

Archivists, computer
scientists and users
working on historical
literacy

SOLM-2018 data set

Archives & AI

Tuesday, September 4th, 2018
The National Archives
United Kingdom

Project portfolio

<http://www.chronoscopic.org>

MarineLives



Signs of Literacy



EM Textiles, Garments & Dyestuffs Glossary



Maphackathon



SOLM-2018



EM Maritime & Mercantile Gazetteer



Some perspective

Labeled Faces in the Wild

Labeled Faces in the Wild Home

UNIVERSITY OF MASSACHUSETTS AMHERST, MASS.

Menu

- LFW Home
 - Mailing
 - Explore
 - Download
 - Train/Test
 - Results
 - Information
 - Errata
 - Reference
 - Resources
 - Contact
 - Support
 - Changes
- Part Labels
- UMass Vision

NEW SURVEY PAPER:

Erik Learned-Miller, Gary B. Huang, Aruni RoyChowdhury, Haoxiang Li, and Gang Hua.
Labeled Faces in the Wild: A Survey.
In *Advances in Face Detection and Facial Image Analysis*, edited by Michal Kawulok, M. Emre Celebi, and Bogdan Smolka, Springer, pages 189–248, 2016.
[Springer Page] [Draft pdf]

NEW RESULTS PAGE:

WE HAVE RECENTLY UPDATED AND CHANGED THE FORMAT AND CONTENT OF OUR [RESULTS PAGE](#). PLEASE REFER TO THE [NEW TECHNICAL REPORT](#) FOR DETAILS OF THE CHANGES.

Welcome to Labeled Faces in the Wild, a database of face photographs designed for studying the problem of unconstrained face recognition. The data set contains more than 13,000 images of faces collected from the web. Each face has been labeled with the name of the person pictured. 1680 of the people pictured have two or more distinct photos in the data set. The only constraint on these faces is that they were detected by the Viola-Jones face detector. More details can be found in the technical report below.

There are now four different sets of LFW images including the original and three different types of "aligned" images. The aligned images include "funneled images" (ICCV 2007), LFW-a, which uses an unpublished method of alignment, and "deep funneled" images (NIPS 2012). Among these, LFW-a and the deep funneled images produce superior results for most face verification algorithms over the original images and over the funneled images (ICCV 2007).

Related:

[new] Collected resources related to LFW - updated 2017/05/09.
LFW Deep Funneled Images.
LFW attributes file (see Attribute and Simile Classifiers for Face Verification, Kumar et al.).
Face Detection Data set and Benchmark (FDDB), our new database for face detection research.
Faces in Real-Life Images workshop at the European Conference on Computer Vision 2008, run by Erik Learned-Miller, Andras Ferencz, and Frederic Jurie.

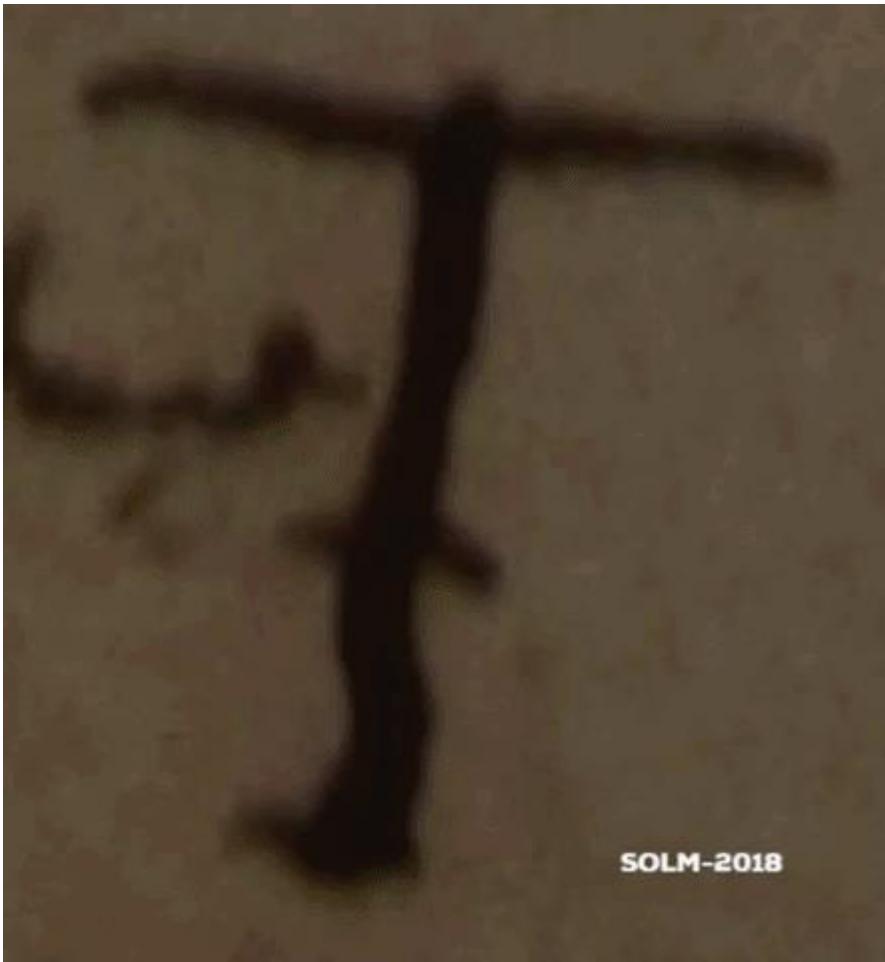
Abstract In 2007, Labeled Faces in the Wild was released in an effort to spur research in face recognition, specifically for the problem of face verification with unconstrained images. Since that time, more than 50 papers have been published that improve upon this benchmark in some respect. A remarkably wide variety of innovative methods have been developed to overcome the challenges presented in this database. As performance on some aspects of the benchmark approaches 100% accuracy, it seems appropriate to review this progress, derive what general principles we can from these works, and identify key future challenges in face recognition. In this survey, we review the contributions to LFW for which the authors have provided results to the curators (results found on the LFW results web page). We also review the cross cutting topic of alignment and how it is used in various methods. We end with a brief discussion of recent databases designed to challenge the next generation of face recognition algorithms.

Labeled Faces in the Wild: A Survey

Erik Learned-Miller, Gary Huang, Aruni RoyChowdhury, Haoxiang Li, Gang Hua

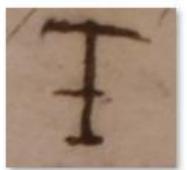
Pattern seeking

How many different letters can you recognise?



Click for animated GIF

Initials – Ts and Js



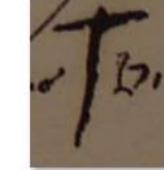
T6.png



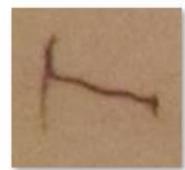
T7.png



T8.png



T9.png



T10.png



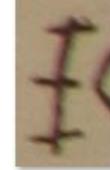
J5.PNG



J6.PNG



J7.PNG



J8.PNG



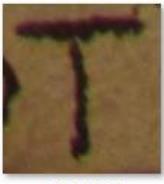
J9.PNG



T11.PNG



T12.PNG



T13.PNG



T14.PNG



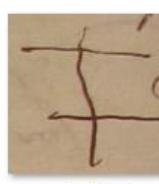
T15.PNG



J10.PNG



J11.PNG



J12.PNG



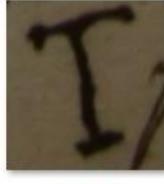
J13.PNG



J14.PNG



T16.PNG



T17.PNG



T18.PNG



T20.PNG



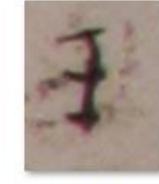
T21.PNG



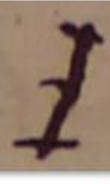
J15.PNG



J16.PNG



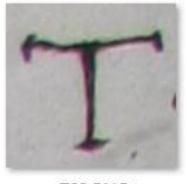
J17.PNG



J18.PNG



J19.PNG



T22.PNG



T23.PNG



T24.PNG



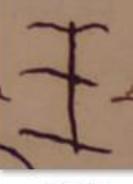
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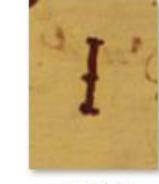
T26.PNG



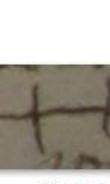
J20.PNG



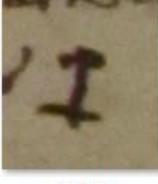
J21.PNG



J22.PNG



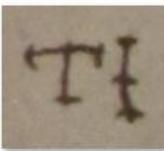
J24.PNG



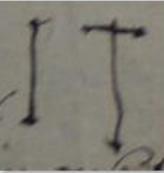
J25.PNG



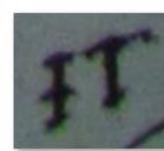
T28.PNG



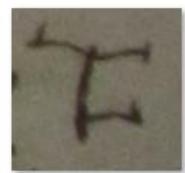
TJ28.PNG



TJ30.PNG



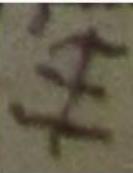
TJ31.PNG



TL29.PNG



J26.PNG



J27.PNG



J28.PNG



J30.PNG



J31.PNG

We need to work together if we are going to make sense of our digitised manuscript archives



'From punishing to pleasurable, how cursive writing is looping back into our hearts', [Washington Post online edition, 03/09/2018](#) - Emilia Schweitzer, left, and Danielle Falls write with homemade quills during a summer day camp devoted to cursive instruction in Danbury, Conn. (Monica Jorge/For The Washington Post)

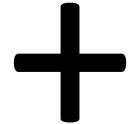


Image processing

Machine learning

Natural Language Programming

Key word spotting

Controlled vocabularies

Programmable decision rules

SOLM-2018 database

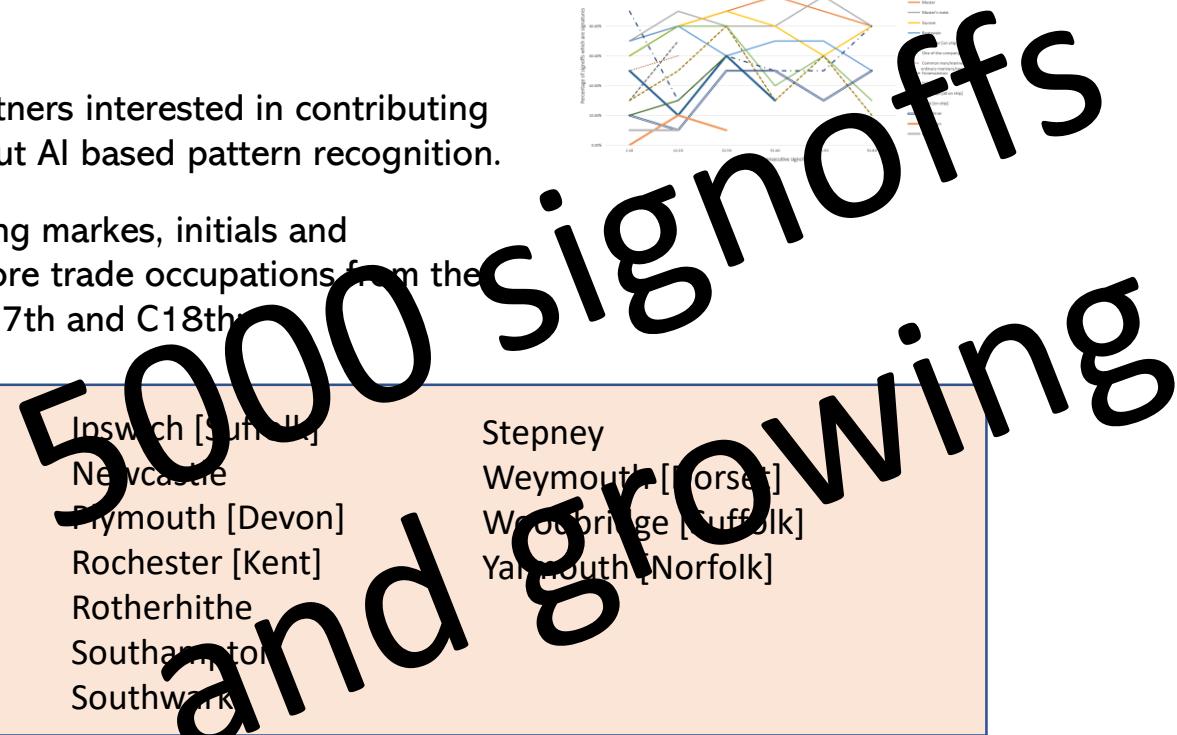
The **SOLM-2018 database** is a tool for historians and computer scientists to work with marks, initials and signatures. It has been designed to support the exploration of historical literacy and the development of tools for automatic metadata creation.

We will be previewing the database at the TNA Archives & AI symposium on Tuesday, September 4th and at the Sheffield Digital Humanities Congress on Thursday, September 6th, 2018.

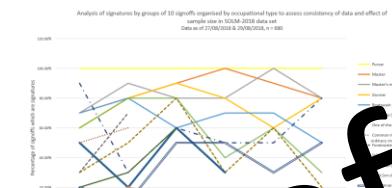
We are looking for UK and international archival partners interested in contributing content to the SOLM-2018 tool and in learning about AI based pattern recognition.

We are especially interested in manuscripts containing marks, initials and signatures by individuals engaged in marine and shore trade occupations from the following English towns and areas for the C16th, C17th and C18th.

