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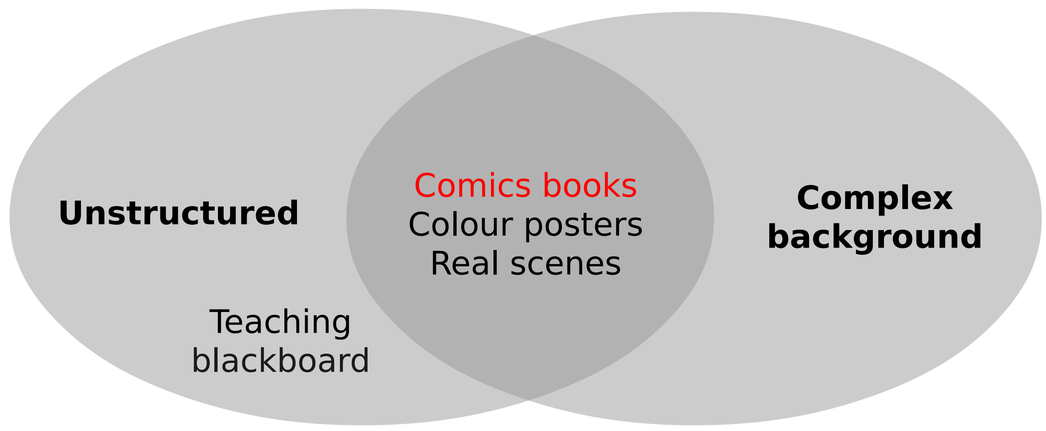
Automatic Text Localisation in Scanned Comic Books

Christophe Rigaud[1] , **Dimosthenis Karatzas**[2] , Joost Van de Weijer[2] , Jean-Christophe Burie[1], Jean-Marc Ogier[1]
[1] Laboratory L3i, University of La Rochelle, Avenue Michel Crépeau 17042 La Rochelle, France
[2] Computer Vision Center, Universitat Autnoma de Barcelona, E-08193 Bellaterra (Barcelona), Spain
{christophe.rigaud, jean-marc.ogier , jean-christophe.burie}@univ-lr.fr, {dimos, joost}@cvc.uab.es

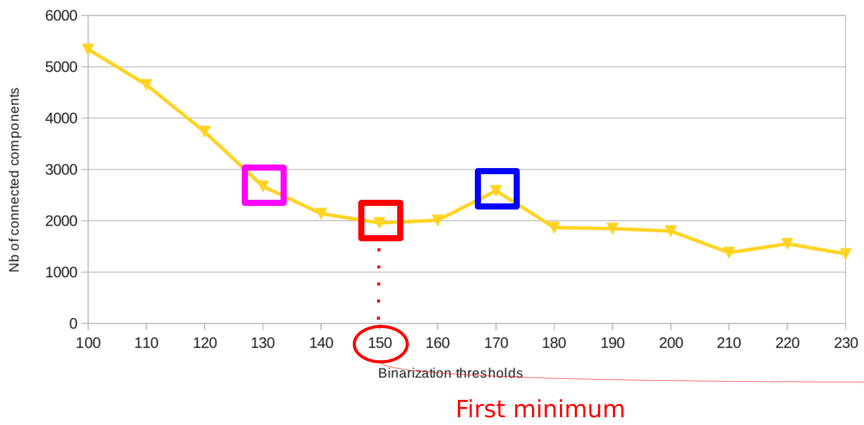
Presentation

This work presents a novel approach for automatic text localization in scanned comic books, an essential step towards a fully automatic comic books understanding.
We focus on speech text as it is semantically important and represents the majority of the text present in comic books.



Contributions

1) Minimum Connected Component Thresholding (MCCT)



