





Digi-workshop #3 Transkribus: updates.

By Dr. C.A. (Annemieke) Romein (Huygens ING) Digital workshop, 9 October 2020

Noon CEST

 What is P 	ylaia and	does it dif	fer from H	TR(+).
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• How to use it.

• Developments in the field of tables/ how to add seperation lines in your LA.

• How to remove small regions (noise).

• How to create a sample set (to function as a sturdy basis for your models).

Sample sets

Small regions

Pylaia



Webversionmasking text

• Read and Search

• Small update on P2PaLA



• In this section you will learn more about Pylaia.

HTR \rightarrow HTR(+) and Pylaia

• Keep in mind HTR stands for Handwriting Text Recognition.

From that, there are different 'techniques' that are being used for the recognition. These have (confusingly enough) similar names:

- 1. HTR: original tool with RNN to recognise the handwriting
- 2. HTR+: faster tool. Created by Planet (Germany) and licensed to Transkribus. This will be phased out next year, replaced by IDA (which will be faster than HTR+).
- 3. Pylaia: open source tool by the University of Valencia (no license, hence the lower costs).

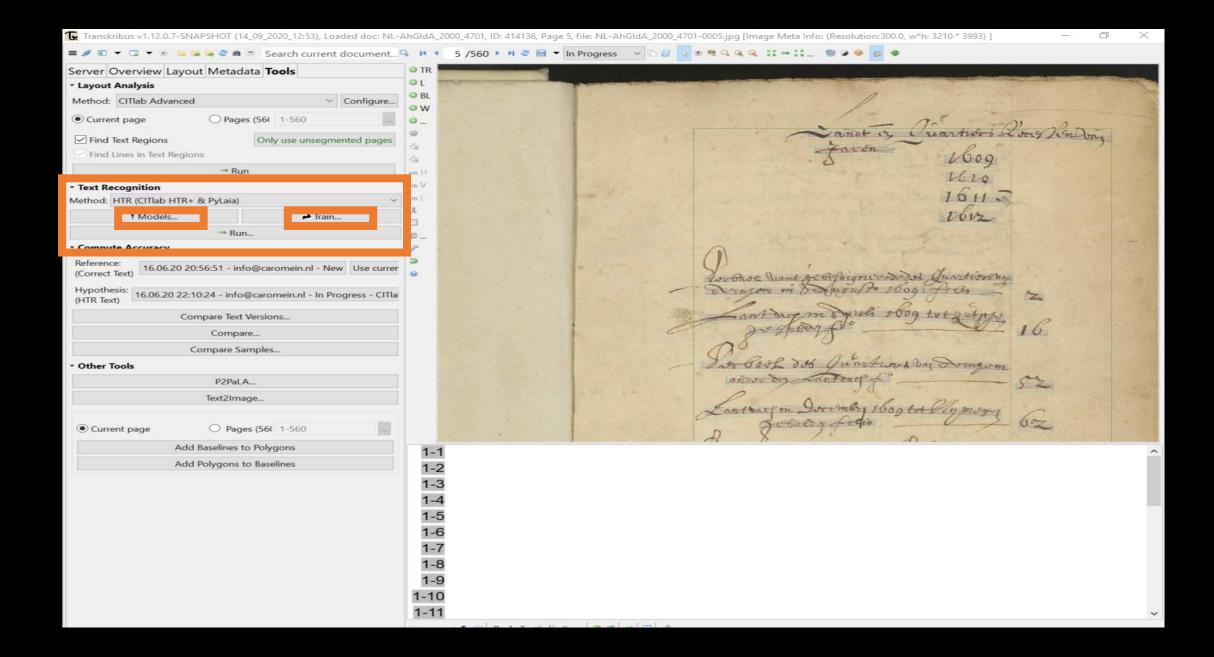
Pylaia

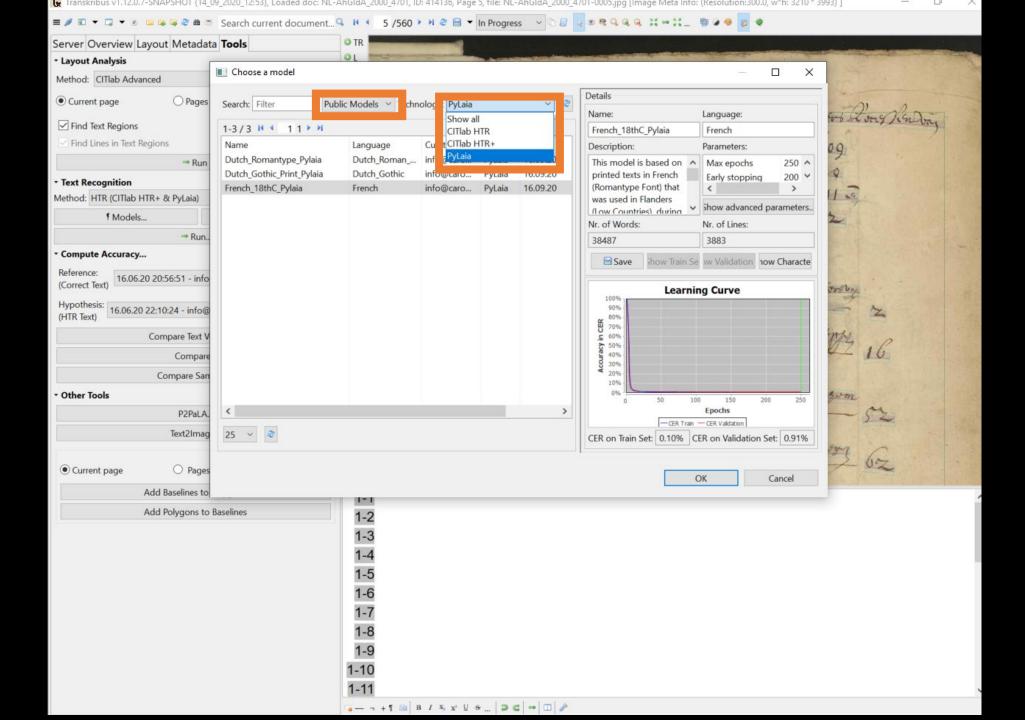
