ADAM MICKIEWICZ UNIVERSITY IN POZNAŃ

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Extracting text from silly drawings

Text localisation and OCR in unstructured graphical documents

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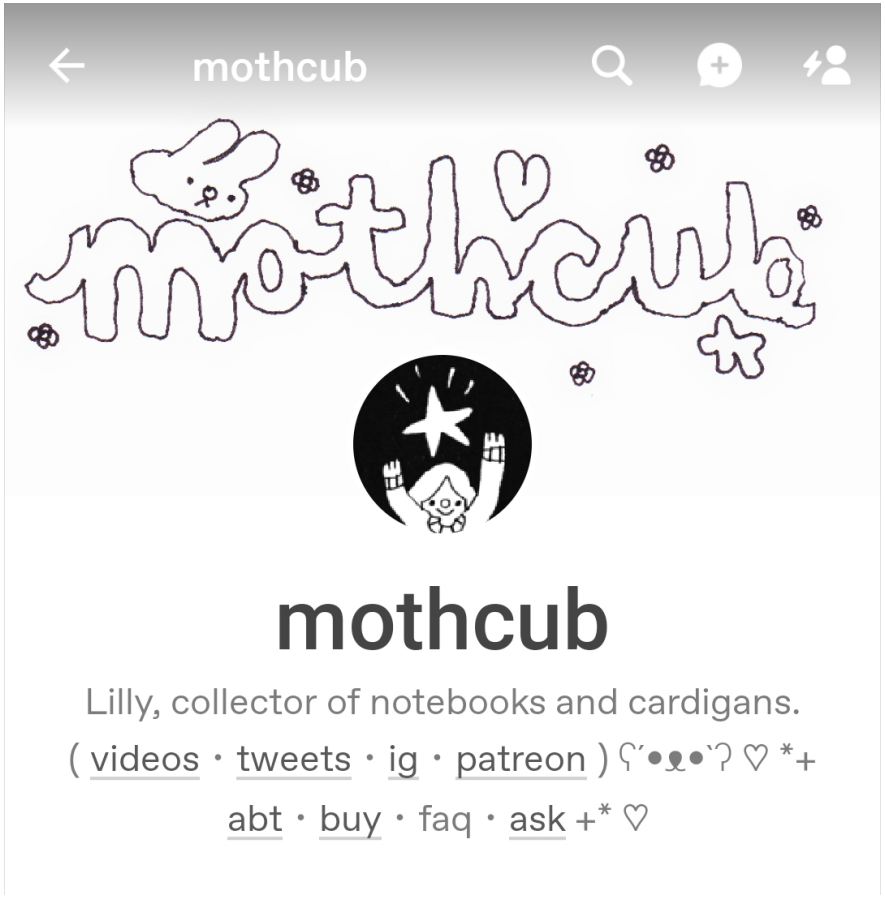
Motivation

The idea was to catalogue silly drawings based on the text message written on it for easier sharing with others.

- fun little project
- image processing
- uniform dataset

Credits

Lilly Ashton, known as *mothcub*, is an Internet artist. She makes artworks, videos and music.

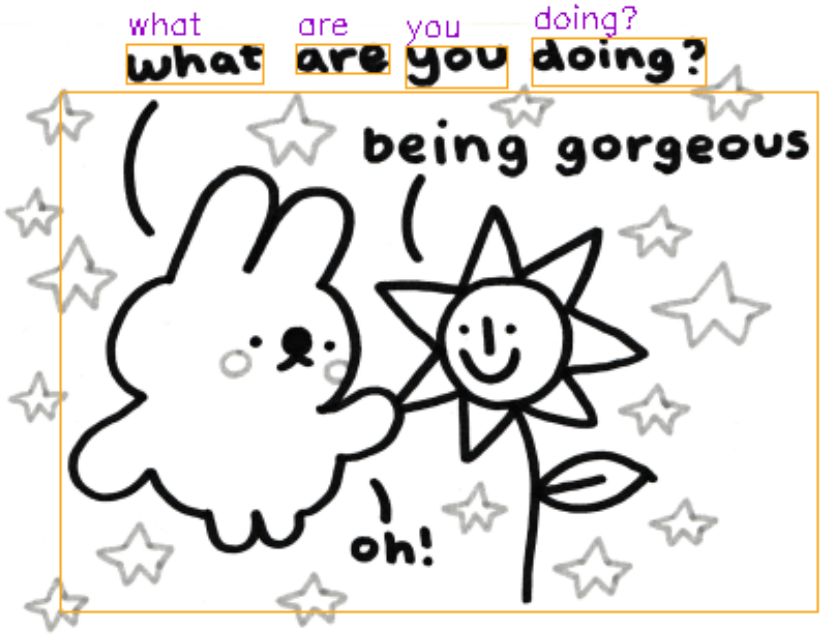


First attempts

OCR alone doesn't do well with graphical documents, mistaking decorative elements for text.

