

**Automatic image processing in the Digital Humanities:  
A pre-study for Children Books in the 19<sup>th</sup> Century**

Chanjong Im, Thomas Mandl  
Universität Hildesheim

Wiebke Helm, Sebastian Schmideler  
Universität Leipzig

**Conceptual Approach**

In cultural sciences, the iconic turn has led to a more significant role of images. On the other hand, digital humanities develop innovative methods to support humanities with digital tools. That way, quantitative approaches can support traditional approaches in cultural sciences. The automatic processing of images in large numbers in order to support research within historical sciences is still in its infancy. So far, very few studies have been published; most of them are restricted to small numbers of images (e.g. Bender 2015).

The analysis of digitized historical books can be of great value. The work reported here intends to quantitatively support positions from cultural studies about images in children books in the 19<sup>th</sup> century.

**Illustrations in Children Books**

Overall, the illustration history of children books in the 19<sup>th</sup> century has been well researched. However, there is still demand e.g. for analysing the overall visual knowledge offered and the influence of reproduction technologies (Schmideler 2014).

The collection used in the first phase is the Hobrecker collection available at the TU Braunschweig, which is based on a collection of Mr. and Mrs. Hobrecker ([https://publikationsserver.tu-braunschweig.de/content/collections/childrens\\_books.xml](https://publikationsserver.tu-braunschweig.de/content/collections/childrens_books.xml)). It consists 167 books with some 16.000 pages including 4500 images. The collection consists of different genres, e.g. alphabetization and poem books (Düsterdieck 1985). That makes the digital part of the Hobrecker collection attractive for digital research methods. The collection contains unique image material, represents most reproduction technologies and shows popular content across different genres. The focus can be set on geographic, ethnographic and historical topics and their appearance throughout competing printing workshops.

**Questions of research**

The first approach to analyse the images is the development of a classifier which allows the identification of the printing technology used. A training set of images created using wood engraving and lithography as designed. A state of the art image classifier was used and resulted in only 70% accuracy after some optimization. The so called Convolutional Neural Networks (CNN) follow the deep learning model and try to find the necessary features within the data themselves (Krizhevsky et al. 2012). Further training sets and classifiers especially for wood cut and copper engraving technologies are being developed.

The following steps will include the search for similar images in order to recognize patterns of re-use.

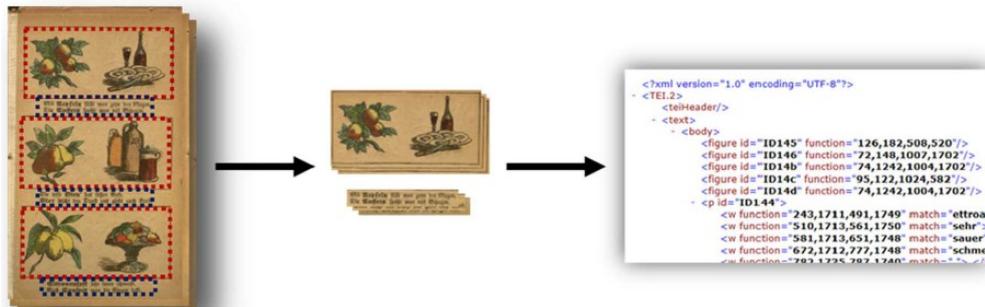


Figure 1: Extracting and Processing Images from the Children Book collection

## Acknowledgements

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## References

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