OCR for Neo-Latin

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Goals of this talk

1. How you can quickly convert scanned page images of early printings into text by **optica characterum recognitio (OCR)**
   - lower the barrier to use OCR (no longer necessary to use a Linux computer)
   - show that model training can be quickly done on top of existing models
2. How to adapt existing recognition models to your needs:
   - e.g., cursive printing
   - e.g., ligature-ridden neo-ancient Greek

Example: Camerarius' Elementa Rhetoricae

Elementa Rhetoricae, sive capita exercitationum studii puerilis et stili, ad comparandum utriusque linguae facultatem

Joachimus Camerarius the elder (1500 - 1574), one of the most eminent humanists in the 16th century (see "Opera Camerarii" project)

A good OCR result depends on a good scan

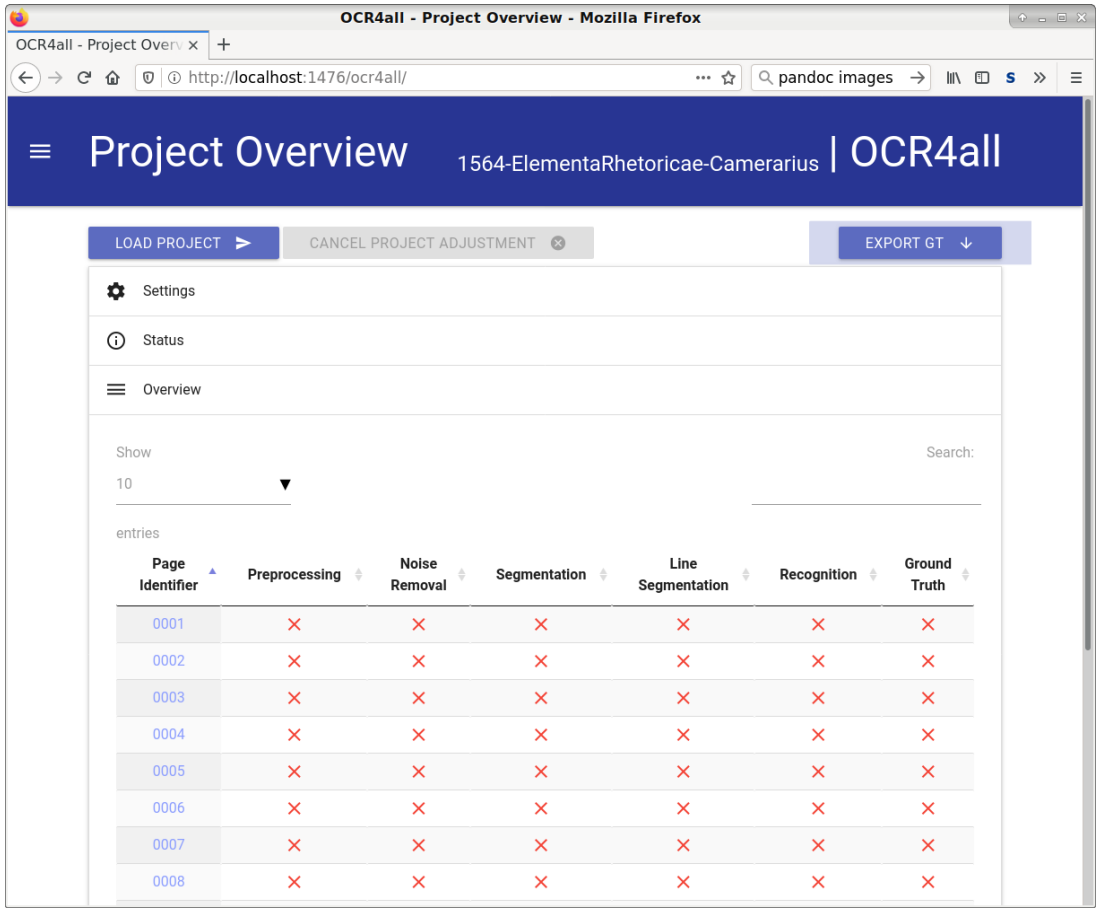
1. search Europeana for "camerarius elementa rhetoricae"
2. best scan: 1564 edition, Czech National Library
3. download images
   - in highest available resolution
   - use your favorite download manager

Preprocess with Scantailor

deskew, get rid of noisy edges:

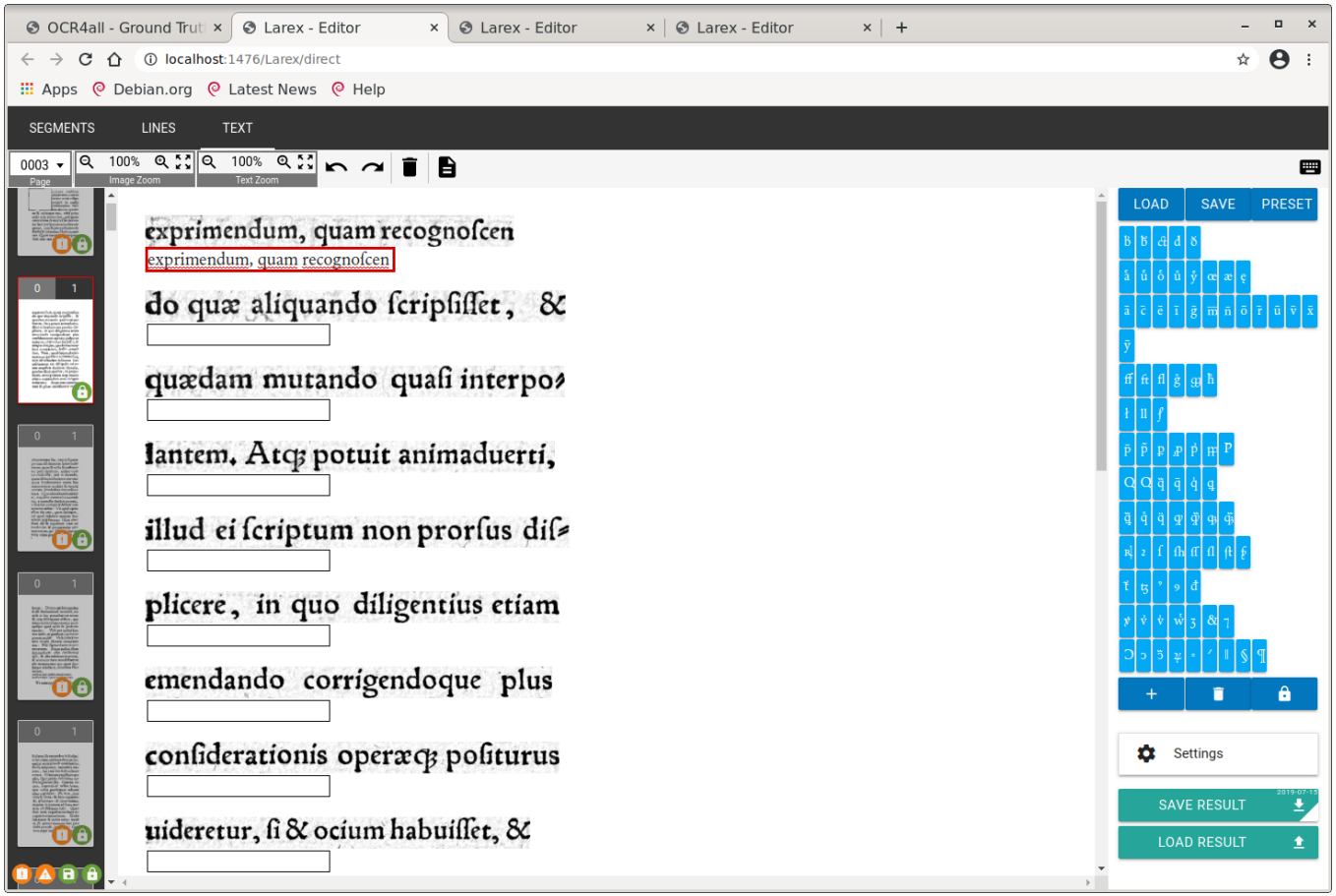
Process with OCR4all

- available for Windows, Linux, Mac
- minimal technical knowledge required
- all of the following steps can be done within OCR4all



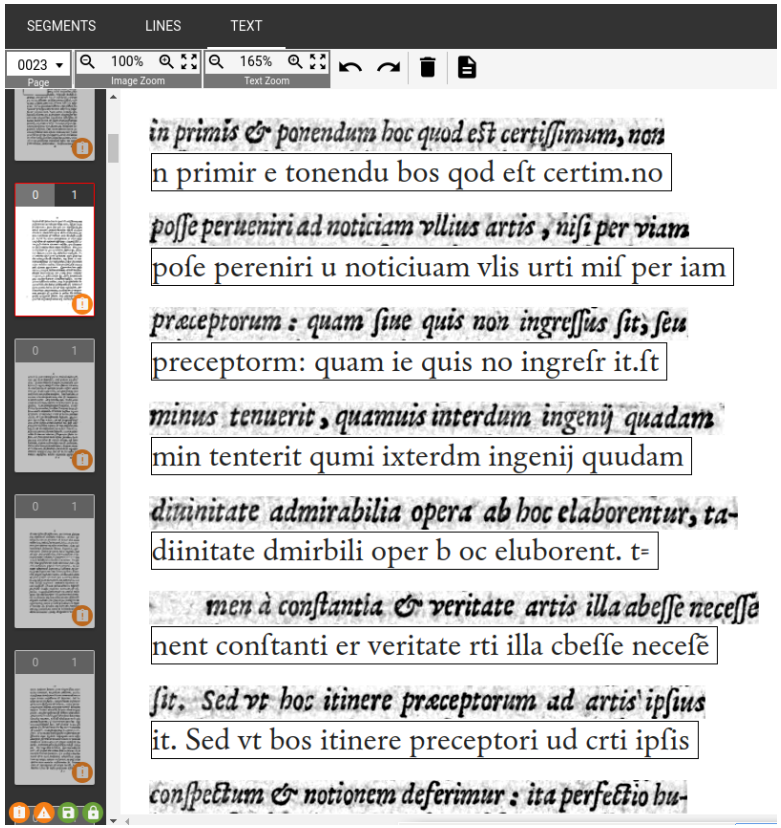
Segment pages with LAREX

binarization + grayscaling, region and line segmentation with LAREX



Recognition with existing (default) model

recognition with default/antiqua_historical (based largely on the subcorpora Early Modern Latin and Kallimachos of GT4HistOCR)