Aldeburgh [Suffolk]	Dover [Kent]
Barnstaple [Devon]	Falmouth [Devon]
Bermondsey	Faversham [Kent]
Bristol	Foy [Cornwall]
Colchester [Essex]	Greenwich
Dartmouth [Devon]	Harwich [Essex]
Deptford	Hull



SOLM-2018 data set



Aldeburgh [Suffolk]	Dover [Kent]	Ipswich [Suffolk]	Stepney
Barnstaple [Devon]	Falmouth [Devon]	Newcastle	Weymouth [Dorset]
Bermondsey	Faversham [Kent]	Plymouth [Devon]	Woodbridge [Suffolk]
Bristol	Foy [Cornwall]	Rochester [Kent]	Yarmouth [Norfolk]
Colchester [Essex]	Greenwich	Rotherhithe	
Dartmouth [Devon]	Harwich [Essex]	Southampton	
Deptford	Hull	Southwark	

Our vision is a SOLM-2023 database with 1 million marks, initials & signatures from across Europe & North America from the C16th to C18th

The maths

- 3 person/months to create 5,000 signoff SOLM-2018 database consisting of image snippets; boundary boxed snippets on full page images; 5,000 lines x 25 rows of metadata
- 6 person/months to create our targeted 10,000 SOLM-2018 training database
- 20,000 signoff processing per person year
- Target of 1 million signoffs in our database
- 100,000 signoffs per year with 5 people working full time

That's TEN YEARS to achieve our vision
with 50 person years to do it!!!!

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Bermonsey	Faversham [Kent]	Plymouth [Devon]	Woodbridge [Suffolk]
Bristol	Foy [Cornwall]	Rochester [Kent]	Yarmouth [North Yorks]
Colchester [Essex]	Greenwich	Rotherhithe	
Dartmouth [Devon]	Harwich [Essex]	Southampton	
Deptford	Hull	Southwark	

For further information contact Colin Greenstreet, community organiser, Signs of Literacy initiative, or Dr Mark Hailwood (Bristol)
GitHub: <https://github.com/Signsofliteracy>

5000 signoffs
and growing

Our challenge to archivists, computer scientists and historians: Help us develop the tools to create a SOLM-2023 database of 1 mill signoffs with a productivity rate of ten times today's best, at a resource cost of 5 person/years, not 50 person/years, and in half the time

More generally, we need to work together, if we are going to make sense of our digitised manuscript archives – **developing AI tools to process archival images and to identify, extract, read and record metadata**

For more information contact Colin Greenstreet, community organiser of the Signs of Literacy initiative, and Dr Mark Hailwood (Bristol)
<https://github.com/Signsofliteracy>

We are looking for partners in the United Kingdom and internationally



kaggle Competitions

Stanford | Text Technologies

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STANFORD TEXT TECHNOLOGIES IS AN INTERDISCIPLINARY ENTERPRISE COMBINING BOOK HISTORICAL APPROACHES WITH DIGITAL METHODS AND TOOLS TO INVESTIGATE THE LONG HISTORY OF HUMAN COMMUNICATION FROM THE EARLIEST TIMES TO THE PRESENT DAY. [FIND OUT MORE](#)

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ARCHIVE EXPLORER

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The storehouse of Essex's history
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Dorset History Centre collects & preserves archives & local studies for Bournemouth, Dorset & Poole for all to enjoy. Use policy d4u.org.uk/jkVKV

Kent County Council
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Kent Archives
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Get involved and keep up-to-date with Kent's Archive and Local History service. This account is monitored from 8:30am - 5pm Monday to Friday.

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@KeyToThePast

Suffolk County Council's Record Office. Follow for archival news, events, updates on collections and more! Discover the treasures of 900 years of Suffolk's past

PICTURAE
LET'S UNLOCK OUR HERITAGE TO THE WORLD.
Gemeente Amsterdam
Stadsarchief

Alle Amsterdamse Akten
DE BESTE VERHALEN UIT HET ARCHIEF VAN DE AMSTERDAMSE NOTARISSEN



TYNE & WEAR archives&museums

TWAM Museums [@TWAMmuseums](#)

Regional museum, art gallery and archives service managing Tyneside and the Wear. Tweets by [@TyneandWear](#)

Norfolk Record Office
@NorfolkRO

Situated at The Archive Centre, Martineau Lane, with staff also based at Norfolk Heritage Centre (@NorfolkHC) and King's Lynn Borough Archive.

Norfolk Record Office
@NorfolkRO

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@NorfolkRO

Situated at The Archive Centre, Martineau Lane, with staff also based at Norfolk Heritage Centre (@NorfolkHC) and King's Lynn Borough Archive.

Bristol Archives
@bristolarchives Follows you

Home to ten centuries of history: we collect + preserve Bristol's archives (and the British Empire & Commonwealth Collection) for current + future generations.

THE NATIONAL ARCHIVES

THE HUNTINGTON

SOUTH WEST HERITAGE TRUST

Devon Archives
@DevonHeritage

Tweets from the team at the South West Heritage Trust about Devon's fascinating archive collection. #SWHTdiscovery

Kresen Kernow - Cornwall's new archive centre

Last updated: 07/06/2018

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Print page Email page Subscr...

kresen kernow

heritage lottery fund
LOTTERY FUNDED

Signs of Literacy Kaggle Research Competition

Signs of Literacy Kaggle Research Competition, 2018
Colin Greenstreet on LinkedIn
April 30, 2018

Google owned Kaggle has selected us as one of a small number of pro bono competitions they support each year on the merits of our proposal, and the potential impact on the research field and community of the competition.

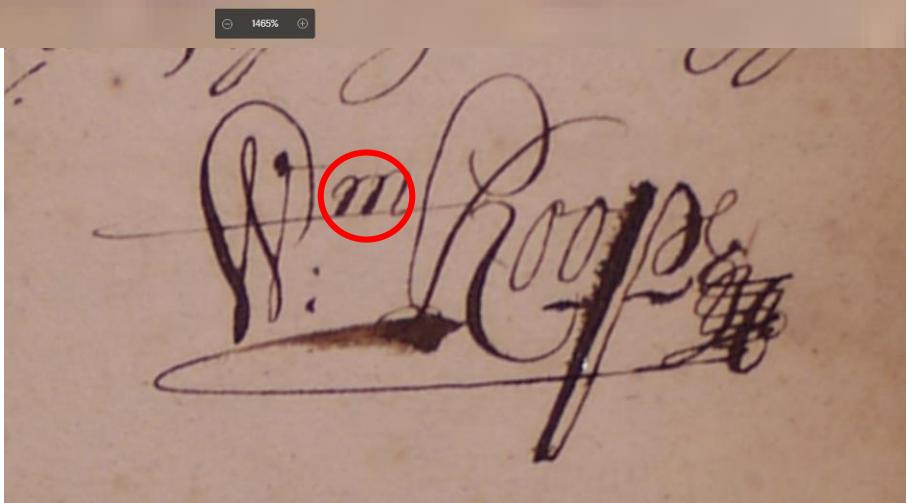
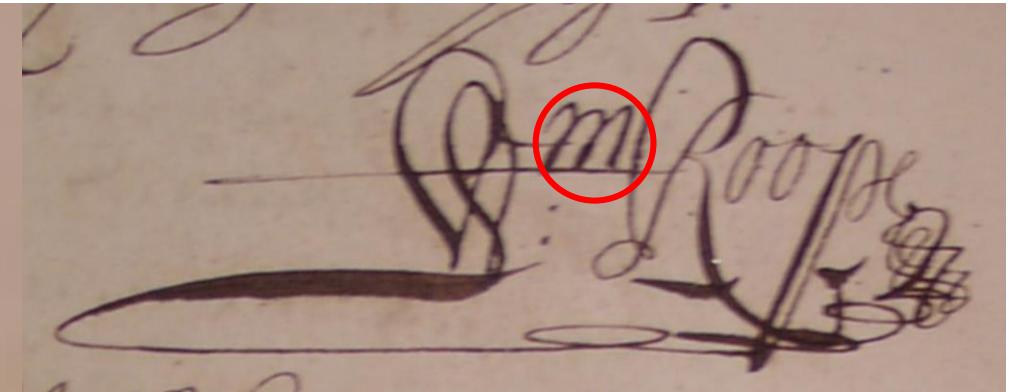
Kaggle will cover the running costs of the competition. We will provide the prize pool, and are now seeking to raise US \$30,000 from potential sponsors and partners.

The Proof of Concept will contain two parts:

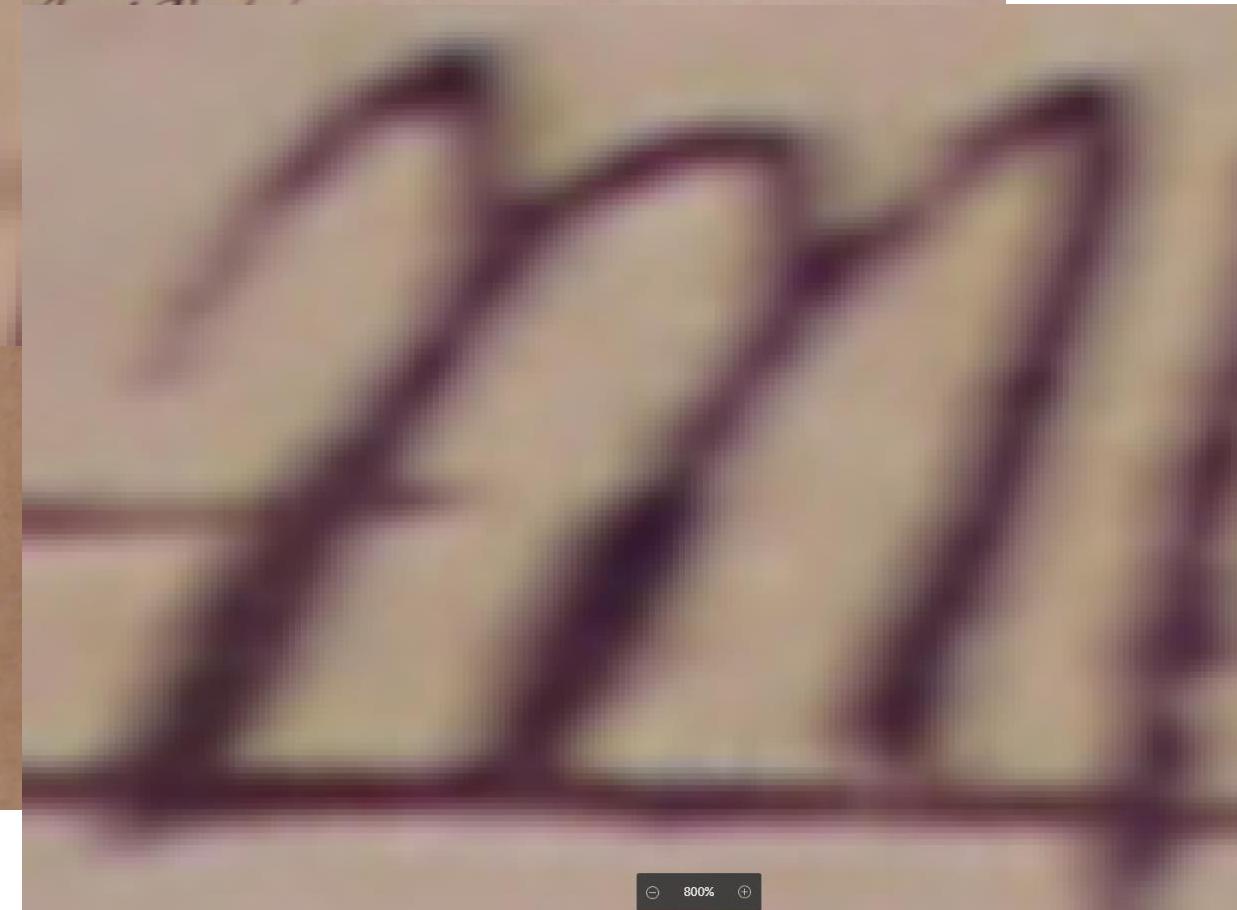
- (1) Algorithmic identification of marks, initials and signatures.
- (2) Algorithmic discrimination between degrees of "sophistication" within the three categories of "mark"; "initial(s)", and "signature".

Having proven the concept, we will seek out an image or vision oriented computational laboratory with which to develop a grant funded collaboration to take the work further in 2019 and beyond.

