

Bixby is Changing The Translation Of Language

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Abstract

It is an important responsibility for those who design machine translation technologies, those working with computer-assisted translation technologies, and even those who use things like Google Translate, to be aware of the culture and the semiotics of both the original and the translated text. While plain translation technology can be an extremely useful thing for business and travelers, nothing can quite compare to the translation of Artificial Intelligence such as Bixby (A Samsung voice assistant). Bixby automatically analyzes the human-readable content and translates it to machine understandable content that can then be translated to other languages, as long as it's one of the 51 input languages or 104 output languages that Bixby recognizes. Bixby is unique in the sense that it learns Grammatical Framework, thus the output translation comes out as accurate as possible. Bixby uses its Artificial intelligence capabilities to understand the abstract syntax, which is the necessary tree of semantics in different languages. This helps in recognizing the sentences and following grammatical approach when translating into other languages. Keywords: Translation, Praising, Voice Assistant.

Human language is a complex entity. Not only does it have many variables and subtle differences, it is vastly different in terms of geography and area where it is used. Learning another language can be considered one of the most complex processes and time-consuming things that can be done and; therefore, this is where translation applications come to play. Translation applications allow the ability to be able to translate a language into a form we can understand and therefore, be able to utilize this to our advantage. Translation fixes the inherent problems we have in having many variables as well as allow the various languages to have a common interface to necessarily allow interaction with each other.

One of the most widely used machine translation services is Google Translate. Google says the service completes billions of translation requests, involving 103 languages, each year. Google Translate can translate whole websites, text messages and information inside programs on smartphones (“Advancement in Real Time Translation Devices - End of Language Learning?”). It also can translate speech spoken into a device.

I took the sentence "Alexa, please call mother" and ran it through Google Translate. From English too Spanish too Japanese to Hebrew to Arabic, then back to English. One would think that the sentence would either be the same or similar or at the very least, contain the same idea as the original. The sentence now reads "please mother Alexa call" Why is this? Translation technology has become a necessary feature of nearly every computing device, yet it does not always give accurate translations. These translation devices lack the crucial component in language, which is intelligence. The sentence I wrote was simple and short yet the result was a whole different structure, so one can imagine what happens when idioms, metaphors, slang and other complex literary devices are thrown into the mix.

Like personal virtual assistant such as Siri, Cortana, and Google Assistant etc. Bixby is a virtual assistant developed by Samsung Electronics. On March 20, 2017, Samsung announced the voice-powered digital assistant named "Bixby". Bixby won't get confused if you don't say the exact phrase required to activate a particular action (Roberts). The assistant is said to be smart enough to understand incomplete information, and will apparently start a task even if it didn't understand the whole of the command – carrying out the parts it did understand and waiting for you to fill in the gaps later with more commands (Roberts). Using Bixby Vision you can extract or translate text, search for images similar to what your camera sees, shop for those items, and plenty more. You can use voice, text, or touch to say what you need since it understands all three. When you're lost for words, open the camera and Bixby will search for you. Bixby was the only translation device that could give me an accurate translation in any language, and the sentence came back the same. Why is Bixby capable of accurate translation? What is the process behind the scenes of translation? In what ways are these translations affecting our language in business, culture, science, technology, and literature?

According to the Oxford Dictionary, translation is defined as "a written or spoken rendering of the meaning of a word or text in another language" (Oxford). It is important to look closely at this definition; not only are texts put into another language, their meanings also have to translate. Additionally, the tone must be taken into account; one must be able to tell if the tone is sarcastic. Not all languages have sarcasm, so translators must take extra care to produce an accurate translation. If the translator is not careful about the meanings, emotion, and context of a text, translation then becomes more or less a game of google feud with a thesaurus. It's practically all guesses with translated words. Bixby (Artificial intelligence translation) can bridge

the gap, by having a deeper understanding of the context in text, thus providing an accurate translation.

There are various ways of input for a language translator like Bixby

Visual input: In this human-readable content are words that we see are recognized through OCR (Optical Character Recognition) and converted to machine-readable content.

OCR – it is a technique to interpret the characters that can be seen. (used in traffic cameras to read the vehicles number plates)

Typed Text: This is normal typed input to proceed with translation. In this, we type the content to be translated, and it translates to required language.

Speech: Speech Recognition is a technique that recognizes the speech and translates it into text. (Many voice assistants are working based on this)

Output methods of Translated content:

Translated content is shown in its native language or in English using phonetics.

Translated content can be converted into speech and outputs using the speaker with pronunciation.

Bixby Translator integrated the above-described input methods and output methods. It consists of OCR techniques to read the content that can be seen and translate into required language and output can be heard or seen. It is integrating all the components into one to evolve and emerge in Visual techniques, Voice assistance in various languages, Speech recognition technique, and Efficient language translation techniques.

