



# Collaborating on Machine Reading: Training Algorithms to Read Complex Collections

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Bucknell University

# Moravian Lives

[Open map](#)

Tracing the Movements and History of Members of the Moravian Church (1750-2012)

[Home](#)[The Moravian Church](#)[Map](#)[Transcribe German & English](#)[Transcribe Swedish](#)[Using the Desk](#)

Search among over 60 000 Memoirs written by members of the Moravian church from 1750 to the present day.  
The map visualizes place and date of birth and death of the authors.

The Moravian Memoirs project is a collaboration between the Center for Digital Humanities and the Centre for Critical Heritage Studies at University of Gothenburg, Bucknell University, USA, The Moravian Archive in Herrnhut, Germany and The Moravian Archive in Bethlehem, USA.

[moravianlives.org](http://moravianlives.org)

# Moravian Memoirs

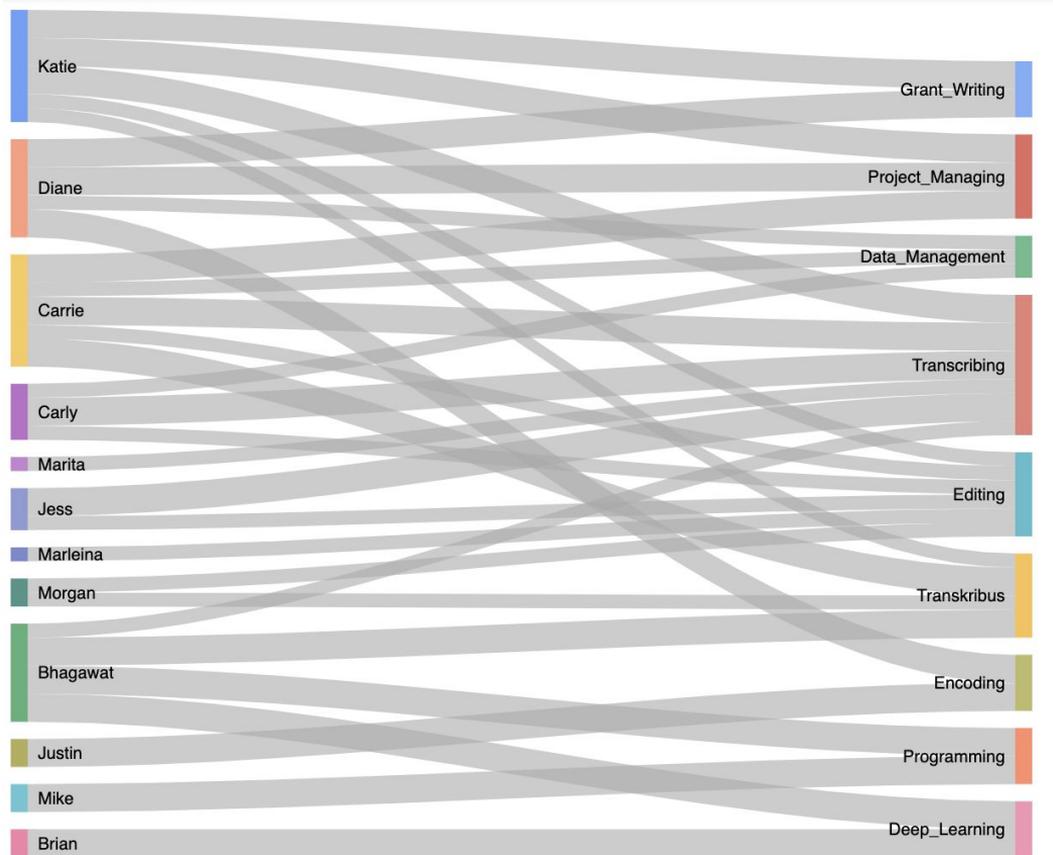
The Moravian archives in Herrnhut, Germany and Bethlehem, PA house over 65,000 memoirs or "ego-documents" of members of the church, dating from 1750 to the present day.

There are many other smaller archives around the world with more uncatalogued and undigitized documents.

The corpus is an important resource for historians of religion, gender, race, linguists, and genealogists.

405  
Ich bin die 19<sup>te</sup> April. 1720 zu Hockenheim in  
des Pfalz, 4 Meilen von Mannheim geboren.  
Meine Eltern waren evangelischer Religion.  
Mein Großvater, von dem Namen Sauter, war  
von der Religion wegen, über mich in die  
n. 1. geistlichen, aus Frankreich nach Siebenbrücken  
Mein Vater, der ein Leinwand n. 1. Küchlermeister  
an obersächsischen Ort war, ließ sich sehr aus  
Luzern ziehen, seine Kinder vor dem lieben Gott  
zu weihen, was wegen <sup>an ihm</sup> (bey zehnjähriger) Jahre  
in sehr genaues Aufsicht hielt n. 1. mit aller Ue-  
gang mit andern Kindern was sagte. So hielt mich  
auch häufig zu fleißigen <sup>Arbeiten</sup> n. 1. zum Gebet, be-  
sonders das Abend vor dem Schlafengehen n. 1. das  
Morgen beym Aufstehen an, welches mich oft zum  
guten Nachdenken brachte; die Beschreibung der  
Sollen flößte mir aber mehr Lust als Lieb-  
gegen Gott ein. In meinem 5<sup>ten</sup> Jahre starb

# The Moravian Lives Team at Bucknell, 2019



**Prof. Katie Faull**, Moravian Lives, PI

**Dr. Diane Jakacki**, Encoding, Project Manager

**Carrie Pirmann**, Transkribus Project Manager

**Carly Masonheimer**, Student Researcher

**Marita Gruner**, PhD Student, Transcriber

**Jess Hom**, Student Researcher

**Marleina Cohen**, Student Researcher

**Morgan McMullen**, Student Researcher

**Bhagawat Acharya**, Student Researcher

**Justin Schaumberger**, Student Researcher

**Mike McGuire**, Programmer

**Prof. Brian King**, Deep Learning, Computer Science

# Transcription Desk

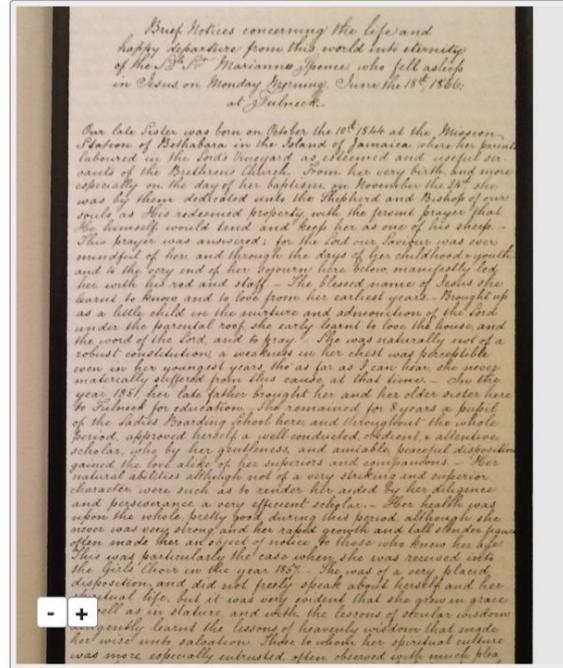
Built with Scripto plugin in a WordPress frame

## Scripto

[Home](#) [My transcriptions](#) [Recent changes](#) [logged in as Katiefaul](#) [Logout](#)

Transcribe [page 01](#)

in [Marianne Spence](#)



Source               

**B** **I** **U** **abc** **X<sub>2</sub>** **X<sup>2</sup>**   

Tags  Font  Size   

Brief notices concerning the life and happy departure from this world into eternity of the S<sup>9</sup>l<sup>e</sup> S<sup>t</sup> Marianne Spence who fell asleep in Jesus, on Monday morning, June the 15<sup>th</sup>, 1866: at Fulneck.

Our late Sister was born on October the 10<sup>l</sup> 1844 at the Mission Station of Bethabara in the Island of Jamaica, where her parents laboured in the Lord's Vineyard as esteemed and useful servants of the Brethrens Church. From her very birth and more especially on the day of her baptism on November the 26<sup>th</sup> she was by them dedicated unto the Shepherd and Bishop of our souls as His redeemed property, with the fervent prayer that He himself would lend and keep her as one of his sheep. - This prayer was answered: for the Lord our Saviour was ever mindful of her and through the days of her childhood - youth and to the very end of her sojourn here below manifestly led her with his rod and staff. - The blessed name of Jesus she learnt to know and to love from her earliest years. Brought up as a little child in the nurture and admonition of the Lord under the parental roof she early learnt to love the house, and the word of the Lord, and to pray. - She was naturally not of a robust constitution, a weakness in her chest was perceptible even in her youngest years tho' as far as I can hear, she never materially offered from this cause, at that time. - In the year 1851 her late father brought her and her older sister here to Fulneck for education. She remained for 8 years a pupil of the ladies Boarding school here and throughout the whole period, approved herself a well conducted, diligent, attentive scholar, who by her godliness, and amiable, benevolent disposition gained the love and respect of her instructors and was generally regarded as a very striking and superior character, were such as to render her noted by her diligence and perseverance a very efficient scholar. - Her health was upon the whole, pretty good during this period although she never was very strong and her rapid growth and tall stature frequently made her an object of notice to those who knew her. - This was particularly the case when she was received into the girls Choir in the year 1857. - She was of a very placid disposition, and did not freely speak about herself and her spiritual life, but it was very evident that she grew in grace as well as in stature and with the lessons of secular wisdom doubtless learnt the lessons of heavenly wisdom that might be wise unto salvation. - Those to whom her spiritual culture was more especially entrusted, often observed with much plea-

