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Language Translator for Deaf Community

Harshala M. Donde[1], Chaitali S. Borse[2], Minal A. More[3] ,Minal Y. Phalak[4]

[1] Student,Dept. Of Computer Engineering ,MET's Institute Of Engineering ,Maharashtra,India
[2]Student,Dept. Of Computer Engineering ,MET's Institute Of Engineering ,Maharashtra,India
[3]Student,Dept. Of Computer Engineering ,MET's Institute Of Engineering ,Maharashtra,India
[4]Student,Dept. Of Computer Engineering ,MET's Institute Of Engineering ,Maharashtra,India

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Abstract - *An application which can hear speech from people involved in discussion and that will convert overall speech into pictorial form which deaf person can understand. Now-a-days, web technologies are a very efficient way to ensure communication between a large and heterogeneous audience. Furthermore, web information is mainly based on textual and multimedia content and consequently, some people with special needs, such as deaf and hard of hearing people, have difficulties to access to information or to communicate with hearing people [1]. This problem is due to the lack of services that facilitates sign language learning for hearing people or speech/text translation into sign language for persons with hearing impairment [3]. In this paper, we discuss a new approach based on web services, android operating system to build a mobile translation system from speech or text into pictorial representation. The main feature of this approach is to provide language translation of speech for people with hearing impairment [4].*

Key Words: **Design, Web services, Android, Deaf, Automatic interpretation, collaborative approach.**

1.INTRODUCTION

In this Project we develop a tool facilitating communication with (and between) deaf people and speech disabled individuals via the Web by using the Pictorial representation. This tool can be used by deaf persons to communicate with hearing people. Therefore, it contributes in reducing the language barrier between deaf and hearing people [5]. Our objective is to improve the accessibility of deaf to the technologies of information and communication by the development of an application which allows the translation of Speech to Pictorial form [7].

2. HISTORY AND BACKGROUND

Up today, most of previous works on SL are based on video support such as sign language video recognition. ELAN video corpus annotation work. However, video based solution is not efficient if we want to provide a good sentence translation because video sign language recognition is not a reliable solution and when merging separate video signs, the meaning can be lost. In this context, few studies have been carried out upon the deployment of Virtual Signers on the Web. Two main techniques are employed: pre-synthesized animation and generated animation. The first one is based on motion capture prerecorded animation using avatar technology such as Mathsigner or DIVA framework. However, this approach depends on expensive material to build signs and decreases the user interactivity to create new signs according to chosen community. The second technique consists on automatic and real-time generation of animations. Furthermore, in this area there are some works as eSIGN, sign-SMITH work. eSIGN is based on synthetic signing works by sending motion commands in the form of written codes for the Avatar to be animated. Sign-SMITH provides a gesture builder to createsigns with elementary movement [6]. However, those products do not give the possibility to share the created signs to be used by the others communities. In addition, all existing systems are not able to give a multi-community real time translator service that includes a mobile access and share all signs created by others communities.

2.1 Proposed System

2.1.1 Architecture

Speech recorder is used to record the Speech. Speech to text converter it is used to convert speech into text using tokenization algorithm. Tokenization algorithm is used analyze the meaning of sentence. Data dictionary is a collection of images associated with text, it allows user to add and fetch images. Client are Mobile devices, it request to web server in form of

HTTP request, get response in JSON form. In Mysql user can update, delete, and modify the data in dictionary. Dictionary contains images.

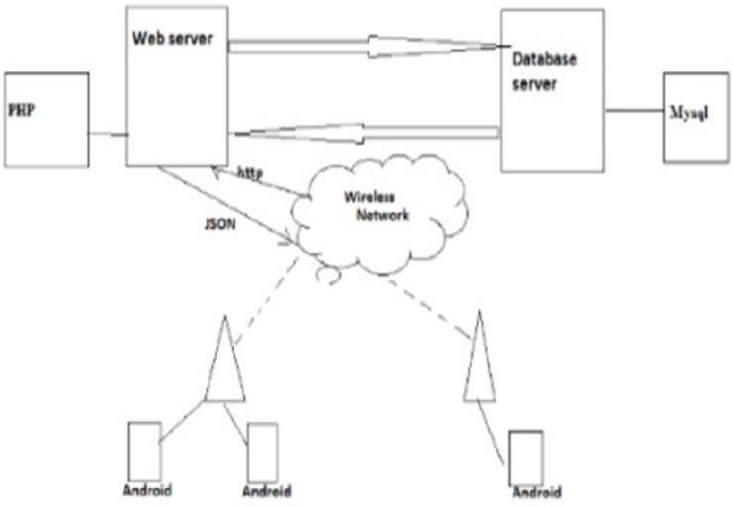

Fig 1. System Architecture

2.1.1Implementation Details

2.1.2.1 Modules

1.**Login** - Already registered, user can log into the system.

2.**Registration -** New user can register here.

3.**Home** – In this the custom view of home page is provided.

4.**Profile** – User can see his/her own profile.

5.**Lecture** – User can view, start, and download all lectures.

6.Add Images – In this, user can add images associated with image name.

2.1.2.2 Algorithms/Techniques

Tokenization Algorithm

Input (Di)

Output (Tokens)

Begin

1 . Collect Input speech (Di) where i=1, 2, 3….n;

2 . For each input Di;

Extract Word (EWi) = Di;

// apply extract word process for all documents i=1,2, 3…n in and extract words//

3. For each EWi;

Stop Word (SWi) =EWi;

// apply Stop word elimination process to remove all stop words like is, am, to, as, etc. //

Stemming (Si) = SWi; // It create stems of each word, like "use" is the stem of user, using, usage etc. //

4. For each Si; Freq_Count (WCi) = Si; // for the total no. of occurrences of each Stem Si. //

Return (Si);

5. Tokens (Si) will be passed to an IR System.

End

Tokenization Phases

It segregates all the words, numbers, and their characters etc. from given document and these identified words, numbers, and other characters are called tokens [2].

- **Token generation** - This process also evaluates the frequency value of all these tokens present in the input documents.
- **Pre-processing** - It involves the set of all documents are gathered and passed to the word extraction phases
- **Extraction phases** - In this all words are extracted.
- In next phase all the infrequent words are listed and removed for example remove words having frequency less than two.

[1] **Stemming** - Stemming phase is used to extract the sub-part i.e. called as stem/root of a given word. For example, the words continue, continuously, continued all can be rooted to the word continue. The main role of stemming is to remove various suffixes as result in the reduction of number of words, to have exactly matching stems, to minimize storage requirement and maximize the efficiency of IR Model.

[2] **Count the frequency of each word** - Information retrieval works on the output of this tokenization process for achieving or producing most relevant results to the given users.

2.1.3 Experimental Details

Hardware Requirements

Server:

Microprocessor: Intel Xeon processor E7

RAM: 4GB

Client:

Intel core 2 Duo or higher

2GB RAM

Software Requirements

Server:

OS: Any linux version (Ubuntu,Fedora,Redhat)

HTTPserver: Apache Web Server

DBMS: MYSQL, DBMS Server

Language: PHP Programming Language,JAVA

3. RESULT AND ANALYSIS

We develop a tool facilitating communication with deaf people by using the pictorial representation. It allows the translation of speech to pictorial form. It reduces the language barrier between deaf and hearing people.

Fig 2. Login Module

Fig 3. Registration Module

4. CONCLUSION

We discussed an interface which allows deaf people to communicate with hearing people by converting speech into pictorial representation. This tool aims to enhance communication with deaf, hard-of-hearing and speech disabled individuals.

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