

On the Web Trilingual Sign Language Dictionary to Learn the foreign Sign Language without Learning a Target Spoken Language

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Abstract

This paper describes a trilingual sign language dictionary (Japanese Sign Language and American Sign Language, and Korean Sign Language) which helps those who learn each sign language directly from their mother sign language. Our discussion covers two main points. The first describes the necessity of a trilingual dictionary. Since there is no "universal sign language" or real "international sign language" deaf people should learn at least four languages: they want to talk to people whose mother tongue is different from their own, the mother sign language, the mother spoken language as the first intermediate language, the target spoken language as the second intermediate language, and the sign language in which they want to communicate. Those two spoken languages become language barriers for deaf people and our trilingual dictionary will remove the barrier. The second describes the use of computer. As the use of computers becomes widespread, it is increasingly convenient to study through computer software or Internet facilities. Our WWW dictionary system provides deaf people with an easy means of access using their mother-sign language, which means they don't have to overcome the barrier of learning a foreign spoken language. It also provides a way for people who are going to learn three sign languages to look up new vocabulary. We are further planning to examine how our dictionary system could be used to educate and assist deaf people.

1. Introduction

Nowadays many deaf people have an opportunity to study abroad and learn a foreign language. But it is said that there are several barriers for them to acquire the target sign language; first barrier is their mother spoken language, the second is the target spoken language, and the last is the target sign language.

Generally deaf people are said to be bilingual since they have to learn their mother spoken language as well as their own sign language. In the United States, everyone can learn American Sign Language (ASL) as their second foreign language at some of the universities. ASL is recognized as one of the independent languages in the U.S. In Japan, regrettably, Japanese Sign Language (JSL) does not yet seem to be recognized as one independent language.

One of the main purposes of our dictionary is to take away those language barriers as much as possible and to help deaf people improve their sign language ability based on their spoken language (Japanese or English) [Suzuki E., and Kakihana K. 2002].

We have been developing a bilingual dictionary system for years and found that it has been useful for deaf people. For these couples of years, Japanese are in a mood of learning Korean language and we think we need a new Korean Sign Language Dictionary.

2. American Sign Language (ASL), Japanese Sign Language (JSL), and Korean Sign Language (KSL)

2.1. American Sign Language (ASL)

American Sign Language (ASL) is a complex visual-spatial language that is used by the Deaf community in the United States and English-speaking parts of Canada [Nakamura (1)]. The number of ASL users is almost 5 hundred thousand. It is the native language of many Hearing-Impaired people, as well as some hearing children born into Deaf families. ASL is derived from the

native American sign language with some words taken from French sign language.

ASL shares no grammatical similarities to English and should not be considered in any way to be a broken, mimed, or gestural form of English. In terms of syntax, for example, ASL has topic-comment syntax, while English uses Subject-Object-Verb.

2.2. Japanese Sign Language (JSL)

There are two main sign languages in Japan: "Japanese Sign Language," and "Japanese Oral Sign Language." The former is used by Deaf people and the latter is mainly used by volunteers and is a pidgin signed Japanese, often used in formal situations, lectures, speeches. The main difference between the two is the sequence of the words. The syntax of "Japanese Sign Language" is like spoken English using Subject-Verb-Object, and the syntax of "Japanese Oral Sign Language" uses spoken Japanese order, that is, Subject-Object-Verb. In this paper, since we deal only with a sign language word dictionary and not with syntax, we will use the word "JSL" to refer to both Japanese sign languages in this paper.

2.3. Korean Sign Language (KSL)

In Korea, Deaf school is first established in 1907 based on the oral communication. Korean Sign Language is educated in that Deaf school after 1913. In those days, from political reasons, Japanese Sign Language is introduced. In '60s and '70s, 14 of 16 Deaf schools in Korea utilized Sign Language for their education [Kato 1999].

First Korean Sign Language Dictionary is published in 1982, which includes about 5500 Korean Sign Language words. These days the number of those who try to learn Korean Sign Language is increasing, and also the number who are interested in Japan is increasing. Korean Sign Language is reported to be similar to Japanese Sign Language about 60 to 70%.

From these reasons, we select Korean Sign Language as our third Internet Sign Language Dictionary.



Figure 5. KSL index with Japanese screen

At the bottom of this index page in Figure 4, you will see the input box (Figure 6).