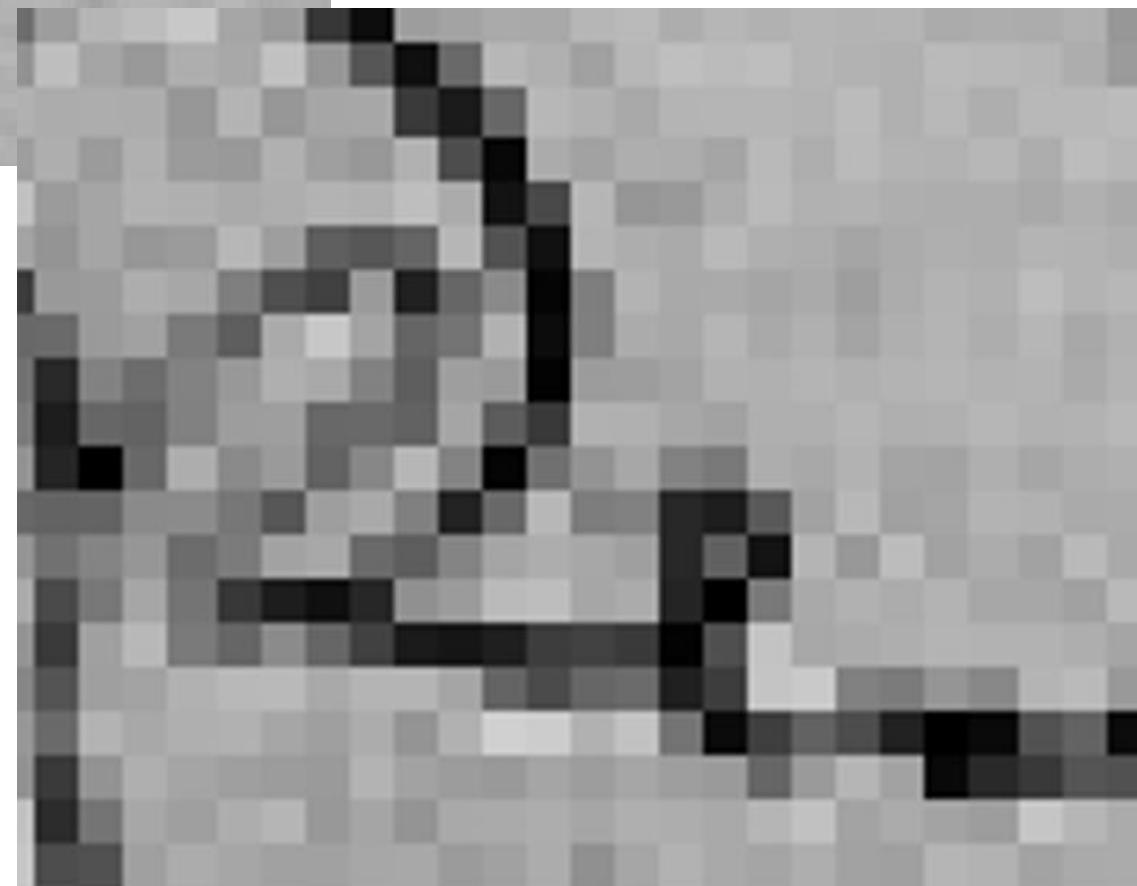
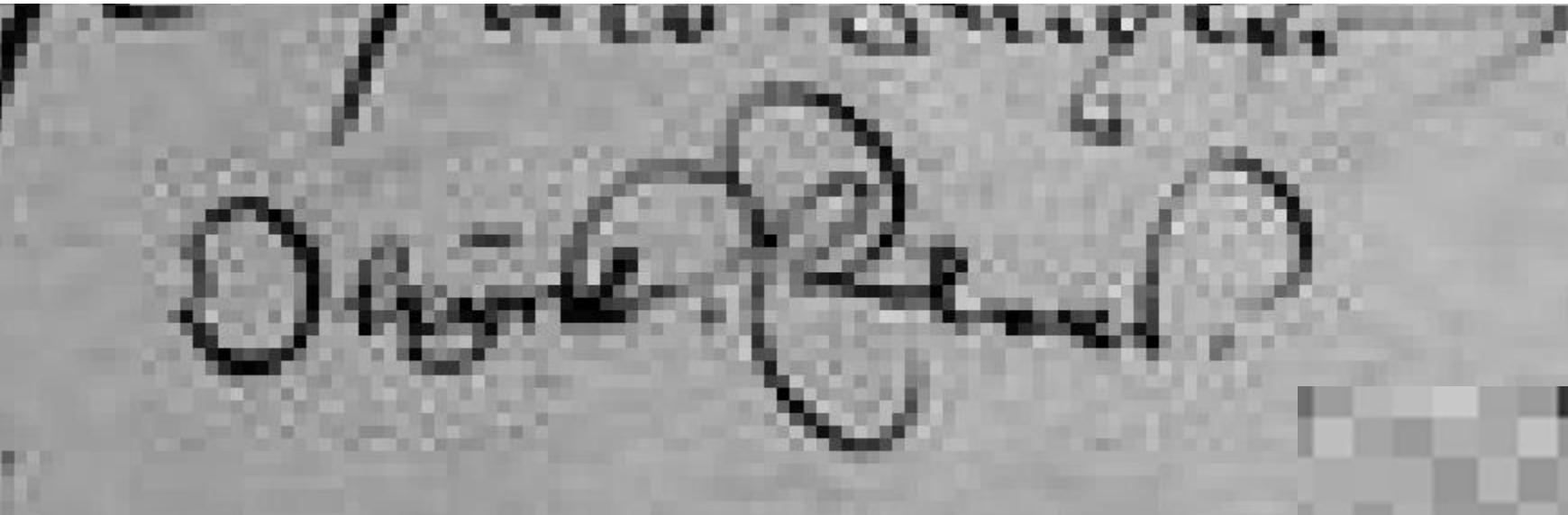
High pixel definition



Source: KaggleTestSnippet_HCA_1373_f.199r.PNG,
KaggleTestSnippet_HCA_1373_f.199v_One.PNG



Low pixel definition



Colour analysis – image colour extract PHP, hexadecimal colours

The figure consists of four panels, each showing a snippet of handwritten text and its corresponding color analysis results.

- Panel 1:** Shows the text "Nicholas Harrison". Below it is a table of colors extracted from the image:

Color	Color Code	Percentage
#e0a080	0.855975	
#c08060	0.084403	
#806040	0.039371	
#604020	0.013208	
#402020	0.007044	

- Panel 2:** Shows the text "Bo:nglis". Below it is a table of colors extracted from the image:

Color	Color Code	Percentage
#c08060	0.883721	
#806040	0.063798	
#604020	0.048605	
#402000	0.003876	

- Panel 3:** Shows the text "Jacob pintorB". Below it is a table of colors extracted from the image:

Color	Color Code	Percentage
#808080	0.969271	
#604040	0.030729	

- Panel 4:** Shows the text "H. Langius". Below it is a table of colors extracted from the image:

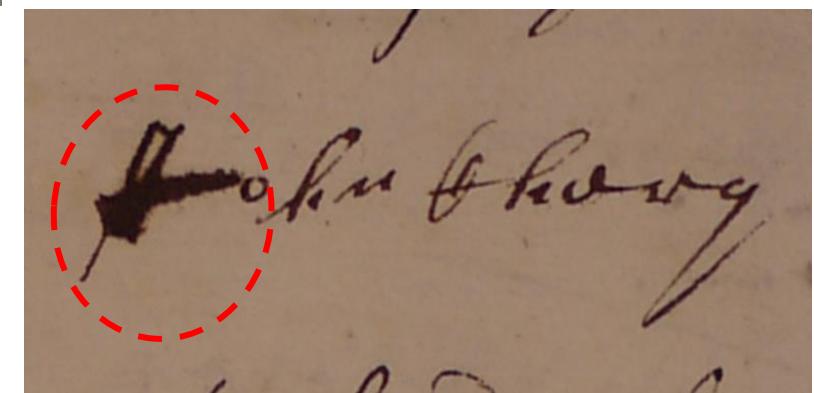
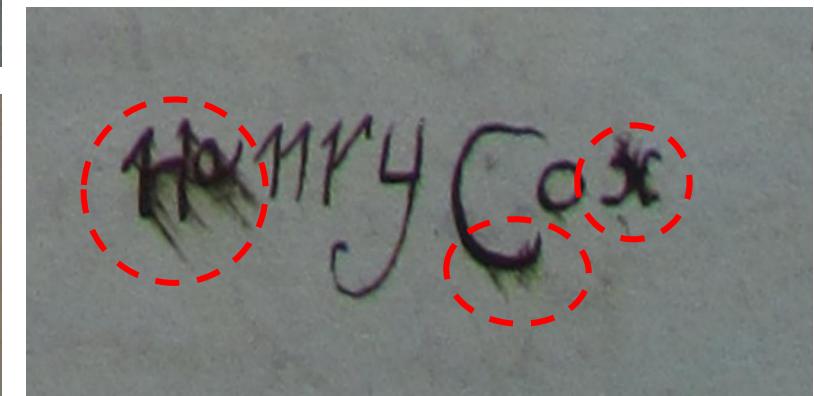
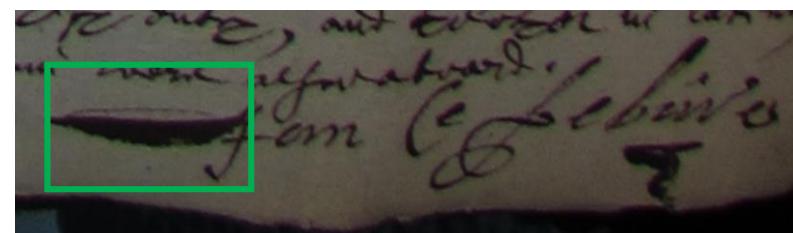
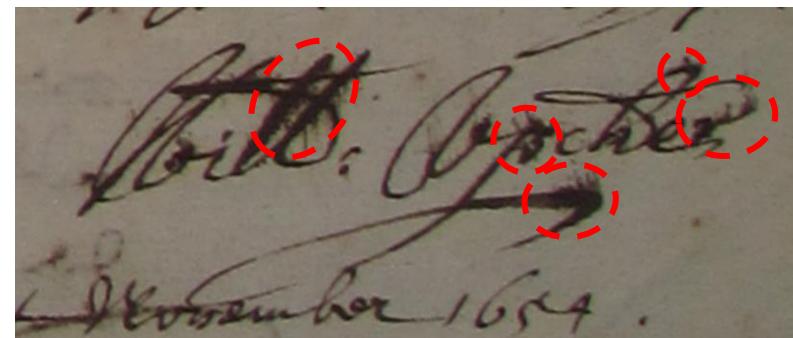
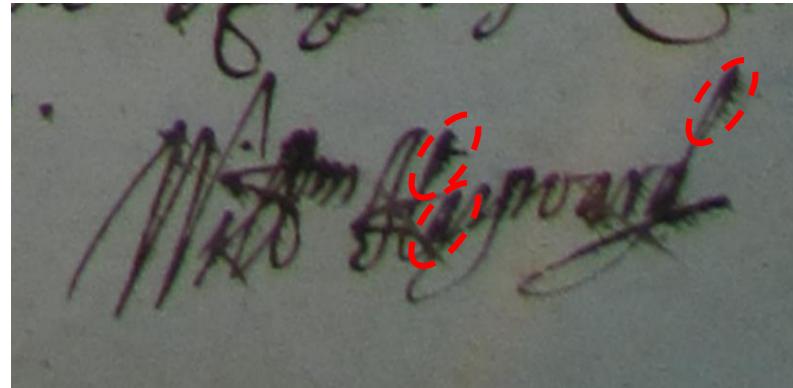
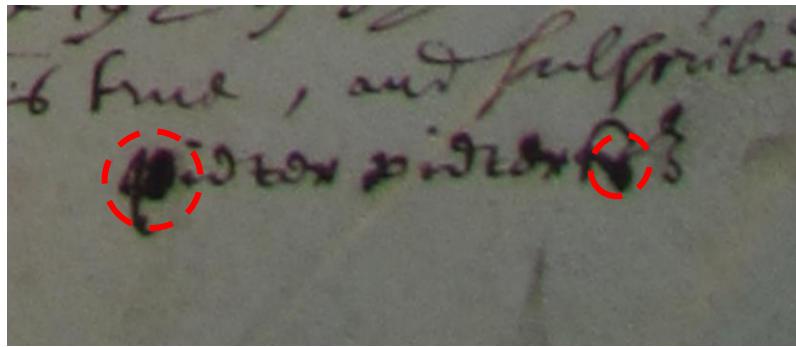
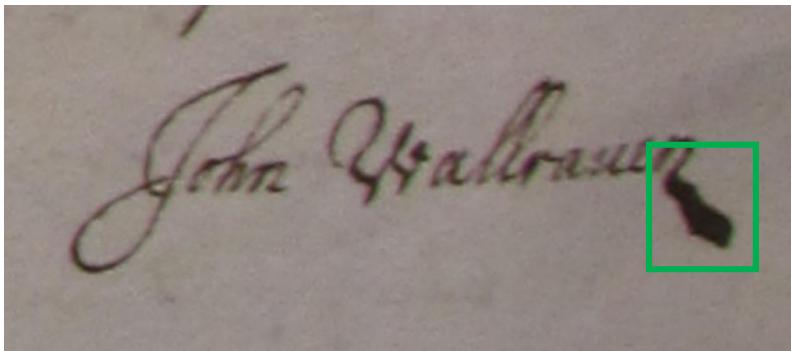
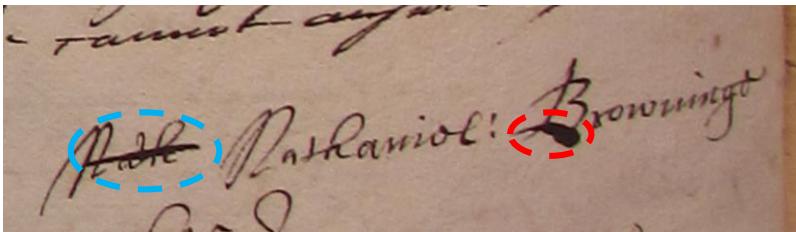
Color	Color Code	Percentage
#806040	0.806762	
#604020	0.125143	
#402020	0.062000	
#202000	0.006095	

Each panel also includes a form for file upload, number of colors (10 or 32), delta values (1-255), and checkboxes for Reduce Brightness and Reduce gradient, with a Run button.

