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MACHINE TRANSLATION IN ARTIFICIAL INTELLIGENCE

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Abstract
When we think of Artificial Intelligence (AI), it's easy to jump straight away to the AI we know from pop culture. Who wouldn't want something akin to Iron Man's Jarvis: a life-like, yet digital, butler embedded into our gadgets that are always ready to help us make the right decisions? While the technology hasn't hit that level of sophistication just yet, AI has already made its way into some of the tools and services we use every day. As the pioneer of cloud translation software, Smarting is already leveraging AI to simplify and optimize your entire translation process. There are translators who understand their job as a process of replacing words from one language to another, without being much concerned about the context, meaning, style and other elements of communication (while the communication of meaning between languages is the very essence of translation), and this is the type of translators than can be replaced by MT. Simply put, machines can replace the people who translate like machines.

Key Words: artificial, communication, human, intelligence, machine, network, translation

Introduction

Earlier this year, both Google and Facebook announced their shift from **statistical machine translation** paradigm to a new model based on **neural networks**. Statistical models mine bilingual text corpora for corresponding elements, but this material usually consists of formal documents composed in a standardized language that doesn't have much in common with the everyday speech. Succinctly speaking, the idea is to apply **artificial intelligence** and mine more informal data such as social media posts, with the purpose of communicating figures of speech, idiomatic expressions, regionalisms, slang and other spoken elements accurately between the languages. While undoubtedly a giant step forwards in the MT development the impact of which we have yet to see, one thing is certain – machines are logical and process language logically, while people are also irrational, emotional and imperfect and process language accordingly. All these exclusively human qualities and limitations form a crucial part of communication, both verbal and non-verbal. An MT paradigm that will be able to replace human translators will therefore have to be able to operate on both logical and illogical levels at the same time. We cannot know what may happen in the millennia to come, but for the time being this doesn't seem very likely.

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MT is translator's friend

Once upon a time, translators wrote on clay tablets. Then came papyri and quills, pens, notebooks, typewriters, personal computers and text editors, **CAT** tools and finally MT, and the development of technology has always been there to make the translation process easier, but never eliminated the need for professional human translators. Machine translation is here and it will be here for a very long time. The growing demand for MT also means a growing demand for MT **post-editing** services. While machines do and will help us translate larger amounts of text for shorter periods, the translated materials do and will require a human touch – editing by a professional linguist. Perhaps one day we will all be flying around the universe in personal spaceships with Babel fish stuck in our ears and communicating with the fellow terrestrials and extraterrestrials telepathically and we will no longer need translators and language teachers. But that day is still very, very distant.

What is AI and how does it relate to Translation?

We can dispel quite a bit of confusion around AI by moving forward wih a consistent understanding. While the semantics may differ from definition to definition, the general idea is clear.

Artificial Intelligence is an aspect of computer science that focuses on developing tools and solutions capable of performing tasks on their own.

Different forms of AI pull from different sets of data and analyze that data to uncover patterns and determine which strategy or action will have the highest probability for success.

For example, we often think of machine translation at first. The most modern machine translation models are known as Neural Machine Translation. These engines directly leverage deep machine learning neural networks to determine how to properly translate your content by interpreting the intent of that source content. The result is that AI translation acts more in-line with how a human translator works, rather than just a bilingual dictionary.

Artificial Intelligence Lives In Your Translation Management System

While Nueral Machine Translation is certainly impressive, AI in cloud translation software focuses specifically on translation management. This means that the AI is tied directly to the concept of automated translation, and is leveraged within specific instances to improve both translation efficiency and quality.

Smartling is constantly leveraging linguistic and project data to teach our services and tools how to work even better.

Artificial translation isn't about removing the need for human translators, but rather supporting them, and simplifying the process from A to Z. More specifically, AI is used to help you work smarter, not harder, while improving translation quality throughout the process. This means content can be pushed to market at a much more rapid pace without sacrificing quality.

From the current point of view, both machine translation and human translation have their own application scenarios and services. For example, machine translation can provide tens of millions of translations per day, and its ability to quickly grasp new terminology customizations is difficult for human translators to do. It is particularly effective in domains where formal or formulaic language is used. While the translators' interpersonal understanding and fuzzy semantics integration is not easy for machine translation to achieve in the short term. At present, with the emergence of large corpora and the maturity of NMT with deep learning ability, more and more companies have already launched relevant

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machine translation products or services, and the market is very competitive with the updating of the latest technology. From the current trend, if machine translation and human translation can truly complement each other, the efficiency and quality of translation services will be greatly enhanced. The future development direction of translation technology research should be a combination of multiple research methods, complementary advantages, and hybrid modelings.

