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The Use of Automatic-Text Translation in Arabic Academic Papers

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Introduction

El-Hakika is a biannual academic journal of the University of Adrar, Algeria, founded in 2002. Among its editorial rules is that all submitted manuscripts must have two abstracts, one in the national language, Arabic, the other in English or French. The authors translate their abstracts through natural (human) translation (hereafter, NA) or Automatic (Machine) Translation (AT or MT).

The present paper focuses on some 'non-sense' passages found in the 24 issues of *El-Hakika*. But before tackling this topic, a review of the literature on Natural Language Processing (NLP) is necessary.

1. Theory and Literature

According to Arnold et al. (1994, in Zughoul & Abu-Alshaar 2005:1022) Automatic Translation (AT) or Machine Translation (MT) is "the attempt to automate all, or part of the process of translating from one human language to another". It uses computer softwares to translate texts from a natural language to another. In other words, it is the means thanks to which grammar rules of a source language (SL) are translated into those of a target language (TL). It also consists of changing morphological, syntactic, and semantic components of SL to fit those of TL. (Jacquemin, 1999; Hamon et al., 1998).

The field of MT witnessed the birth of new methods during the last decades, such as the well known statistical machine translation (Lopez 2008), the interlingua approach, and the Universal Network Language (UNL) system designed for Multilanguage translation. The quality of these last is "acceptable" but not "perfect", and remains a useful means of translation in such specialized domains as medicine (Grabar and

Zweigenbaum, 2005; Baud et al., 2005) and for task-oriented domains such as speech translation for specific fields (Lavie, Pianesi, and Levin, 2006).

MT computer systems function in two ways. The first, "Autonomous" or Unassisted MT (Hahn, 2004) is based on the work of the computer alone. The second, called Machine Aided Translation (MAT) involves both a computer and a translator. The latter does post-editing, clarification (corrections) and disambiguation, or "polishing" (Napier, 2000).

With the advance of 21st century technology, the rapid progress of mass communication as well as globalisation, favourable political and socioeconomic circumstances, the low costs of computing power, MT reached a faster pace than it had (Translation and Interpretation, 2004).

The revival of MT enhanced its shift from a grammar based approach to the "development of interlingua systems which depended on translating the source text into an intermediate language or symbolic representation from which it could be translated into any of other several languages" (Zughoul and Abu-Alshaar, 2005:1026). The challenge of Interlingua systems is the overcoming of the language barrier at the level of the Internet.

With the avowed aim to overcoming that linguistic barrier, new systems appeared such as the Universal Network Language (UNL) based on an independent artificial language, which possesses its own lexical, syntactical and semantic levels. It is designed to automatically and unambiguously translate all human information and knowledge found in natural languages.

Although the statistical approaches are far simple in matter of translation systems, their final product lacks grammatical correctness. More so in the case of Arabic translation, where semantic representation systems are needed without which high quality translation is highly improbable (Aljlal, 2004 in Zughoul and Abu-Alshaar 2005:1028).

1. The Internet

The World Wide Web or Internet is the place where researchers find information and documentation about their immediate queries. However, the information is found in foreign languages such as English and French. Hence, translation is a crucial means of improving and widening the researchers' knowledge.

Online translation through the web is possible thanks to the numerous programmes available in search engines like *Bing*, *Google*, *Google chrome* and *Yahoo* to cite but a few. However, MT is not as perfect as it may seem, since the translated texts must be corrected.

The Cross-Language Information Retrieval (CLIR) system aims at putting at the disposal of the researchers a system throughout which they submit queries in one language, and retrieve them in another or many other languages. This system is based on two different categories: “approaches that exploit explicit representations of translation knowledge such as bilingual dictionaries or machine translation (MT) and approaches that extract useful translation knowledge from comparable or parallel corpora” (Farag & Nurnberger, 2009:195).

Recently, the Encyclopedia of Life Support Systems (EOLSS) has used the UNL system to put its immense documentation at the disposal of readers and researchers in several languages. EOLSS was translated into the six official languages of the United Nations (UN) using UNL. The Arabic translation of 25 documents through UNL EnConverter and its DeConverter counterpart was successfully done compared to other translation system like *Tarjim* and *Babylon* (Adly and Al-Ansary, 2009).

