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Segmentation and indexation of complex objects: detection and recognition of complex objects in comic books

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Presentation

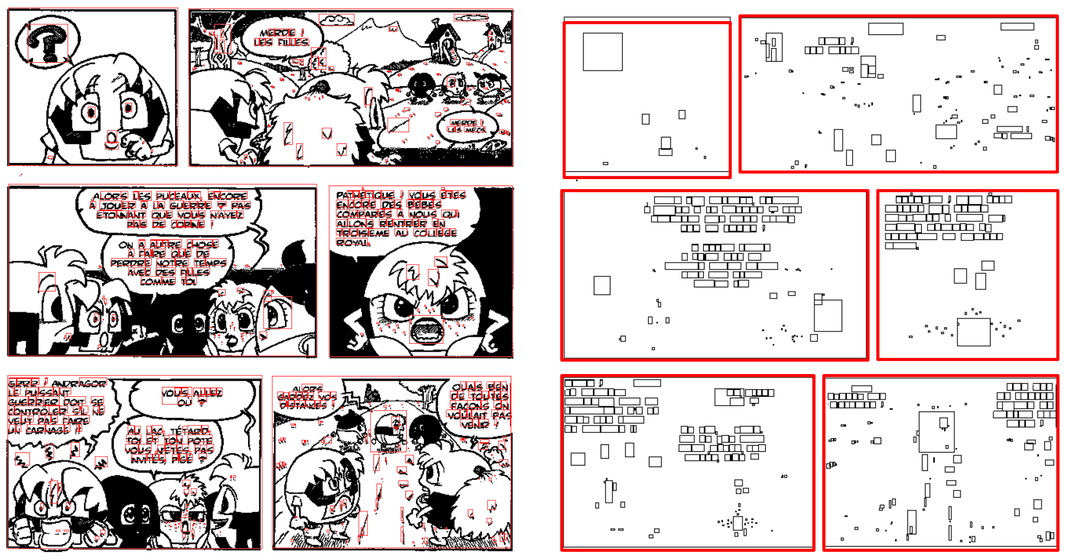
Context
- Comics represent an important part of cultural heritage
- Digitization of thousands of comic books
- Content Based Image Retrieval

Objectives
-

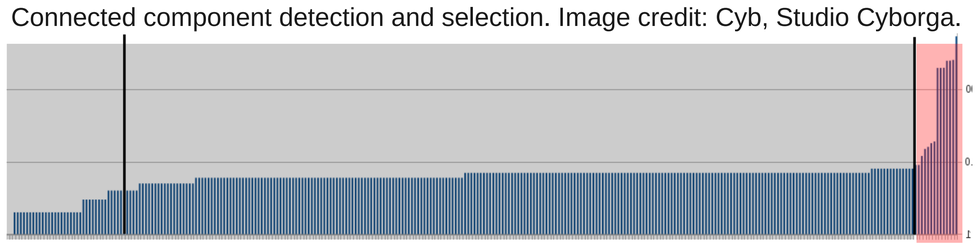
Contributions

Frame detection[1]

- Connected component bounding box
- Height classification (3 class k-mean)
- Topological filtering



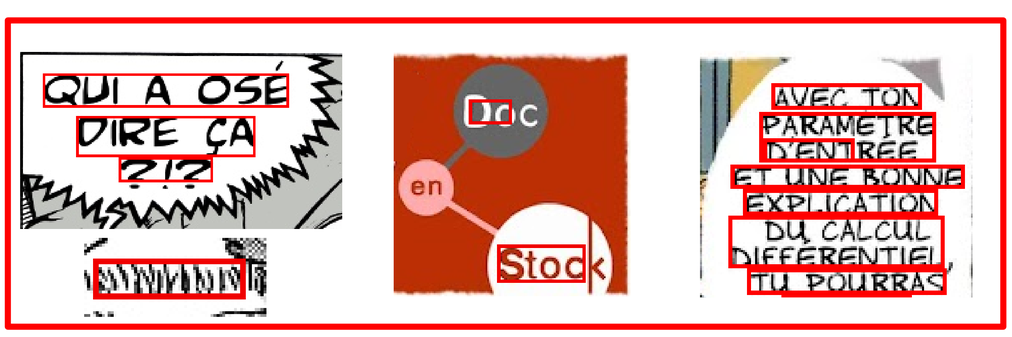
Connected component detection and selection. Image credit: Cyb, Studio Cyborga.



Connected component bounding box histogram, ordered by height.