Artificial Intelligence Translation in Smartling

The best part about artificial intelligence translation, besides being apart of the futuristic world we live in, is the overt opportunity to reduce cost while saving valuable time -- a major benefit behind cloud translation software.

For example, with the ability to preconfigure job automation rules, users can keep content free-flowing, relying on automated quality checks to identify any issues within the translation.

According to the latest CSA MarketFlex Report for Language-Oriented TMS, Smartling is constantly leveraging "linguistic and project data" to teach our services and tools how to work even better. With AI constantly involved, users can optimize the efficiency of their translation process while learning how to improve even further. Here are six real-world features, illustrating how Smartling leverages artificial intelligence translation to constantly improve both time-to-market and translation quality:

1. AUTOMATED PROJECT MANAGEMENT

Smartling surfaces relevant data, and makes automated decisions about how to best translate content from one language to any target language. Project management can be automated based on a set of pre-programmed parameters, including budget, time-to-market, and quality expectations.

- **Job Creation** - Schedule content to automatically be packaged into a job, based on a set of rules including file type, project type, languages and more.
- **Content routing** - Automatically route and deliver content to the translation supplier of your choice, after the content has been assigned as a job.
- **Notifications** - Smartling notifies the next user when work is ready for translation, editing or review so nothing slips through the cracks.

2. QUALITY CHECKS

Users can configure their own unique automated processes and task management through customizable Quality Checks. Instead of always requiring human review, users can determine the priority of errors, and require action to be taken to resolve these errors before content can move to the next step. Hence the term automated translation. Instead of requiring a constant human editing process, AI can step in to help clean up content and remind translators of any errors during the translation process itself.

3. DYNAMIC WORKFLOWS

With dynamic workflows, users can design their own workflows based on the unique needs based on their role during the translation and content management process. Users can even link multiple actions to one trigger. For example, an advanced Dynamic Workflow can determine when a human translator might be a better fit for specific content. One method available is to leverage an existing Translation Memory (TM) to determine the complexity of the content. When Smartling compares source content against your brand's TM, it will often

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find word matches that are not 100% identical. These are known as a Fuzzy Match, and are represented as a percentage based on how closely the words align in meaning. Content with a high number of Fuzzy Matches that score below 90% can automatically be routed to a translator instead of a Machine Translation workflow. The idea here is that Smartling can help determine the best path to take for success based on your content and translation history. The goal is to achieve accurate and high quality translation; Dynamic Workflows enables you to do this without manually managing every string.

4. DATA AND ANALYTICS

Our machine learning algorithm compiles an automated quality score for every translation as it moves through Smartling. The result: a real-time view of translation quality across all your projects, languages and translation providers. Dynamic and Velocity Workflow Reports visually represent the potential benefit these workflows added to the translation process, or where greater optimization is required.

5. SMARTLING DRAFT

One of our favorite AI additions to Smartling has to be Draft. Just recently released, Draft represents a major push in utilizing AI. Draft is meant to unify the entire global content creation experience. Draft, an automated writing collaboration tool, will actively scan your content as it is being written, and offer suggestions on how to improve your source content for the highest quality translation possible. The best part is that it all happens in real-time by pulling from available data within your translation memory to suggest phrases or words that best fit within the content.

6. QUALITY CONFIDENCE SCORE

Smartling's Quality Confidence Score (QCS) provides a prediction of translation quality results. Based on a score of 1-100, the QCS helps users recognize how close or far away the quality of their piece is from "professional quality," meaning that if content were to be manually evaluated by a human agent. This score tracks multiple metrics, with a granular view of each, including Translation Memory leverage, Glossary terms, Workflow Steps, Quality Check Errors, String Length, Visual Context, and any other issues within the content itself.

Conclusion

Artificial intelligence in translation is a bit of a hot topic at the moment, following such a boom in real-world use of the technology. It is always important to manage expectations around emerging technologies. This holds true when we discuss how AI is impacting both the translation process, as well as the localization industry as a whole. When it comes to Smartling, AI translation is a part of almost everything the service does. Smartling is constantly working to improve your translation workflow process while learning how to improve the service itself at the same time.

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