

**DEVELOPING A SPEECH-TO-SPEECH LANGUAGE TRANSLATOR SYSTEM  
FOR VOICE CHAT**

**BY**

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## ABSTRACT

Voice communication over the Internet has been increasingly popular and has changed the way people communicate. Internet communication connects people around the world anytime, anywhere. It has provided people with a faster, cheaper, and easier way of interacting with other people near, far or from another part of the globe.

Translators have been a major help in bridging the language gap of businessmen, statesmen, and Internet users. Incorporating this mechanism into a voice chat system will most certainly be useful to these people. Since there have not been any developments of this kind of technology for the Filipino language, the proponents initiated a study for the development of this service.

The study discusses a methodology for the development of a speech-to-speech language translator system for voice chat specifically translating from Filipino to English and vice versa.

*Keywords:*

Speech-to-Speech, translator, voice chat, Internet communication

## **CHAPTER I**

### **INTRODUCTION**

#### **1.1 Background of the Study**

The study focused mainly on Speech-to-Speech and language translation technologies. It concentrated on areas of natural language processing, which is a subfield of artificial intelligence and linguistics.

The study could contribute in the language communication problems of the world. The study might aid people especially businessmen and Internet users in interacting with other people of a different language.

The group is motivated to pursue in the study because there is a lack of this kind of technology in the Philippines. There has been no development of any English to Filipino Speech-to-Speech translator and vice versa. Moreover, the group is interested in human language translation and they are intrigued in developing the technology.

The setting of the study was in the Ateneo de Davao University. The desired output of the study is a working prototype of the speech-to-speech language translator system for voice chat and can be used anywhere in the world.

#### **1.2 Statement of the Problem**

The study sought to answer this general problem: How can a speech-to-speech language translator for voice chat be implemented?

Specifically, it sought to answer the following sub problems:

- How to incorporate this technology as a voice chat?
- How to create a voice chat application?
- What are the processes involved in language translation?
- What are the steps involved in implementing a speech recognizer and speech synthesizer for the Filipino (Tagalog) language?

### **1.3 Objective of the Study**

The study aimed to develop a working prototype of a speech-to-speech language translator for voice chat.

The objectives of the team for the study are to:

- Find out how to incorporate language translation as a voice chat.
- Determine how to create a voice chat application.
- Determine and enumerate the processes involved in language translation.
- Enumerate the steps involved in implementing a Filipino speech recognizer and speech synthesizer.

### **1.4 Scope and Limitation of the Study**

The goal of the study is to develop a working prototype of the speech-to-speech language translator that will run on computers with Internet access. The prototype is able to accept speech as input and produce translated speech as

output. The study focused mainly on the translation from English to Filipino language and vice versa.

The Filipino speech recognition functionality of the prototype is limited to the words added to the recognizer's wordlist or vocabulary. In order for the recognizer to accurately recognize the spoken words, the user must train the speech recognizer. However, training the recognizer is time consuming.

The Filipino speech synthesis is merely a Java version of the I-SALITA MO Filipino speech synthesis. The team did not do any improvements or enhancements on the said Filipino speech synthesizer. Therefore, it has the same limitations as with the I-SALITA MO application.

The language translation functionality is limited in words and in grammar rules. Translation is limited to the words and their counterparts listed in the dictionary. In addition, a number of language grammar rules were not applied in the translation process. Therefore, the input may not be accurately translated.

The chat application is dependent on the speed or bandwidth of the Internet connection. The higher the bandwidth, the faster the receiving and sending of the messages. In contrast, the lower the bandwidth, the longer it takes for the chat application to receive and process/translate messages.

### **1.5 Significance of the Study**

The study is significant for businessmen, statesmen, and Internet users who converse with people of another language over the Internet. Since Internet communication, more specifically voice chat is in rampant use nowadays, a

speech-to-speech language translator may aid people with difficulties in talking in another language. Even though the team's scope is the translation between the English and Filipino languages, the success of the study can challenge other developers to implement a similar translator for other languages. The study can contribute to the language problems of the world by making it easier for people to talk to another person of a different language.

## **1.6 Definition of Terms**

- 1. Dictionary – A collection of words and phrases and their corresponding counterparts in another language.**
- 2. Internet – An interconnected system of networks that connects computers around the world via the TCP/IP protocol.**
- 3. Speech Recognition - Speech Recognition technologies allow computers equipped with microphones to interpret human speech. It is the ability of the system to convert spoken words to written text.**
- 4. Speech Synthesis – Speech synthesis systems are often called text-to-speech (TTS) systems in reference to their ability to convert text into speech. It is the artificial production of human speech.**
- 5. Translation – Is the act of rendering text in one language into another.**
- 6. Voice Chat – A chat application feature that allows you to talk or speak to anybody on the Internet.**
- 7. Wordlist – A collection of words without their meanings of a specific language.**