Research in the field of Arabic MT started as early as the 1950's, particularly in the US, focusing mainly on Modern Standard Arabic (MSA) (Vasconcellos, 2000; Yngve 2004; Zbib et al., 2012). Arabic ranked higher among the priority languages to be researched, i.e.: English, German, and French. The complexity of translating Arabic texts into other foreign languages was primarily due to its morphology, phonetics and phonology.

The priority of the research on Arabic processing was given to its lexicon and morphology. It was extended to syntactic analysis, machine translation, document indexing, and information retrieval as a consequence of the new advances in technology and communication.

Lack of diacritics (i.e.: vowels), a complex morphology, and different (written) characters led to “particularistic” approaches to the translation of Arabic. Its linguistic structure, particularly inflection, morphology and semantics were the principal concern of the researches. Its trilateral root system from which 85% of the words are derived, i.e. “a closed set of

around 10,000 roots” (Sakhr, 2004; Farag and Nurnberger, 2009:196) was at the core of the studies.

The characteristics of Arabic grammar are its parts of speech, which are the verb and the noun. It comprises three genders, feminine, masculine, and neuter, as well as three numbers, singular, dual (for two persons, things, or entities) and plural. To add number or gender, prefixes and suffixes are added to the nouns and verbs. The definite article is always prefixed to nouns; the prepositions and the conjunctions are affixed to both nouns and verbs.

Moreover, Arabic is a language which script is written from right to left. It is a consonantal language which does not need vowels to be well understood. These features make of Arabic a difficult language to translate and to process, particularly as concerns methods for information retrieval.

Nowadays, advances in the field of Arabic MT are due to several reasons. Among these are mass communication, globalization, and information technology. We can also cite the domain of business, which gave this area an important impetus as international companies funded the development of translation software packages with the aim of facilitating commerce and trade with Arab countries. Another factor enhanced research and development of Arabic to other languages translation systems: security.

As an example, AraMorphe is a well-known Arabic morphological analyzer used to translate Arabic queries into English through a sense inventory approach (Buckwalter, 2002). The UNL Arabic dictionary is among the recent systems that support morphological, syntactic and semantic analysis and generation during both Arabic EnConversion and DeConversion.

Actually, the use of bilingual dictionaries is not enough to guarantee an acceptable translation, particularly from Arabic into other languages. For one word query, these dictionary translations come up with multiple translations, and these need to be disambiguated according to the context or to the field. One proposed solution for this type of MT troubles is to make use of a substantial bilingual corpus and statistical co-occurrence.

2. The research

El-Hakika was first issued in 2002. Until 2013, the periodical has released 24 issues consisting of academic papers or proceedings of international conferences held at the University of Adrar.

In 2004, the editorial board amended the rules of publication, and asked future authors to attach two different abstracts to their texts: one in the national language, Arabic, the other in English or French. From that date onward, most pieces of writing are submitted for publication following the rules of the editorial board. Yet, many academic papers do not use human translators but AT/MT.

In the present study, only the issues that contain abstracts written either in English or in French are surveyed. The publications are those between the years 2004 and 2013. Some of them are published twice a year, while the conference proceedings are published once a year, only. Table n°1 details the issues, their publication dates, the number of papers, and the English or French abstracts.

The first observation is that abstracts written in French are more numerous than those in English i.e. 44.64% versus 28.86%. This shows that most authors are cautious vis-à-vis the use of English in academic papers. The historical presence of French in Algeria as language of academia before and after independence, and the weak mastery of English are the main causes of that situation.

The abstracts split into two categories: Automatic Translation (AT) and Natural Translation (NT) texts. In the first case, the author uses an online translator; whereas, in the second case, the researcher tries to translate alone or with the help of either a real translator or a foreign language teacher.