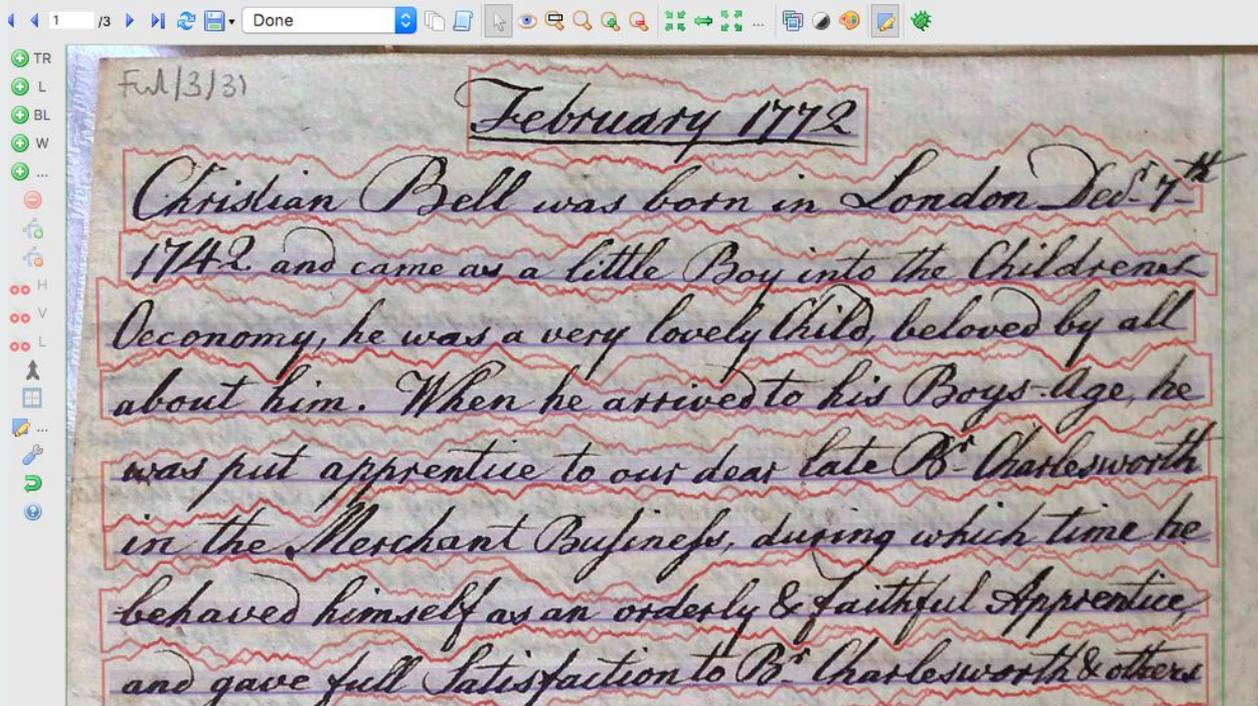
SAVE TRANSCRIPTION

# Challenges to Crowdsourcing Transcriptions



- Slow, painstaking, and meticulous work
- We need transcribers who have some facility with reading cursive; this is becoming more difficult to find among students who might want to work on the project
- Crowdsourcing produces results that vary in levels of accuracy
- Our rate of images being acquired is far exceeding the manual transcription rate (i.e., a weeklong trip to the Archives may result in digital images for 100 memoir documents, which equals hundreds of pages to be transcribed)

# Working with Transkribus



- 1-1 February 1772
- 1-2 Christian Bell was born in London Decr 7th
- 1-3 1742 and came as a little Boy into the Children's
- 1-4 Oeconomy, he was a very lovely Child, beloved by all
- 1-5 about him. When he arrived to his Boys Age, he
- 1-6 was put apprentice to our dear late Br Charlesworth
- 1-7 in the Merchant Business, during which time he
- 1-8 behaved himself as an orderly & faithful Apprentices,
- 1-9 and gave full Satisfaction to Br Charlesworth & others
- 1-10 about him. I was evident that there was a Work
- 1-11 of Grace in his Heart, be those who were acquainted

# What is Transkribus?



- Comprehensive platform for the automated recognition, transcription, and searching of historical documents
- Originally developed at University College, London; development team is now housed at University of Innsbruck (Austria)
- Uses predefined handwriting models to machine transcribe handwritten documents (handwritten text recognition, or HTR)
- Users can “train” their own models, specific to the handwriting style(s) of the documents in a corpus
- Accuracy rates of 95% and above are possible with adequate amounts of training data

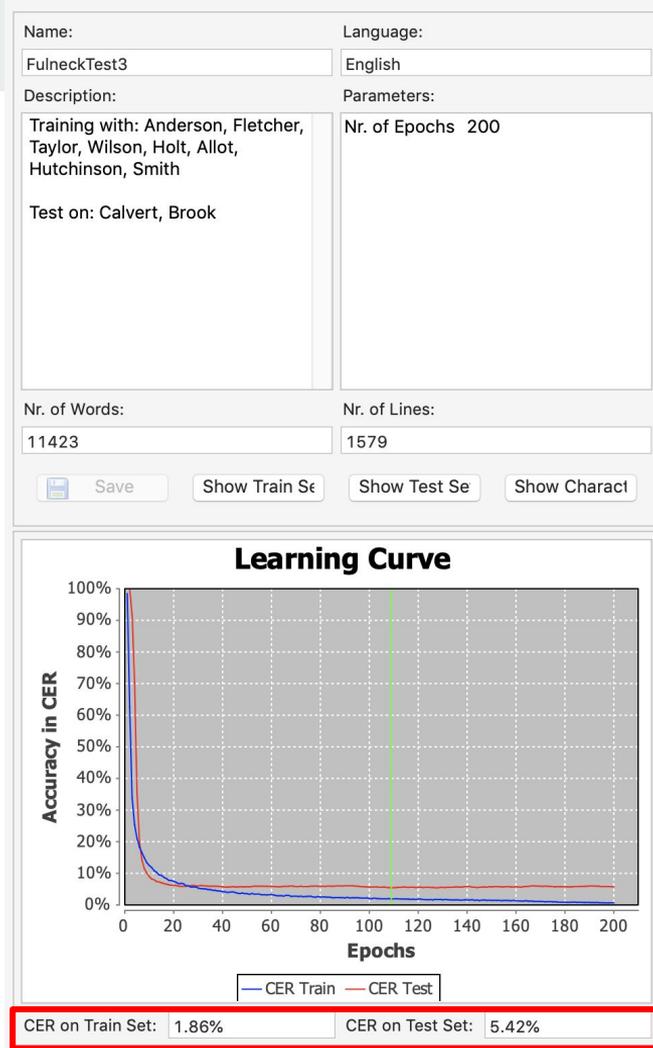
# Transkribus Workflows



- Establishing a training corpus of data from the Moravian memoirs
  - Batch upload digital images to Transkribus' servers, and match existing transcriptions to digital images to ensure diplomatic transcriptions of the documents
- These documents have been used to train HTR models, which can be reconfigured and tweaked as necessary, with the goal of achieving a CER (character error rate) of between 5-10%.
- Apply HTR models to new, untranscribed documents; assess models for best results
- The resultant transcriptions generated by Transkribus still need to be checked by humans, a job done by Carrie, Katie, Jess, and Morgan.

