# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

# Voice Based Translator

Miss. Shayanika Hazarika[1], Miss. Poonam Suryawanshi[2], Miss. Nikita Shinde[3], Master Chetan Jangid[4], Prof. Soumitra Das[5]

[1, 5]Computer Department, Dr D Y Patil School Of Engineering, Lohegaon Pune, Savitribai Phule Pune University, Maharashtra India

Abstract: In our day-to-day life language plays a vital role for communication. We use speech to convey our thoughts and actions during any general discussion or in a meeting or while in a casual conversation with friends, family or stranger. It becomes very difficult for communication when one person is speaking but the other person does not understand the language. Therefore we need a system which can act as a bridge between different language barriers. Speech to speech translator can help us in accomplishing the desired goal. In this paper we have studied about the methodologies and techniques used previously for the development of Translation models.
Keywords: Natural Language Processing, Language Model, Translation Model, Statistical Machine Learning

## I. INTRODUCTION

India is a culturally diverse country. It has innumerable language. After travelling some distance in any direction we are able to listen or read multiple type of speech. Such variety in terms of speech pressed the need for Translation System of different Indian Languages.

Assamese is the easternmost Indo-Aryan language. It is the language as like mother tongue of Assam and is mostly used to communicate in the north-eastern states. It is one of the 23 official languages recognized by Republic of India. Now-a- days there is a lot research going on in machine translation and Natural Language Processing. There exist systems for languages like Marathi, Bengali, Chhattisgarhi, English, Tamil, Malayalam, Urdu, etc.

There are online translator available like Google, Bing translator, etc. We have observed in past 2-3 years people are migrating from one state to another state for official purpose, Business purpose, transfer of Army personal, Health Care, and Tourism etc. so they are using Assamese language widely. Like other Indian languages there is no such application developed for Assamese to Hindi translation and Vies versa. So this paper will fill the gap. In this paper, we are analysing the previous work done i.e. the different methodologies used by the authors to develop a system for translation of Assamese Phrase to Hindi phrase and for other languages.

In this system we will be using statistical machine translation method which will split a sentence into small phrases and after that by calculation the approximate value for each small phrase. Then finally by aggregating all the small phrases it will form a translated sentence into target language.
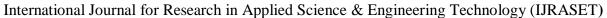
## II. LITERATURE REVIEW

Natural Language Processing can be used to find the meanings from human language and analyse it. NLP is also used to interact with humans in a unique method. A word or sentence from source language to target language is translated without human interruption is called Machine Translation [1]. There are different types of Machine Translation as indicated in the paper [1] :

A. Statistical Machine Translation
B. Rule-Based translation
C. Knowledge-Based Machine translation
D. Principle Machine Translation
E. Example-Based Machine Translation[1].

In statistical Machine Translation they have used Bayes Theorem which is based on Probability Distribution and Bilingual Corpora[1].

In the paper [2], The Author Sameer Bansal worked on Speech-to-Text Translation Model which was evaluated on many people having conversation at a time and simultaneously translating the data. This system did not require Intermediate Automatic Speech Recognition. The system uses unsupervised speech processing which was used in Spanish-English Translation.

In the paper [3] , The Author N. D. Londhe has discussed about Automatic Speech Recognition (ASR). Methodologies involved in ASR are data acquisition, speech segmentation, feature extraction and model formation stages of developing an efficient

system. From this paper, we have observed that separation of uttered speech samples of an individual speaker was done by using speech segmentation. They had used bottom-up blind speech segmentation for dividing a speech sample which is required in machine learning. Bottom-up blind speech segmentation is language independent and it doesn't require any prior information of sample speech. ASR works efficiently and satisfactorily when the system is being trained by using any one of the following Machine Leaning paradigms [3].

1) Hidden Markov Model
2) Artificial Neural Network
3) Support Vector Machine

In the paper [6] the Statistical translation model is discussed which is used by The Author Moirangthem Tiken Singh in English to Assamese machine translation system. The statistical translation model does not require any intermediate for interpretation like humans (Nadeeem Jadoon Khan). We have observed as per the Statistical translation algorithm the sentence is converted to target language in between these processes from the training data the sentence is split in small phrases and the order of those phrases is unsorted and after the complete translation of those small phrases, these phrases will be reordered and sentence is formed.