Source: Sample images from SOLM-2018 (KaggleTestSnippet_HCA_1353_f.275v.PNG, KaggleTestSnippet_HCA_1353_f.270v_Two.PNG,

KaggleTestSnippet_HCA_1370_f.463r_One.PNG, KaggleTestSnippet_HCA_1368_f.497v.PNG) processed in http://www.coolphptools.com/color_extract#demo; same images reprocessed in Photos SW package, with adjustments set to 0% light, 0% colour, 100% clarity

Detection and analysis of blots, smudges, stylistic features, & deletions



Ink blots or smudges



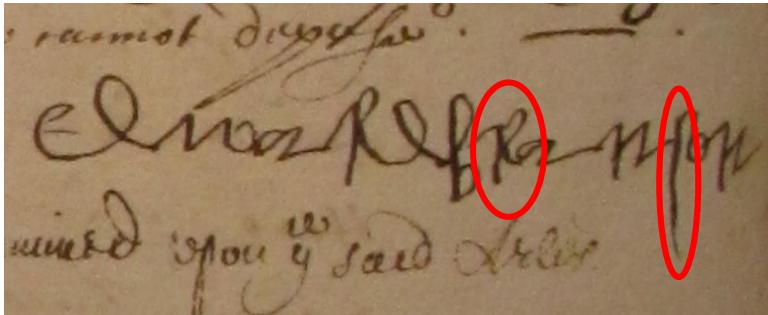
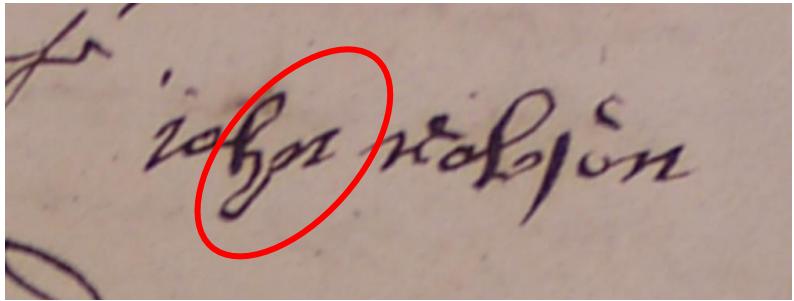
Stylistic feature or smudge?



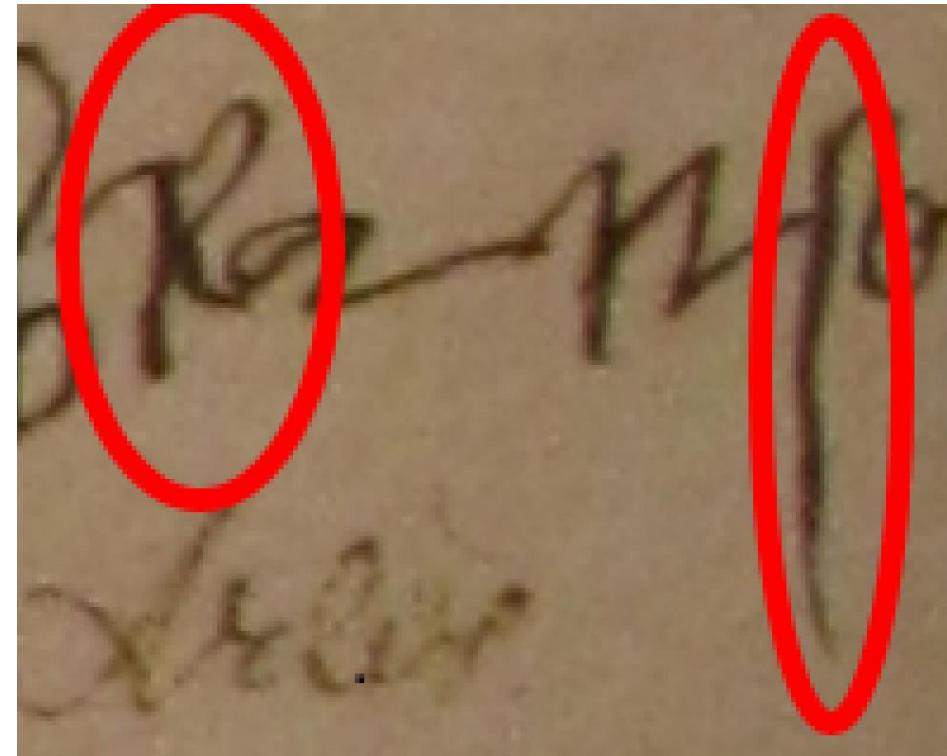
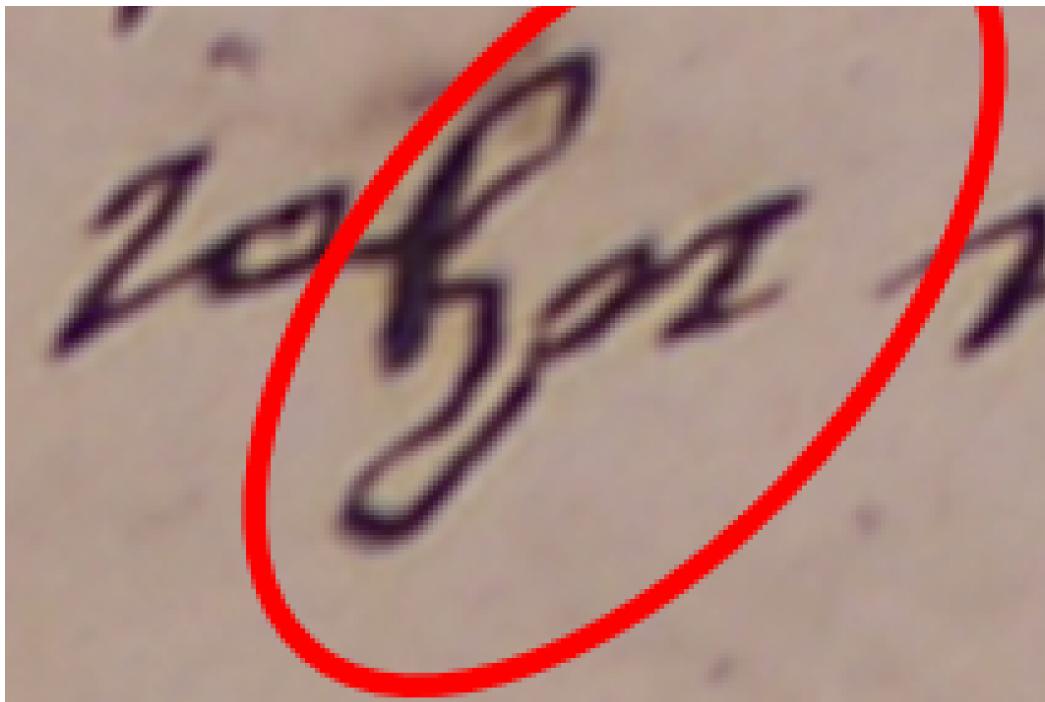
Deletion

Source: Clockwise from top LH side:
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KaggleTestSnippet_HCA_1370_f.13r.PNG,
KaggleTestSnippet_HCA_1370_f.167r.PNG,
KaggleTestSnippet_HCA_1371_f.456r.PNG,
KaggleTestSnippet_HCA_1370_f.15r.PNG,
KaggleTestSnippet_HCA_1370_f.19r.PNG,
KaggleTestSnippet_HCA_1370_f.41v.PNG,
KaggleTestSnippet_HCA_1370_f.17v.PNG

Detection of “shake” in straight and curved lines



HYPOTHESIS: Shaky lines are a sign of poor signature execution (and by inference, poor handwriting execution) suggesting lower level of literacy than smooth executed lines

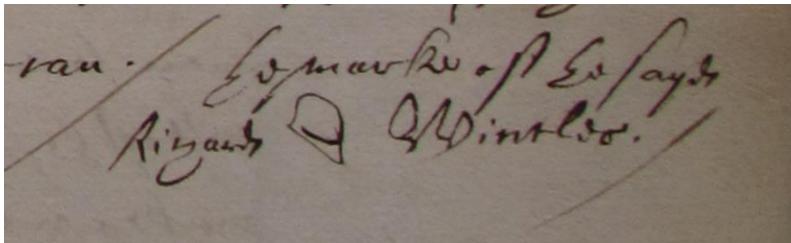


Shaky straight lines and/or loops

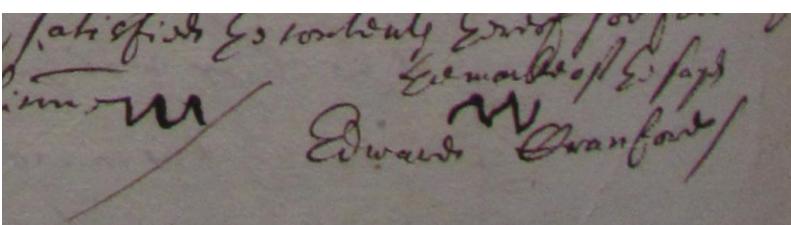
Clockwise, from top LH: KaggleTestSnippet_HCA_1371_f.435v.PNG,
KaggleTestSnippet_HCA_1368_f.483v.PNG,
KaggleTestSnippet_HCA_1368_f.483v_PIXELS.PNG,
KaggleTestSnippet_HCA_1371_f.435v.PNG_PIXELS.PNG

Porters handling coals, whale oil, ginger & corn

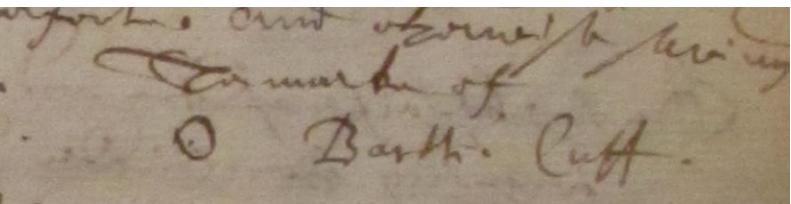
Richard Wincles, thirty-three year old porter, of the parish of Stepney, Middlesex, Dec. 15, 1656; employed as a labourer with fifteen other men to unload coals from the *Imployment* moored near Execution Dock, Wapping, into lighters for fixed rate of 12 s per man ([HCA 13/70 f.554r](#))



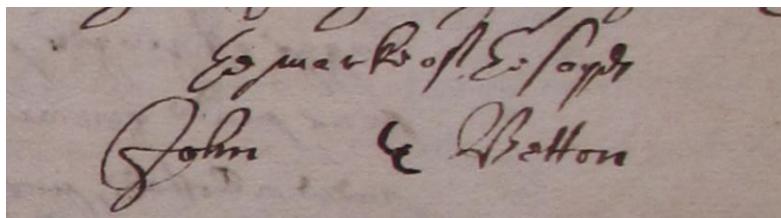
Edward Cranford, forty-four year old coale heaver or porter, of the parish of Stepney, Middlesex, Dec. 15, 1656; employed as a labourer with fifteen other men to unload coals from the *Imployment* moored near Execution Dock, Wapping, into lighters for fixed rate of 12 s per man ([HCA 13/70 f.555v](#))



Bartholomew Cuff, sixty year old porter of the Stillyard, of the parish of Allhallows the Greate, London, May 15, 1658; assisted in the landing of whale oil from lighters at the Stillyard Key and loading them away into a warehouse ([HCA 13/70 f.555v](#))



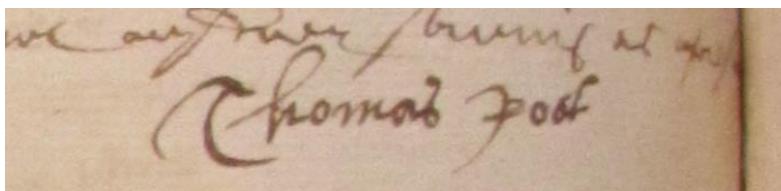
John Betton, fifty-four year old citizen and white baker of London, of the parish of Saint Buttolph Algate, London, Jul. 31, 1655; self-described as a porter employed by the Commissioners for Prize Goods to deliver ginger from a warehouse at Ralphes Key ([HCA 13/70 f.449r](#))



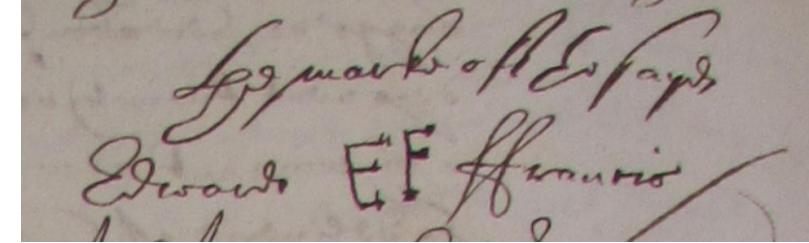
Edward Sherwin, fifty-six year old cittizen and leatherseller, of the parish of Little Allhallowes, London, Jul. 31, 1655; self-described as a porter employed by the Commissioners for Prize Goods to deliver ginger from a warehouse at Ralphes Key ([HCA 13/70 f.449v](#))



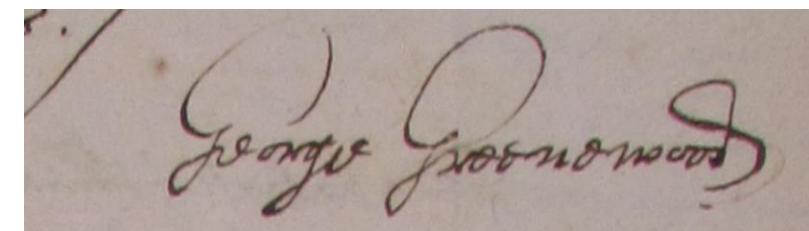
Thomas Roots, twenty-nine year old porter, of the parish of Greate Allhallowes, London, May 15, 1658; assisted in the landing of whale oil from lighters at the Stillyard Key, as one of the Stillyard porters, and loading them away into a warehouse ([HCA 13/72 f.330v](#))