# Building an HTR Model

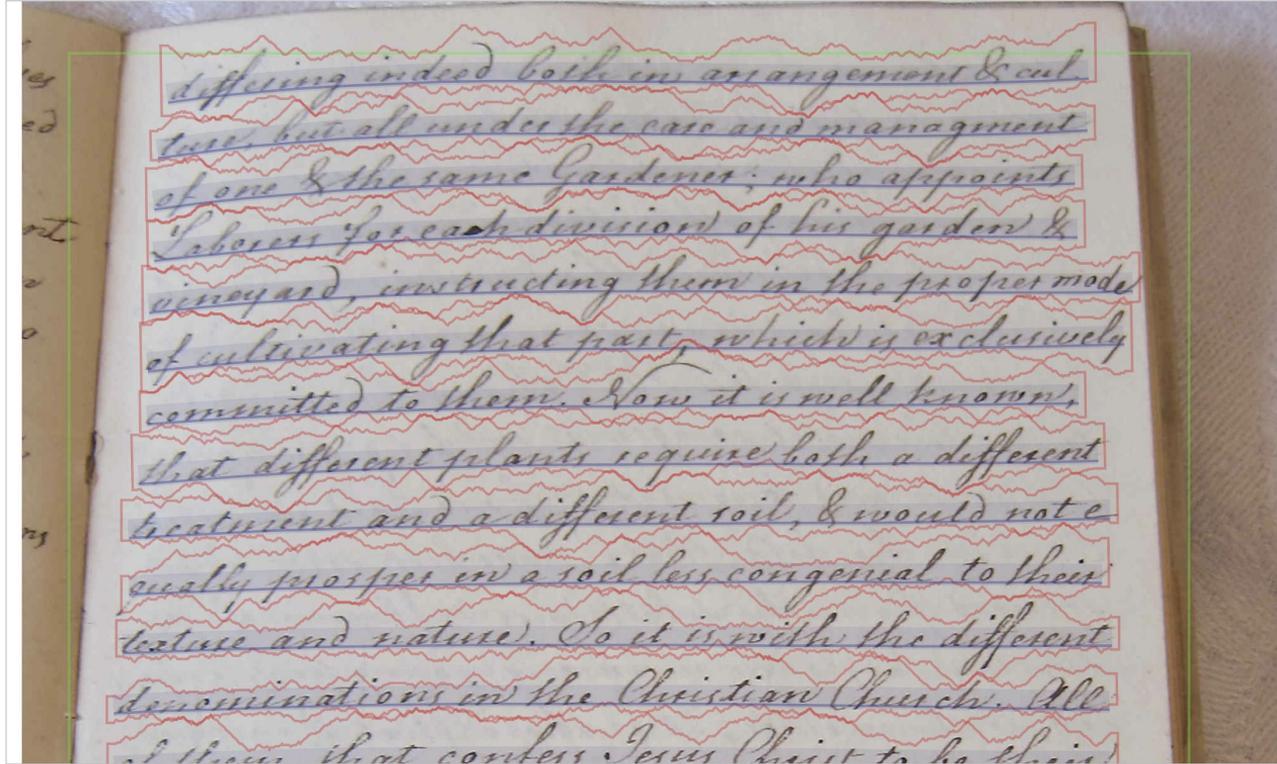
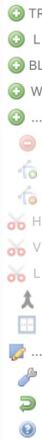
- Eyeballing for similar handwriting styles to build models - sometimes leads to good results; sometimes not
- Have created 30+ models, best CER is 5.42%
- Other models with CER of 11% or lower have performed well against documents



# Refining Models

Samuel Benade memoir

First computer generated transcription



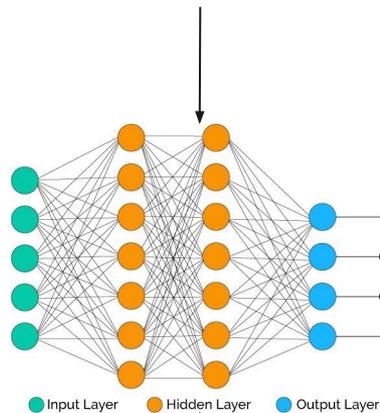
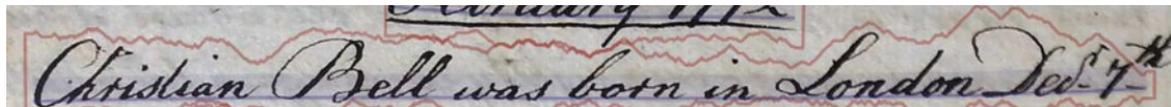
- 1-1 differing indeed both in anangemens & all
- 1-2 lose, but all under the care and managment
- 1-3 of one & the same Gardener, who appoints
- 1-4 Laboren for each divisions of his gaiden &
- 1-5 cenoyard, instructing them in the propermode
- 1-6 of cultivating that part which &y exclasusely
- 1-7 committed to them. Now it is well known.
- 1-8 that different plants require both a different
- 1-9 to catuent and adifferent soil, & would note
- 1-10 gueatly prosper in a soil less congenial to their
- 1-11 texture and nature. So it is with the different
- 1-12 donominations in the Chsictian Church. All

## Refined Model

differing indeed both in ~~anangement~~ arrangement & ~~cul-~~ culture, but all under the care and ~~managinment~~ management of one & the same ~~Gordener,~~ Gardener; who appoints Laborers for each division of his garden & vineyard, instructing them in the proper ~~made~~ mode of cultivating that part which is exclusively committed to them. ~~How~~ Now it is well known, that different plants require both a different treatment and a different soil, & would not ~~e-~~ ~~gually~~ ~~qually~~ prosper in a soil less congenial to their texture and nature. So it is with the different denominations in the Christian Church. All of them, that confess Jesus Christ to be their Lord and Master, and walk in the way of his precepts and commandments ~~desiving~~ deriving from him wisdom, righteousness, sanctification and redemption, and keeping the word of his ~~pra-~~ ~~pa-~~ tience, belong to the ~~Lords~~ Lord's vineyard, & occupy different ~~compartinents~~ compartments where they receive a different treatment under their peculiar form and constitution; there they find themselves at home and thrive best. Thus there are many excellent Children of God, whom our constitution, discipline and ~~outivard~~ outward form would not suit, and who would not like to be confined within our fold. And thus on the



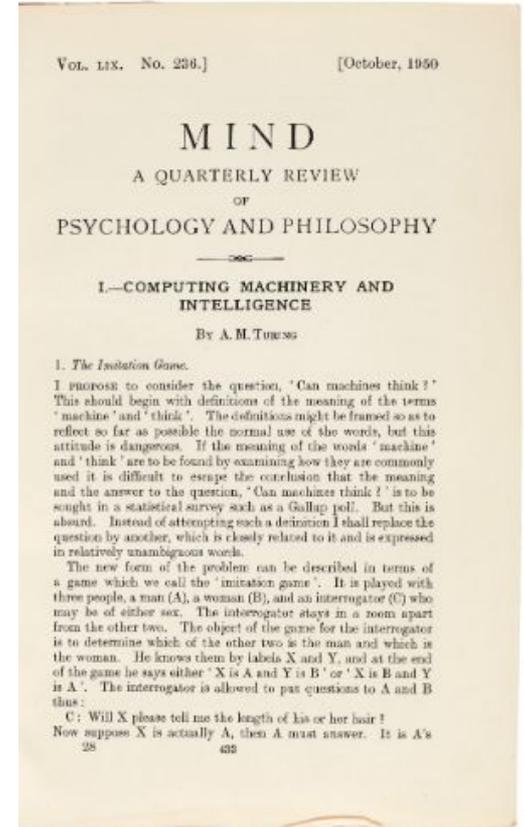
# Deep Learning: Making HTR a reality



What is  
deep learning?

1-2 Christian Bell was born in London Decr 7th

# Alan Turing



# Human Learning vs. Machine Learning



We study



We take an exam



DOG



DOG



We assess our performance

72% of 1000 images correct



We (hopefully) makes adjustments  
if performance is low!

# Machine Learning

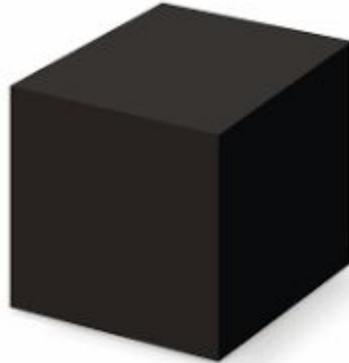
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A ML algorithm:  
“Learns” about your data

identifies key **features** in your data that  
distinguish between different labels

Data... and LOTS of it!