- If you have curved lines (or pages) HTR+ generally works better; but this will improve in pylaia.
- Pylaia models cannot be used for Text2Image, you'll need HTR+.
- Pylaia is PyTorch based (aka Machinelearning Library).
- Benefits Pylaia: you can adjust more Parameters and the Netstructure can be changed (if you are familiar with machine learning). More can be found on: <u>https://github.com/jpuigcerver/pylaia</u>
- Same amount of pages necessary; but preprocessing is important.
- You can train Pylaia to fill out abbreviations by using \$ as a sign between the abbreviated form and the filled out form. *new sign will come!*
- Pylaia can export word-coordinates, which is interesting if you want to be able to show the exact word location in an image/text (e.g. IIIF).

Trainingsbutton

- In order to train Pylaia-models you will need like with HTR+ ask the Read-Coop team to provide you with the button.
 - Info@readcoop.eu

This is because not everyone is going to be using this.





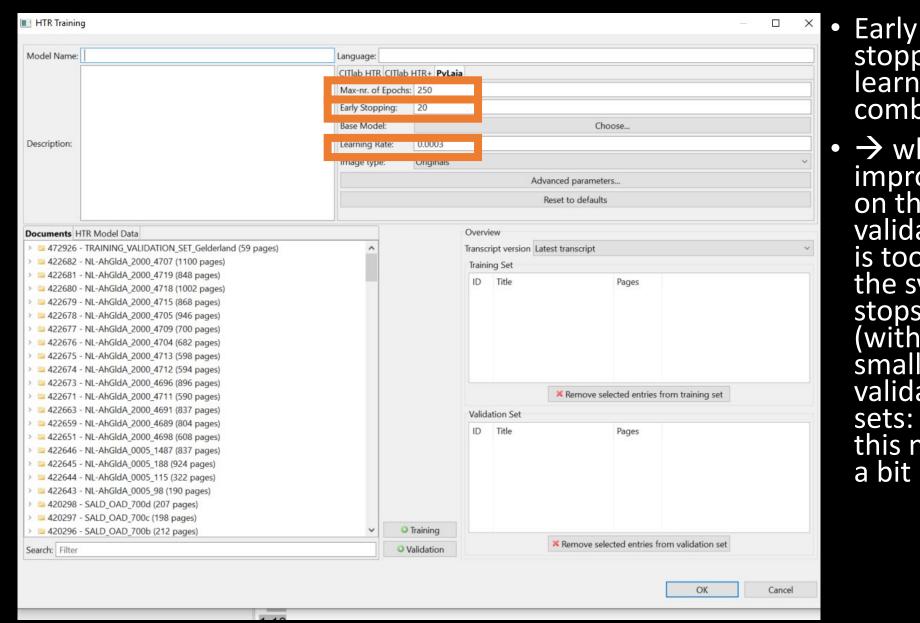
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- Image type do you want to have the model work on original or compressed?
 - If it takes to long to create, stop the training and use the compressed! (Not that much influence on the result.)