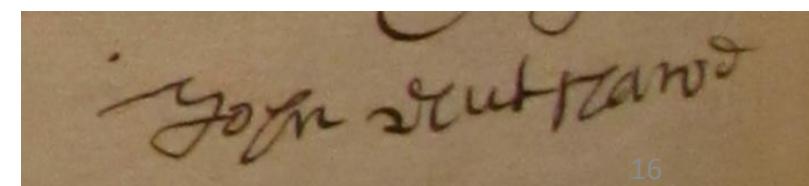
Edward ffrancis, citizen and merchant taylor of London, of the parish of Saint Olave in Southwarke, Jul. 31, 1655; self-described as a porter employed by the Commissioners for Prize Goods to deliver ginger from a warehouse at Ralphes Key ([HCA 13/70 f.450v](#))



George Greenwood, thirty year old citizen and vintner of London, of the parish of Saint Buttolph Bishopsgate, London, Jul. 31, 1655; self-described as a porter employed by the Commissioners for Prize Goods to deliver ginger from a warehouse at Ralphes Key ([HCA 13/70 f.454r](#))

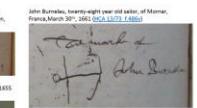
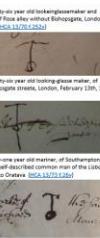
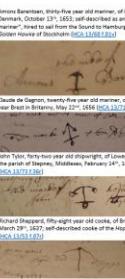


John Nutshall, fifty-five year old corne porter, of the parish of Saint Saviours Southwarke, Nov. 19, 1653; employed with a barber chyrurgeon/corne meter, an additional corne-meter, and other labourers to unlade a cargo of what in the *ffortune* of Stettin, moored against Limehouse; eight years of experience as a corne porter ([HCA 13/70 f.352v](#))



SOLM-2018 IIIF anchors manifest in Mirador viewer

Anchors



44

HCA Depositions: Anchors

The Mirador viewer interface displays a large central image of a manuscript page with several anchor markings. Below this main image are five smaller, horizontal thumbnails, each showing a different set of anchor markings. The thumbnails are labeled with names: Richard Shepperd, Andrew Beake (2), Andrew Beake (1) (which is highlighted with a blue border), John Tylor, and John Burnelau. The interface includes standard Mirador controls like navigation arrows, zoom tools, and a search bar.

Richard Shepperd

Andrew Beake (2)

Andrew Beake (1)

John Tylor

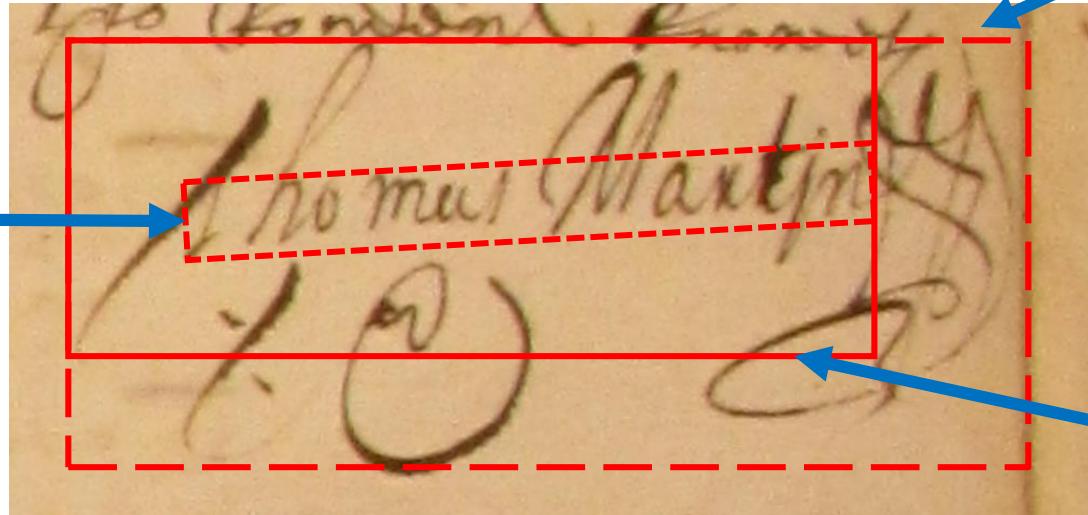
John Burnelau

Boundary boxes marking the visual geometry of a signature

Inside boundary box,
excluding uppers and
downers

Outside boundary
box, including
flourish

Middle boundary
box, including all
letters, but excluding
flourish



Statistics

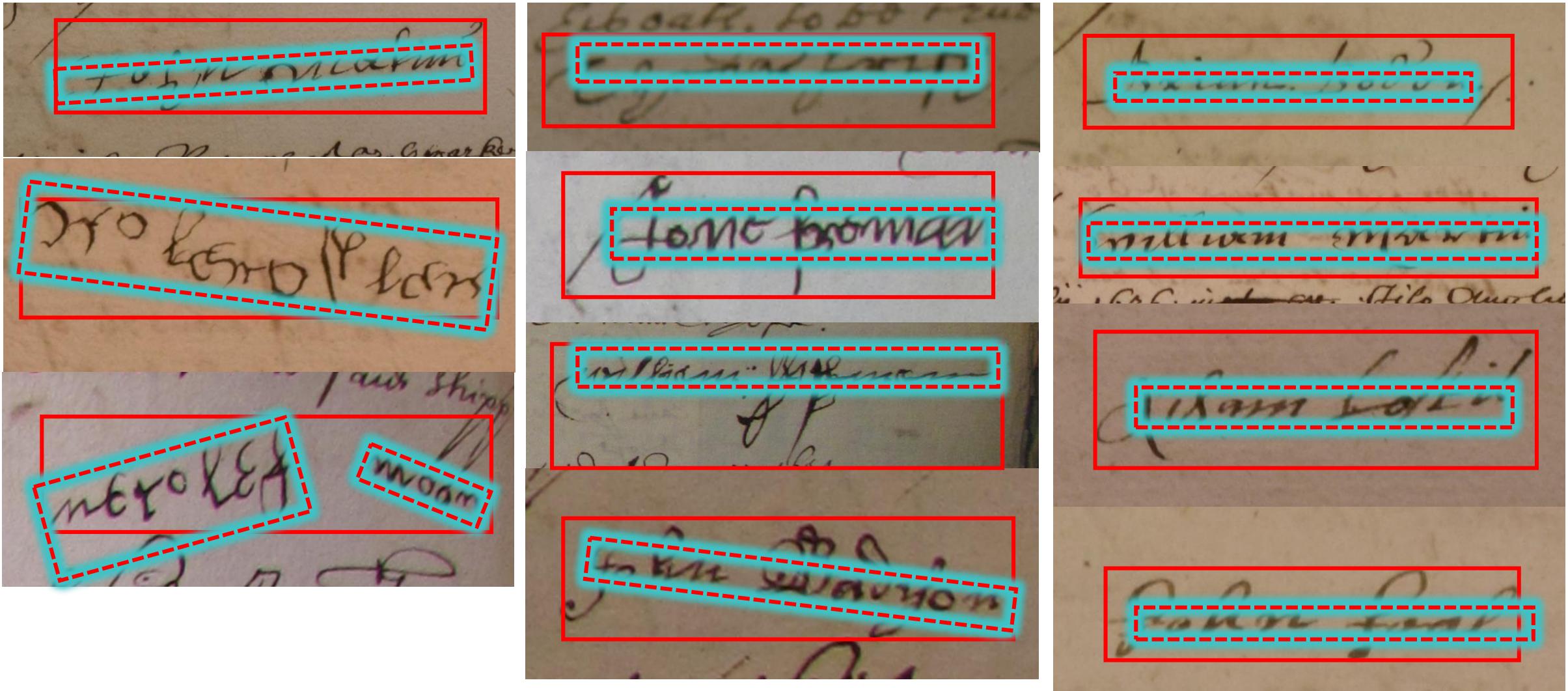
Inside boundary box: 9.0 x 1.1

Middle boundary box: 9.75 x 4.25

Outside boundary box: 12.75 x 5.75

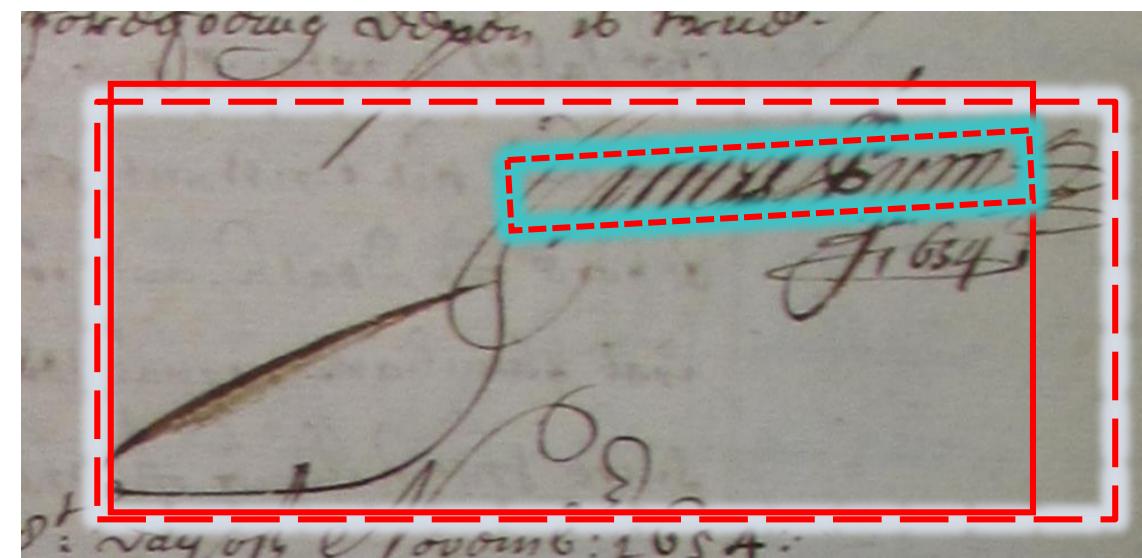
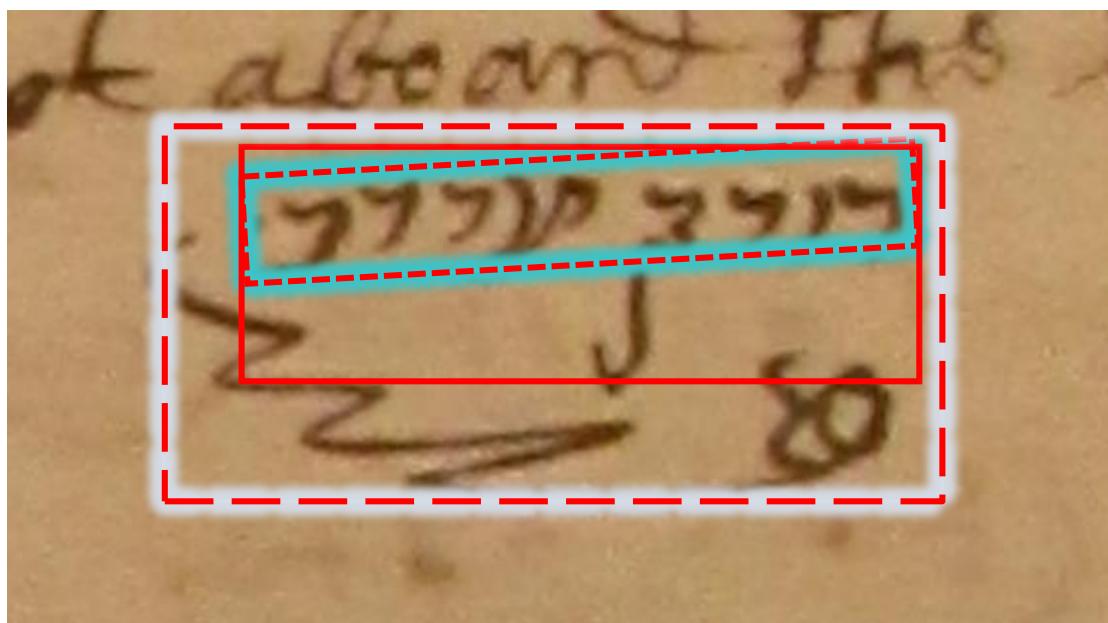
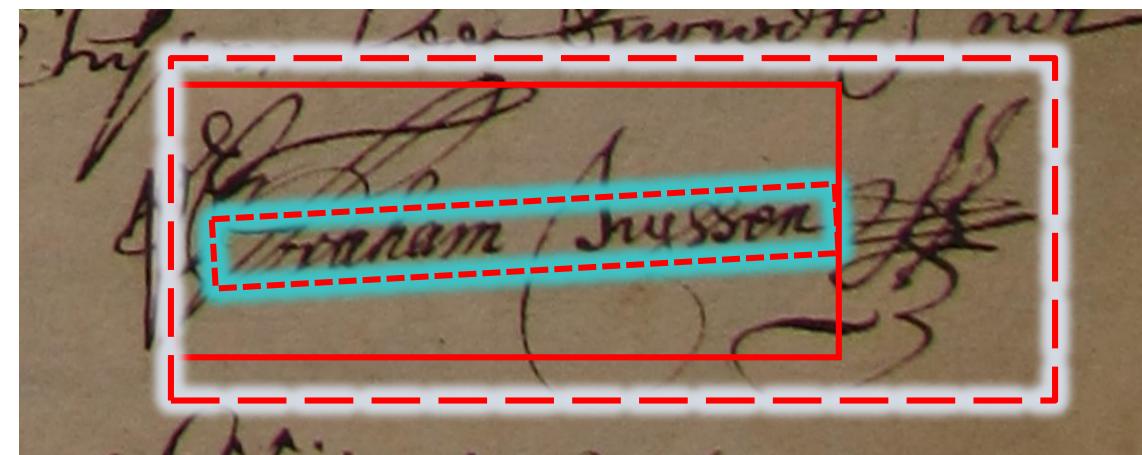
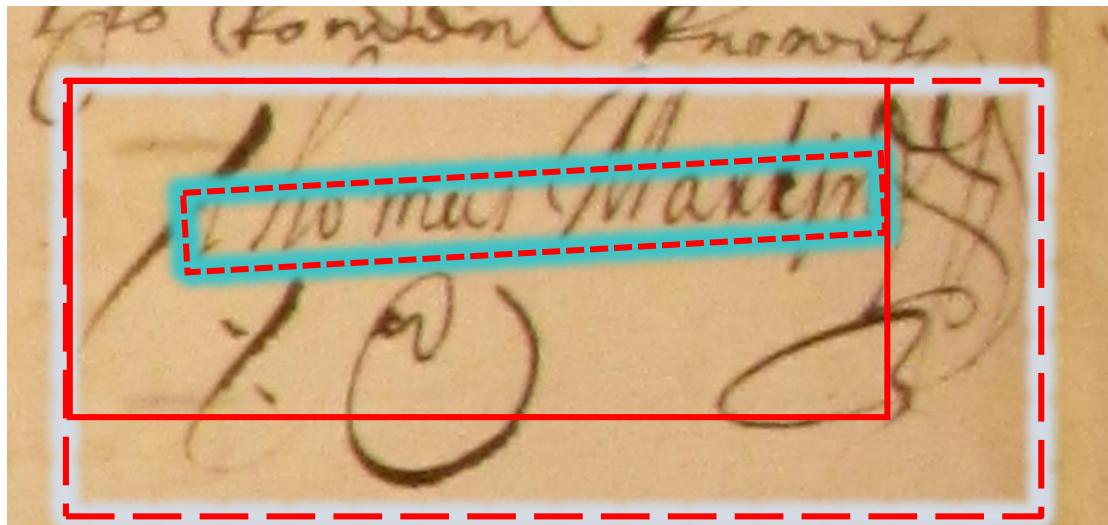
Rotation from horizontal: ca. 340 degrees

