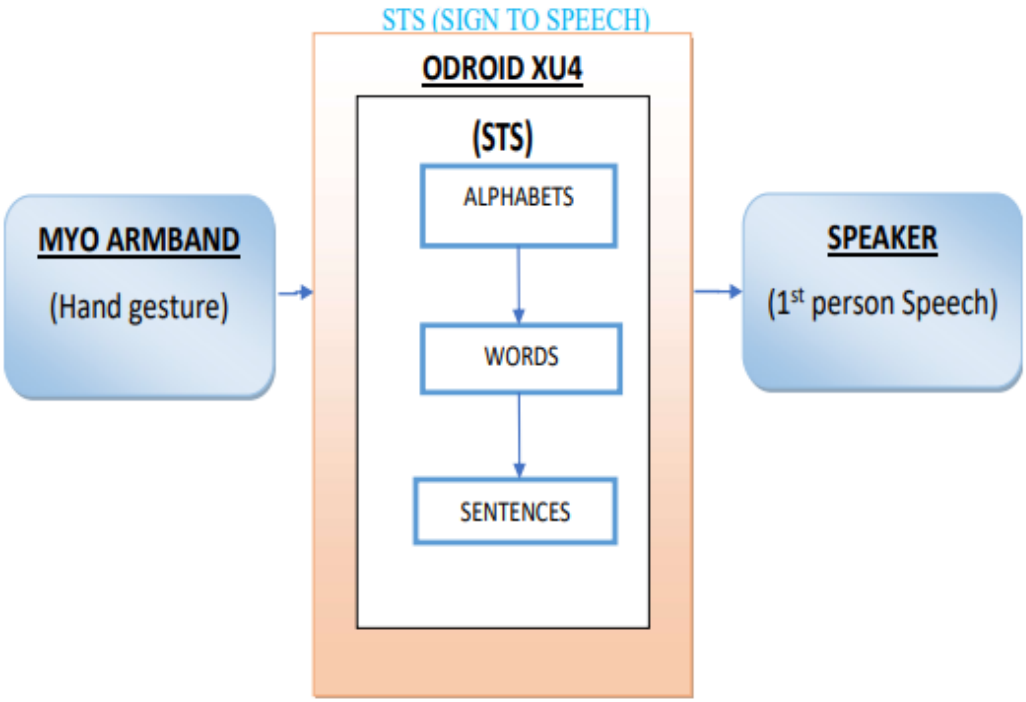

Figure 1: Project External Interface Requirements

3.1. Hardware Interaces

Hardware component is mainly focused on Myo Armband , Raspberry pi 3 , Speaker and Power Supply.

3.2. Software Interfaces

Our Pyo Connect software contains the script files which is written in python scripting language. This file contains the basic programming of our product which takes input from sensor and processes it then recognizes the gestures and converts it into certain words. Sensor provides continuous form of data and Pyo Connect application will be converting it continuously thus forming the speech for Hearing impaired persons. The user does not have to learn anything additional to use our software based product.

3.3. Communications Interfaces

The main communication interface which is required to our project than other communication interfaces includes Raspberry pi LED and Speaker.