 Number of epochs (same as in HTR+)



learning rate combined • \rightarrow when the improvement on the validationset is too small, the system stops. (with very small validation sets: make this number a bit higher).

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• Learning rate: the worth between each step in the training. If the steps are large, the CER will drop quicker, but is less accurate. Leave it at default if you are not experienced.

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- Deslope: ✓ accept a higher variety with the baselines .
- Deslant: ✓ necessary for written texts; NOT for printed texts.
- Stretch: ✓ if texts are written extremely tight to one another
- Enhance: ✓ if there is a lot of 'noise' on the page (not with very white pages e.g.)

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			Cancel OK	[

- Enhance window size: the size of the "optimizing tool" that goes over the pages.
- Sauvola enhancement parameter: × don't touch, has to do with special algoritms.

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- Line height: the height of the text measured in pixels. If it is not high enough, change it to 100.
- If you get an 'out of memory order' you may change the "batch size" to a lower number. The smaller this number is, the slower the training becomes.
 In a next version this will be changed into an automatic batch-size.

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• Line x-height: this concerns descenders and ascenders. If you chose to fill this one in, the Line-height parameter is ignored.

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- Moment normalization: ➤ don't touch (leave the ✓ there)
- Features parallelogram: ★ don't touch (leave the ✓ there)
- Features surrounding polygon: ➤ don't touch (leave the ✓ there)
- Features surrounding polygon dilate: ➤ don't touch (leave the ✓ there)

PyLaia preprocessing configuration						×
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- Left/ right padding: the number 10 here means '10 pixels' to prevent the risk of cutting a part of the row.
- Max width: 6000 is default (pixels). If you have huge pages, you will need to adjust this to a higher number, otherwise you don't need to touch this.

PyLaia preprocessing configuration		$ \Box$	×
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• Model: all the parameters here are meant for people who know their way around with machine learning. It has to do with modifications to the Neural Networks.

PyLaia preprocessing configuration			— 🗆	×	
Preprocessing ✓ Deslope ✓ Deslant ✓ Stretch ✓ Enhance Enhance window size: 30 Sauvola enhancement parameter: 0.1 Line height: 64 Line x-height: 0 ✓ Moment normalization ✓ Features parallelogram ✓ Features surrounding polygon Features surrounding polygon dilate: 0 Left/right padding: 10 Max width: 6000	Modelcnn_kernel_size 3 3 3 3cnn_dilation 1 1 1 1cnn_num_features 12 24 48 48cnn_batchnorm True True Truecnn_activations LeakyReLU LeakyReLU LeakyReLU LeakyReLU LeakyReLUcnn_poolsize 2 2 0 2use_masked_conv Truernn_type LSTMrnn_layers 3rnn_units 256rnn_dropout 0.5lin_dropout 0.5lin_dropout 0.5	^	Training batch_size 24 use_baidu_ctc True add_logsoftmax_to_loss False use_distortions True	>	
			Cancel OK		

- Batch size: number of pages that are being processed at once at the GPU (Graphic Processing Unit aka: the core in the server).
- Use_distortions: "True" means that the computer will rotate or change the shape and position of the trainingsset to make the model more stable.
 - Not necessary for printed and very regularly written texts and really good quality scans. You
 can then change this statement from 'True' by typing 'False' there.