Simple signatures, no flourishes



Source: Down from top LH side: KaggleTestSnippet_HCA_1353_f.24v.PNG, KaggleTestSnippet_HCA_1353_f.188r.PNG;
Down from top Middle: KaggleTestSnippet_HCA_1353_f.66r.PNG; KaggleTestSnippet_HCA_1370_f.193r_One.PNG,
KaggleTestSnippet_HCA_1370_f.203r.PNG, KaggleTestSnippet_HCA_1370_f.218r.PNG
Down from top RH SIDE: KaggleTestSnippet_HCA_1353_f.28v.PNG, KaggleTestSnippet_HCA_1353_f.29v_One.PNG,
KaggleTestSnippet_HCA_1353_f.35r.PNG, KaggleTestSnippet_HCA_1353_f.36v.PNG

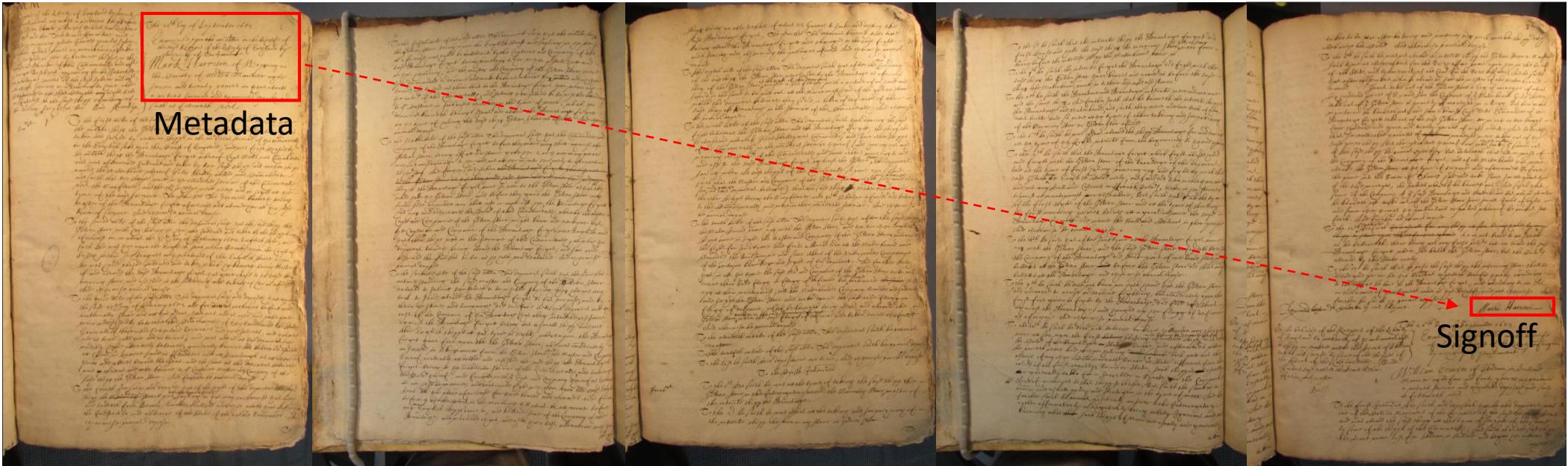
Visual geometries of flourishes – C17th Irish, Dutch, English & Moroccan merchants



Source: Clockwise from top LH side: KaggleTestSnippet_HCA_1368_f.34v.PNG,
KaggleTestSnippet_HCA_1370_f.366r.PNG, KaggleTestSnippet_HCA_1370_f.134r.PNG,
KaggleTestSnippet_HCA_1368_f.58r.PNG

Legal deposition

Deposition of Mark Harrison; mariner and master; resident in Wapping, Middlesex; age 27;
Dated September 21st 1659 (TNA, HCA 13/68, ff. 1r-3r)



Machine based recognition of metadata

The 21st Day of September 1693

Examined upon the 21st day of September 1693 before me by
John Hales Esq; a Notary Publick for the County of Lancashire
and the City of Lancaster by
Mark Harrison of Waddington in
the County of Middle Marches aged
fifty and twenty years or thereabouts
a married man and a master
of a small farm and a man of moderate
means.

Q. In the first article of the said warrant the day and year before
the aforesaid Sheriff the following Starre or Morning Starre and his
labor and service as a common shipp in the usual course of his commonal-
in the Longish field upon the Coast of England, and his first Captain
he aforesaid being the Stevenglass Captain whose of East Middle Marches
and son of Edward Harrison late taken by the said shipp and another shipp
named the Master Name whereof Peter Hartley Abbott was Commandor
and forth that two shipp went in his command in service of the Commonwealth
with the Grayfalcon, and the 16th January 1692 were set in sight at the
time of the said forenoon. Questioned The Defendant Answered saying
that he was the Stevenglass Captain about aforesaid and above for the said
King of England. And answering a general question

C. The second article of the said warrant the day and year before
the same year with the aforesaid 16th was followed and taken by the shipp
aforesaid on or about the 25th day of February 1692 against him, and
with him was then upon the English coast where he was upon the Coast of
Suffolk within the purview and jurisdiction of the English Admirals wherein
he was called Master ydward and taken aforesaid to Newhaven being Master
of and aboard the said Stevenglass Captain who was sent to the said shipp
Morning Starre and who was in the following aforesaid service of the aforesaid
Ships it appears by several depositions.

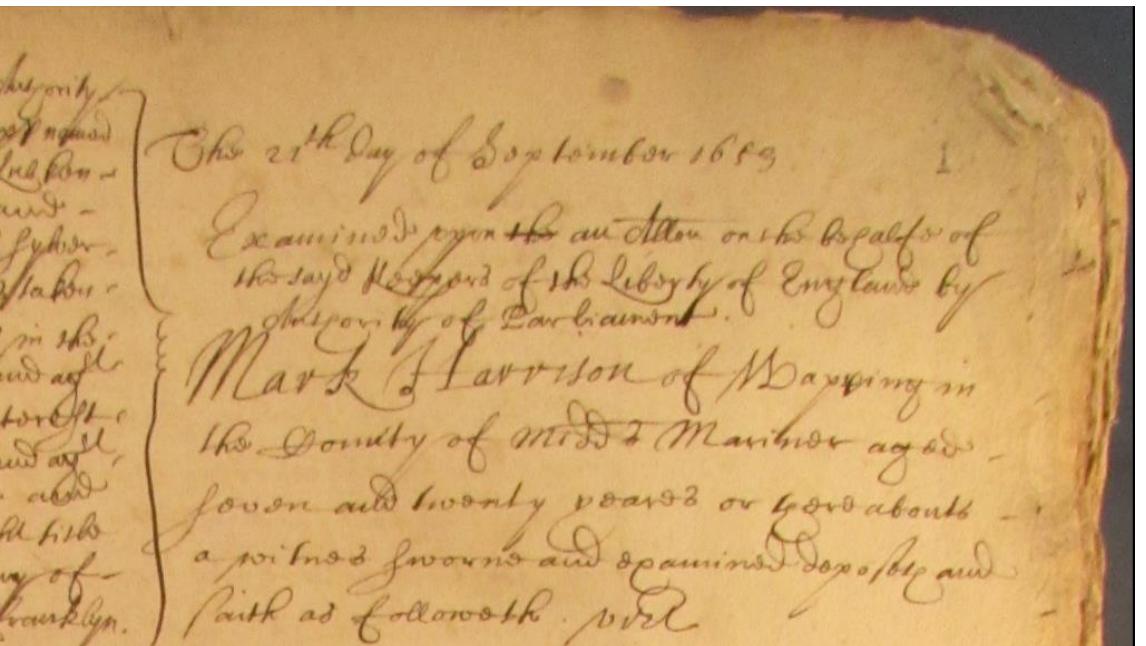
C. The third article of the said warrant the day and year before
the said 25th day of February 1692 also for which he aforesaid he first and
continually then and all his life, from and ever since his publick ser-
vice ended with the Commonwealth the State
General of Newhaven being Master of the said
Admiral town aforesaid and continued so and was then at Newhaven and
probably upon Newhaven Admirell, generally knowne as Newhaven Towne
at Newhaven said so affirmed and at Newhaven as aforesaid
Ports and places beyond the seas and the said at the Newhaven Admirell
was a general and well knowne to all Captains Master and Company of the
said 16th day of the Month of February. And further he aforesaid deposed.

C. The fourth article and next last of the said warrant the day and
year the aforesaid 25th day of February in the year aforesaid he aforesaid
and aforesaid from Newhaven to the said Admirell and other ports upon the
said 16th day of February and additional of the State of the said Commonwealth. The
aforesaid general deposed.

The 21st Day of September 1689

Examined upon the affaile on the behalfs of
the sayd Negroes of the Liberty of Engelewood by
Mark T. Garrison of Newbury in
the County of Middlesex aged
seven and twenty years or there abouts
sworn from and examined upon opon the 21st day
of September 1689 in the following manner

Speech to text recognition



Watson Speech to Text / Speech to Text Demo

Speech to Text

The IBM Watson Speech to Text service uses speech recognition capabilities to convert Arabic, English, Spanish, French, Brazilian Portuguese, Japanese, Korean, and Mandarin speech into text.

[Get Started](#) [API Reference](#) [Documentation](#) [Fork on GitHub](#) [Start for free in IBM Cloud](#)

Voice Model:

GB English broadband model (16KHz) ▾

mark Harris² and of⁴ what happened⁷ in² the county of Middlesex mariner⁸ aged seven and twenty years

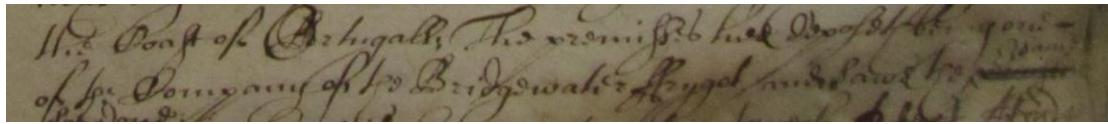
mark Harrison³ of² walking⁸ in² the county of Middlesex mariner¹⁵ aged seven and twenty years or² there⁴ about

mark² Harrison³ of² what⁴ happened in the county of Middlesex mariner¹⁰ aged seven and twenty years or⁴ there⁴

mark² Harrison³ or³ walking in the county of Middlesex mariner⁸ aged² seven and twenty years³ or² the³ about⁵

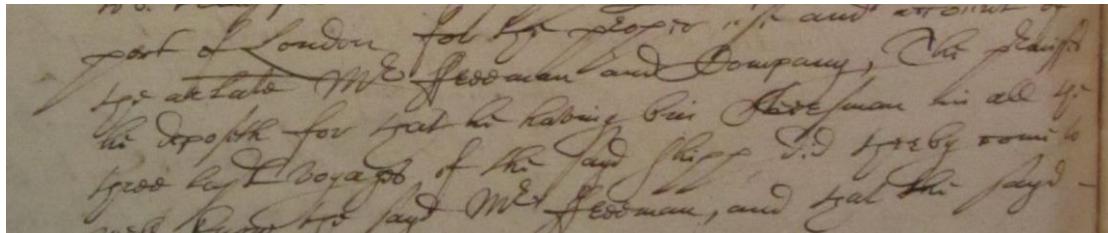
Can we use key word spotting to excavate raw metadata?

