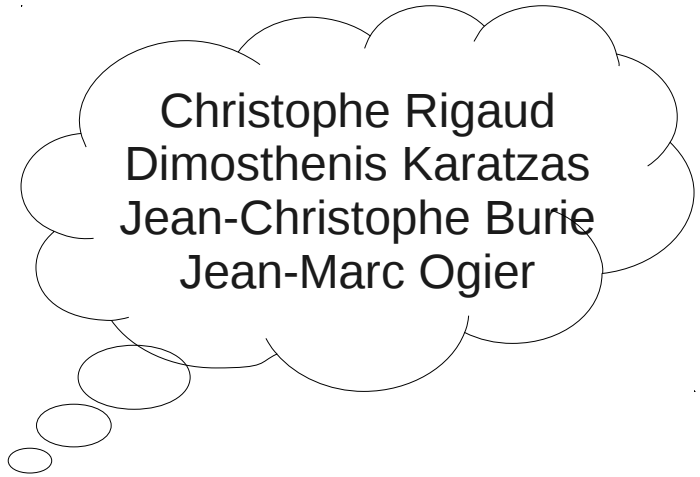
Lehigh University, Bethlehem, PA, USA - August 21 2013

GREC 2013

Speech balloon contour classification in comics

Christophe Rigaud
Dimosthenis Karatzas
Jean-Christophe Burie
Jean-Marc Ogier



Université La Rochelle

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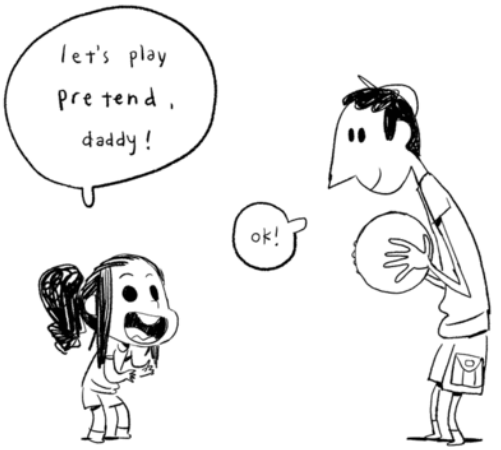
Summary

- Project
- Speech balloons
- Detection
- Classification
- Evaluation
- Conclusion