In the paper [7], The Author Kaveri Kamble discussed about speech synthesis. Synthesized speech can be created by concatenating part of recorded speech which is stored in the database. The main function of Text-To-Speech system is to convert an arbitrary text to a spoken waveform. Text-To Speech (TTS) is a major application of Natural Language Processing (NLP). This conversion involves text processing and speech generation process. The approach used for implementing Hindi TTS involved basically three steps such as Text-Pre-processing, Text-Processing, Speech-Synthesis. In Text-Pre-Processing basically Text is taken as input which is entered manually after that spelling check is involved. Text Processing which is performed by Text Standardization and normalization. Speech synthesis, which involved phonetic rule based on Waveform generation and output as speech.

The Author of The paper [11] , G V Garje have given different types of Indian Machine Translation Systems. India is a diverse country where population 1.25 billion and 22 constitutionally recognized language. In every 50 miles a new language is spoken like Hindi, Marathi, Punjabi, Assamese, Bengali, Tamil, etc.

The Author G V Garje of paper [12] have implemented Rule-Based approach for translation. The components that were being used are Lexical Analyser , Morphological Analyser, Parser, Mapping Module, Local word grouper, Token Rearrangement, Transliteration. Like English language sentences have a format subject, verb, object where in Marathi the format of the sentence is not fixed. Subject, object, verb this format of the sentence is in Marathi. So in this paper they have used Machine Translation Algorithm in such steps that source sentence, i.e. English to target sentence i.e. Marathi.

TABLE I : TAXONOMY CHART

| Sr. No. | Author Name And Year of Publication | NLP | Machine Translation | Text-To-Speech (TTS) | Statistical Machine Translation |
|---|---|---|---|---|---|
| 1 | Mani Bansal, 2017 | No | Yes | No | Yes |
| 2 | Sameer Bansal, April 2017 | No | Yes | No | No |
| 3 | Moirangthem Tiken Singh, May 2014 | Yes | Yes | No | Yes |
| 4 | N. D. Londhe, April 2016 | No | Yes | No | No |
| 5 | Kaveri Kamble, November 2014 | Yes | No | Yes | No |
| 6 | Mahak Dureja, November 2015 | Yes | No | No | Yes |
| 7 | G V Garje, October 2013 | No | Yes | No | Yes |

### III. GENERAL DISCUSSION AND REVIEW

From the above taxonomy chart we can conclude that in most of the previously developed system NLP is being used in translation system. NLP techniques incorporates a variety of methods , including linguistics, semantics, statistics and machine learning to extract entities, relationships and understand context, which enables an understanding of what's being said or written. NLP helps computers understand sentences as they are spoken or written by human.

After studying the taxonomy chart we can conclude that T-T-S is an intermediate step in the translation models. T-T-S understands text and natural language to generate synthesized audio as output.

In our system we will be using Natural language Processing to analyse the human speech. And we are converting the Source speech to target speech which will be done in three intermediate Steps:

A. Speech-To-Text Translation
B. Text-To-Text Translation
C. Text-To-Speech Translation

Statistical machine Translation is the type of machine translation in which Sentences from a source language to target language is converted using bilingual corpora and probability distribution which is based on Bayes theorem.



Fig. 1 Overall Speech to Speech Translation System

### IV. FUTURE USE AND SCOPE

This system will be used by the people migrating to and from Assam and other states. For Business Purpose, Military, Education and Tourism. Furthermore this application can be developed for other regional and foreign languages. In Hindi language the Ambiguity issue is there, example: Main Hu Aam Aadmi (मैं हूं आम आदमी'). The meaning of "Aam" is Common and the other meaning of "Aam" is mango, so these types of Ambiguity will be solved.

### V. CONCLUSION

In this paper we have studied and analysed different Artificial Intelligence methodologies like statistical machine learning, Automatic Speech Recognition being used for the developing previous translation system.

We are in the process of developing a system will help user to translate Assamese Speech to Hindi Speech. Which will help people from other states who are visiting Assam for different purposes and for people from Assam who will be travelling all over the country.

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089  (24*7 Support on Whatsapp)