Issu es	Dates	pap ers	Abstracts	
			English	French
04	2004 March	14	01	00
06	2005 May	18	00	01
08	2006 May	16	02	11
09	2006 November	11	00	01
10	2007 (Proc.) 2 Vol.	28	06	03
11	2008 March	17	03	13
12	2008-2009 (Proc.) 2 Vol.	46	08	17
13	2009 March	15	07	06
14	2009 July	16	03	11
15	2010 March	16	06	10
16	2010 July	11	02	09
17	2011 January	13	05	07
18	2011 July	21	09	12
19	2011 December	16	10	06
20	2012 March	15	09	06
21	2012 June	14	08	06
22	2012 September	13	06	07
23	2012 December	22	09	13
24	2013 March	14	03	11
<i>Total</i>		<i>336</i>	<i>97</i>	<i>150</i>

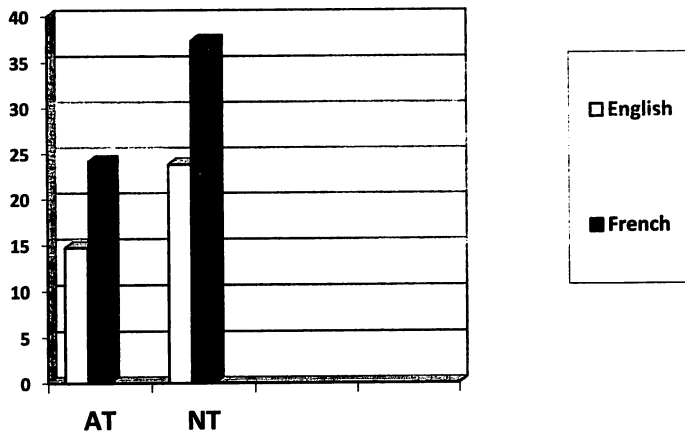
Table n°1: *El-Hakika* issues and their characteristics.

The next table summarises the findings:

Issue number	Abstracts in English		Abstracts in French	
	<i>AT</i>	NT	<i>AT</i>	NT
04	00	01	00	00
06	00	00	00	01
08	01	01	<i>04</i>	07
09	00	00	00	01
10	<i>06</i>	00	<i>02</i>	01
11	01	02	<i>05</i>	08
12	<i>06</i>	02	<i>10</i>	07
13	<i>04</i>	03	<i>03</i>	03
14	00	03	<i>01</i>	10
15	<i>03</i>	03	<i>01</i>	09
16	00	02	<i>02</i>	07
17	02	03	<i>00</i>	07
18	03	06	<i>04</i>	08
19	01	09	<i>02</i>	04
20	07	03	<i>01</i>	04
21	01	07	<i>03</i>	03
22	01	05	<i>03</i>	04
23	01	08	<i>07</i>	06
24	00	03	<i>06</i>	05
<i>Total= 19</i>	<u><i>37</i></u>	<u><i>60</i></u>	<u><i>61</i></u>	<u><i>94</i></u>
<i>%</i>	<u><i>14.68</i></u>	<u><i>23.80</i></u>	<u><i>24.20</i></u>	<u><i>37.30</i></u>

Table n°2: Type of translated abstracts

Figure1: Type of translation of abstracts in El-Hakika (2004-2013)



The most important finding is that abstracts naturally translated from Arabic into French are the most numerous ($n=94$ or 37.3%). The number of automatic-translation into French is the second highest number, i.e.: 61 or 24.2%. It is also worth pointing at the several articles which abstracts are converted from Arabic into English through AT ($n=60$ or 23.8%), while only 37 paper abstracts are translated with the help of a human translator (14.68%).

The scores lead to the following conclusions:

- Academic authors still rely on the human capacity to translate Arabic written passages into French.
- They make use of AT for both English and French.
- When translating into English, most authors resort to the use of human NT.
- However, the number of Arabic texts converted into English through AT is the least important.

The second conclusion shows that AT from Arabic into English is a recent phenomenon in Algerian academic circles. It also illustrates that the authors prefer to translate their abstracts with the help of a translator or a language teacher.

