

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/371685081>

Role of Hand Talk Translator Application for Sign Language Translation

Book · May 2023

CITATIONS

0

READS

79

3 authors:



Gomathi Batumalai

Universiti Putra Malaysia

9 PUBLICATIONS 0 CITATIONS

SEE PROFILE



Manimangai Mani

Universiti Putra Malaysia

33 PUBLICATIONS 32 CITATIONS

SEE PROFILE



Veeramohan Veeraputhran

Universiti Putra Malaysia

10 PUBLICATIONS 0 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Asian Literature [View project](#)

Role of Hand Talk Translator Application for Sign Language Translation

Gomathi Batumalai¹

(gomathi7207@gmail.com)

Universiti Putra Malaysia

Veeramohan Veeraputhran²

(veeramohan@upm.edu.my)

Universiti Putra Malaysia

Manimangai Mani³

(Manimangai@upm.edu.my)

Universiti Putra Malaysia

ABSTRACT

A communication link between two languages is provided by interpretation and translation. Machine translation, sign language translation, and technical translation are just a few examples of translations that are used frequently in addition to text translation. The development of translation software and applications is a result of the quick advancement of technology. The Hand Talk Translator Application for sign language Translation is the main focus of this study. This application is majorly invented for deaf and hard of hearing people with American Sign Language (ASL). The major goals of this study are to describe how Hand Talk Translator programs are used to translate Sign Language and to outline the difficulties associated with doing so. This is a qualitative study. All the data was collected with the text analysis method. Data was clearly explained in findings and discussions. Newmark Translation Theory (1988) was used to analyse the data. This study finds that the Hand Talk Translator application is useful to translate Sign Language used to communicate with the deaf and hard of hearing community. Expertise in sign language is significantly use the Hand Talk Translator application. Applications play a great role in the translation world.

Keywords: *Hand Talk Translator, application, Sign Language, interpretation, translation*

INTRODUCTION

Information can be exchanged by speaking, writing, and other means through communication. There are verbal and non-verbal forms of communication, which can help us better understand how we communicate. Face-to-face conversation is considered verbal communication, while

Gomathi Batumalai, Universiti Putra Malaysia, gomathi7207@gmail.com ¹

Veeramohan Veeraputhran, Universiti Putra Malaysia, veeramohan@upm.edu.my ²

Manimangai Mani, Universiti Putra Malaysia, manimangaimani@upm.edu.my ³

body language, sign language, and nonverbal communication are also included. Additionally, there is textual communication, which includes books, magazines, and letters, among other things. Notably in nonverbal communication individuals frequently utilise the sign language. The major language of the deaf community is sign language. Americans and Canadians who are deaf or have hearing loss utilise American Sign Language (ASL). The most well-known sign language in the world is this one. Normal people without any knowledge face challenges on understanding the sign language. Therefore, various applications were invented by experts to build a communication bridge between normal people and hard of hearing people. In this case, translation technologies play their role on rendering information for these two parties. Hand Talk Translation is one of the famous applications to translate American Sign Language (ASL). This study is mainly describing about the role of Hand Talk Translator application on Sign Language Translation among people.

Objectives:

- i. *To describe the Sign Language translation techniques on Hand Talk Translator application*
- ii. *To outline the difficulties on translating Sign Language on Hand Talk Translator application.*

PETER NEWMARK TRANSLATION THEORY (1988)

This study is mainly about the Hand Talk Translator application on sign language translation among deaf and hard of hearing people. This study was carried out with Peter Newmark's Translation Theory (1988). This theory explains the two major ways of translation. This theory was invented by the well-known translator Peter Newmark in 1988. There are two main approaches in this theory, which are *Semantic Translation Theory* and *Communicative Translation Theory*. *Semantic translation theory* is basically about the word for word translation and the *Communicative translation theory* is mainly about translation by understanding the context. In this study, *communicative translation theory* was used to analyse the data.

LITERATURE REVIEW

Numerous post-studies on sign language and its uses have *been done by other scholars*. Firstly, '*Neural Sign Language Translation*' by (Cihan Camgoz et al., 2014). This article will translate sign language films into spoken English while taking varied word ordering and grammar into account. In this study, the difficult task of sign language translation is introduced, and the first complete solution is suggested. This study finds that, neural sign language translation is different from other form of sign languages. The second study is '*Statistical Sign Language Translation*' (Bungeroth & Ney, 2004). The data collection for this project focuses on German Sign Language. This study discovered that it is quite suitable to apply this strategy to actual world conditions. In addition to these, numerous studies on sign language have been done. However, there aren't many publications about the Sign Language Translation programme to be found. Consequently, the focus of this study is on the use of a hand talk translator for sign language translation.