More importantly,  
“labeled” data



Program that can  
automate labeling  
of data

popular machine learning algorithms



All

Images

Videos

News

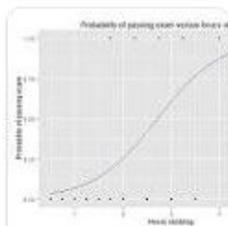
Shopping

More

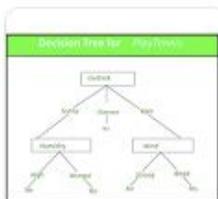
Settings

Tools

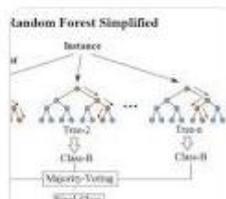
## Popular on the web



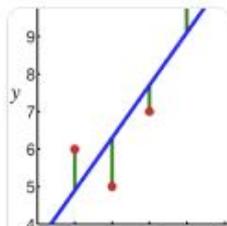
Logistic regression



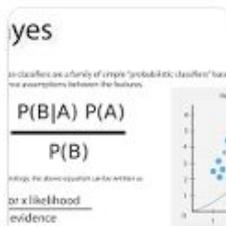
Decision tree



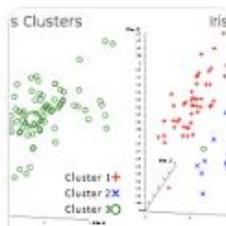
Random forest



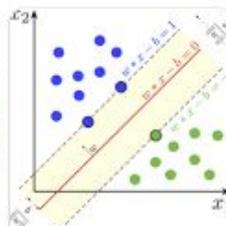
Linear regression



Naive Bayes classifier



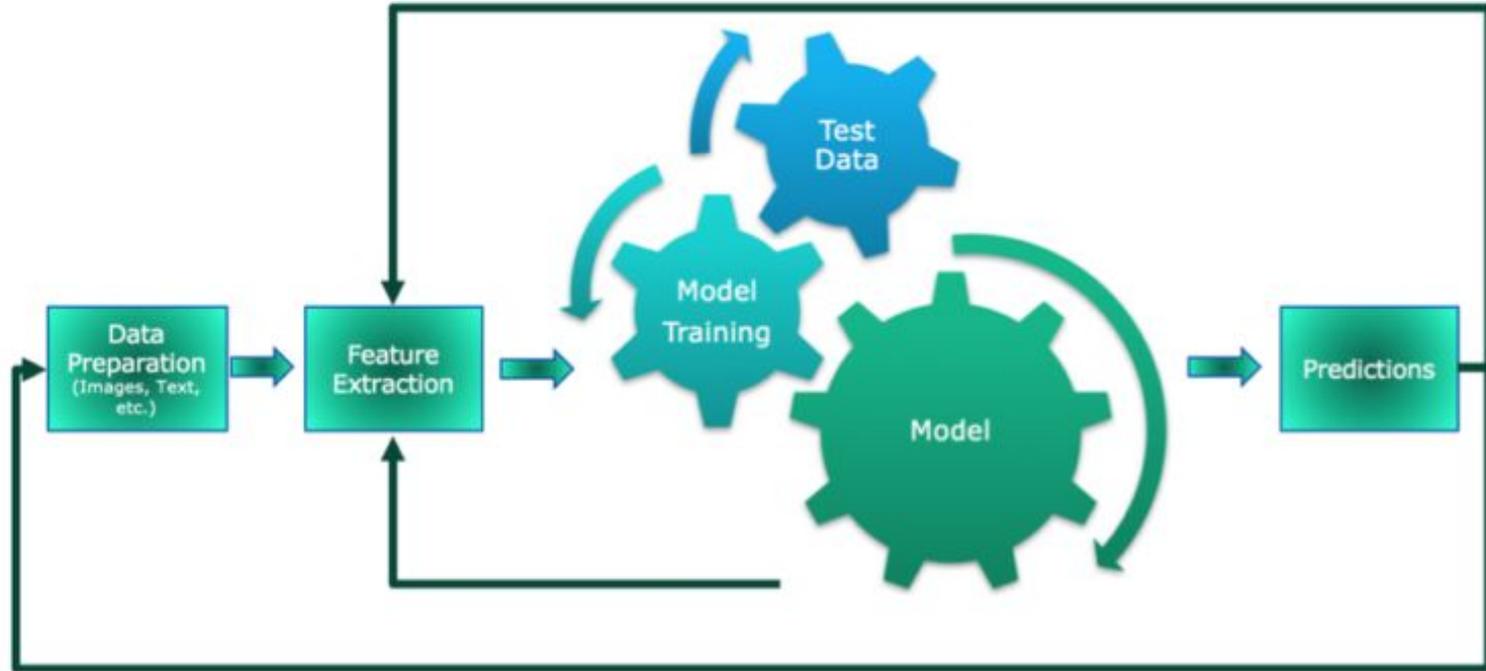
k-means clustering



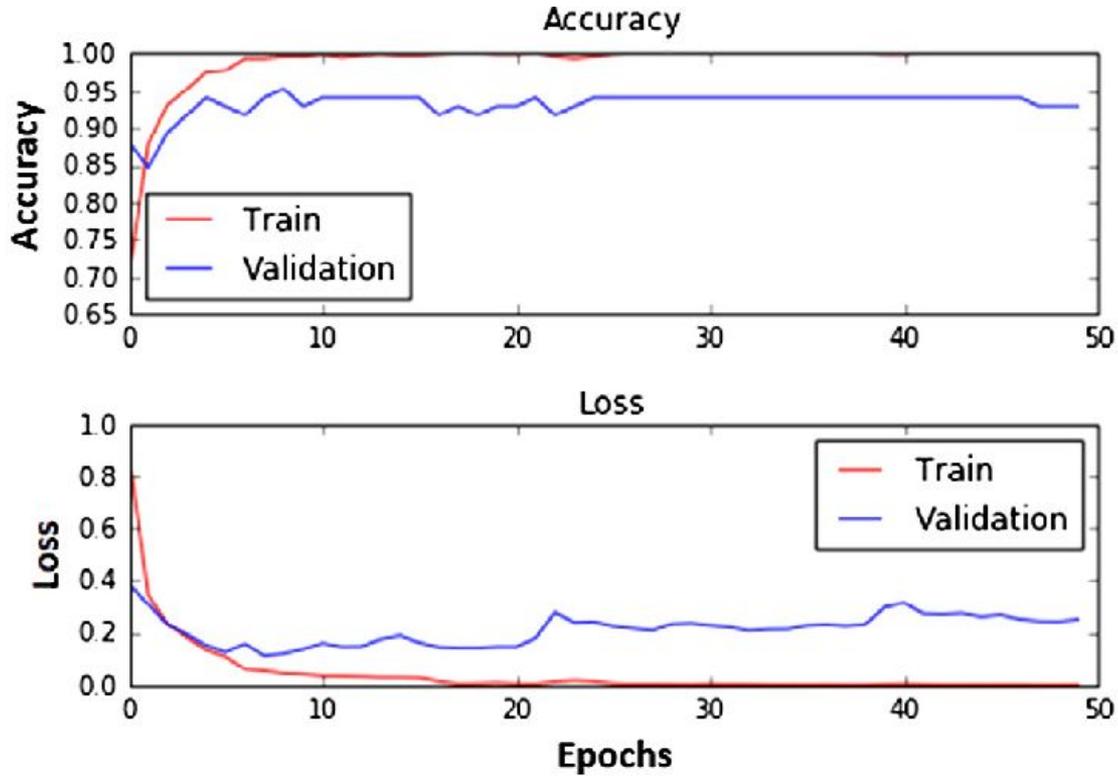
Support vector machine

And the list goes on...

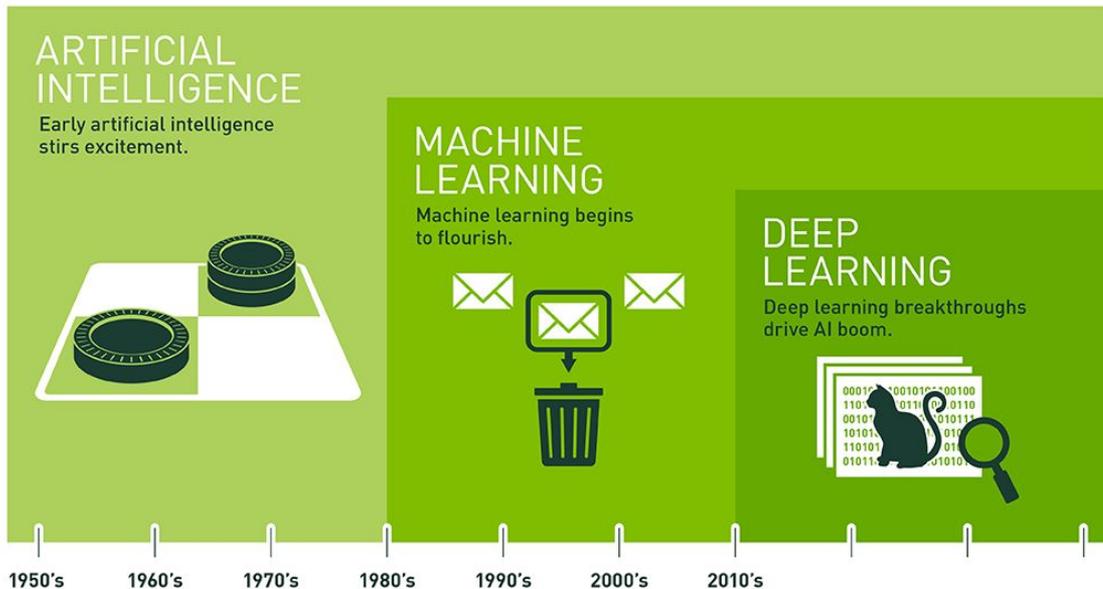
# A Standard Machine Learning Pipeline



# Learning curve



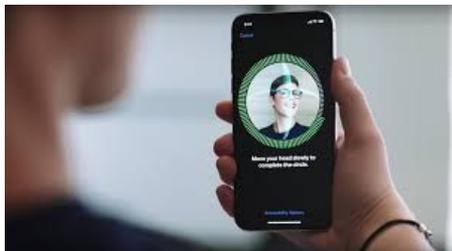
# AI → Machine Learning → Deep Learning



Since an early flush of optimism in the 1950s, smaller subsets of artificial intelligence – first machine learning, then deep learning, a subset of machine learning – have created ever larger disruptions.