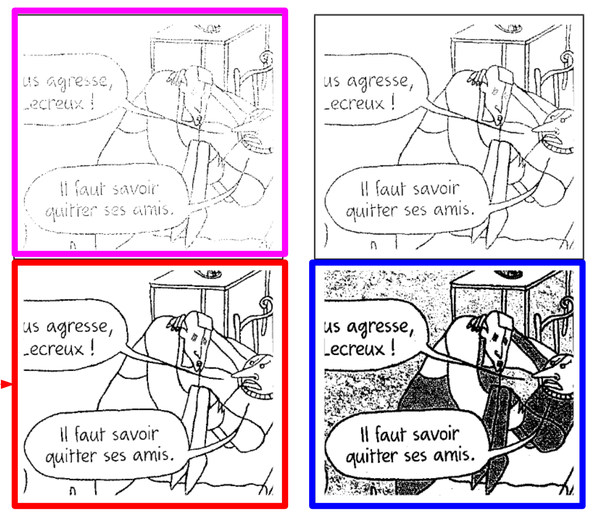
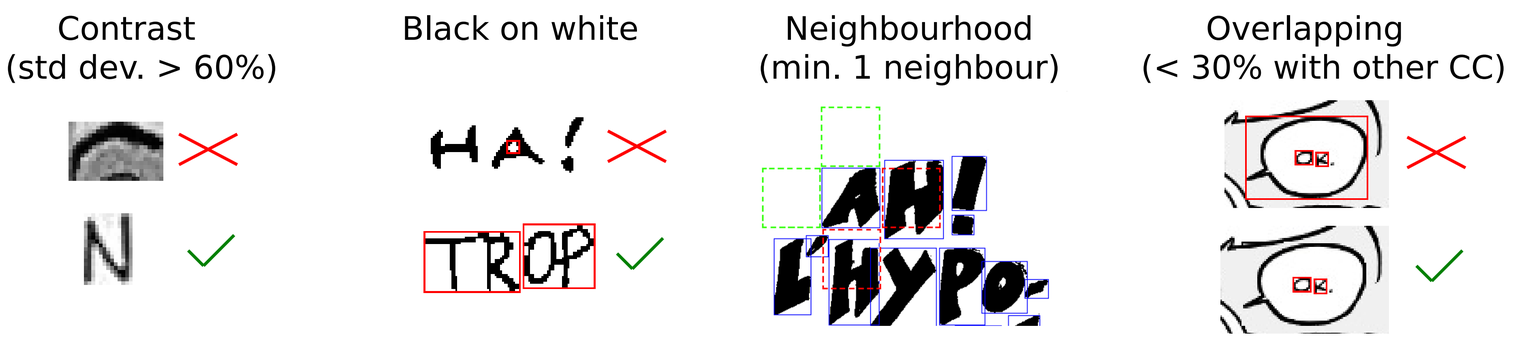
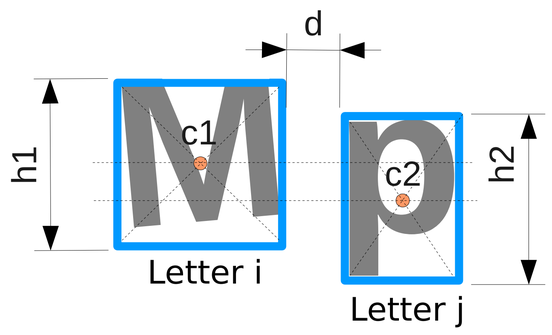


Image credit [1]

2) Text / graphic separation



3) Text line localisation



We consider letters are on the same text line if:

$$d < Max(h1, h2)$$

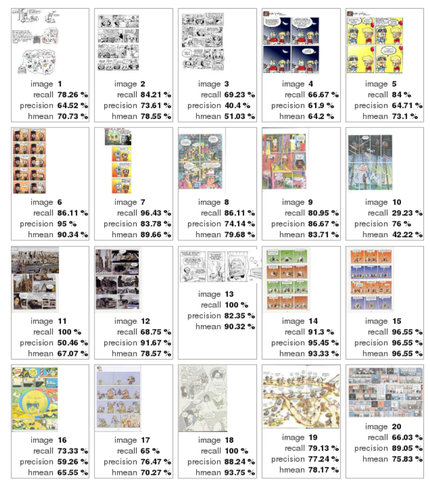
$$i.y_{min} < c2.y \quad \text{AND} \quad i.y_{max} > c2.y$$

