Developing and testing Kanjingo: A mobile app for post-editing

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ABSTRACT

This paper describes the development of the mobile post-editing application Kanjingo, and the developers' intentions for the tool. There have, to date, been two rounds of usability testing of Kanjingo completed, with good responses from participants. Despite this, it remains difficult to make a commercial case for smartphone post-editing.

Keywords: translation; post-editing; mobile post-editing; app development

RESUM

Aquest article descriu el desenvolupament de Kanjingo, una aplicació mòbil per a la postedició, i les motivacions de la seva creació. L'aplicació ha estat sotmesa, fins ara, a dues rondes d'avaluació pel que fa a la facilitat d'ús, amb respostes positives dels participants. Amb tot, encara no s'ha pogut convertir en projecte comercial per a la postedició amb telèfons intel·ligents.

Paraules clau: traducció, postedició, postedició mòbil, desenvolupament d'aplicacions

RESUMEN

Este artículo describe el desarrollo de Kanjingo, una aplicación móvil para la posedición, y las motivaciones de su creación. La aplicación ha sido sometida, hasta la fecha, a dos rondas de evaluación sobre su facilidad de uso, con respuestas positivas de los participantes. Sin embargo, todavía no se ha podido convertir en proyecto comercial para la posedición con teléfonos inteligentes..

Palabras clave: traducción, posedición, posedición móvil, desarrollo de aplicaciones

1. Introduction

Kanjingo is a mobile tool for post-editing machine translation that was developed within the ADAPT Centre (formerly CNGL) at Dublin City University. The tool was developed firstly to test whether post-editing was possible on mobile devices, and secondly to consider whether an interface design that moved away from a layout intended for working with translation memory (TM) would be feasible for post-editing. This article recounts the background to the development of Kanjingo, the basic functionality of the tool, the two stages of user testing that were carried out to test specific use cases of the tool, some obstacles to further development, and the direction of future research and development work.

2. History and purpose

Kanjingo was developed as part of a larger research aim to examine how users interact with machine translation, and to consider whether features that were (at the time) unavailable might be helpful for post-editors. Preparatory survey and interview research (Moorkens and O'Brien, to appear) showed that despite over 20 years of development, there remained dissatisfaction among users with commercial translation tools, echoing the findings of Lagoudaki (2008: 17) who wrote that "systems usability and end-users' demands seem to have been of only subordinate interest" to tool developers. The use cases envisaged for Kanjingo included contribution to volunteer translation efforts while on the move, or use as part of an agile development workflow, where strings could be pushed to translators regularly to post-edit as needed. The former use case is motivated by an increase in 'activist' translation in the past years and by translation by 'non-professional translators', i.e. people who wish to volunteer their time and contribute to a cause through translation. Such users are highly unlikely to engage with complex computer-aided translation (CAT) tools and many will only contribute small parcels of time in erratic timeframes. The second use case is relevant to the localisation sector in particular, which in recent years has moved from the traditional model of delivering large volume projects for translation once or twice a year, to sending a few localisation packets out every day, with a small number of segments requiring immediate update in many languages. This task could, in principle, be taken care of in a light, mobile translation app. Although these clear use case scenarios were identified, we did not underestimate the feasibility and acceptability of post-editing on a mobile phone app. As a starting point, we expected users to complain about the lack of space and context, and the difficulty of inputting (long strings) of text.

Kanjingo offered the opportunity to develop a tool from scratch with the user as a focus, and without the constraints of desktop post-editing. The timing seemed appropriate given the translation industry's reliance on freelance work (see Ehrensberger-Dow et al., 2014) and falling figures for PC use (access to the internet in Ireland is increasingly via mobile and tablet – PC internet access fell from 77% to 56% from 2013-2015 (Weckler, 2015)). Reliance on desktop tools is problematic in countries where Internet access may be more sporadic (such as China) or where the majority of active Internet users access using a mobile device (such as in India, where 235m of 254m active Internet users access the Internet via mobile devices (Deloitte, 2015)). Crowdsourcing platforms increasingly rely on users in less-developed economies who are more likely to access the internet via a mobile device, to the extent that companies such as Crowdflower now have formal ties with Indian companies for sourcing workers (iMerit, 2016). Worldwide, mobile data traffic is expected to increase from 3.7 exabytes per month in 2015 to 30.6 exabytes per month in 2020 (Statista, 2016a). Creating a post-editing tool for mobile would thus open the task up to many more users.

Kanjingo was developed following a number of internal discussions and mock-ups. The first version of the app was a web-based tool, which underwent usability evaluation. Based on the evaluation results, a second iteration of the tool was developed, and a second round of usability evaluation was carried out in conjunction with a volunteer translation organisation. At the time of writing a third round of more in-depth testing has been conducted, with results to be reported in 2017.