# The rise of “deep” learning

“Deep learning is getting lots of attention lately and for good reason. It’s achieving results that were not possible before.” - Mathworks.com



Facial recognition



Autonomous driving

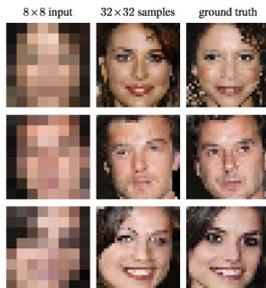


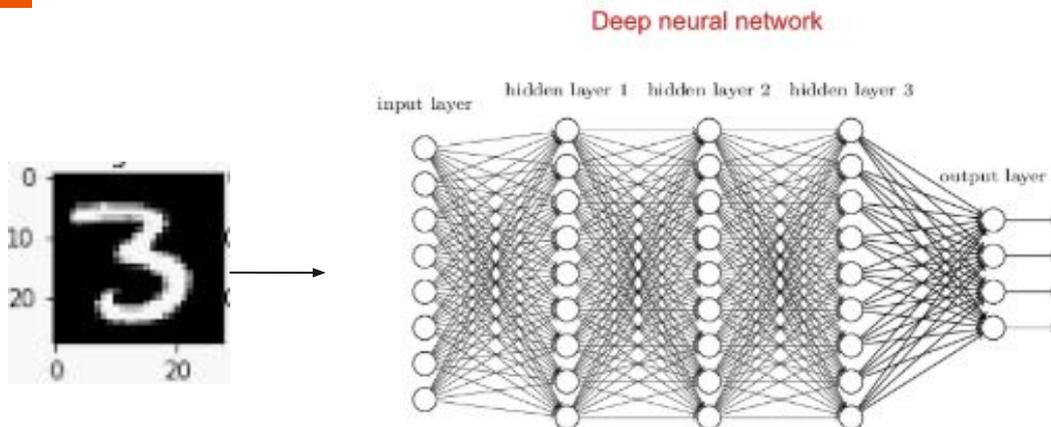
Image restoration

*Optical Character Recognition is designed to convert your handwriting into text.*

Optical Character Recognition is designed to convert your handwriting into text.

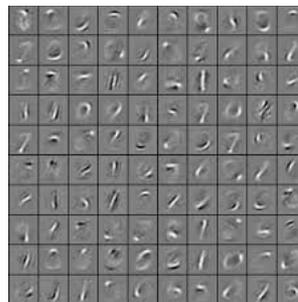
Handwritten Text Recognition (HTR)

# Automatic feature extraction



3

A deep learning model learns key “features” of the input that distinguish between labels

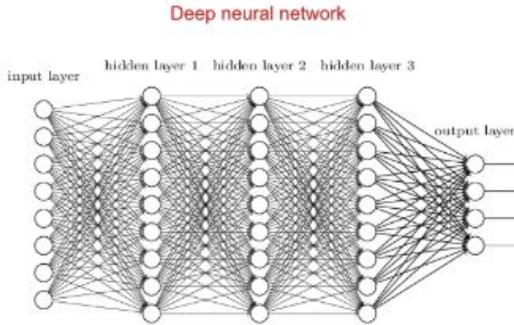
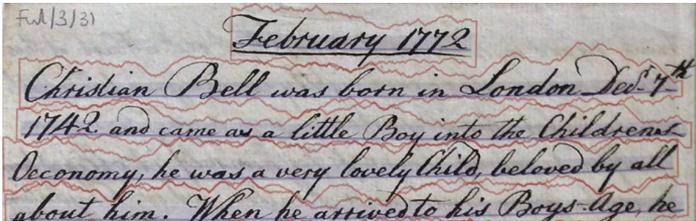


# “Deep” learning - The take away

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- Traditional machine learning:
  - Great on smaller, well-defined classification / regression problems from *structured* data
  - Limited results on large, high-dimensional, unstructured data
    - Image, audio, video, time series, etc.
  - Often requires substantial time to prepare / reduce data so that methods could learn
- Deep learning
  - Works with complex, high-dimensional, large datasets
  - Works with *unstructured* data
- Deep learning - there is no free lunch
  - Computational costs can be huge
  - LOTS of data required to perform well

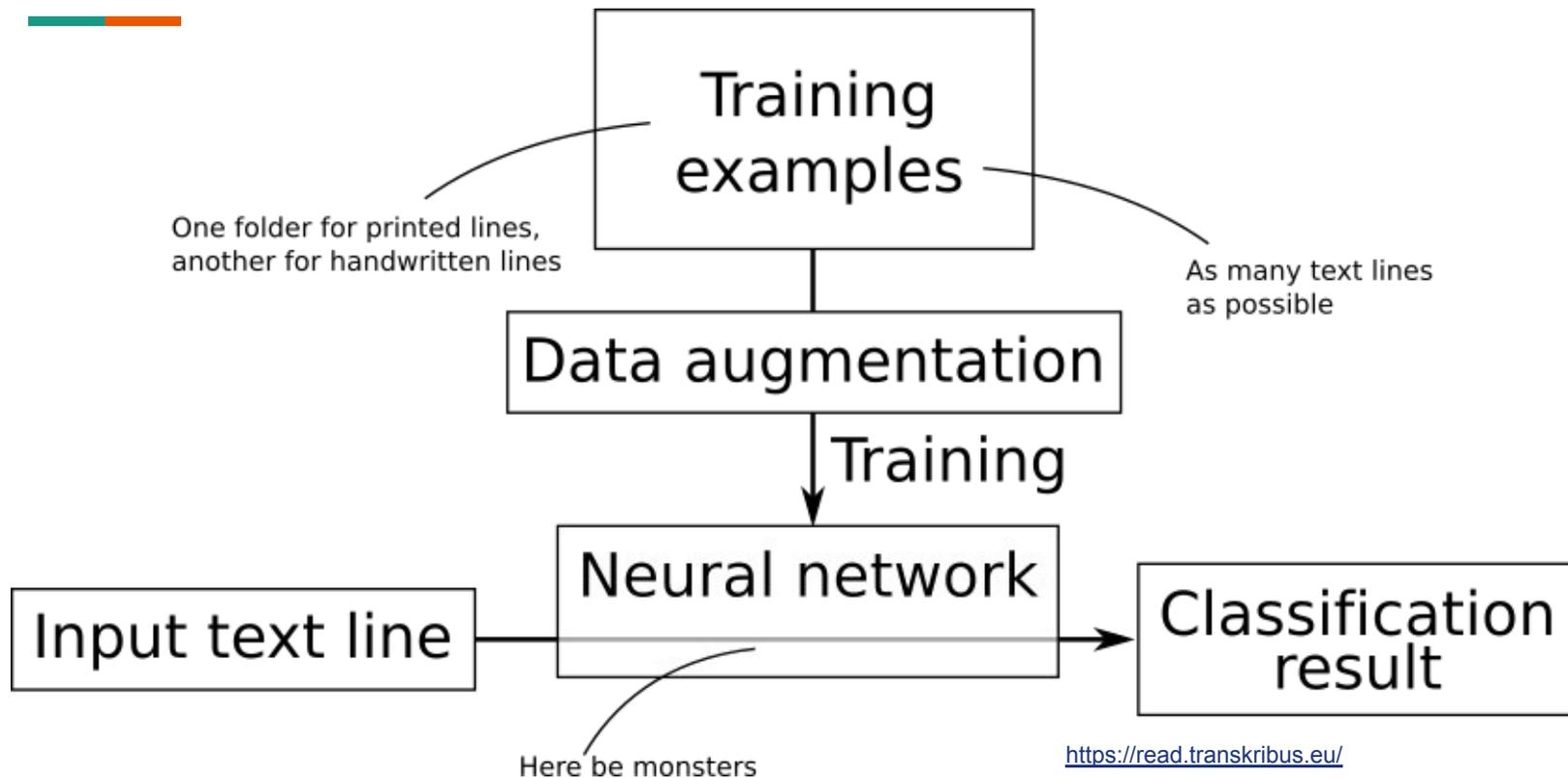
# HTR: Handwritten Text Recognition



February 1772  
Christian Bell was born in London Decr 7th  
1742 and came as a little Boy into the Children's  
Oeconomy, he was a very lovely Child, beloved by all  
about him. When he arrived to his Boys Age, he

Transkribus developers leverage deep learning to create a series of HTR models

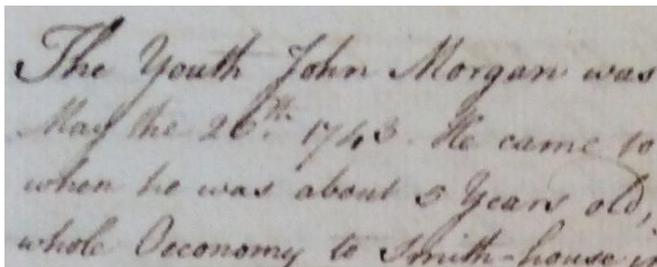
# The Transkribus pipeline



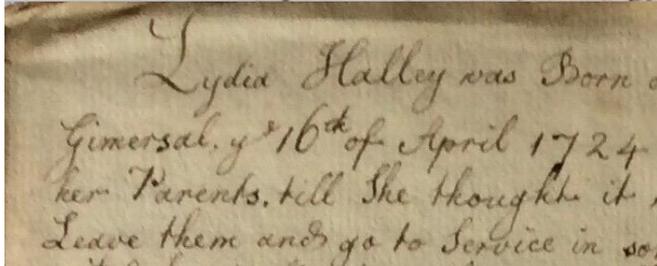
# Transkribus live demo



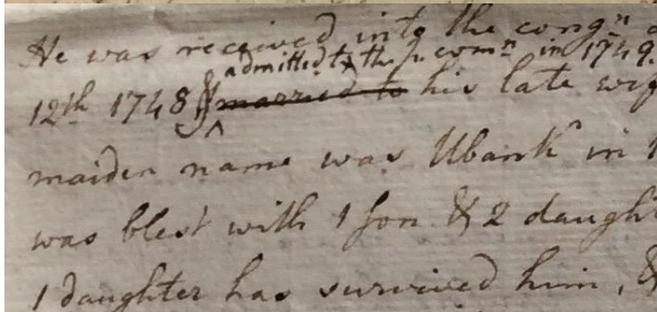
# Challenges



The Youth John Morgan was  
May the 26<sup>th</sup> 1743. He came to  
when he was about 3 years old,  
whole Oeconomy to Smith-house in