What is the Technology behind a Translation to begin with?

The technology is called Machine Translation (MT), where the interpretation process is completely mechanized. MT works by using one of three primary frameworks: Rule-based,

Statistical, and Neural. With Rule-based Machine Translation (RBMT), the product is "based on calculations that break down the punctuation of the source language and utilization rules to exchange the importance to the objective language by building a sentence" ("Rule-based"). Basically, this means that utilizing a progression of scientific conditions, the machine can take a gander at the structure of a sentence in one language and utilize a coordinating structure in another language to modify the sentence completely interpreted. The disadvantage to this framework is that figures of speech, slang, and other, more conceptual parts of language can't more often than not be effectively deciphered.

Statistical Machine Translation (SMT), like RbMT, applies conditions to get interpretations. The way SMT applies the math is somewhat unique. SMT will make a few extraordinary conceivable "hopeful interpretations, called theories" and after that statistically assess the rightness of everyone until the point when it can pick the one with the most noteworthy likelihood (Schmid). The upside of Statistical Machine Translation is that it has a superior possibility of exactness. In any case, SMT is harder to make a model for and may require additional information (Schmid).

At last, there is Neural Machine Translation (NMT). NMT, much like its name proposes, is designed according to the human cerebrum and it can, to some degree "take in" the languages it is deciphering. NMT "utilizes neural systems that comprise numerous hubs (reasonably demonstrated after the human cerebrum), which identify with each other ... These hubs manufacture associations with each other based on bilingual writings with which you prepare the framework" (Zetzsche). As such, this framework tries to show how the cerebrum forms languages and once prepared, can make associations and interpretations it was not particularly instructed. NMT is great with interpreting settings and picking the suitable interpretations based

off of them. There are downsides to NMT, however, for example, the way that it has a few issues with more mind-boggling sentences. The best outcomes with machine interpretation are discovered when at least two of these frameworks are utilized together.

Parsing is a major part of the technical translation process. Parsing is defined as the process of assigning structural descriptions to sequences of words in a natural language (or to sequences of symbols derived from word sequences). In some machine translation and natural language processing systems, written texts in human languages are parsed by computer programs (Gutenberg).

To parse natural language data, researchers must first agree on the grammar to be used. The choice of syntax is affected by both linguistic and computational concerns; for instance, some parsing systems use lexical functional grammar, but in general, parsing for grammars of this type is known to be NP-complete. Most modern parsers are at least partly statistical; that is, they rely on a corpus of training data which has already been annotated (parsed by hand). This approach allows the system to gather information about the frequency with which various constructions occur in specific contexts (Gutenberg).

Approaches which have been used before include straightforward PCFGs (probabilistic context-free grammars), maximum entropy, and neural nets. Most of the more successful systems use lexical statistics (that is, they consider the identities of the words involved, as well as their part of speech). However such systems are vulnerable to overfitting and require some kind of smoothing to be effective.

Bixby Translation Effect on Language in Culture

Translation unassumingly offers an insight into the culture and attitudes of another country. For instance, when reading English books from authors such as Shakespeare, Agatha

Christie or George Orwell in any other language, we learn something about the culture or mentality (“Advantages of Translation”). Literary texts, books, and novels need to be translated into various languages so that they can be read by people in other countries. A similar experience can be had when watching foreign language movies with English subtitles (“Advantages of Translation”). Perhaps one of the greatest impacts that translation has had is in the area of tourism. Translation has enabled people from one country to truly appreciate and understand the culture and beauty of another country (“Advantages of Translation”). Now let's say, you have arrived in America, you hear a phrase “I call shotgun”, in American culture it means "I call front seat ", but your translator doesn't comprehend American slang. So now you're freaking out because someone has a shotgun. Bixby would comprehend the slang, and interpret the proper meaning, so there's no confusion in a new cultures dialogue.

How would Bixby Translation effect language in companies?

The Internet has been a great leveler in connecting people from across the globe. It has also enabled businesses to go global by connecting with customer groups in various countries. Despite all the advantages that the Internet has brought about, the language remains a challenge for businesses to reach a larger audience. Though English is perceived as a global language of business communication, many countries still prefer to converse in their local tongue. Only 10% of the world speaks English. Translation has helped bridge this divide to a large extent by bringing diverse groups of linguistically and culturally different people together, enabling them to communicate effectively. Why stay local when your products and services can meet the needs of a larger audience? Translation helps your business open up to markets that you thought didn't exist before. Now picture, you invest in an advertisement in Japan but used the wrong translation, so instead of "Use Bright Whites Toothpaste" it says "Whites use Bright

Toothpaste”. The confusion of a translation app could cause you failure in business, Bixby would maintain the language structure through translation, so your message comes across correctly.

