Developing Software for Translation of Comic Strips

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The rapid advances in information technology have helped the internationalization in many fields. For example, the newest comics of artists can be digitalized and delivered to readers over the world at the same time as they are published at home. The potential market of comics is huge because they are popular among generations and customers can download and read comic strips on mobile devices, such as cell phones or iPods.

Delivering new comics to customers as soon as possible requires quick and correct translation of the comics. There are two ways of presenting the translated text strings: either to type the text strings under each panel or to erase the original texts within the speech balloons and replace them with the translated ones. The latter would be the preferred option to readers. However, it needs more handwork and time.

When Japanese text is translated to Chinese or English changing its presentation from vertical to horizontal would be required. As the translated text may have more words than the original, the speech balloon may not have enough space for the new text. For example, translated English text is often much longer than the width of original balloon. Thus, last words would occur outside the speech balloon. Although many translation softwares are available on the market none of them could deal with the problems in comic translation. In practice, painting software such as Photoshop is often used to erase the original speech balloon and draw a new and larger one. As such, operations are rather difficult and require good experience in using software and drawing comics.

Through this research we have developed a software to support comic translation and provide users with specific functions to allow change of text strings and speech balloons. This software has following remarkable functions:

- Subdivision function: it automatically subdivides a page of comic strips into frames, each with one panel.
- Speech balloon selection function: when users click any point within a speech balloon, it automatically extracts the outline of the balloon, highlights it, and makes a new layer of the outline in database.
- Text strings selection function: it enables the user to select a group of text strings by dragging with a mouse.
- Text strings removal function: When a speech balloon is selected, it automatically erases all the text strings within it.
- Text string inserting function: When a speech balloon is selected, it places text strings from the keyboard there.
- Speech balloon extension function: when a speech balloon is selected, it extends all the pixels on the speech balloon’s outline outward. This is done interactively. Each time the user double-clicks mouse, the outline moves outward by one pixel. This is the most unique function of this software. It enables the user to enlarge a speech balloon while keeping its formation unchanged. Our algorithm for this function is based on the previous research for extracting text strings from comics [1].

Since there is usually a white space between texts and speech balloon (or panel frame), we can firstly get Fig.1-(b) which contains almost no texts. By using radiating lines centered in the position of mouse clicking, we can find controlling points on the original speech balloon (Fig.1-(c)). By extending the controlling points outward while keeping the original panel frame unchanged, we can get a new extended speech balloon similar to the original one (Fig.1-(d) to (f)). As shown in Fig. 2, smooth speech balloon is kept smooth, sharp and harsh balloon is still sharp. This is important to make the translated comics having the same mood and quality as the original.

For the implementation, we used VC++ for coding and run the software on a notebook computer. We have tested the software for a range and variety of sample panels selected from many famous cartoonists around the world. The testing results show that the software is useful and efficient in translation. Use of it would lead to better and more efficient comic translation.

Fig. 1 Illustrating the algorithm for extending speech balloon

Fig. 2 Illustrating the comic translation software