First attempts

Submitting text-only images to the recognition system improves the results immediately, yet it requires additional image processing.



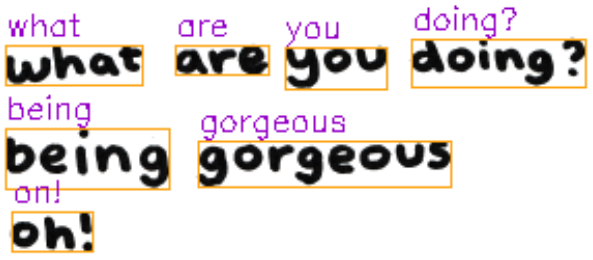
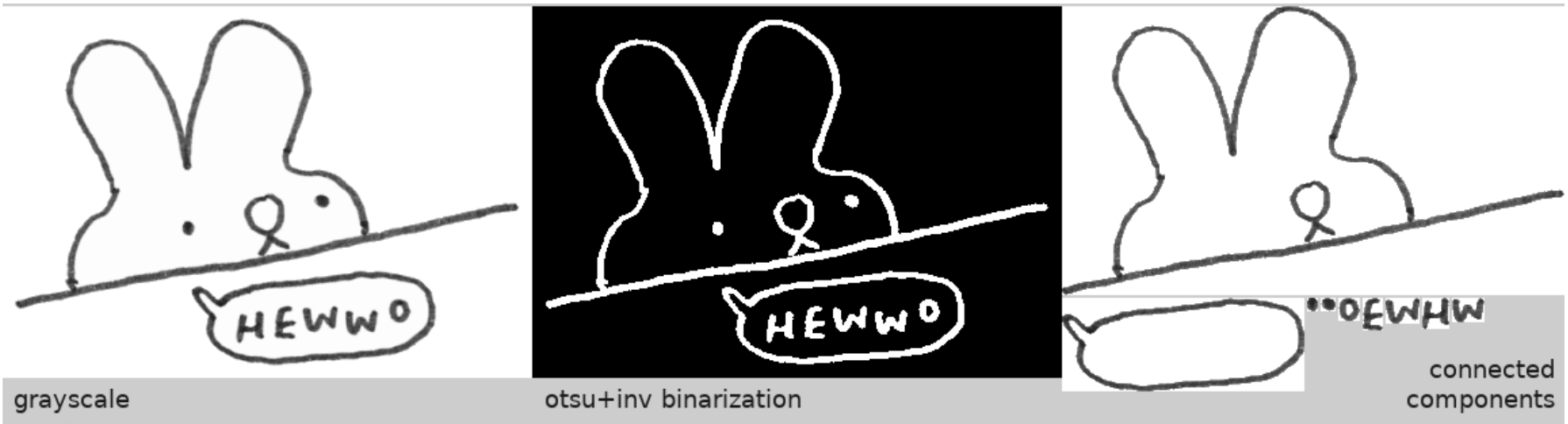


Image segmentation

Since most of the collected images are hand drawn with a felt-tip pen on a white background and the elements never overlap, we can easily separate them.

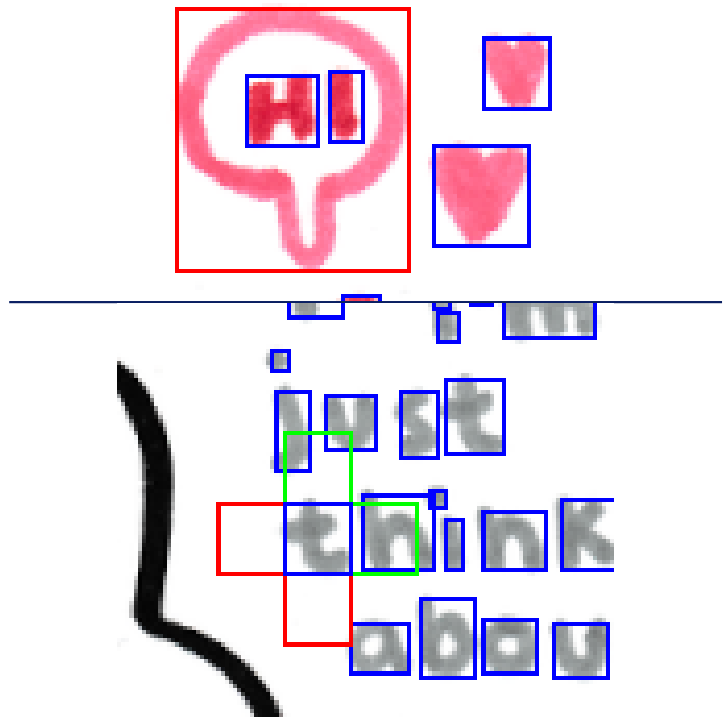


Text/graphic separation

Then we classify each component as either text or non-text CC: letter or decorator.

