Can AI Make Machine-Translation* Legally "Fit for Purpose"?

(* also called "computer translation").

(For our full set of language technology White Papers please see: www.com-sof.com/White-Papers.php).

> *"The language we use to describe things can be critically important. If someone owes you £5 and pays that debt with a real "fiver" they've paid their debt; if they gave you a fake-"fiver" they did several things but they didn't pay the debt, and probably broke the law, too, by implying that the fake-"fiver" was an actual "fiver".*
>
> *"Translations" and "machine translations" have a similar feature.*
>
> *"Machine translation" has a place. In the consumer market it has almost entirely replaced the holiday phrase-book for ordering coffee in a foreign language. For anything with ANY greater level of formality or legal consequence, passing-off a "machine translation" as a "translation" might cause serious problems or even break the law.*

"Translation" is done by translators – humans with the right skills and qualifications. "Translations" can be checked, double-checked, quality-assured, certified and legally approved before they are used – some of the additional services offered by translation companies.

"Machine translations" are statistical or rules-based guesses made by a computer algorithm. They *can't* be checked or double-checked (except before use, by human translators); they *can't* be quality-assured, certified or legally approved, except by prior-to-use human involvement.

Using the term "translation" (un-prefixed by "machine" or "computer") to describe "machine translation" is almost a category-error and there are now many examples of this leading to serious quality, financial and legal problems.

1. Why machine translation isn't fit for any level of "formal" translation purposes – is yours one?

"Machine translation" and "translation" differ in six critical ways:

- **Accuracy**

  o Translators don't translate **words**, they translate **meaning**. Machine translation systems cannot understand – and possibly never will understand – **meaning**, so instead they guess at the most likely **equivalent words**. No matter how good the guess, it's still a guess, and meaning can easily be lost. For any purpose with potential down-stream legal or other consequences "machine translation" won't be appropriate or justifiable.

- **Consistency**

  o Machine translations are inconsistent because the data used in the *algorithmic-word-guess* mentioned above changes all of the time, sometimes from hour to hour. This means that vital parts of the meaning of a phrase, when machine-translated, can change, appear or disappear between one machine-translation use and the next, sometimes minutes apart. Combine with this that the algorithms used are themselves changing regularly and the problem compounds – you simply cannot know whether today's machine translation is ok, even if it may have seemed ok yesterday.

- **Reliability**

  o The consistency problem above naturally leads to an issue with reliability – how do you know that the translation of your phrase *this time* is acceptable? For any more formal situation this problem is again further compounded because – for example, in a large organisation with many users – different users may type slightly different versions of a phrase into the machine translator and so the results can differ wildly even though all users *think* they're getting reliable answers to the same question.

- **Quality-assurance**

  o Quality-assurance is a pre-use issue. If you need to maintain quality in translations those translations have to be checked, validated and approved before being used. Machine translation systems are designed to be instant best-guesses and so *cannot* be subject to *any* pre-use quality-assurance whatsoever.

TECHNOLOGY
WHITE PAPER

LANGUAGE
TECHNOLOGIES

(For our full set of language technology White Papers please see:
www.com-sof.com/White-Papers.php)

- **Certification**

  - This is similar to the quality-assurance issue outlined above. Certification, where required, has to be done pre-use and so certification of machine translations is not possible.

- **Legal standing**

  - This is the "killer issue" for any organisation considering use of machine translation – what are the possible legal consequences of using machine translations?

    There are now many examples of the use of machine translations resulting in negative legal consequences, either because of or irrespective of the issues outlined above.

    One key example was experienced by the police in Denmark. The use of machine translation, when challenged in court, led to an anti-terrorism case collapsing against a defendant once the machine translations were re-analysed by a suitably qualified interpreter.

    Another involved an out-of-court damages payment, thought to be c.£10k, by a UK local authority to a client because of the personally-offensive mis-translation of a simple question by a machine translator.

    Legal opinion seems to be that this is an issue of legal negligence – using a tool for any 'official' purpose that *cannot be shown to be legally fit for that purpose prior to or during its use*.