LANGUAGE DENOTING OCCUPATION



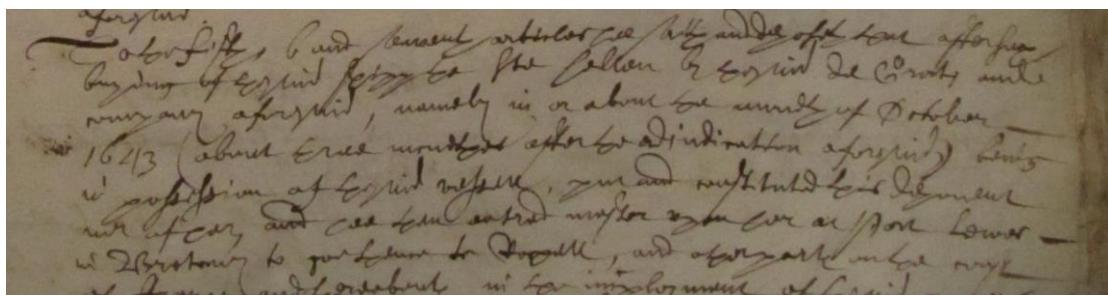
W^t Roast of Orthigall, The premissee hee deposeth
of the Companye of the Bridgewater ffrygott, and sawe her
in the same shipp in the said voyage.

"The premisses hee deposeth being one of the company of
the *Bridgewater ffrygott*, and sawe the same soe done" [HCA 13/72
f.90r] [CONCLUSION: One of the company]



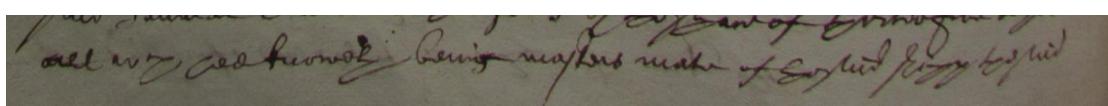
part of London for the sead to "ye and" another
ye late Mr. Godman and Company, the shipp
the deponet for that he had in his service in all ye
free last boyards of the sayd shipp D. I. byt of monies
and he paid Mr. Godman, and that the sayd

"The premisses he deposeth for that he the deponent was not onely
for the voyage arlate wherein she was stranded, but in two former
voyages stiersman of the sayd ship" [HCA 13/72 f.90v] [CONCLUSION:
Steersman]



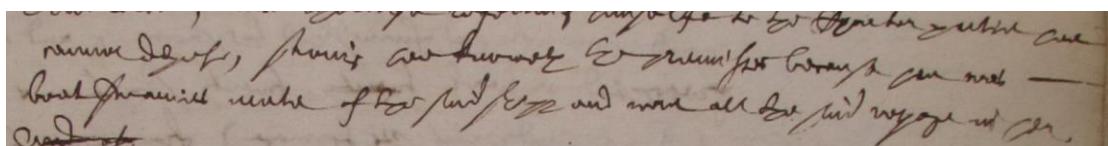
Yours.
To oblyf, and present witness as he ande off late after
buying of Esq^r J^r to the Bellin or Esq^r de Grotte and
many other apysit, namely in or about the moneth of October
1643 (about three moneths after the adiudication aforesaid) being
in possession at Esq^r de Grotte, and he then constuted this
one of Esq^r and he then constuted master of her at Port Lewes
in Bretany to go to her to Foggall, and afterwards in the same
to Lorient in the moneth of Nov^r.

"after such buying of the said shipp the *Santa Hellen* by the said da
[?Groots] and company aforesaid, namely in or about the moneth of
October 1643 (about three monethes after the adiudication aforesaid)
being in possession of the said vessel, put and constituted this
deponent master of her, and hee then entred master upon her at Port
Lewes in Bretany" [HCA 13/72 f.95r] [CONCLUSION: Master]



all my ded knoweth being masters mate of sayd shipp byt mid
the same shipp, having ever knoweth Esq^r de Grotte to be one
boat swaines mate of sayd shipp and made all sayd shipp voyages w^t her.

"all which hee knoweth being masters mate of the said shipp the said
voyage" [HCA 13/70 f.669v] [CONCLUSION: Master's mate]



knoweth the premisses because hee was boatswaines mate of the
said shipp and went all the said voyage in her" [HCA 13/70 f.671r]
[CONCLUSION: Boatswain's mate]

Can we refine raw machine generated metadata using a combination of NPL, controlled vocabularies, and programmable decision rules?

LANGUAGE DENOTING OCCUPATION

"The premisses hee deposeth being one of the company of the *Bridgewater ffrygott*, and sawe the same soe done"
[HCA 13/72 f.90r] [CONCLUSION: One of the company]

"The premisses he deposeth for that he the deponent was not onely for the voyage arlate wherein she was stranded, but in two former voyages stiersman of the sayd ship" [HCA 13/72 f.90v] [CONCLUSION: Steersman]

"after such buying of the said shipp the *Santa Hellen* by the said da [?Groots] and company aforesaid, namely in or about the moneth of October 1643 (about three monethes after the adiudication aforesaid) being in possession of the said vessel, put and constituted this deponent master of her, and hee then entred master upon her at Port Lewes in Bretany" [HCA 13/72 f.95r] [CONCLUSION: Master]

"all which hee knoweth being masters mate of the said shipp the said voyage" [HCA 13/70 f.669v] [CONCLUSION: Master's mate]

"the premisses because hee was boatswaines mate of the said shipp and went all the said voyage in her" [HCA 13/70 f.671r] [CONCLUSION: Boatswain's mate]

KaggleTestSnippet_HCA_1370_f_546r.PNG	HCA 13/70	Signature	Mariner; Boatswain
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KaggleTestSnippet_HCA_1370_f_596v_One.PNG	HCA 13/70	Signature	Mariner; Boatswain
KaggleTestSnippet_HCA_1370_f_636r.PNG	HCA 13/70	Signature	Mariner; Principal boatswain
KaggleTestSnippet_HCA_1370_f_671v.PNG	HCA 13/70	Marke	Mariner; Boatswain's mate
KaggleTestSnippet_HCA_1368_f_631v.PNG	HCA 13/68	Signature	Mariner; Boatswain
KaggleTestSnippet_HCA_1371_f_27r.PNG	HCA 13/71	Initials	Mariner; Boatswain
KaggleTestSnippet_HCA_1371_f_27v_One.PNG	HCA 13/71	Initials	Mariner; Boatswain
KaggleTestSnippet_HCA_1371_f_27v_Two.PNG	HCA 13/71	Initials	Mariner; Boatswain
KaggleTestSnippet_HCA_1368_f_640r.PNG	HCA 13/68	Signature	Mariner; Boatswain
KaggleTestSnippet_HCA_1368_f_687r.PNG - CREATE HCA 13/68	HCA 13/68	Signature	Mariner; Boatswain [of the Civill Society]
KaggleTestSnippet_HCA_1371_f_77v.PNG	HCA 13/71	Signature	Mariner; Boatswain
KaggleTestSnippet_HCA_1370_f_378r.PNG	HCA 13/70	Signature	Mariner; Boatswain
KaggleTestSnippet_HCA_1371_f_99r.PNG	HCA 13/71	Signature and	Mariner; Boatswain [of man of war]
KaggleTestSnippet_HCA_1370_f_484r.PNG	HCA 13/70	Signature	Mariner; Quartermaster; Boatswain
KaggleTestSnippet_HCA_1371_f_139v.PNG	HCA 13/71	Signature	Mariner; Boatswain
KaggleTestSnippet_HCA_1371_f_167r.PNG	HCA 13/71	Signature	Mariner; Boatswain [of the John and Mary]
KaggleTestSnippet_HCA_1371_f_279r.PNG	HCA 13/71	Signature	Mariner; Boatswain

File name&c	Volume	Type	Occupation	Month	Year	Estimated	names	name	last name
				Wage	paid	age	Age	Age	Age
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KaggleTestSnippet_HCA_1370_f_571v.PNG	HCA 13/70	Signature	Mariner; Boatswain	40	1654	1625 Peter	Simonson	Simonson	Lee
KaggleTestSnippet_HCA_1370_f_596v_One.PNG	HCA 13/70	Signature	Mariner; Boatswain	30	1654	1625 John	Lee	Lee	Lee
KaggleTestSnippet_HCA_1370_f_636r.PNG	HCA 13/70	Signature	Mariner; Boatswain	26	1655	1629 John	Lee	Lee	Lee
KaggleTestSnippet_HCA_1370_f_671v.PNG	HCA 13/70	Marke	Mariner; Boatswain	26	1655	1629 John	Lee	Lee	Lee
KaggleTestSnippet_HCA_1368_f_631v.PNG	HCA 13/68	Signature	Mariner; Boatswain	26	1655	1629 John	Lee	Lee	Lee
KaggleTestSnippet_HCA_1371_f_27r.PNG	HCA 13/71	Initials	Mariner; Boatswain	26	1655	1629 John	Lee	Lee	Lee
KaggleTestSnippet_HCA_1371_f_27v_One.PNG	HCA 13/71	Initials	Mariner; Boatswain	26	1655	1629 John	Lee	Lee	Lee
KaggleTestSnippet_HCA_1371_f_27v_Two.PNG	HCA 13/71	Initials	Mariner; Boatswain	26	1655	1629 John	Lee	Lee	Lee
KaggleTestSnippet_HCA_1368_f_640r.PNG	HCA 13/68	Signature	Mariner; Boatswain	26	1655	1629 John	Lee	Lee	Lee
KaggleTestSnippet_HCA_1368_f_687r.PNG - CREATE HCA 13/68	HCA 13/68	Signature	Mariner; Boatswain [of the Civill Society]	26	1655	1629 John	Lee	Lee	Lee
KaggleTestSnippet_HCA_1371_f_77v.PNG	HCA 13/71	Signature	Mariner; Boatswain	22	1655	1635 Joseph	Casperell	Casperell	Casperell
KaggleTestSnippet_HCA_1370_f_378r.PNG	HCA 13/70	Signature	Mariner; Boatswain	22	1655	1635 Robert	Shorting	Shorting	Shorting
KaggleTestSnippet_HCA_1371_f_99r.PNG	HCA 13/71	Signature and	Mariner; Boatswain [of man of war]	22	1655	1635 Robert	Shorting	Shorting	Shorting
KaggleTestSnippet_HCA_1370_f_484r.PNG	HCA 13/70	Signature	Mariner; Quartermaster; Boatswain	22	1655	1635 William	Conquett	Conquett	Conquett
KaggleTestSnippet_HCA_1371_f_139v.PNG	HCA 13/71	Signature	Mariner; Boatswain	22	1655	1635 John	Johansen	Johansen	Johansen
KaggleTestSnippet_HCA_1371_f_167r.PNG	HCA 13/71	Signature	Mariner; Boatswain [of the John and Mary]	22	1655	1635 John	Johansen	Johansen	Johansen
KaggleTestSnippet_HCA_1371_f_279r.PNG	HCA 13/71	Signature	Mariner; Boatswain	41	1655	1634 Cornelius	Peterson	Peterson	Mathyson
KaggleTestSnippet_HCA_1370_f_546r.PNG	HCA 13/70	Signature	Mariner; Boatswain	34	1655	1621 Hendrick	Stralund	Stralund	Aars
KaggleTestSnippet_HCA_1370_f_571v.PNG	HCA 13/70	Signature	Mariner; Boatswain	34	1655	1621 Hendrick	Stralund	Stralund	Aars
KaggleTestSnippet_HCA_1370_f_596v_One.PNG	HCA 13/70	Signature	Mariner; Boatswain	30	1654	1624 Thomas	Strerner	Strerner	Strerner
KaggleTestSnippet_HCA_1370_f_636r.PNG	HCA 13/70	Signature	Mariner; Boatswain	29	1654	1623 Thomas	Serjeant	Serjeant	Serjeant
KaggleTestSnippet_HCA_1370_f_671v.PNG	HCA 13/70	Signature	Mariner; Boatswain	29	1654	1623 Thomas	Serjeant	Serjeant	Serjeant
KaggleTestSnippet_HCA_1368_f_631v.PNG	HCA 13/68	Signature	Mariner; Boatswain	29	1654	1623 Thomas	Serjeant	Serjeant	Serjeant
KaggleTestSnippet_HCA_1371_f_27r.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1654	1623 Thomas	Serjeant	Serjeant	Serjeant
KaggleTestSnippet_HCA_1371_f_27v_One.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1654	1623 Thomas	Serjeant	Serjeant	Serjeant
KaggleTestSnippet_HCA_1371_f_27v_Two.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1654	1623 Thomas	Serjeant	Serjeant	Serjeant
KaggleTestSnippet_HCA_1368_f_640r.PNG	HCA 13/68	Signature	Mariner; Boatswain	40	1654	1624 Thomas	Minshall	Minshall	Minshall
KaggleTestSnippet_HCA_1368_f_687r.PNG - CREATE HCA 13/68	HCA 13/68	Signature	Mariner; Boatswain [of the Civill Society]	40	1654	1624 Thomas	Minshall	Minshall	Minshall
KaggleTestSnippet_HCA_1371_f_77v.PNG	HCA 13/71	Signature	Mariner; Boatswain	30	1655	1630 John	Court	Court	Court
KaggleTestSnippet_HCA_1370_f_378r.PNG	HCA 13/70	Signature	Mariner; Boatswain	30	1655	1624 Pierre	Roussel	Roussel	Roussel
KaggleTestSnippet_HCA_1370_f_546r.PNG	HCA 13/70	Signature	Mariner; Boatswain	28	1656	1630 William	Elton	Elton	Elton
KaggleTestSnippet_HCA_1370_f_571v.PNG	HCA 13/70	Signature	Mariner; Boatswain	28	1656	1630 William	Elton	Elton	Elton
KaggleTestSnippet_HCA_1370_f_596v_One.PNG	HCA 13/70	Signature	Mariner; Boatswain	30	1656	1626 Henry	Crouch	Crouch	Crouch
KaggleTestSnippet_HCA_1370_f_636r.PNG	HCA 13/70	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1370_f_671v.PNG	HCA 13/70	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_631v.PNG	HCA 13/68	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27r.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27v_One.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27v_Two.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_640r.PNG	HCA 13/68	Signature	Mariner; Boatswain	28	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_687r.PNG - CREATE HCA 13/68	HCA 13/68	Signature	Mariner; Boatswain [of the Civill Society]	28	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_77v.PNG	HCA 13/71	Signature	Mariner; Boatswain	30	1655	1630 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1370_f_378r.PNG	HCA 13/70	Signature	Mariner; Boatswain	30	1655	1624 Pierre	Roussel	Roussel	Roussel
KaggleTestSnippet_HCA_1370_f_546r.PNG	HCA 13/70	Signature	Mariner; Boatswain	28	1656	1630 William	Elton	Elton	Elton
KaggleTestSnippet_HCA_1370_f_571v.PNG	HCA 13/70	Signature	Mariner; Boatswain	28	1656	1630 William	Elton	Elton	Elton
KaggleTestSnippet_HCA_1370_f_596v_One.PNG	HCA 13/70	Signature	Mariner; Boatswain	30	1656	1626 Henry	Crouch	Crouch	Crouch
KaggleTestSnippet_HCA_1370_f_636r.PNG	HCA 13/70	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1370_f_671v.PNG	HCA 13/70	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_631v.PNG	HCA 13/68	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27r.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27v_One.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27v_Two.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_640r.PNG	HCA 13/68	Signature	Mariner; Boatswain	28	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_687r.PNG - CREATE HCA 13/68	HCA 13/68	Signature	Mariner; Boatswain [of the Civill Society]	28	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_77v.PNG	HCA 13/71	Signature	Mariner; Boatswain	30	1655	1630 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1370_f_378r.PNG	HCA 13/70	Signature	Mariner; Boatswain	30	1655	1624 Pierre	Roussel	Roussel	Roussel
KaggleTestSnippet_HCA_1370_f_546r.PNG	HCA 13/70	Signature	Mariner; Boatswain	28	1656	1630 William	Elton	Elton	Elton
KaggleTestSnippet_HCA_1370_f_571v.PNG	HCA 13/70	Signature	Mariner; Boatswain	28	1656	1630 William	Elton	Elton	Elton
KaggleTestSnippet_HCA_1370_f_596v_One.PNG	HCA 13/70	Signature	Mariner; Boatswain	30	1656	1626 Henry	Crouch	Crouch	Crouch
KaggleTestSnippet_HCA_1370_f_636r.PNG	HCA 13/70	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1370_f_671v.PNG	HCA 13/70	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_631v.PNG	HCA 13/68	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27r.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27v_One.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27v_Two.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_640r.PNG	HCA 13/68	Signature	Mariner; Boatswain	28	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_687r.PNG - CREATE HCA 13/68	HCA 13/68	Signature	Mariner; Boatswain [of the Civill Society]	28	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_77v.PNG	HCA 13/71	Signature	Mariner; Boatswain	30	1655	1630 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1370_f_378r.PNG	HCA 13/70	Signature	Mariner; Boatswain	30	1655	1624 Pierre	Roussel	Roussel	Roussel
KaggleTestSnippet_HCA_1370_f_546r.PNG	HCA 13/70	Signature	Mariner; Boatswain	28	1656	1630 William	Elton	Elton	Elton
KaggleTestSnippet_HCA_1370_f_571v.PNG	HCA 13/70	Signature	Mariner; Boatswain	28	1656	1630 William	Elton	Elton	Elton
KaggleTestSnippet_HCA_1370_f_596v_One.PNG	HCA 13/70	Signature	Mariner; Boatswain	30	1656	1626 Henry	Crouch	Crouch	Crouch
KaggleTestSnippet_HCA_1370_f_636r.PNG	HCA 13/70	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1370_f_671v.PNG	HCA 13/70	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_631v.PNG	HCA 13/68	Signature	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27r.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27v_One.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_27v_Two.PNG	HCA 13/71	Initials	Mariner; Boatswain	29	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_640r.PNG	HCA 13/68	Signature	Mariner; Boatswain	28	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1368_f_687r.PNG - CREATE HCA 13/68	HCA 13/68	Signature	Mariner; Boatswain [of the Civill Society]	28	1656	1627 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1371_f_77v.PNG	HCA 13/71	Signature	Mariner; Boatswain	30	1655	1630 John	Heck	Heck	Heck
KaggleTestSnippet_HCA_1370_f_378									