Rules:

- a letter bounding box can't contain another CC
- each letter is surrounded by other letters - CCs similar in height
- ?

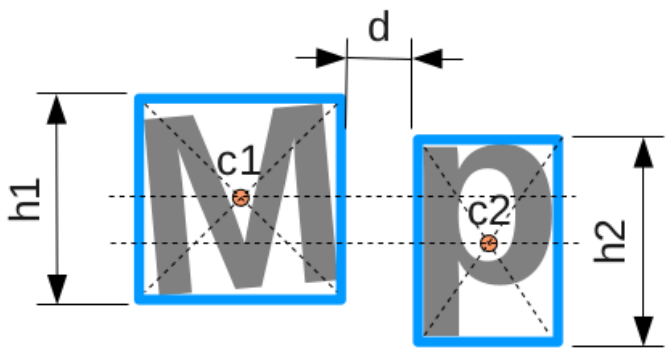


Text localisation

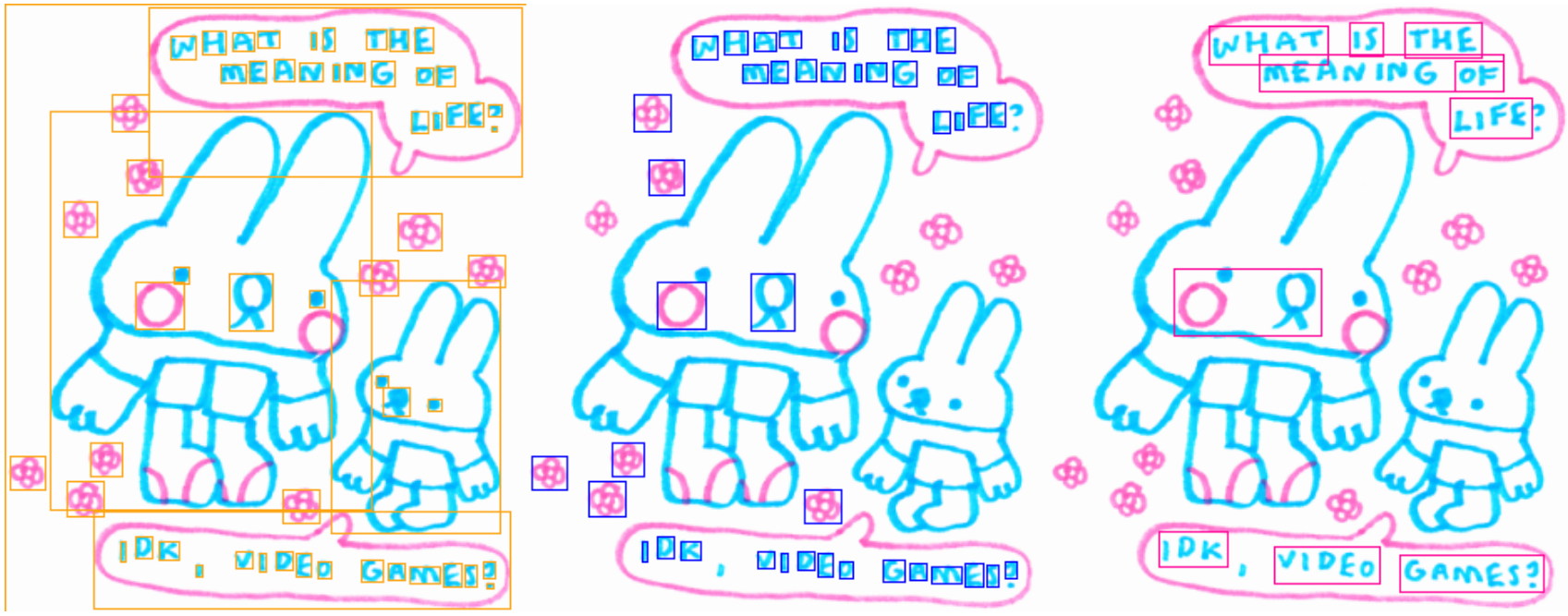
The drawings are unstructured documents so the text can be placed anywhere in the image.

Recipe:

1. begin with the leftmost letter for each line
2. then add letters on the right if
   - $d < max(h1, h2)$
   - $y_{min}(l_1) < c2.y < y_{max}(l_1)$



Did it work?



method	CER	WER
OCR_alone	62,13	90,33
with_text_extr	55,07	77,32
with_text_extr_no_punct	53,70	74,25

What's next?

Improvements:

- better binarization method for problematic images
- masking non-text CCs when cropping ROI
- combining ROIs into one image (?)

Future work:

- concept tagging from text

References

- Rigaud C. et al., Automatic Text Localisation in Scanned Comic Books
- Rosebrock A., Tesseract OCR: Text localization and detection
- mothcub.tumblr.com