2.1 Kanjingo functionality

Fig. 1: Choice of language pairs

The current version of Kanjingo is built for iPhone. Once the user has logged in, they are given a choice of language pairs as shown in Figure 1. Thereafter, the user is presented with a list of segments in the chosen language pair. Clicking on a segment will bring the user to the editor view (see Figure 2). Within this view, the target text as produced by machine translation is presented on vertically aligned tiles. The user may click and drag each word tile to change word order, delete words by clicking the red '-' button, or add words using the blue '+' button. Words may be added using the keyboard or the iPhone-native automatic speech recognition function. The source segment is always visible at the top of the screen, and the full target segment is available by scrolling to the end of the word tiles.

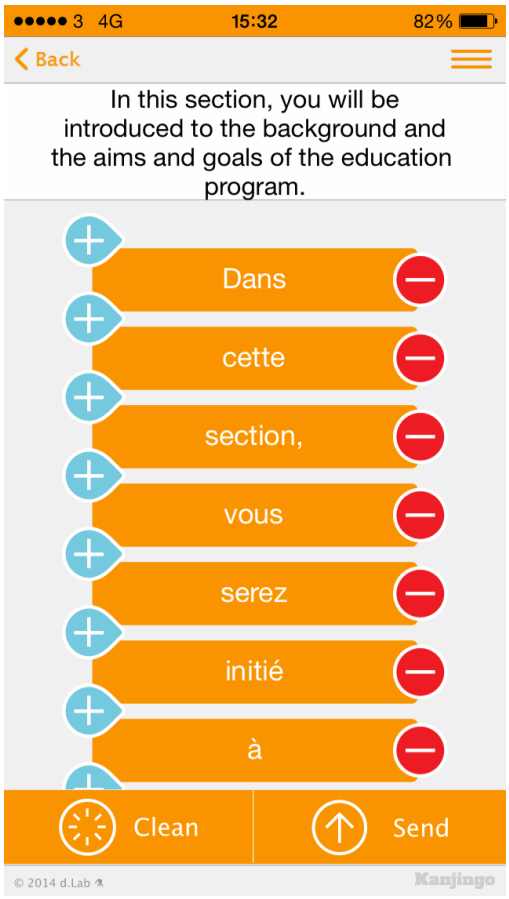

Fig.2: Kanjingo editor view

The user may choose to delete the MT suggestion using the *Clean* button or click the *Submit* button to submit a post-edited target segment (or one that requires no post-editing).

3. User testing

The first iteration of Kanjingo was tested using content from the volunteer translation organisation Translators Without Borders in 2014 based on a use case of volunteer translation. The motivation was based on evidence that volunteers are willing to translate or post-edit for causes they wish to support (Munro 2010, Petras 2011). Initial feedback on this iteration of the app was quite positive, although users identified some particular challenges, e.g. input and sensitivity limitations, insufficient Help, lack of automatic punctuation and capitalisation. Full details of this evaluation were reported in O'Brien, Moorkens, and Vreeke (2014).

The development of a second iteration of the application (see Section 2.1) presented an opportunity to make adjustments based on the first round of testing, and to add voice input. A second round of usability testing in July/August of 2014 followed to fine-tune the application, testing whether the usability issues identified in the previous round of testing had been eradicated. As previously, the use case was of a volunteer post-editor contributing to a non-profit organisation, in this case The Rosetta Foundation (TRF). Participants were recruited by TRF from their mailing lists, limited to those who owned Apple iPhones and who translate from English to either French or Spanish, the two language pairs used in this research. The data was TRF data from a humanitarian organisation advocating rights for women and young girls. Participants were asked to post-edit machine translations of this data (translated using

Microsoft Bing), and then to complete an online survey using the Limesurvey platform. The process of downloading and installing the app was unavoidably quite convoluted, which had some adverse effects on the survey response rate. Participants had to register their interest, download the Testflight app linked from an invitation email, and then download and install Kanjingo via Testflight. Participants were offered email support throughout this process.