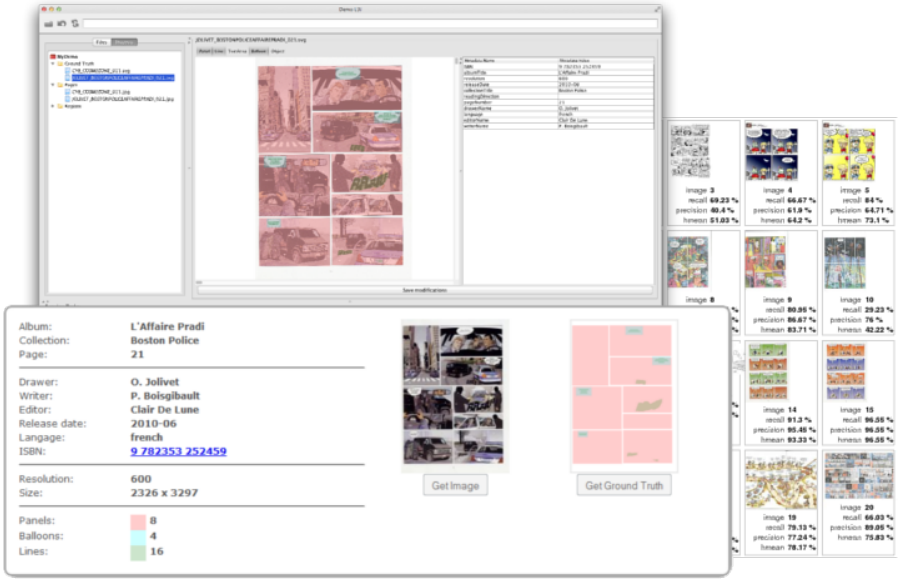


http://www.tumblr.com

Project

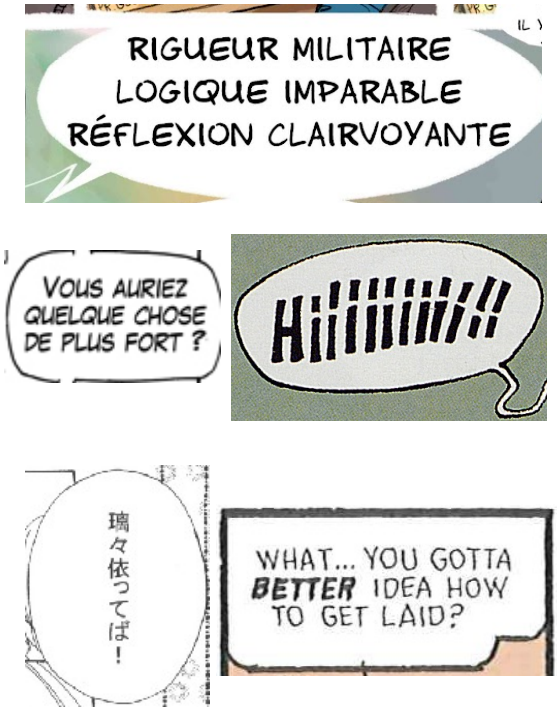
L3i project: eBDtheque

- June 2011 – September 2014
- Participants
  - 2 doctoral researchers
  - 5 assistant professors
  - 3 professors
- Comic books
  - Cultural heritage
  - Need to be valorized by the new technologies
- Objective: comics content understanding
  - Augmented reading experience
  - Information retrieval (e.g. semantic query, full text search)
  - New dataset http://ebdtheque.univ-lr.fr
- Progress
  - Panels, text lines, balloons, people



Speech balloons

Where is the semantic information? What can we infer?



Smooth contour:
dialogue, conversation...

Wavy contour:
Thought, dream, insinuation...

Zigzag contour:
exclamation, event, action...

Image credits: eBDtheque dataset

Detection

An active contour model for speech balloon detection in comics

Christophe Rigaud, Dimosthenis Karatzas, Joost van de Weijer, Jean-Christophe Burie, & Jean-Marc Ogier.
In 12th International Conference on Document Analysis and Recognition (ICDAR), 2013

Initialization

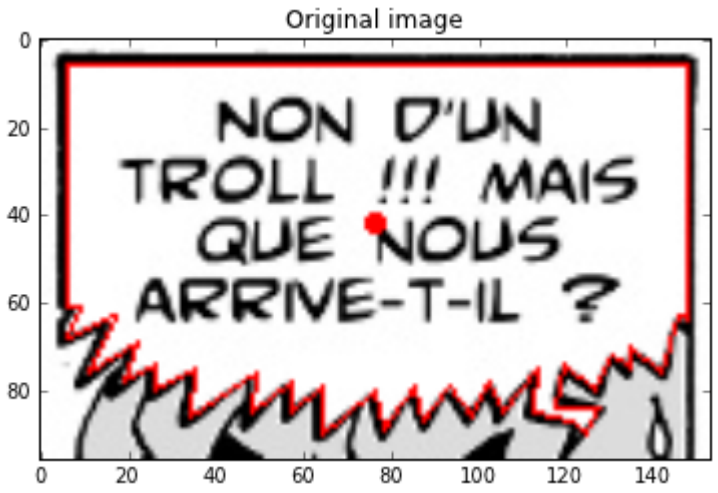
Detection

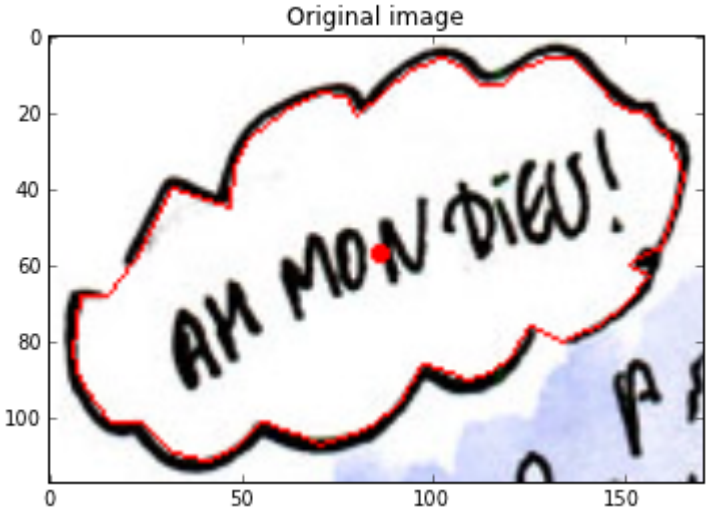
$$min(E) = min(E_{internal} + E_{external} + E_{text})$$