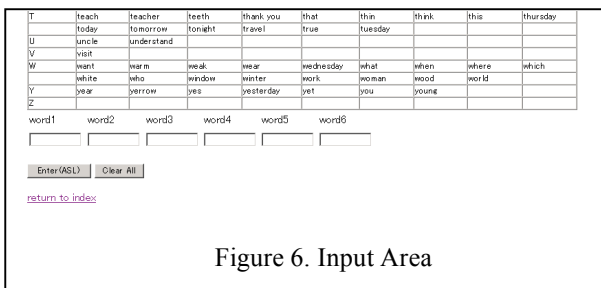


Figure 6. Input Area

Then you can put some words you want to see. For example, let's input "money" of ASL to show.

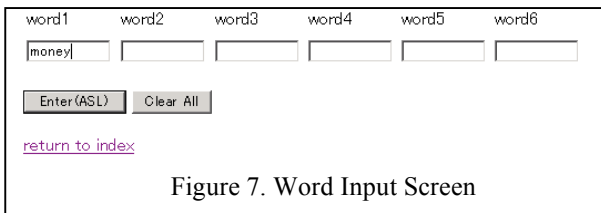


Figure 7. Word Input Screen

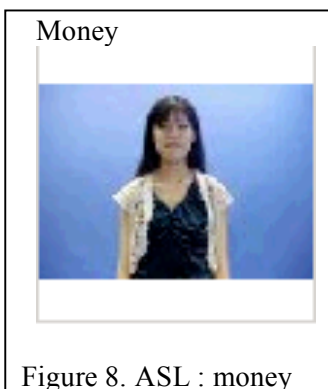


Figure 8. ASL : money

Each Sign Language movie repeats 3 times as the user can check easily and repeatedly. Maximum 6 words are shown in vertically within one page.

You may try our system by accessing the address below:
http://www.kasei.ac.jp/~student/script/suzuki_semi/index.html

3.3. Comments and Advices from the users and remaining problems

When we asked the people who are the beginners of learning JSL to try our system, they seem to become very interested in our system and gave us some comments and advices.

First, the beginners said that they don't notice that there were some other sign languages in the world. It was a surprising fact that there exist sign languages for each country, for each district, for each language. They became very interested that some sign words are similar each other and also some of them are completely the same.

Secondly, they advised us that the sign language movie screen should be newly opened so that they do not have to scroll the page.

Third opinion was they would like to check the sign language motion sometimes more slowly and they would like to control the play speed including pausing.

One of the problems of our system is that some users who do not have any input method of Hangul can not search by Hangul. Those whose OS is Windows XP can install input method by using CD-ROM may input Hangul from their keyboards, and those whose OS is Windows 2000 or 98, are allowed to install Hangul IME through Internet.

Another problem is that we have already recorded only 70 Korean Sign Language, since there are few books or papers on Korean Sign Language which we can get now in Japan. So Korean Sign Language database is very small for now.

4. Conclusion

We have already completed a Japanese sign language dictionary with 218 entries that came from the JSL dictionary for beginners [Yonaiyama and Ogata 2001]. We also used corresponding American sign language entries, but some of the words do not exist. About Korean Sign Language, we have found only 71 corresponding word and we still have to continue looking up Hangul dictionary which takes a lot of time for us. We are planning to add more Japanese, American and Korean sign language motion pictures. The cross-referenced features in our dictionary offer students, sign language learners, and deaf people, a genuine three-language resource that enhances the opportunity to obtain communication skills in any modes. We know that introducing ASL in the English learning classroom attracts the students' interest and is effective in learning a foreign language[Pauly, M., Miyao M., and Ikeguchi C. 2003]. As mentioned earlier, the word order in ASL is from general to specific and from large to small, similar to the Japanese language. This results in easier learning of each language. We expect that we may also learn Korean Language easily by learning Korean Sign Language which is now made in Japan.

We are currently working to expand our trilingual dictionary as a translation table. We are also planning to test it and obtain feedback and suggestions from Deaf people who are eager to learn foreign sign languages and also to learn foreign spoken language. We hope that our system helps those who came to Japan to study at Japanese Universities and Colleges and have some difficulties in communication by spoken language.

As we mentioned above, our input method have some difficulties for those who are not familiar in the target foreign language. We had better provide the easier way to

input the searching sign language, such as just pushing the word area button or moving the cursor on that word instead of inputting the target word itself within the input fields.

5. Acknowledgements

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