Most companies have very technical text and specific instructions that need to be translated; this is usually seen in technical manuals, product brochures, etc. Translation helps convert technical documentation into various languages, thus, helping users in diverse locations understand instructions better, in their own language. There is little room for mistakes in these documentations, and the closest you can get to a human translation is a translation done with artificial intelligence.

Companies are already battling it out to have the best translation technology available online for customers, and last year Amazon joined in with the launch of its own Amazon Web Series (AWS). The e-retail giants Translate app provides translations for supported languages as a way for businesses to expand products and services using the tool. Google and Microsoft have been offering their own version of online translation services for many years now, not to mention independent offerings (Preimesberger).

Is Bixby going to steal the job of translators?

Some of the bigger job prospects available for translators are in Chinese, German, Russian, Portuguese, and Spanish, which are among the more important languages for businesses in the global market. While one might think that translation apps, such as Bixby, threaten the jobs of translators, they are in fact creating new opportunities. Despite recent advancements in artificial intelligence, machine translation software still needs to be overseen by professional human translators. This can ensure that the correct dialect, grammar, and translations have been used when interpreting voice notes and texts. Although algorithms are becoming more accurate, machines are still unable to beat human translations when set against each other head-to-head.

Last year, Sejong Cyber University in Korea put three machine translation programs in competition with a group of human translators, with the machines failing to live up to expectations (“The Future of Translator Technology: Why Human Interpreters Are Key”). While the machines were much faster, they made more mistakes in the finished documents, with 90% of the machine-translated texts being (“The Future of Translator Technology: Why Human Interpreters Are Key”) “grammatically awkward”.

Overcoming this issue requires more specialist knowledge when building a machine translator. Hiring technical translation experts can help make technology more accurate, giving a better-finished product. Businesses can then use the technology to market their products to overseas customers, and reach a more global audience (“The Future of Translator Technology: Why Human Interpreters Are Key”).

Can Bixby be used in Industry-specific translations? Doctors and lawyers?

Machines are still unable to form coherent, grammatically-correct sentences when translating a piece of text or information, making them much less reliable than a human translator. For industry-specific translations, such as law or medicine, businesses will need to provide highly accurate translations, which human interpreters will be far more able to do. For these kinds of translations, interpreters will be trained in terminology to provide an accurate translation. While Bixby and experts work on fine-tuning the algorithms behind machine translation to make them more accurate, human interpreters will be more reliable for businesses looking to grow globally (“The Future of Translator Technology: Why Human Interpreters Are Key”). Bixby comes as close as you can get to a human interpreter using technology, but even I couldn't advocate for it to be used in medical or law fields because of the chance of error. You don't want to be a wrong translation on a medical diagnosis.

Technology like Bixby has brought about consistency and increased productivity in translation. Human translators will never achieve the speed and volume these systems have brought to the translation process, even though they were modeled from the emulation of human translations. The use of these systems has created new lines of language in culture, business, and industry-specific jobs. The future of technology in translation industry ironically is the increase of Artificial Intelligence, improved processes, and the ultimate marriage of man and machine to produce quality and consistently high volume.

Reference

Setscrew, Jost. "Neural Machine Translation." The Chronicle Neural Machine Translation Comments. N.p., n.d. Web. 27 Apr. 2017.

Schmid, Helmut. "Statistical Machine Translation." Wwww.sfs.uni-tuebingen.de. Web. 27 Apr. 2017.

Paterson, Jim. "#EdTech: Lost in Translation? Websites and Apps Overcome Barriers." *Principal Leadership*, vol. 17, no. 9, 2017.

California University of Pennsylvania,
www.calu.edu/academics/undergraduate/certificate/arabic-language-culture/index.aspx.

Foreign Tongues, 30 Jan. 2018,
www.foreigntongues.eu/advancement-real-time-translation-devices-end-language-learning/.

Gutenberg. *Occupy Wall Street / Project Gutenberg Self-Publishing - EBooks / Read Books Online*, self.gutenberg.org/articles/end/Parser.

Information Age, 23 Feb. 2018, www.information-age.com/future-translator-technology-123470925/.

Love, Dylan. *Inverse*, Inverse, 14 Feb. 2017, www.inverse.com/article/11766-how-instant-translation-tech-will-change-the-way-the-world-talks-and-listens.

Outsource to India, www.outsource2india.com/translation/articles/translation-importance.asp.

Picand, Yann, and Dominique Dutoit. *Krystyna Skarbek: Definition of Krystyna Skarbek and Synonyms of Krystyna Skarbek (English)*,
dictionary.sensagent.com/parsing/en-en/.

Oxford. "Translation." Oxford Dictionary.com. N.p., n.d. Web. 6 May 2017.