Train a book-specific model

Prepare some pages of ground truth by correcting the OCR, or transcribing from scratch (do it iteratively) and train on top of existing model, then recognise again! Remaining character error rate around 1%.

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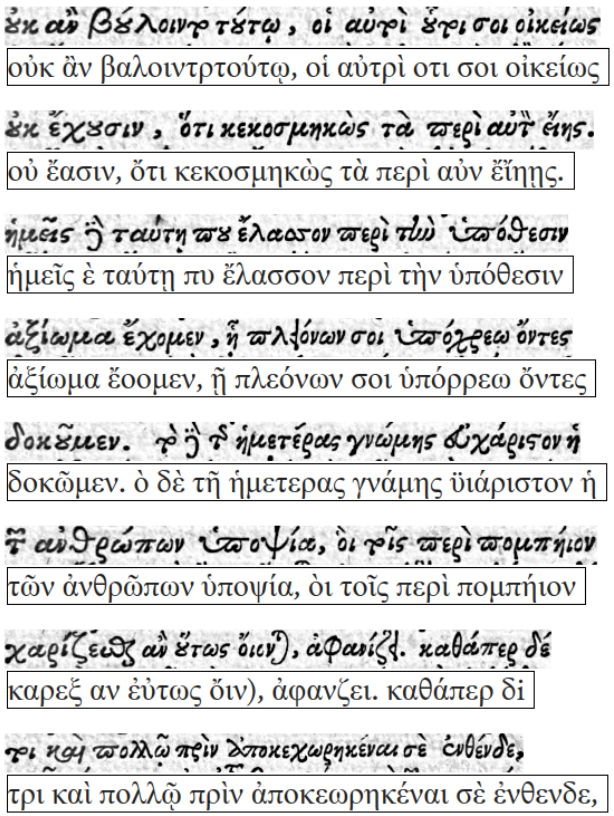
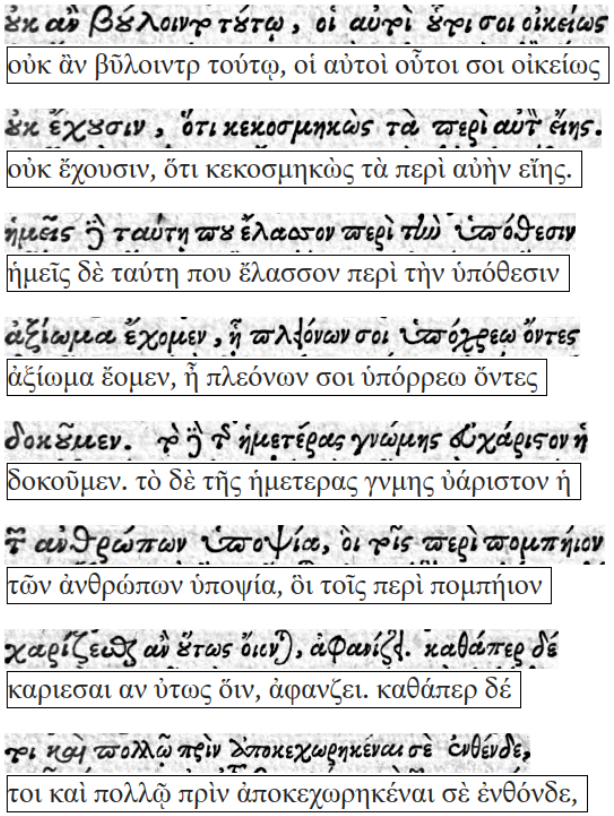
Do the same for Greek

left: existing model trained on another greek printing and synthetic material;
right: trained with 2 pages (267-268) of ground truth and applied to p. 269;
remaining character error rate about 6%





What do we do with OCR generated texts?

- postprocessing
  - manual correction (if needed)
  - spelling normalization
- named entity recognition
- search
- prepare an edition
- . . .
- see the rest of this conference!

References

Interactive tool for scanned pages:
Scantailor-Advanced

User-friendly OCR environment with GUI:
OCR4all - *Christian Reul et al.*

Trainable state-of-the-art OCR engine (included in OCR4all):
Calamari–OCR - *Christoph Wick*, based on Ocropy by Tom Breuel

Ground Truth for early printings:
GT4HistOCR

Thank you for your attention!

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