1. The Drawbacks

Across the 24 issues, several translation mistakes are recurrent. Among these are word-to-word translations and 'non-sense' transliterations. In this case, whole pieces of writing are translated through an automatic-translator and do not render any meaning. The types of mistakes encountered in the various English abstracts are:

1. Feminine and plural markers missing or overused.
2. Misused formulaic expressions.
3. Lack or misuse of definite/indefinite articles.
4. No masculine/feminine (gender) agreement with verbs.
5. Missing or misused words
6. Missing or misused determiners, possessives, pronouns, and relative pronouns.
7. Misused prepositions.
8. Non-sense translations.
9. One-sentence (nonsense) paragraphs.
10. Punctuation and (no) capital letters.
11. Repetition.
12. Singular/plural agreement with verbs.
13. Spellings.
14. Tense agreement.
15. Whimsical translations.
16. Written expression mistakes.
17. Wrong word-to-word translations.

Distinguishing between AT and NT translation is possible thanks to the following characteristics:

- No use of capital letters
- Nonsense words or expressions
- One-sentence paragraphs
- Punctuation not respected
- Syntax of the target language is not respected.

AT texts are characterised no respect of punctuation, nor do they start with capital letters. Moreover, after full stops the words are in small case letters, and commas are jotted down without any syntactic order.

In the case under study, most AT abstracts are not corrected or edited by the authors of the texts. They are published as such with plenty mistakes. More than that, the standards of academic papers are not respected; for instance, some translated abstracts consist of a few lines (05 to 08 lines), while others are several pages (up to 07 pages) long!

2. The results

The present section reports examples of non-sense translations, wrong word-to-word translations, whimsical translations, and one-sentence (nonsense) paragraphs found in the various issues of *El-Hakika*. The illustrations are either in English or French along their original texts:

...the Arab countries, *unlike most commodities and agricultural products*, then started to gradually lower the *amount* of exports ...until taking the increase in the deficit (Rev. n°10, 2007)

-In this *context_embodied profile catastrophic life-threatening economic and social stability* in the Arab nation. For وفي هذا السياق تتجسد ملامح صورة كارثية تهدد الحياة الاقتصادية والاجتماعية والاستقرار في وطننا العربي. (Rev. n°10, 2007)

-While the peoples of the third world remain absent from the event, although the matter concerned the beginning and the end, as long as all the negative impacts on its part. (Rev. n° 10, 2007)

-decreasing the responses *chip* ...for تراجع التمويل (rev n° 10, 2007)

-Summary *interjection* (Rev. n°10, 2007)

-et *emmenant par lui vers une réalisation ses deux rayons* la nation arabe for لتطوير القطاع الزراعي و المضي به نحو تحقيق رفاه الأمة العربية.

-Sofia a eu un role for لقد كان للصوفية دور (Rev. N°12, 2008-2009)

-nous constatons que le soufi le long d'un autre des objectifs est de l'islam (Rev. N°12, 2008-2009)

-the soufism is a way important to the fact (Rev. N°12, 2008-2009)

-I seek highlight for أرينا في هذه الإطلالة أن تكشف (Rev. N°12, 2008-2009)

-Al Arabi Sufi heritage in ancient and modern finds studded informing *Ulloa* for الناظر في التراث الصوفي العربي القديم والحديث يجده حافلا بأعلامه الذين أولوا

-It is *informing contemporary mysticism* who did not know much especially in the Maghreb professor Bediuzzaman Said gull for ألا و هو جانب التصوف في حياة الأستاذ بديع الزمان سعيد النورسي

The self-sponsorship and cleared of hidden diseases among the smoldering enshrine the most important tasks that must be maintained and recognized by all means to be subject to the temple for God and slavery and Bugeanh element transcends

the level of devotion to God Almighty. So it must be education and recommend self-restraint in order to place the humanitarian reason and inspired by his power, and this is the approach and Rabanyen prophets and advances the interest of the nation إن تركية النفس و تطهيرها من أمراضها الخفية المستكنة بين جوانحها من أهم الأعمال التي يجب على المسلم المداومة عليها بكل الوسائل كي يخضع إلى محراب العبودية لله عز و جل و يتسامى بكيانه إلى مستوى الإخلاص لله عز و جل. إن فلا بد من التربية و تركية النفس بغية إخضاع النفس الإنسانية لوحي العقل و سلطانه، و هذا هو منهج الأنبياء و الربابيين و السلف الصالح من هذه الأمة. (Rev. N°12, 2008-2009)