4. Functional Requirements

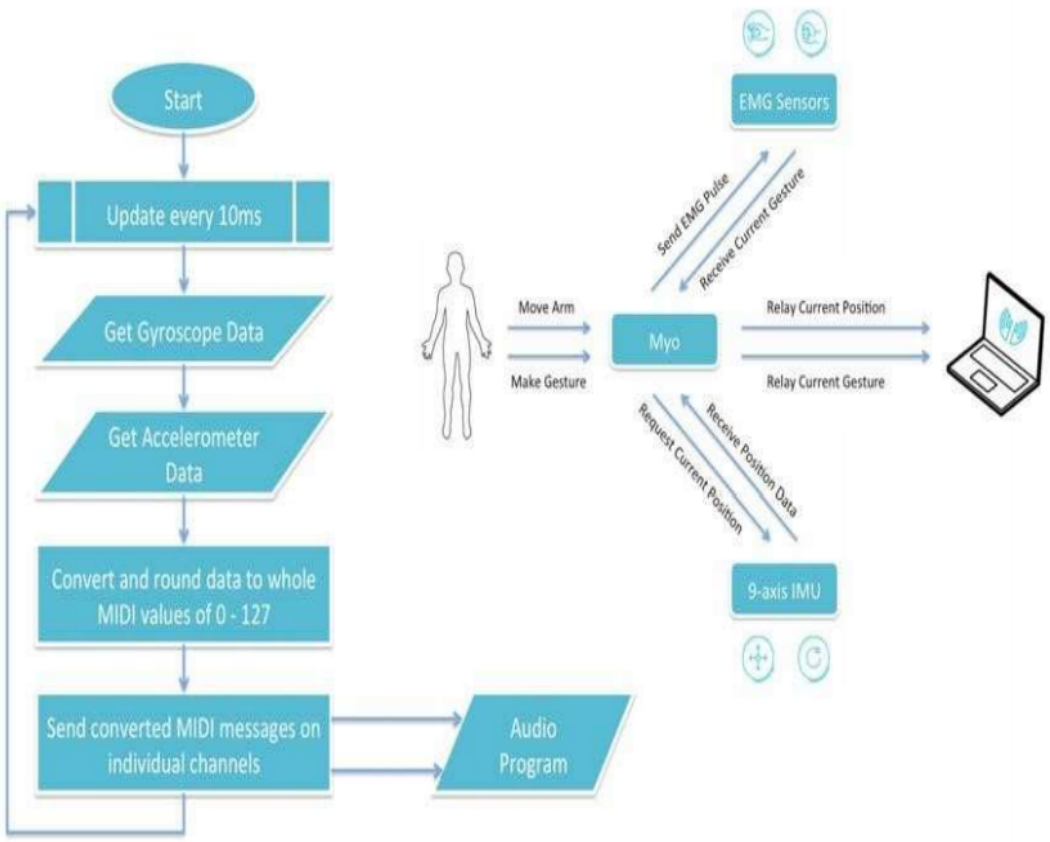

Figure 1: Functional Requirement

4.1 Functional Hierarchy

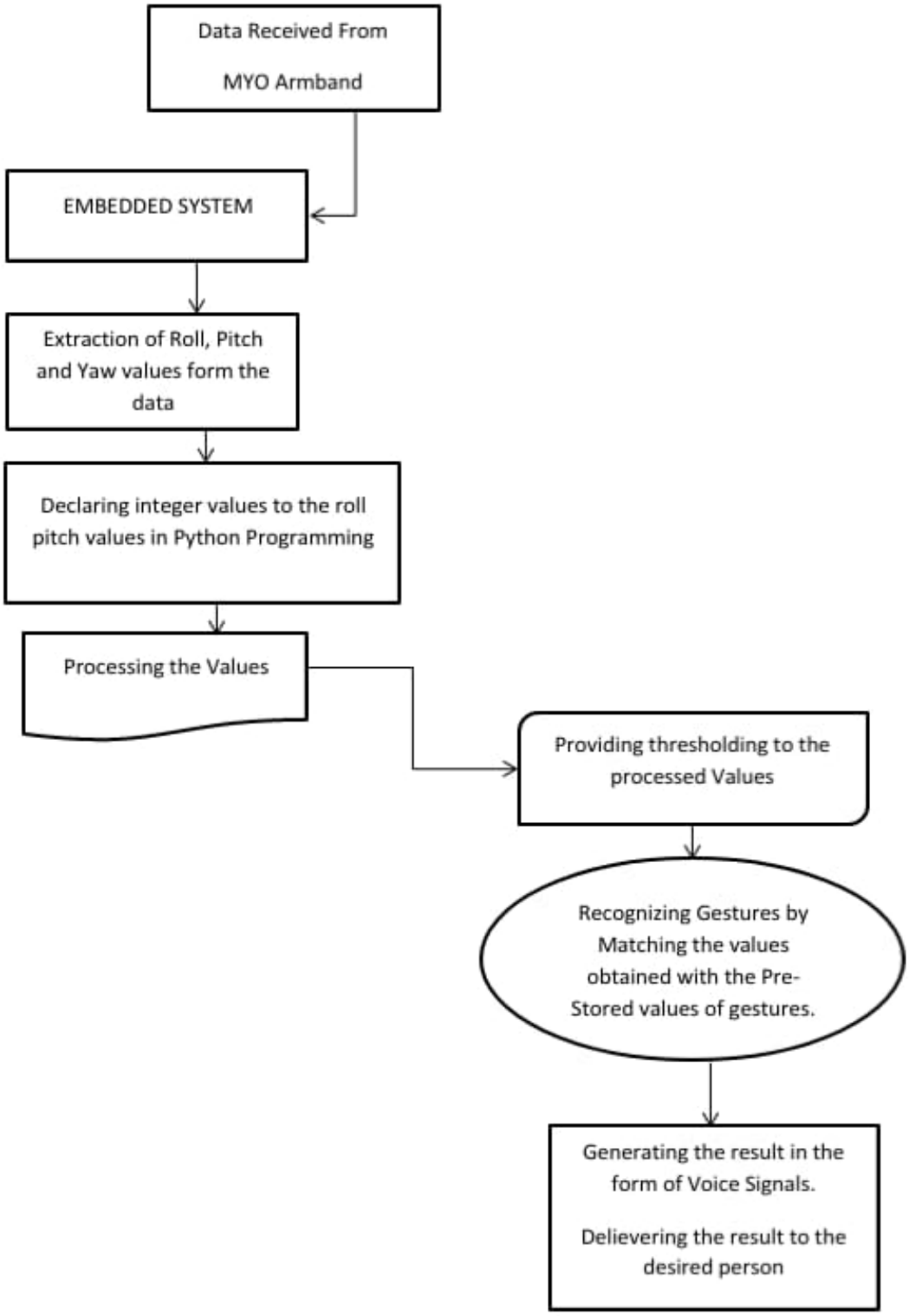

Figure 1: Project Functional Hierarchy

4.2 Use Case Diagram

UC-01: Sign Up on Mobile Device		
Use case Id:	UC-01	
Actors:	Mute Peoples	
Feature:	Mute people will be able to communicate with everyone in daily life in general public stores, shops and in places where most people are not aware about the sign languages. It will help to convert hand gesture into voice output in speaker	
Pre-condition:	Electrical muscle pulses values an input	
Scenarios		
Step#	**Action**	**Software Reaction**
1.	Gesture will performed by the user	**2.** Filter the values recieved and identify the gestured
3.	A little knowledge of initial setting up / starting of system	**4.** If in range then generate the voice output