Lydia Halley was Born  
Gimersal. y<sup>s</sup> 16<sup>th</sup> of April 1724  
her Parents, till She thought it  
Leave them and go to Service in so

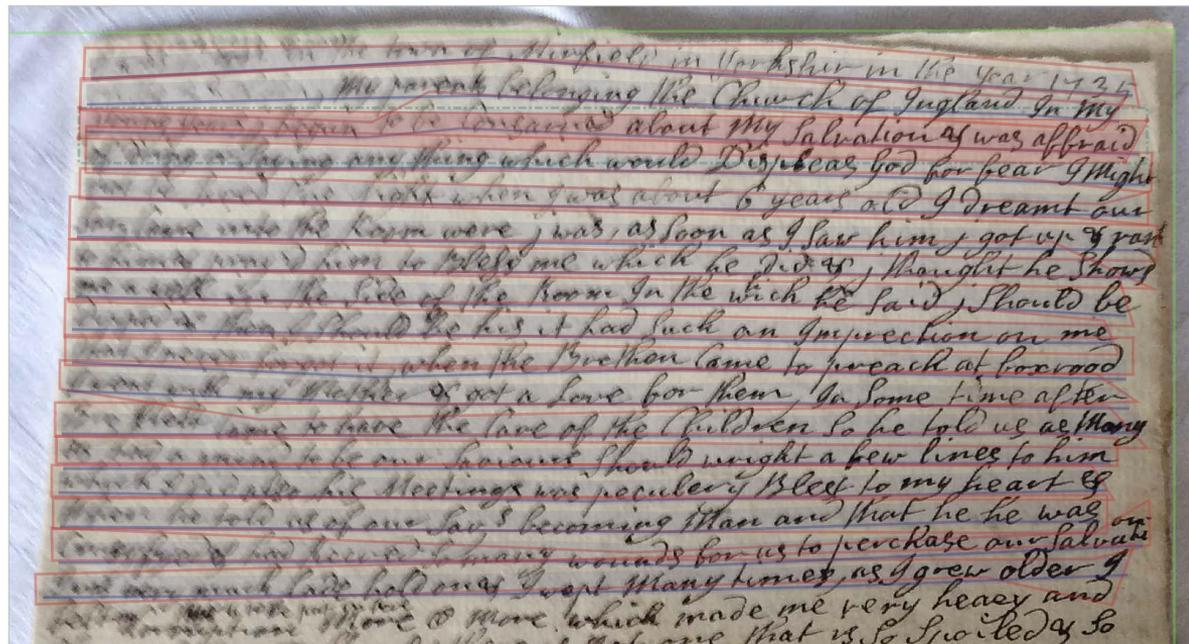


He was received into the cong<sup>n</sup> &  
12<sup>th</sup> 1748 <sup>admitted to the p. com<sup>n</sup> in 1749.</sup> ~~married~~ to his late wife  
maiden name was Ubank in  
was blest with 1 son & 2 daughter  
1 daughter has survived him, &

- Transkribus
  - Supplies only one English handwriting model, which was created based on a corpus of materials with one single handwriting style
  - User is also allowed to train their own models
- For Moravian Lives Project?
  - Not all images are “clean”!
  - Inconsistent digitizing (using a smartphone camera!)
  - Artifacts from bleedthrough, poor image quality, paper decomposition from age, etc.
  - The default Transkribus English handwriting model is not a good match with the majority of our documents
  - Scribes can often exhibit substantially different script styles

# Challenges

Poor image quality



- 1-1 a act &, to four of tiofiel in Sorkshir in to year 173 y
- 1-2 have to parent Celerwind till Cnuch of Tuglaad In My
- 1-3 song years begun to is Pocainied about the Sulvatioudf was aCCraid
- 1-4 of Fine an Sndins any thing which would Bispbead God for bear iMigt
- 1-5 on hour One dioke whom &wal about 5 years old & dreamt our
- 1-6 non and wise the Room worewa, a soon as I far him got on I pay
- 1-7 & meant wine' d vivre in less me which be gives , thought he Show
- 1-8 me and ion the Sied of the form In the which he said should be
- 1-9 can in been a should to his it had such an Smprechion one me
- 1-10 than I needed wit is when the Prethion came to reach at borood
- 1-11 become with aid better & at a loud for here In some time after
- 1-12 a& whole have where the have of the Children to be told us as her
- 1-13 be and a game to bo our Spoiouiet should right a few lives to him
- 1-14 way a Deed also the glectiode use neciclevy Bleeft to is heart is
- 1-15 meer to hold a of our said I becorind Man and think the he was



# Improving the HTR models



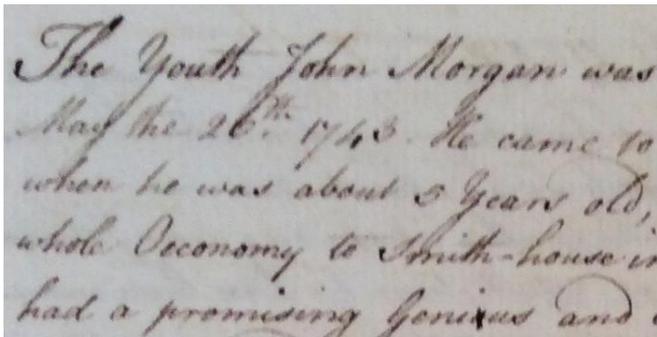
A model that is built on handwriting that is representative of samples from the Moravian Lives project will perform better than the default English model, which is built from only one handwriting

**PROVEN! But, can we do even better?**

A model built from highly similar handwriting should perform even better than a single, broadly trained model

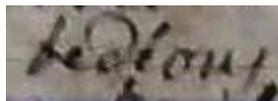
**QUESTION: How can we identify similar handwriting?**

# Scribe identification?



The Youth John Morgan was  
May the 26<sup>th</sup> 1743. He came to  
when he was about 3 years old,  
whole Oeconomy to Smith-house in  
had a promising Genius and

- We do not know the identity of the scribe for every memoir in the Fulneck corpus
- Human intervention?



below

- Our approach:
  - We made an assumption on a handful of examples from the same memoir that they also used the same scribe

# Auto identification of the scribe



Hypothesis: Developing a model to predict the scribe can prove that deep learning can distinguish between handwriting styles.

How? Get good, high quality handwriting examples from different scribes, and train a deep learning model!

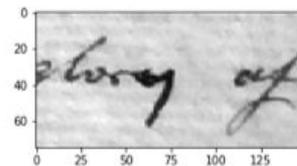
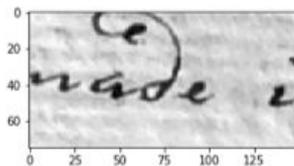
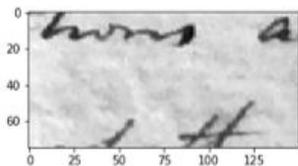
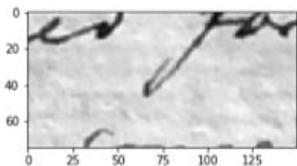
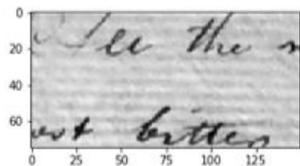
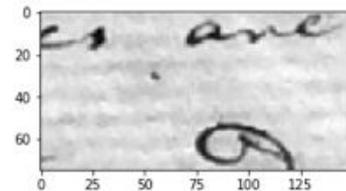
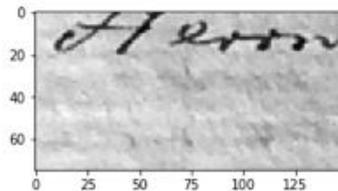
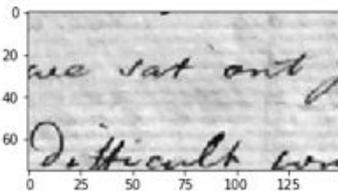
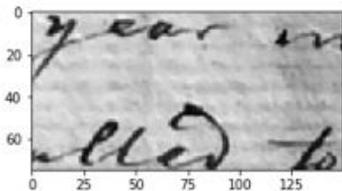
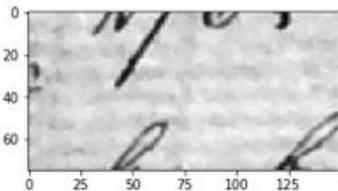
1. Improve the selection of handwriting on each image to eliminate artifacts not representing handwriting
2. Create small, random “**patches**” representing snippets of script from different scribes
  - Why? We don't care about the text, only the style of the handwriting.
  - These are our input into a model
  - Output? The scribe