-But there has been contact with this approach that some people whims and fads, and infiltrated many of Pediatrics and the difference Alzaigp bees and spoke in violation of the law matters assets, and the perverse approach, all in the name of "Mysticism" Ajax many people doctrine and talk to detect and combat these pitfalls, and warn of its dangers لكن حدث أن خالط هذا المنهج بعض أهل الأهواء و البدع و اندست فيه كثير من الفرق الباطنة و النحل الزائغة و تكلموا في الشريعة بأمور مخالفة لأصولها ، و منحرفة عن منهجها، كل ذلك باسم "التصوف" (Rev. N°12, 2008-2009) فانبرى كثير من أهل الفقه و الحديث إلى شكل هذه المزالق و محاربتها.

-which by its *turn appears that it's an Algeria one with a purely appearance except that it's owner have entred to different ways in Algeria for* التي هي الأخرى تبدو أنها (Rev. N°12, 2008-2009) جزائرية خالصة الظهور بها، غير أن صاحبها قد دخل مختلف الطرق من قبل

-ils présentent conseils et prêches et leurs *luisent la voie* السبيل (Rev. N°12, 2008-2009) و ينبرون له

-le sultan craigne la révolution du commun sur lui *عليه* و السلطان يخشى ثورة العامة (Rev. N°12, 2008-2009)

-du *phénomène* Mohamed Ibn Abd Es-Sanad for *الظاهرة* (Rev. N°12, 2008-2009)

-from the beginning of the *first Islam* (Rev n° 12, 2008-2009)

-admiltang to *Tovatarea* (Rev n° 12, 2008-2009)

-the spirititiva life (Rev n° 12, 2008-2009)

-un de vu *necatif* (Rev. N°12, 2008-2009)

- *The building of personal Islamic integrated based on a balance between matter and spirit* (Rev. N°12, 2008-2009)

- *kingdom of the Islamic empire* (rev n° 15, 2010)

- *after Arabic was let to what is called the more fluent language* اللغة الفصيحة (Rev. n° 13, 2009)

- *of blending science some sites* أحد تجليات تمازج عدة علوم كاقصاديات المواقع (Rev. n° 13, 2009)

- *either at the international level* اما على المستوى الدولي (Rev. n° 13, 2009)

- *de la nature de part et pro forma nature* (Rev. n° 16, 2010)

One-sentence (nonsense) paragraphs.

- *And certainly not in front of our Arab peoples but to confront these threats and dangers are real and not illusory, and conflict over water part of the struggle for land, air and water to cover the conflict to stay whole.* (Rev. n°10, 2007)

- *because of the low production Arab foodstuffs to a number of reasons including lack of cultivated area for the number and growth of population and rising standard of living, as well as the low technical level of production and not used in modern production methods that would increased production and intensified (تكتيفه), even if they are used within too narrow (في حدود دقيقة للغاية).* (Rev. n°10, 2007)

-Whimsical translations:

- *and factors are predicted great food crisis...* (Rev. n° 10, 2007)

- *And solutions controversial...* (Rev. n° 10, 2007)

- *remain legal protection for* تبقى الحماية القانونية

- *aspirations of peoples the roots of the history of the Arab nation for a better tomorrow is characterized* (Rev. n°10, 2007)

- *but it will face either famine or dependency third option but not both* وإلا فإنه سوف يواجه إما المجاعة أم التبعية ولا خيار ثالث إلا الاثنين معا.