METHODOLOGY

This is a qualitative study. Data was collected and analysed with explanatory method. This study focuses on a Sign Language application which is Hand Talk Translator application. The application was entirely explored for this study. Based on the rating, this application were chosen by the researcher. This study used American Sign Language (ASL) and Brazilian Sign Language (Libras) that programmed in application. Peter Newmark's Communicative Translation Theory (1988) was used to analyse data of this study.

HAND TALK TRANSLATOR APPLICATION

For persons who are hard of hearing or deaf, there is an app called Hand Talk Translator. Artificial intelligence has been developed to translate text and voice between Brazilian Sign Language (Libras) and American Sign Language (ASL). Over 400 million people worldwide are deaf or hard of hearing, according to this application. Most people who use this programme are sign language students, families, and teachers in the classroom. Because it received a rating of 4.4 and had more than 1 million downloads, this application is known as a well-known sign language translator.

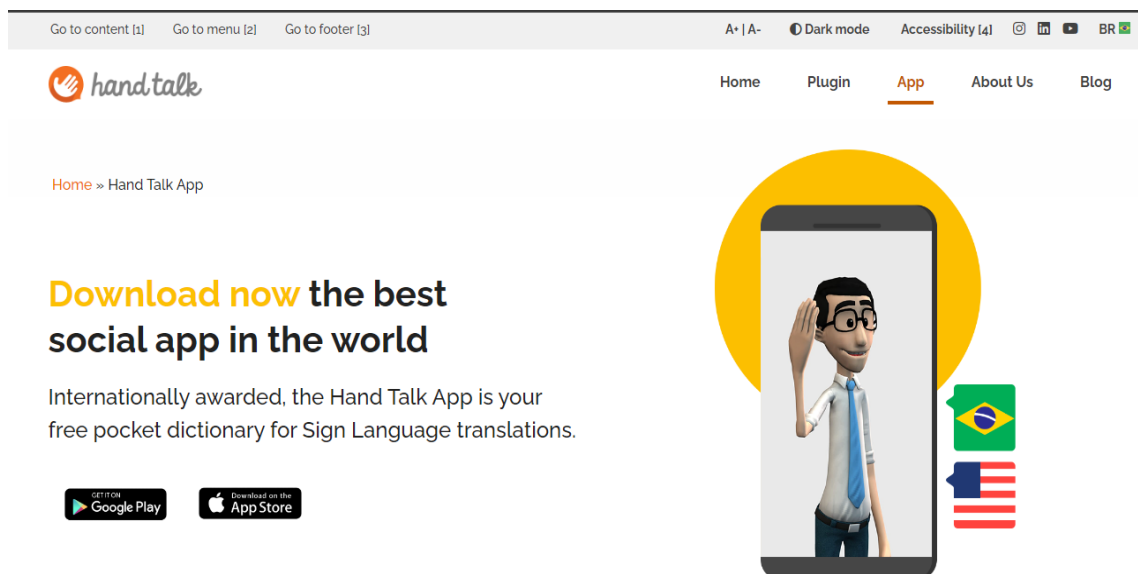


Figure 1: Hand Talk Translator Application

- **AMERICAN SIGN LANGUAGE (ASL)**

American Sign Language (ASL) is a famous sign language that used by people around United States, Canada, West Africa, and Southeast Asia. More than 250 000 people in those places use this ASL which uses one-handed fingerspelling alphabet. ASL was developed at the American School for the Deaf (ASD) in West Hartford, Connecticut, in the early 19th century as a result of language contact. Since then, ASL has been widely promoted by deaf community organisation and schools for the deaf. Only a few of the phonemic components found in ASL signs include the face, torso, and hands. ASL is not a pantomime, despite iconicity being more pronounced in it than in spoken languages. English loan words are frequently learned by fingerspelling. Even though ASL grammar has nothing to do with English grammar, fingerspelling frequently uses English loan words. ASL has a good approach for generating

agglutinative classifiers, aspectual marking, and verbal agreement. Numerous linguists believe that ASL is a subject-verb-object language. However, there are other approaches that take into account the word order in ASL.