🛯 HTR Training												×
Model Name:			Language:									
			CITIab HTR C	ITIab HTR+ PyLa	ia							
			Max-nr. of Ep	pochs: 250								
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• Pylaia only works with Pylaia models as a base (as does HTR+ with HTR+ models)

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Tables or adjustments of LA with additional lines

- There is a lot of improvement regarding tables. It's easier to draw the lines.
- Cells are not yet recognised in P2PaLA but you could opt for columns.
- Naverlab Document Understanding will be integrated sometime in the coming months (this focusses on the Al-understanding of the content).

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• If there is a lot of noise on your pages (because of stains or discolourations).

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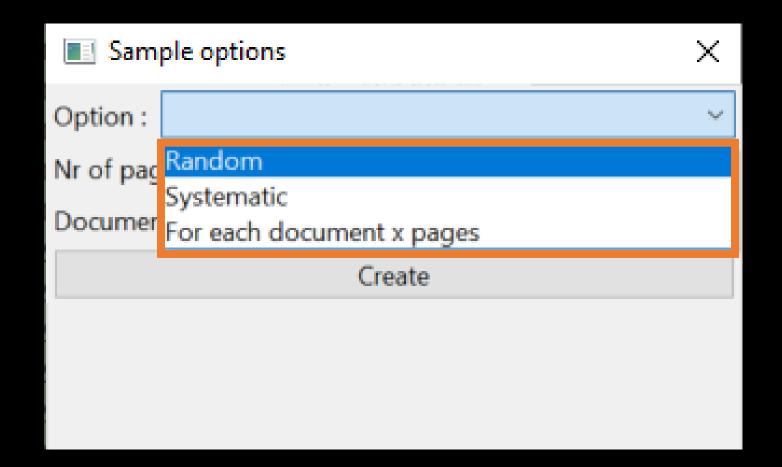
• Why?

• Because you can create a representative set from a whole collection to transcribe and make that into a useful model for your collection.

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Some other small updates

- P2PaLA
- Read and Search (kws)
- Little bit on the webversion
- Masking text

P2PaLA

- "Label existing transcription" aka: rename the regions
- P2PaLA/ text regions that are labelled can (in the very near future) be used to apply a model just to certain fields and not on others if you want. (F.g. useful you

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if you want. (E.g. useful with multiple languages/translations.)

Read & Search service

- Keyword spotting and searching options are available through the Transkribus server (with log in through your own account).
 - See KWS in webinar 1 <u>https://youtu.be/5YCfaFNMol4?t=7266</u>
- If you have a (small) project and you want to provide the results to a wider audience but you do not want to have to figure out how to host/ create a website and such for all this searchable data...
 Transkribus is going to offer this as a service. In other words: they can host your data and show it as a searchable website so others (without Transkribus accounts/ access to your collection) would be able to publicly view it.
- Works based on IIIF.

Webversion

- The rights of someone you shared the folder with will be made the same within the webversion as in the desktop version (expert client). (So a co-owner or editor will be the same in both versions, meaning that they can sign a page off as GT.)
- If you need to use special signs: use Unicode. (e.g. Alt133 = é)
- Italics and bold are not (yet) possible in the web interface. (Mind you, these are not going to be integrated into a model anyway for the coming time; so ask yourself if you need these to be tagged/ analysed).

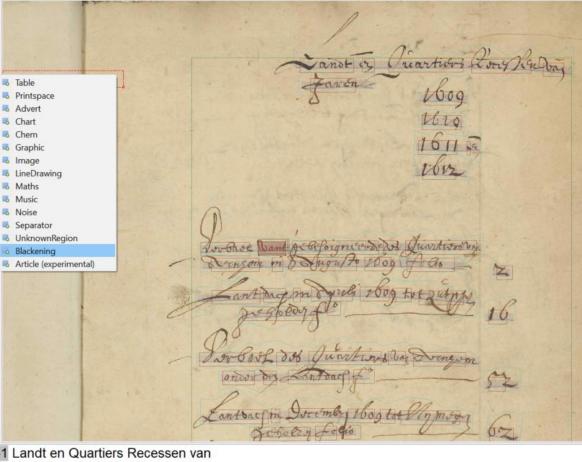
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Masking

- "blackening"
- You then draw a box over the text that you want to hide.
- N.B. it's only a "layer", not *in* the image.
- It will be in pdf but textual export contains the original text

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• Thank you for your attention!