Post Conditions		
Step#	**Description**	
	Recognizing gesture by matching values and generate output in the form of voice signals	
Use Case Cross referenced	Convert hand gestures into voice	

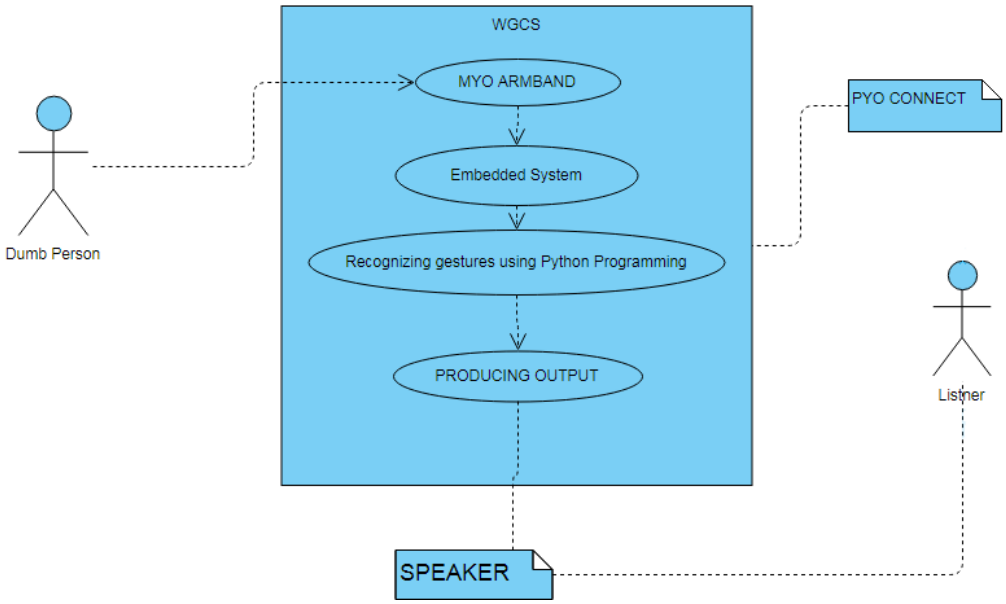

Figure 1:

5. Non-functional Requirements

5.1. Usability

The system WGCS is divided into three component MYO Armband embedded system and speaker. The user wears armband on forarm and make gesture the system will recognize the arm movement of user and give output in voice

5.2. Compatible

The System will easy to carry for user.

5.3. User Documentation

The system will be provide a clear and wide interface and guidance that can easily be understand by the user and he can access follow the guidance that the system will provide.