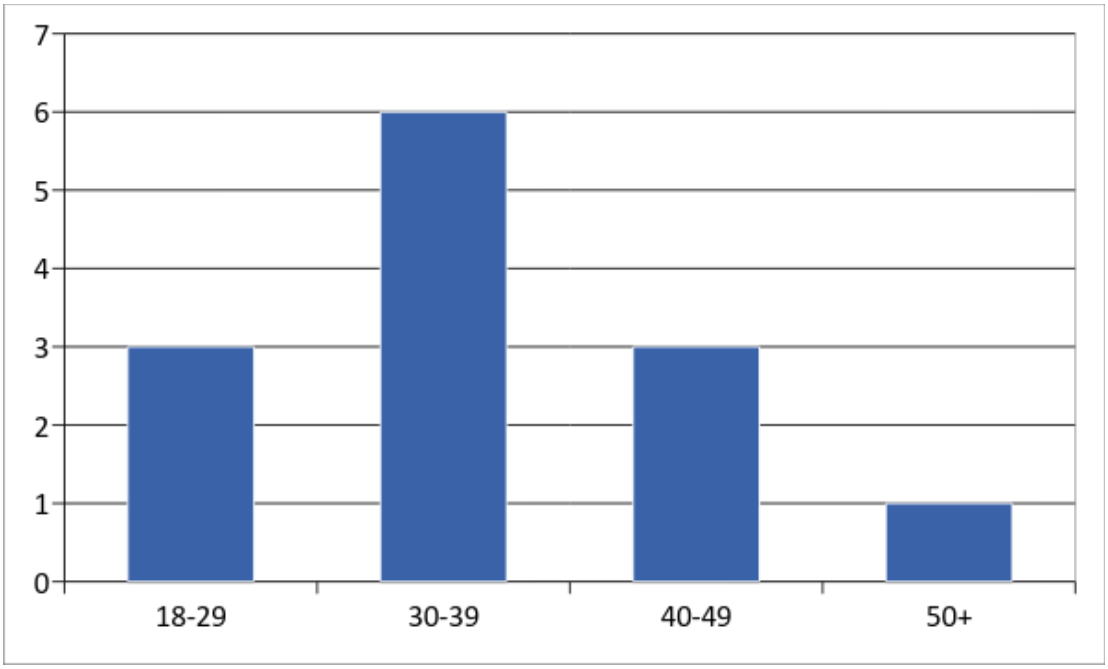

Fig. 3: Age profile of survey respondents

There were 18 survey respondents in total, of whom 13 completed the survey. The age profile was weighted towards those in the 30-39 age range, as can be seen in Figure 3. All but one respondent said that they were smartphone/tablet users who use apps regularly, and 11 respondents said that they generally find technology "very useful". On average, respondents reported just under 5 years' experience of translation, most with an undergraduate or masters' degree. Other than one respondent with 5 years' experience at post-editing, few reported that they post-edit often. One respondent said that 40% of his/her time was spent post-editing, and another reported post-editing regularly for just over two years. When asked why they volunteer to translate or post-edit, most respondents said that it was an opportunity to help or to contribute to a positive cause. They also want to "improve knowledge", "gain experience", and to "expand my range" of skills.

3.1 User impressions

When asked for their initial thoughts on the app, nine respondents were effusive in their praise, somewhat contrary to our expectations, finding it user-friendly, intuitive, and User 11 was "amazed by the interface". User 10 "loved the way the source and target were set up and really how easy it was to get around and use the app". 11 respondents said that the task of post-editing was well or very well-supported in the app. User 13 found the interface "a bit slow", and another complained about MT quality. Several users were in touch by email to report problems with installation.

When asked how the app could better support post-editing, four respondents could not think of any improvement, and one "just wanted to know how to introduce new segments and texts". User 2 suggested spellcheck – this should work already if the iPhone language is set

to the translation/post-editing target language. User 5 would like to see source and target texts horizontally aligned, for easy comparison. User 6 suggested clicking on a word to see other possible translations. User 7, who used the app "on the go", complained of connectivity issues that caused delay or required a restart. User 10 would like to be able to edit segments after they have been submitted, and suggested "a larger view at the end where you can see more than one sentence at a time so you can make sure there is flow".

Users were asked how post-editing with the app compared to desktop post-editing. Two users said that they prefer the app. User 11 said that the app is "more intuitive and ready to use anywhere", but would like to know where work is saved and what formats to use. Most users had a slight preference for desktop applications, with reasons given such as easier use of accents, easier word modification on desktop, and the ability to see the whole document. User 8 said that the app was "fine for short messages", and user 12 said that although his/her preference was for desktop, the app "makes post-editing very easy and [is] comfortable to use".

3.2 Positives and negatives

Users were asked what the app did well, and most found it user-friendly and attractive. Four users were pleased with the ability to change word order with a gesture. Word order is an acknowledged problem for statistical machine translation systems, so a simple re-order method proved useful for participants. User 14 wrote: "It is easy to remove and add new words, change their position in the sentence", and this "makes post-editing easier and faster." When asked what the app did badly, three users said that they would like to change the order of chunks of text rather than just single words. Four users complained of having to delete and retype a word to change capitalisation – another regular problem for MT output - or spelling, rather than clicking on a position in the word and placing the cursor there for editing. When asked to rate the responsiveness of the app, nine of the 12 users that managed to make the app work agreed that it was fast and responsive. Two users said that it was "not too slow", and one found it "a little bit slow and unresponsive".