- **BRAZILIAN SIGN LANGUAGE (Libras)**

Brazilian Sign Language (Libras) is called as *Lingua Brasileira dos Sinais* and constitutes its own language with its own grammar, syntax, morphology, and so on. Around 5 million deaf people around Brazil use Libras along with ASL too. There are 5 fundamental criteria for Libras. They are made up of the way the hands are arranged, the points of articulation, the direction, movement, and expression of the face and body. With these five elements, Libras work. Brazilian Sign Language is a well-known language, and dictionaries, instructional videos, and papers on its linguistic features have all been published. Brazil is home to a wide variety of dialects that reflect regional and socioeconomic differences. On April 24, 2002, the National Congress of Brazil passed a stringent law governing sign language, which is now being implemented as of 2005. The law mandates that Brazilian Sign Language be utilised in administrative and educational settings.

- **SIGN LANGUAGE TRANSLATION TECHNIQUES**

Brazilian Sign Language (Libras) and American Sign Language (ASL) are both supported by the Hand Talk Translator application program. Through this application, artificial intelligence (AI) is used to translate sign language. Artificial intelligence (AI) was used in the creation of this application to incorporate all the databases. This program received data and was utilized by many parties to determine the translation of nonverbal communication. To use this application, users must sign into their accounts. Hugo can be personalized by the user with their preferred colour, style, etc. Insert the word or phrase that needs to be translated into sign language next. The user can enter text and audio. The users will also feel better. The translation can be saved for later and the user must afterwards select one of two sign language categories. To translate a text or audio file into ASL or Libras, this application uses machine translation techniques.

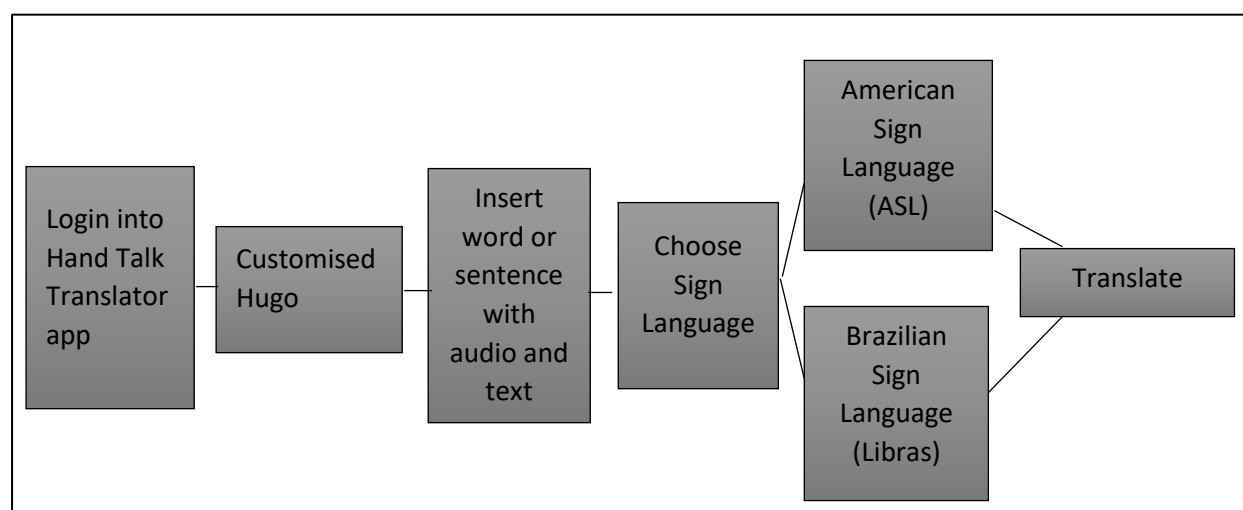


Figure 2: Translation Technique on Hand Talk Translator Application

DIFFICULTIES ON SIGN LANGUAGE TRANSLATION

Around the world, there are more than 700 different varieties of sign language. Depending on the communication language utilised in a country, several varieties of sign language were used. Depending on the country, region, and culture, different signs are utilised in different countries. For instance, American Sign Language (ASL), which is unique from Arslan, the sign language used in Australia, differs from British Sign Language (BSL), which is used in the UK. ASL speakers may find it challenging to comprehend local signers in Sydney, Australia, because the signs and gestures differ from one another, unlike distinct dialects or accents in oral language. The deaf and hard-of-hearing community now has a means of communicating with others thanks to sign language. However, there are various challenges faced by different group of people on using Hand Talk Translator application for Sign Language Translation.