# Generate and train a dataset

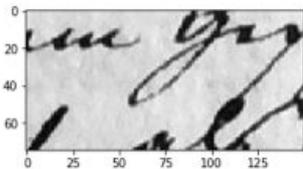
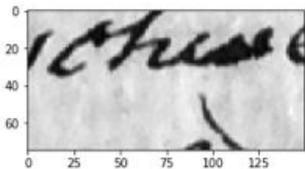
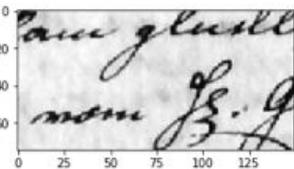
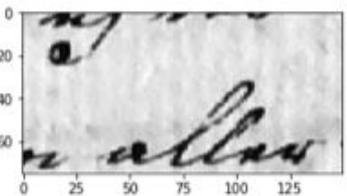
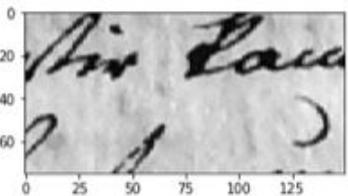
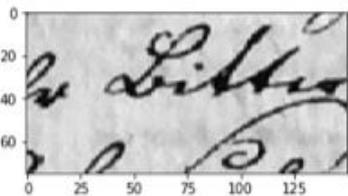
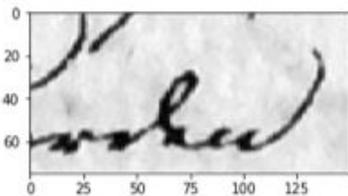
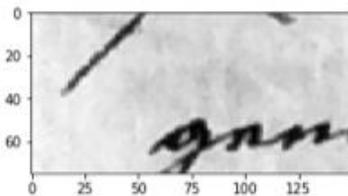
---

- We have images from different memoirs.
  - Divide the images from each memoirs for training and testing
- For every image, generate random patches of same size
- Patches are filtered to maximize the likelihood of capturing ONLY patches that contain text.
  - Filtered using the standard deviation to determine if a patch is mostly the same color (probably no writing) or different colors (probably writing)
  - Currently working on better ways to generate patches
- Classify these patches and train the model

# Example Patches



# Example Patches (continued)





# Train

Model is trained from 300 patches per memoir using 6 memoirs

# Evaluate

For a new image, select 15 random patches from the image

# Predict

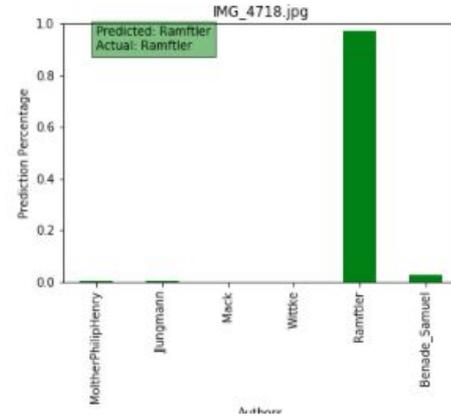
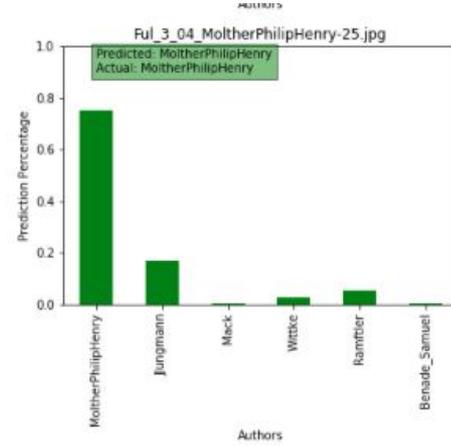
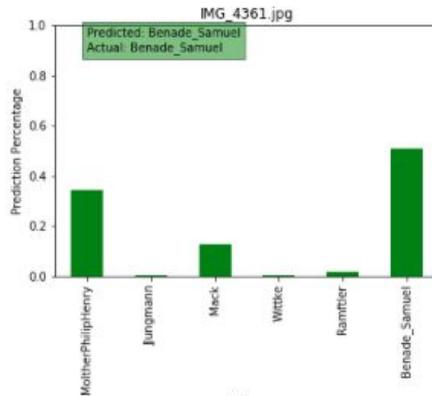
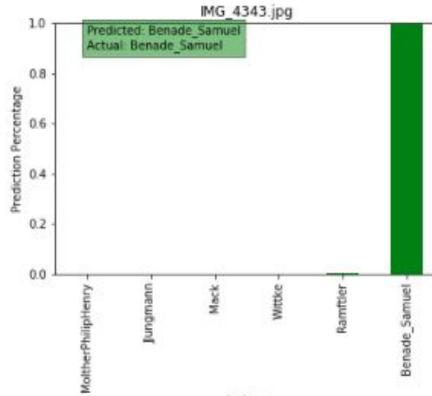
For any image, the scribe with the most predictions over all patches wins the prediction!

# Prediction Table

Prediction for the test images of each memoir.

		MoltherPhilipHenry	JJungmann	Mack	Wittke	Ramftler	Benade_Samuel
Benade_Samuel	IMG_4320.jpg	0.0005	0.0000	0.0679	0.0000	0.0042	0.9274
	IMG_4322.jpg	0.1316	0.0001	0.1157	0.0001	0.0013	0.7512
	IMG_4329.jpg	0.0011	0.0001	0.0439	0.0002	0.0235	0.9312
	IMG_4330.jpg	0.0106	0.0001	0.0090	0.0001	0.0027	0.9776
	IMG_4332.jpg	0.0001	0.0000	0.0001	0.0000	0.0043	0.9956
	IMG_4343.jpg	0.0000	0.0000	0.0000	0.0000	0.0003	0.9997
	IMG_4361.jpg	0.3444	0.0016	0.1273	0.0014	0.0164	0.5089
JJungmann	JJungmann.jpg	0.1009	0.6639	0.0059	0.1645	0.0154	0.0493
	Women_s memoirs - 126 of 192.jpg	0.0000	0.9999	0.0000	0.0001	0.0000	0.0000
	Women_s memoirs - 129 of 192.jpg	0.0034	0.9381	0.0045	0.0534	0.0005	0.0001
	Women_s memoirs - 131 of 192.jpg	0.1265	0.7995	0.0006	0.0656	0.0018	0.0061
	Women_s memoirs - 153 of 192.jpg	0.0269	0.8127	0.0001	0.0692	0.0855	0.0057
Mack	10.jpg	0.0011	0.0000	0.9272	0.0004	0.0008	0.0705
	19.jpg	0.0011	0.0000	0.8872	0.0001	0.0670	0.0445
	3.jpg	0.0004	0.0000	0.9964	0.0026	0.0001	0.0005
MoltherPhilipHenry	Ful_3_04_MoltherPhilipHenry-01.jpg	0.8713	0.0009	0.0630	0.0271	0.0037	0.0341
	Ful_3_04_MoltherPhilipHenry-10.jpg	0.7829	0.0600	0.1200	0.0197	0.0112	0.0061
	Ful_3_04_MoltherPhilipHenry-25.jpg	0.7522	0.1658	0.0006	0.0255	0.0517	0.0041
Ramftler	IMG_4718.jpg	0.0011	0.0003	0.0000	0.0000	0.9721	0.0264
	IMG_4733.jpg	0.0002	0.0001	0.0000	0.0000	0.9954	0.0043
	IMG_4747.jpg	0.0023	0.0593	0.0004	0.0001	0.8229	0.1150
	IMG_4750.jpg	0.0620	0.0004	0.0000	0.0000	0.8998	0.0377
	IMG_4757.jpg	0.0456	0.0182	0.0002	0.0016	0.9053	0.0291
	IMG_4768.jpg	0.0645	0.0009	0.0561	0.0001	0.8562	0.0222
Wittke	Women_s memoirs - 112 of 192.jpg	0.1328	0.6283	0.0615	0.1751	0.0012	0.0011
	Women_s memoirs - 113 of 192.jpg	0.2785	0.3448	0.0803	0.1560	0.0581	0.0824

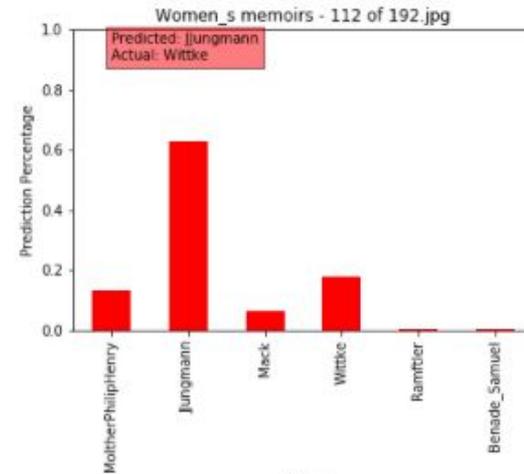
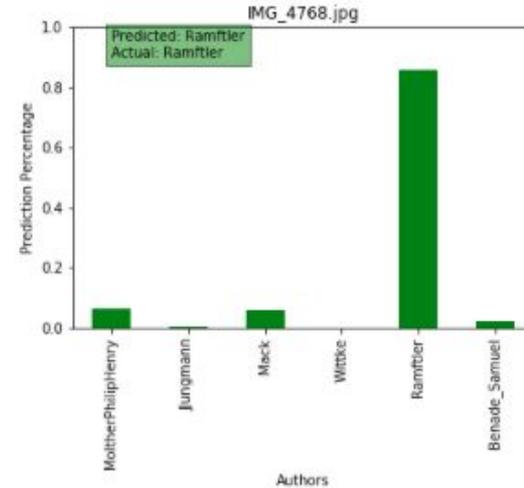
# Prediction Visualized