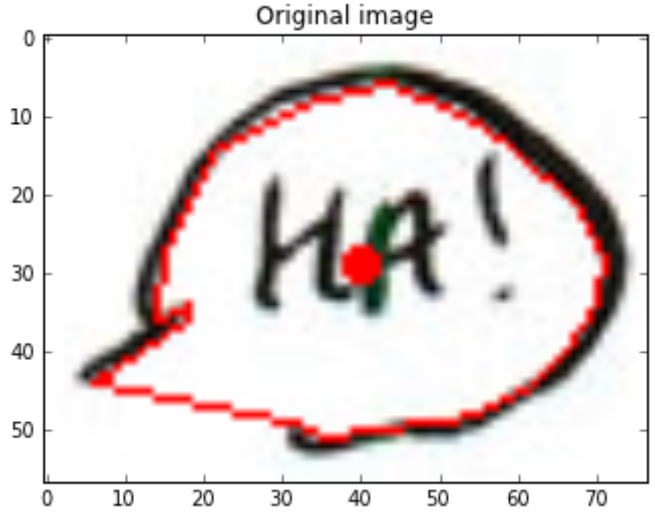
Results

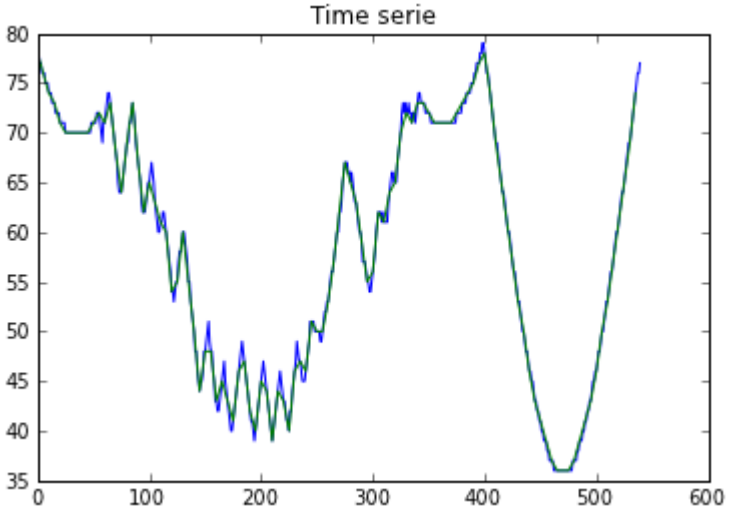
Classification

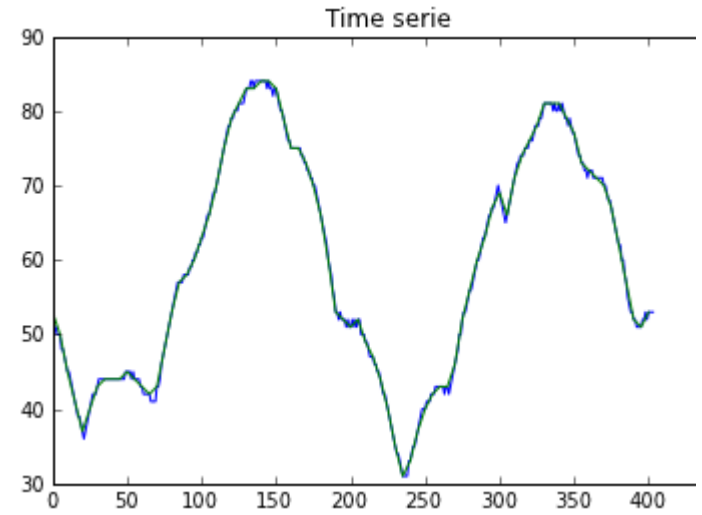
Metrics: convexity defect, derivative, frequency, defect perimeter percentage

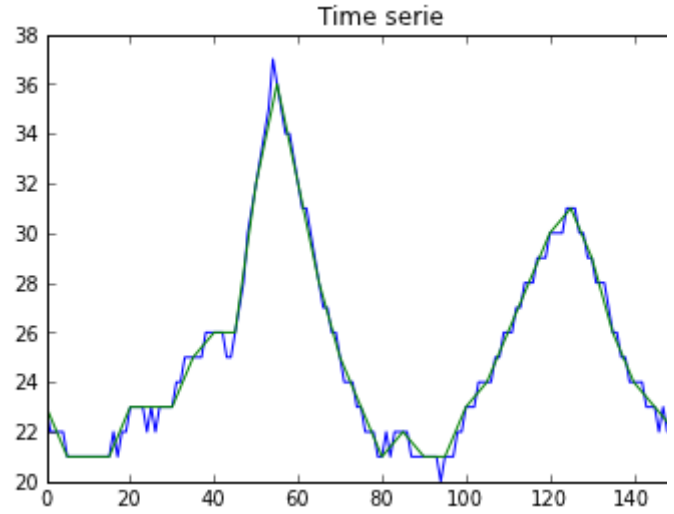












Evaluation

- eBDtheque subset
  - 20 speech balloons
  - Pixel level ground truth
  - Type {smooth, zigzag, wavy}
  - Tail direction

ADD RESULTS HERE

Conclusion

- Shape and contour are sentimentally different
- Contours are more discriminant than shapes

- Next step: tail detection and link to the speakers