- *since water is the component of the first life* إذ تمثل المياه عنصر الحياة الأول

- *because of food insecurity poses prominent dimensions of the political and security can be exploited by exporters of food* نظرا لما يحمله انعدام الأمن الغذائي في طياته من أبعاد سياسية أمنية يمكن استغلالها من قبل الدول المصدرة للغذاء

-of important *issues and contemporary and preoccupied thinking many economists and politicians Arabs* القضايا الهامة و المعاصرة التي تؤثر في السكان و الأوضاع السياسية و (Rev. n°10, 2007)
 الاقتصادية و شغلت تفكير الكثير من الاقتصاديين و السياسيين العرب

-dans le cadre de *l'orientation et la bonne gestion* الرشيد في إطار من الإدارة و

-sauf que *l'agglomération et la solitude reste plus adéquate* pour détruire les causes de *croupe* إلا أن التكتل و التوحد يبقى الحل الأنسب للقضاء على أسباب العجز

-without *the alternative will be the spectre of famine or in the best of circumstances fall under the control of exporting foodstuff* وبدون ذلك فإن البديل سيكون
 شبح المجاعة أو في أفضل الظروف الوقوع تحت سيطرة الدول المصدرة للمواد الغذائية.

-he left *with to Maghreb* for different reasons رحل بها إلى المغرب

-Cette communication va *résoudre* for تتناول (Rev. N°12, 2008-2009)

-en raison de la *geopolitique de l'Algérie est situé* dans le cœur de l'Afrique du Nord (Rev. N°12, 2008-2009)

-l'un des *moyens les plus importants pour nous trouver Brown plus de 400 millions de dollars* for (Rev. n° 12, 2008-2009)
 الأتباع تجاوز عددهم 400 مليون

-ainsi que *Altarekab Borkalp Albalkaidip Bohran* for وكذا الطريقة القادرية بورقلة
 والبلقانية بوهران (Rev. n° 12, 2008-2009)

-et *d'autres méthode d'autres mysticisme* for (Rev. n° 12, 2008-2009)
 و غيرها من الطرق الصوفية الأخرى

-and through the years after the fact of the Doha Declaration (Rev. n° 15, 2010)

-the concept of the *right* has witnessed...no longer an option *delivering rights...which makes them absolute power as their own hands has absolute fact* without it *to be limitations or wholes* (Rev. n° 16, 2010)

-where the split of society into an aristocratic class *denied the launch of Bdelha* right وأقام بلها (Rev. n° 16, 2010)

-where *gold* faqih French Planiol and *Mottagamo* Shafi'ia حيث ذهب الفقيه الفرنسي بلانيول و *متقدمو* الشافعية (Rev. n° 16, 2010)

Wrong word-to-word translations:

-it *remains suffer* from the problem إلا أنها تبقى تعاني من مشكلة

- deposition* استقرار
- evolved* فظهرت
- Avion fleu* أنفلونزا الطيور
- and *become achieving* food security...و أصبح تحقيق الأمن الغذائي...
- resolved* يحل مسألة
- genetic engineering of plant-based *horse* الهندسة الوراثية للنبات رهان قائم
- pour *l'acquisition* de son aliment من أجل تأمين غذائه
- le droit *positif comparé* القانون الوضعي
- Les législations *musulmane et positive* التشريعات الإسلامي و الوضعي
- retour de la *Le région* بالعودة المفاجئة للدين
- pour *investigue* هذه المصطلحات من أجل استقصاء
- this *flag* incident هذا العلم من العلوم الشرعية
- l'éteinte* des langues de la réforme خبت مصابيح الإصلاح
- Methodic had occupy* الطريقة
- between the *livers* and *banderies* التخوم
- with the *outside* اتصالاتها مع الخارج
- the *theoretical site* النظرية الواقعي

6. Analysis and conclusion

AT Arabic into English and French is not an easy task as can be noted in the previous examples. Due to the lack of diacritics in the Arabic words, the English and French transliterations are not logical and have no sense. Even if multilingual dictionaries are used in translation programmes, they render wrong translations. Another point is drawn from the various mistaken translations: the authors do not check, nor correct, or "polish" their translated abstracts. They rely on the software programmes.

We also conclude that, if national academic papers impose the use of abstracts written in foreign languages, the phenomenon of 'blindly' using AT/MT is not going to stop. As a recommendation, academic writers should translate their texts through real translation services. If they use AT/MT, they 'must' correct them with the help of people who master foreign languages; otherwise, their publications would be far from being academic.

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