Most respondents could not think of a suggestion for improving the look of the interface, but four suggested allowing users to toggle between viewing the text as a whole and segment view, so as to understand the meaning and to see progress through the text. All other users had no comment or complimented the look or colours.

3.3 Use cases

Respondents were asked about circumstances where they could envisage using the Kanjingo app. Two could not see themselves using it. User 13, for example, "did not find it very efficient." User 7 would only use it for "very short texts", and User 4 would like to have it as a backup for situations when desktop software is not available. Four users would like to use it during "downtime" post-editing "as the app makes it very fun." Respondents were not particularly fond of adding gamification elements to the UI, e.g. badges or leaderboards, with six saying this would make them "somewhat motivated to use the app", three "a little less likely" to use it, and four "very unmotivated" to use it.

3.4 Limitations of the second evaluation

In general, users were very positive about the app. Some of their issues, such as trouble with accented characters or spellcheck could have been quickly dealt with in a monitored testing scenario. The lack of supervision was one of several limitations to this study. First of all, the user base was limited to those with ability in the two available language pairs who had access to an iPhone running the most recent iOS. The inability for users to download the app via iTunes (a regulation imposed by Apple for apps that have not yet been approved for

distribution) appears to have been a major limitation: the distribution method was laborious for users and was the largest cause of support requests and, most likely, demotivation amongst users. User 11 wrote “At first it was difficult to install and I didn't understand very well what to do”. Of 50 users who expressed an interest in taking part, only 13 completed the survey. The survey itself was another limitation, adding an extra task to complete for unsupervised and unrewarded users. One recommendation for further remote testing would be to simplify the distribution and response methods.

4. Conclusion

The positive response to Kanjingo is pleasing, but gives little direction for improvements or refinements of the app, other than to focus on easy distribution and stability. The ability for the user to toggle between segment and document level views was requested more than once, and the ability to group words for reordering may also be worth adding to the interface. One thing that this suggests is that the app might be more successful in a tablet, rather than smartphone, environment. The additional space on the tablet may allow for increased context and grouping of words. Development work on a tablet and touchscreen-optimised version of Kanjingo for multimodal input will begin in 2017. The challenge to be addressed is that screen size, particularly for smartphones, but also for tablets, is considered a barrier to productive input and to longer session times (Statista, 2016b).The respondents in this study mostly just wanted to know how to add texts and to begin using the app. This would require the development of a back-end for project management, whereby tasks could be prepared and sent to translators from a server.

The global market for MT post-editing is growing, with an estimated turnover that grew beyond US$1bn in 2014 (DePalma, Hegde, and Pielmeier, 2014). Subsequent surveys found that over 80% of language service providers offer post-edited MT (Lommel and DePalma, 2016). User dissatisfaction with current desktop translation tools means that there is an opportunity for a tool that supports post-editing well. In addition, web-based translation tools are still optimised for desktop use at the expense of mobile. The figures for spending on fixed Internet use was surpassed by mobile in 2014 (Bell, 2014), which means that more than half of Internet users are currently unable to access a translation tool optimised for their device.

Gouadec (2007: 375) predicted that "in all probability, the translation industry in the twenty-first century will go oral.” Speech recognition technology is already widely available for mobile devices, and the addition of touch-screen and speech modes would also cater for the growing number of tablet and hybrid devices. This is all promising for Kanjingo, but unless it can be demonstrated that post-editors can use it to produce quality translations at high speed, the tool could commercially only be an add-on or a cut-price option. It could still have a societal impact, particularly in regions with little desktop internet access or in crisis scenarios.

Bell (2014: 18) notes that “more Africans have a mobile phone than have a toothbrush”, and suggests that “if a translator in Africa does not have a laptop, only a smartphone, he or she must therefore translate upon that phone.” She added that, were a tool like Kanjingo available in Africa, for example, it could have the effect of “not only making it easier for their translators to operate”, but of “economically enabling a continent and […] pushing the rest of us to innovate” (2014: 19). Bell (2014: 19) also believes that it is important to support translation using smartphones generally as “translation students today become translators tomorrow, and our processes will either be ready for their technology expectations or they won’t.” These demographic arguments may need to be accompanied by results that show not only usability but also productivity to make a compelling case for the development of translation tools for mobile.

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