Group 1	Group 2	Group 3
Ordinary People	Deaf and hard of hearing people without knowledge of	Deaf and hard of hearing people from different countries
<ul style="list-style-type: none">• Expression of feelings or emotion• Language problem	<ul style="list-style-type: none">• Hard to understand• Communication issue	<ul style="list-style-type: none">• Different languages• Different sign language

Figure 3: Difficulties of Sign Language Translation on Hand Talk Translator Application

First, regular folks. When using the Hand Talk Translator app for sign language translation, regular people encounter some difficulties. Normal body language is typically employed by everyday people to communicate with deaf individuals. Only specialists can use sign language to communicate. It forces them to deal with translation difficulties. Problems in conveying messages that include emotions or feelings come first. People who know sign language will be able to communicate the message as well as the feelings and emotions, but regular people cannot. It caused the receiver to poorly receive the proper information. The rest is language. This English-programmed Hand Talk Translator application is available. Ordinary folks had difficulty communicating because of their limited linguistic skills.

People who are deaf or hard of hearing and do not know sign language make up the following group. There are many different types of sign language used throughout the world. There are many different sign languages, such as American Sign Language (ASL), British Sign Language, Brazilian Sign Language, Malaysian Sign Language, and more. Sign language was created in order to communicate with the deaf and hard of hearing community. However, not all deaf people are able to understand sign language. The majority of the deaf community was not familiar with sign language. Children find it challenging to understand sign language when family members or teachers try to use the Hand Talk Translator programme to communicate with them. In addition, there is a communication problem. Lack of exposure to sign language makes it difficult for people to communicate with one another. The inability of deaf persons with normal body language to understand the hand movements, for example, makes it impossible for them to use sign language applications.

Third group is, deaf and hard of hearing people from various countries. This group face different challenges on using the Hand Talk Translator application for Sign Language Translation. There are varieties of sign languages used in every country. It is because the difference on dialect and the communicative language of each country. When Chinese who are

normalised with Chinese Sign Language will face difficulty on understanding American Sign Language because this application is only available for ASL and Libras. In this case, the deaf people unable to use this application. Various group of people face various challenges on using Hand Talk Translator to translate something into sign language.

CONCLUSION

Invention of sign language applications and software are beneficial to community because it builds a communicative bridge among deaf and ordinary people. It helps the development of translation in various ways. Exposure on sign language to deaf, muted people and hard of hearing community overcome the communication issues with ordinary people. Sign language isn't only the tool of communication, it's a language of deaf people. helps the deaf and the dumb communicate with one another and with each other. promotes the social inclusion of those who are hard of hearing or deaf. Additionally, it increases the self-esteem of the disabled and gives deaf children the chance to educate themselves. The Hand Talk Translator app offers the chance to converse with deaf people via sign language, despite several loopholes.

REFERENCES

- Bastos, I. L. O., Angelo, M. F., & Loula, A. C. (2015, August 1). *Recognition of Static Gestures Applied to Brazilian Sign Language (Libras)*. IEEE Xplore.
<https://doi.org/10.1109/SIBGRAPI.2015.26>
- Bungeroth, J., & Ney, H. (2004). *Statistical Sign Language Translation*. <https://www.sign-lang.uni-hamburg.de/lrec/pub/04021.pdf>
- Camgoz, N. C., Koller, O., Hadfield, S., & Bowden, R. (2020). *Sign Language Transformers: Joint End-to-End Sign Language Recognition and Translation*.
Openaccess.thecvf.com.
https://openaccess.thecvf.com/content_CVPR_2020/html/Camgoz_Sign_Language_Transformers_Joint_End-to-End_Sign_Language_Recognition_and_Translation_CVPR_2020_paper.html
- Cihan Camgoz, N., Hadfield, S., Koller, O., Ney, H., & Bowden, R. (2014). *Neural Sign Language Translation*.
https://openaccess.thecvf.com/content_cvpr_2018/papers/Camgoz_Neural_Sign_Language_CVPR_2018_paper.pdf

Pichler, D., Müller De Quadros, R., & Lillo-Martin, D. (2009). *Effects of Bimodal Production on Multi-Cyclicity in Early ASL and Libras*.

https://lillomartin.linguistics.uconn.edu/wp-content/uploads/sites/1112/2016/11/Chen_Pichler_Quadros_Lillo-Martin_2010_BU.pdf

Yin, K., & Read, J. (2020). Better Sign Language Translation with STMC-Transformer.

ArXiv:2004.00588 [Cs], 2(1). <https://arxiv.org/abs/2004.00588>

PENGESAHAN PENULIS

Saya dengan ini mengesahkan bahawa bahan ini belum pernah diterbitkan atau tidak dihantar serentak untuk pertimbangan mana-mana penerbitan lain. Saya juga bertanggungjawab bahawa bahan ini tidak melanggar mana-mana hak cipta penerbitan.

G. mathi

.....

(Gomathi Batumalai)

Tarikh: 28.04.2023