# Prediction Visualized



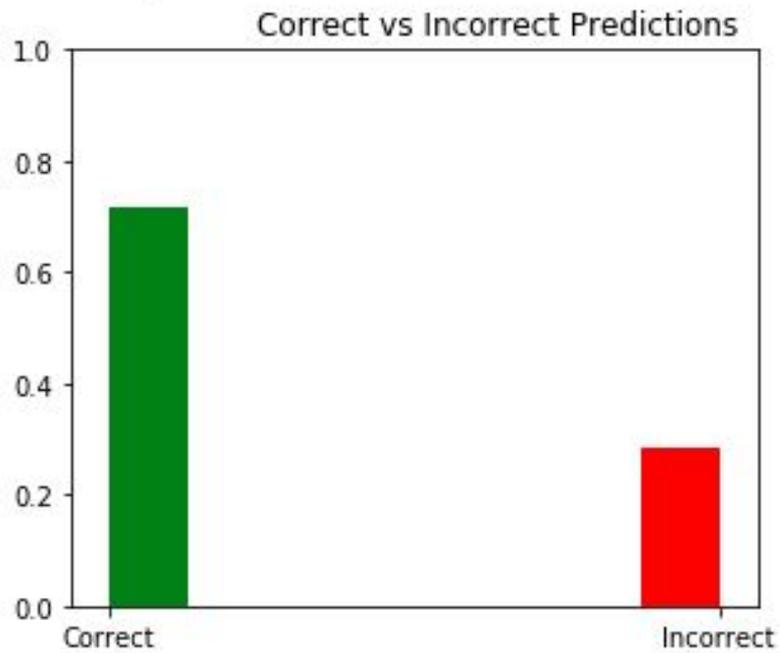
The bottom graph shows an incorrect prediction.



# Prediction Results



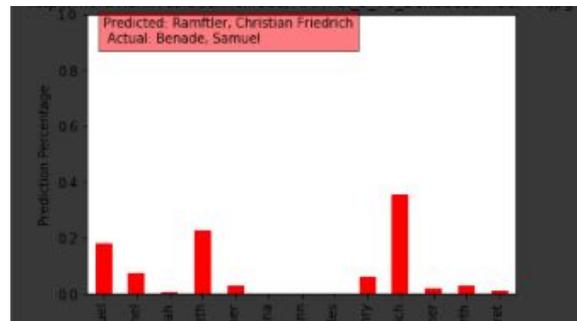
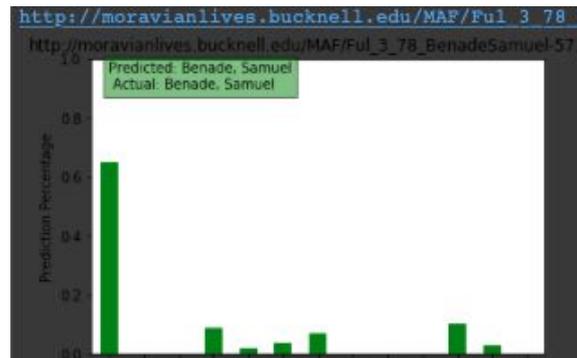
Accuracy: 71.43%



# Challenges

and conducive to their  
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ground of their hope  
before eternity.

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Cennick\_Sarah\_Ful\_SS\_68\_tei.xml [~/Users/cmp016/Documents/GitHub/ML/Fulneck/Raw\_XML/Cennick\_Sarah\_Ful\_SS\_68\_tei.xml] - <oxygen/> XML

XPath 2.0 - Execute XPath on 'Current File'

Cennick\_Sarah\_Ful\_SS\_68\_tei.xml x

```
1 <?xml version='1.0' encoding='UTF-8'?>
2 <TEI xmlns='http://www.tei-c.org/ns/1.0'>
3   <teiHeader>
4     <fileDesc>
5       <titleStmt>
6         <title type='main'>Cennick_Sarah_Ful_SS_68</title>
7       </titleStmt>
8       <publicationStmt>
9         <publisher>tranScriptorium</publisher>
10      </publicationStmt>
11      <sourceDesc>
12        <bibl><publisher>TRP document creator: cmp016@bucknell.edu</publisher></bibl>
13      </sourceDesc>
14    </fileDesc>
15  </teiHeader>
16  <text>
17    <body>
18      <pb n='1' />
19      <p>
20        <lg>
21          <l>The Life of the S. Sr Sarah Cennick who went happily home Jany 24th 1770</l>
22          <l>I was born June the 12th old Style 1712 in Reading Berks. </l>
23          <l>was baptiz&apos;d in the Church of England and brought up in that Comunion.</l>
24          <l>The first thing I remember is the simple and happy intercourse I </l>
25          <l>lived in with the Lord: I Knew he lov&apos;d me; and I lov &apos;d him; &amp; therefore</l>
26          <l>used to have recourse to Him without the least reserve.</l>
27          <l>When I was about 5 Years old, I remember to have been particularly</l>
28          <l>naughty &amp; selfwilld, which caused me much heaviness, tho&apos; I strove all</l>
29          <l>I could to divert and get rid of the Conviction by play &amp;c. But</l>
30          <l>running hastily into my Mothers room, where she was sitting with</l>
31          <l>my late dr Bror John then an Infant lying in her lap</l>
32          <l>I saw her weeping with litted up hands, and heard her pray. I was</l>
33          <l>much affected: But felt so hard, to acknowledge my fault, but</l>
34          <l>upon repeatedly asking my Mother, why she cried and what she</l>
35          <l>was saying? She referr&apos;d the Cause to me and said: &quot;I was praying</l>
36          <l>for you and for your Brother.&quot; This pierc&apos;d me through, and I</l>
37          <l>thought my heart would break. For I thought, The Lord also is</l>
38          <l>grieved! I therefore silently withdrew condemn&apos;d and asham&apos;d</l>
39          <l>and hasted to a private Place, where with many Tears, I beged</l>
40          <l>Him to forgive me; which he most graciously did directly, and</l>
41          <l>all my Burthen instantly removed.</l>

```

Text Grid Author

/Users/.../Raw\_XML/Cennick\_Sarah\_Ful\_SS\_68\_tei.xml U+000A 1 : 39

# Outputs & Next Steps

# What happens after transcription?



- Batch export of TEI-compliant XML, raw TXT, and keyword searchable PDFs directly from Transkribus
- Documents housed in GitHub repository
- Semantic and text analysis
- Automated entity extraction (XSLT)
- Building personography and placeography
- Working toward digital editions
- ... and more possibilities!



# What have we learned?



- The value of interdisciplinary, collaborative work
- The value of having undergraduate students work as research assistants - they each bring their own skills and interests and can help further develop parts of the project
- Progress on creating English-language models is informing our work developing German script models
- Benefits of multiple project management tools (Trello, GitHub, Google Apps, Slack)

# Questions?



Moravian Lives: <http://moravianlives.org/>

Moravian Lives - Transcribed Memoirs: <http://moravianlives.scholar.bucknell.edu/>

Transkribus: <https://transkribus.eu/Transkribus/>

Moravian Lives GitHub: <https://github.com/moravianlives/ML>

## Project Contacts:

- Katherine Faull (PI): [faull@bucknell.edu](mailto:faull@bucknell.edu) (@KatherineFaull)
- Carrie Pirmann (Transkribus): [carrie.pirmann@bucknell.edu](mailto:carrie.pirmann@bucknell.edu) (@librariancarrie)
- Brian King (Machine Learning): [brian.king@bucknell.edu](mailto:brian.king@bucknell.edu) (@bkingcs)
- Bhagawat Acharya '20 (Algorithm Development): [ba017@bucknell.edu](mailto:ba017@bucknell.edu)

Kathode, den 18.9.

Wärde,- und "ab ab" über

⇒ Was würden Sie machen, wenn Sie keine Haarbürste hätten?

⇒ Was würden Sie machen,

Wann  
up

- , wenn Sie keinen Haarschneimer hätten
- , wenn Sie kein Shampoo hätten
- , wenn Sie Rückenbeschmerzen hätten
- , wenn Sie Fieber hätten
- , wenn Sie sich das Handgelenk verstaucht hätten
- , wenn Sie die Grippe hätten
- , wenn Sie keine Zahnbürste hätten.

Wiederholung S. 1104 ① + ③ + ④

Postmarke ⑧  
✓ SAM. 128€130

Präca Quizzes?

... in the town of Marple in Yorkshire in the year 1794.  
My parents belonging the Church of England in my  
... began to be concerned about my Salvation as was affraid  
... anything which would Displeas God for fear I might  
... light when I was about 6 years old I dreamt our  
... into the Room were, as soon as I saw him, got up & rush  
... him to bless me which he did so; thought he should  
... the side of the Room in the which he said, I should be  
... should be his, it had such an Impression on me  
... when the Brethren came to preach at Foxwood  
... with my Mother & got a Love for them, In some time after  
... time to have the Love of the Children so he told us as many  
... to be our Patron should write a few lines to him  
... his Meetings were peculiarly Bless to my heart &  
... to tell us of our Saviour becoming Man and that he he was  
... many wounds for us to purchase our Salvation  
... had our Love hold our Sweet many times, as I grew older  
... more which made me very heavy and  
... that is, I was led to