Text localisation[2]

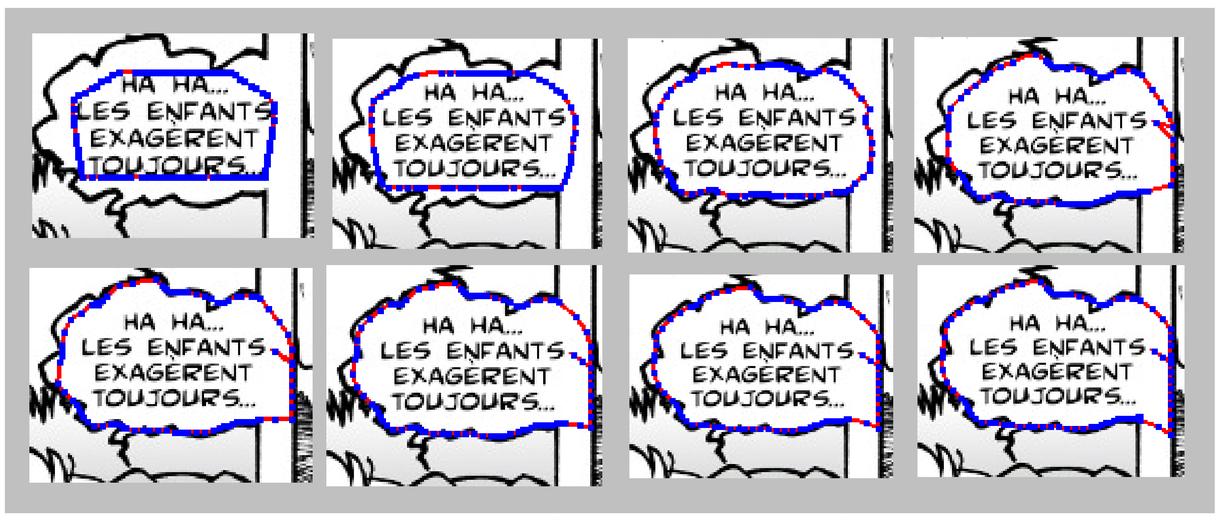
- Minimum Connected Component Thresholding (MCCT)
- Text/graphic separation
- Text line localisation
- Recall and precision > 75%



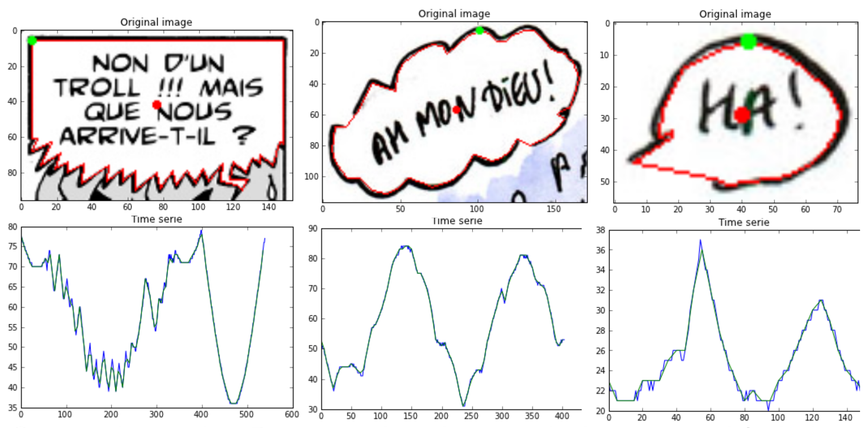
EBDtheque dataset

Balloon detection[3] and classification[4]

- Active contour model adaptation
- Based on previous text localisation
- Contour time series classification



Active contour initialisation and detection evolution



Contour time series. Barycentre in red, start point in green, anticlockwise.

Publications

[1] C. Rigaud, N. Tsopze, J-C. Burie and J-M Ogier, Robust Frame and text extraction from comic books, Graphics Recognition. New Trends and Challenges, volume 7423 of Lecture Notes in Computer Science (LNCS), pp. 129-138. Springer Berlin Heidelberg, 2013
[2] C. Rigaud, D. Karatzas, J. Van de Weijer, J-C Burie and J-M Ogier. Automatic text localisation in scanned comic books. International Conference on Computer Vision Theory and Applications (VISAPP), pp. 814-819. SCITEPRESS Digital Library, 2013.
[3]
[4]
[5] eBDtheque database, website: http://ebdtheque.univ-lr.fr

Perspectives

We have proposed and evaluated a new active contour based method to accurately localize open and closed speech balloons in comic books. Future work will be focused on speech balloon pixel level segmentation and classification.

Online: https://github.com/crigaud/publication/tree/master/2013/ICDAR_DC/segmentation-and-indexation-of-complex-object-in-comics/