    Further, legal opinion is that any organisation with any level of *duty of care* would not be appropriately carrying out its duty of care by using machine translation systems.

2. So what difference does adding Artificial Intelligence (AI) or Machine Learning (ML) make?

Of the 6 critical issues outlined above – accuracy, consistency, reliability, quality-assurance, certification and legal standing – accuracy is an issue that is wholly "*inside the machine translator black-box*" as it's about *how the machine translations are achieved*; the other five issues are "*outside the machine translator black-box*".

Adding **AI** and/or **ML** to machine translation could improve accuracy, but that's all. The other 5 issues exist "*outside the machine translator black-box*" and so cannot be affected, improved, resolved or avoided by the addition of **AI** and/or **ML** "*inside the box*". Not being able to trust the consistency, reliability, quality-assuredness, certification or legal standing of what comes out of the "*machine translator black box*" is unchanged whether what comes out of the black box is 10% accurate, 50% accurate, 90% accurate or, indeed, 100% accurate.

CommSOFT
Technology to Assist Human Communication

TECHNOLOGY
WHITE PAPER

LANGUAGE
TECHNOLOGIES

(For our full set of language technology White Papers please see:
www.com-sof.com/White-Papers.php)

Furthermore, because of the "meaning" vs. "word-guess" issue mentioned previously, machine translation systems aren't going to improve much even in terms of accuracy until machines can fully understand meaning.

Even the most optimistic computer scientists agree that understanding meaning probably implies a form of consciousness, and that – as philosopher and leading linguist Noam Chomsky noted – machine-consciousness implies the machine having a "whole human brain" simulation going inside it, and we're a long way from even fully understanding how human brains work let alone being able to write computer simulations of them.

So, **AI** and **ML** might improve accuracy but still, in practice, can't get close to human translators. But, more importantly, **AI** & **ML** don't affect the vast majority of the real-world issues in using machine translation in anything other than the most inconsequential circumstances. To replace holiday phrase-books for consumers is one thing, but organisations that do anything more consequential than "ordering coffee on holiday" can't rely on machine translation, no matter how it is packaged or presented and no matter what other features it may be combined with.

(For example, some machine translators will include the facility to photograph a document and provide a near-instant machine-translation of that document. However attractive that may sound, it doesn't change or compensate for the fact that the result is produced by machine translation and so is subject to the same problems as individual phrases, as outlined above.)

3. Summary

Machine translation definitely has its uses. Most of these are relevant to mass-consumer-usage in scenarios that are trivially inconsequential and where accuracy, consistency, reliability, quality-assurance, certification and legal standing simply don't matter much or at all.

For any organisation, however, but especially those with any level of formal, legal or duty of care context in what they do, machine translations aren't going to be a suitable replacement for real, human-done, quality-assured, certified and legally approved translations. The risks and possible consequences are simply too great.

Just imagine the first coroner's verdict of *"death by machine translation"* or the first time a terrorist is allowed into a country *"because we checked their details using machine translation"* and those risks and the consequences become all too obvious.

Technology *can* help – by *delivering* accurate, consistent, reliable, quality-assured, certified and legally approved translations – but it can't *produce* those translations; that, for the foreseeable future, will involve real, human translators and interpreters.

Machine translation, with or without **AI** & **ML**, may become legally fit for purpose one day, but that day is still a long way off.

**TECHNOLOGY
WHITE PAPER**

**LANGUAGE
TECHNOLOGIES**

CommSOFT
Technology to Assist Human Communication

(For our full set of language technology White Papers please see:
www.com-sof.com/White-Papers.php)

References and Further Information

http://translationjournal.net/journal/56google.htm
https://www.transifex.com/blog/2015/google-translate-reliability/
http://www.teacherswithapps.com/human-translation-vs-google-translate-in-2015/
http://tinyurl.com/z57ltk3
http://www.evs-translations.com/blog/trial-by-jury-or-trial-by-google-translate/
http://www.upi.com/Police-use-of-Google-Translate-mistake/66011355355771/