Experiments

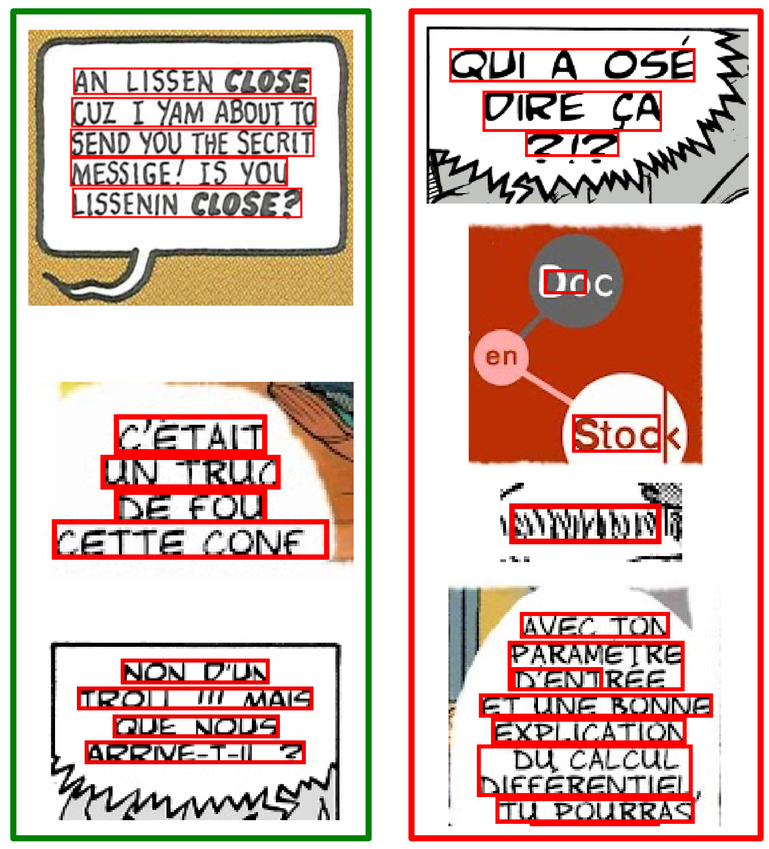
Dataset

eBDtheque [2]

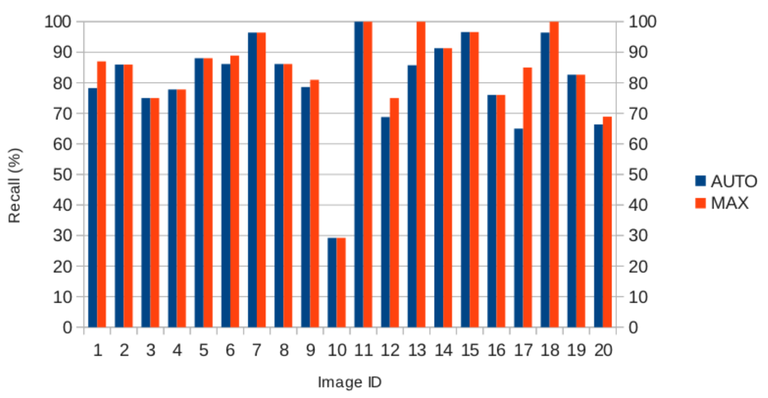
- 1700 text lines
- 100 to 300 DPI
- Text line level



Results



Evaluation



Segment.	Text/graphic sepa.	R (%)	P (%)
(Neumann and Matas, 2012)[3]		12.56	30.19
Colour[4]	Proposed	15.69	6.92
Proposed	(Tombre et al., 2002)[5]	74.18	61.25
Otsu	Proposed	75.14	64.14
Proposed	Proposed	**75.82**	**76.15**

Applications

Comics text localization can be used for image compression, OCR training or content retargeting and reflowing.
Associated with OCR system, new uses may appear as automatic translation and speech synthesis.

Conclusion & Perspectives

We have proposed and evaluated a new method based on connected components and contrast ratio to localize text lines in comics books. Future work will be focused on different categories of text and the detection of speech balloons.

References

[1] Roudier, N. Les terres creusees, Acte sur BD. Actes Sud. 2011
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[3] Neumann, L. and Matas, J. Real-time scene text localization and recognition. *Computer Vision and Pattern Recognition (CVPR)*, pages 1485–1490. 2012
[4] Clavelli, A. and Karatzas, D. Text segmentation in colour posters from the Spanish civil war era. *Proceedings of the 2009 10th ICDAR,* pages 181–185, Washington. IEEE Computer Society. 2009
[5] Tombre, K., Tabbone, S., Plissier, L., Lamiroy, B., andDosch, P. Text/graphics separation revisited. *Workshop on Document Analysis Systems (DAS)*, pages 200–211. Springer-Verlag. 2002