Adding semantic to comic books extracted content using ontologies and spatial relations

Clément Guéрин
clement.guerin@univ-lr.fr

Karell Bertet
karell.bertet@univ-lr.fr

Arnaud Revel
arnaud.revel@univ-lr.fr

Comic books have become over the past century a major piece of the cultural legacy for a lot of countries. They are now on their way to the digital world. Digitization and online indexing have already begun but, unlike previous media, comics can’t be digitized “as is”. Some companies are developing solutions but there is still some issues to be solved before the dynamic mass of published comic books can be exploited on digital hardware in a really satisfying way.

The amount of published comics is enormous, we cannot do the entire digital conversion manually.

We have to use automatic extraction algorithms, but what pieces of information are we able to extract from comic books with confidence?

State of the art

Don’t you know the Grand Comics Database (1)? You should check it out, there’s a lot of comics references available in it!

Sure I’ve heard about it. But it would be nice to have information about the content of comics. Take a look at ComicsML (2- McIntosh) or CBML (3-Walsh), they are both XML schemes that can describe the bibliographic and pictorial content of comic books.

XML you said? A bit limited, isn’t it? I’ve heard about a quite recent promising web technology called “ontology”. It provides ways to store information within a reasoning knowledge model. I think there’s even one that has been developed about comic books named (4-Rissen).

Well, all of this is fine but I think we can go a little further regarding ontologies.

What about using them to deduce information about screenplay from image analysis?

Conclusion & Perspectives

There is obviously much more to do involving balloon’s shape and characters’ position.

However, ontologies applied to comic books and image analysis are very promising and should play an important part on the emerging digital comic books market.

And then, how to use them to deduce more information that can be helpful to a digital comic creation?

And what exactly is a digital comic book anyway?

A comic book piece of art is made and thought for a specific support and, consequently, has to be reshaped as this support is changed. Comic’s content must be extracted and used according to a particular knowledge, as a new basis to the digital conversion. Some works have already been conducted on this issue…

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This model shows the classes hierarchy of our ontology with some of their properties. Based upon the “Region of interest” image analysis concept, it permits to do a couple of new interesting things…

This model shows:

As panels and balloons extraction is quite mastered today (5-Rigaud et al.), integration of some image specific information, such as coordinates, allows reasoning on position and shape with a limited human interaction.

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For instance, panels and text regions’ order can be directly deduced from their position on the page. Voluntary ambiguous situations can be detected the same way (6-Guerin et al.).

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The three panels at the bottom of this frame show the same scene from different angles. It is not obvious which one is meant to be read first.

References