We need visual metadata, which can be machine processed

Table 1.2a EXPANDED: HCA 13/53 [f.1r-340v] - Signoff frequency per manuscript page, data from 1637

	1 r	2 v	3 r	4 v	5 r	6 v	7 r	8 v	9 r	10 v	Subtotal									
1-10	1	2	3	1	0	1	0	2	2		16									
11-20	2	2	1		1	1	1	1	1	1	13									
21-30	2	1		1	3	1	1	1	2	1	16									
31-40		1	1	1		1	1	2	1	1	13									
41-50		1		1			1	1	1		6									
51-60			1		1	2	1		2	2	11									
61-70	2			1	1		2	1	1	1	18									
71-80	1	2	1			1	2	1	1	1	19									
81-90	2	1	1	1	1	2	1	2	4	1	23									
91-100	1	2			1	2	2	3	3	1	26									
101-110	2	1	2	2	1	1	2	2	1	2	23									
111-120	1			1		1	1	2	1	2	16									
121-130			1			2		1	1	2	12									
131-140	2	3	2	1	1	2		1	1	2	1	23								
141-150	1	1	2	1	2	2	1	2	1	1	22									
151-160		1			2		1	1	2	1	18									
161-170		1		2	2	1		1	2	1	17									
171-180	1	2			2	1	1	1		1	11									
181-190				2				3	1	2	1	21								
191-200		1			1	1	1	1	1	2	1	17								
201-210	2	2			1	1	2	4	3	1	2	24								
211-220	1		2	1		1		1	4	1	2	25								
221-230	2	2	1	3		1	2	1	1	2	2	25								
231-240	1	1		1	2	1	1	3		2	1	15								
241-250	2						2	1	1	2	1	15								
251-260	2		2	2	1	1	1	1		1	1	15								
261-270		1	1		1	1		1	1	1	2	11								
271-280	2			1		1	1	1		1	1	12								
281-290	1		1	2	1	1	1	1	1	2	1	14								
291-300		1	1	1	1	2	1	1	1	1	1	15								
301-310	1		2				2	1	2	1	1	12								
311-320			1			1			1	2	1	6								
321-330				1		1		1			3	7								
331-340	1	2	2	2		2	1	1	1	1	1	18								
Total	31	30	24	27	23	17	23	30	19	31	39	31	33	30	42	33	16	29	16	555

Archivists, computer scientists and users of all sorts need to work together

Table 1.2a: HCA 13/53 [f.1r-100v] - Signoff frequency per manuscript page, data from 1637

	1	2	3	4	5	6	7	8	9	10	Total
	r	p	r	r	r	r	r	r	r	r	
1-10	1	2	3	1	0	1	1	0	2	2	16
11-20	2	2	1	1	1	1	1	1	1	1	13
21-30	2	1	1	3	1	1	1	1	1	1	18
31-40	1	1	1	1	1	1	2	1	1	1	13
41-50	1	1	1	1	1	1	1	1	1	1	6
51-60	1	1	1	1	1	1	2	1	1	1	11
61-70	2	1	1	1	2	1	1	1	2	1	20
71-80	1	2	1	1	1	2	1	1	1	1	19
81-90	2	1	1	1	1	2	1	2	4	1	23
91-100	1	2	1	1	2	2	3	3	1	3	1
Total	1	2	1	1	2	2	3	3	1	3	165

1637

Table 1.3a: HCA 13/58 [f.1r-100v] - Signoff frequency per manuscript page, data from 1642

	1	2	3	4	5	6	7	8	9	10	Total
	r	p	r	r	r	r	r	r	r	r	
1-10	1	1	1	1	1	1	1	1	1	1	15
11-20	1	1	1	2	1	1	1	1	1	1	16
21-30	1	1	1	1	1	1	1	1	1	1	10
31-40	1	1	1	1	1	1	1	1	1	1	16
41-50	2	1	1	2	1	1	1	1	1	1	12
51-60	1	1	1	1	1	2	1	1	1	1	16
61-70	1	1	2	1	1	1	1	1	1	1	11
71-80	1	2	1	1	1	1	2	1	1	1	14
81-90	1	1	2	1	1	1	2	1	1	1	19
91-100	1	2	1	2	1	2	1	2	1	1	15
Total	1	2	1	2	1	2	1	2	1	1	144

1642

Table 1.4a: HCA 13/70 [f.401r-500v] - Signoff frequency per manuscript page, data from 1655

	1	2	3	4	5	6	7	8	9	10	Total	
	r	p	r	r	r	r	r	r	r	r		
401-410			1	1	1	1	1	1	2	1	1	13
411-420	1	1	1	1	1	1	1	1	1	1	1	12
421-430	1	1	1	1	1	1	2	1	1	1	1	13
431-440	1	1	1	1	1	1	1	1	1	1	1	13
441-450	2	2	2	1	1	1	1	1	1	1	1	13
451-460	1	2	1	2	1	1	1	1	1	1	1	16
461-470		1	2	2			1	1	2	1	1	8
471-480		1			1	1	1	1	1	1	1	5
481-490	1	1	1	1	1	1	1	1	1	1	12	
491-500	1	1	1	1	1	1	1	1	1	1	8	
Total	1	2	1	1	1	1	2	1	1	1	113	

1655

Table 1.5a: HCA 13/71 [f.1r-300v] - Signoff frequency per manuscript page, data from 1656

	1	2	3	4	5	6	7	8	9	10	Total
	r	p	r	r	r	r	r	r	r	r	
1-10			1	1	1	1	1	1	1	1	10
11-20	2	2	2	1	1	1	1	1	2	2	21
21-30	1	1	1	1	1	2	2	1	1	1	16
31-40	1	1	1	1	1	1	1	1	1	1	7
41-50	1	1	1	1	1	1	1	1	1	1	7
51-60	1	1	1	1	1	2	1	1	1	1	11
61-70	1	1	1	1	2	1	1	1	1	1	5
71-80	1	1	1	1	1	1	1	1	1	1	2
81-90	1	1	1	1	1	1	1	1	1	1	3
91-100	1	2	1	1	1	1	1	1	1	1	8
Total	1	2	1	1	1	1	2	1	1	1	98

1656

Table 1.1a: HCA 13/53 [f.1r-100v] - Signoff frequency per manuscript page, data from 1637

	1	2	3	4	5	6	7	8	9	10	Total
	r	p	r	r	r	r	r	r	r	r	
1-10	1	2	3	1	0	1	1	0	2	2	16
11-20	2	2	1	1	1	1	1	1	1	1	13
21-30	2	1	1	3	1	1	1	1	1	1	18
31-40	1	1	1	1	1	1	2	1	1	1	13
41-50	1	1	1	1	1	1	1	1	1	1	6
51-60	1	1	1	1	1	1	2	1	1	1	11
61-70	2	1	1	1	1	1	1	1	1	1	20
71-80	1	2	1	1	1	1	2	1	1	1	19
81-90	2	1	1	1	1	2	1	2	4	1	23
91-100	1	2	1	1	1	2	2	3	1	3	1
Total	1	2	1	1	1	2	2	3	1	3	165

Location of signoffs

1637

Table 1.1b: HCA 13/53 [f.1r-100v] - Signoff frequency per manuscript page & location of signatures, marks & initials, data from 1637

	1	2	3	4	5	6	7	8	9	10	Total
	r	p	r	r	r	r	r	r	r	r	
1-10	1	2	3	1	0	1	1	0	2	2	16
11-20	2	2	1	1	1	1	1	1	1	1	13
21-30	2	1	1	3	1	1	1	1	1	1	18
31-40	1	1	1	1	1	1	2	1	1	1	13
41-50	1	1	1	1	1	1	1	1	1	1	6
51-60	1	1	1	1	1	1	2	1	1	1	11
61-70	2	1	1	1	1	1	2	1	1	1	20
71-80	1	2	1	1	1	2	1	1	1	1	19
81-90	2	1	1	1	1	2	1	2	4	1	23
91-100	1	2	1	1	1	2	2	3	1	3	1
Total	1	2	1	1	1	2	2	3	1	3	165

Location of marks & initials

1637

Table 1.1c: HCA 13/53 [f.1r-100v] - Signoff frequency per manuscript page & location of mariners, data from 1637

	1	2	3	4	5	6	7	8	9	10	Total
	r	p	r	r	r	r	r	r	r	r	
1-10	1	2	3	1	0	1	1	0	2	2	16
11-20	2	2	1	1	1	1	1	1	1	1	13
21-30	2	1	1	3	1	1	1	1	1	1	18
31-40	1	1	1	1	1	1	2	1	1	1	13
41-50	1	1	1	1	1	1	1	1	1	1	6
51-60	1	1	1	1	1	1	2	1	1	1	11
61-70	2	1	1	1	1	1	2	1	1	1	20
71-80	1	2	1	1	1	2	1	1	1	1	19
81-90	2	1	1	1	1	2	1	2	4	1	23
91-100	1	2	1	1	1	2	2	3	1	3	1
Total	1	2	1	1	1	2	2	3	1	3	165

Location of mariner signoffs

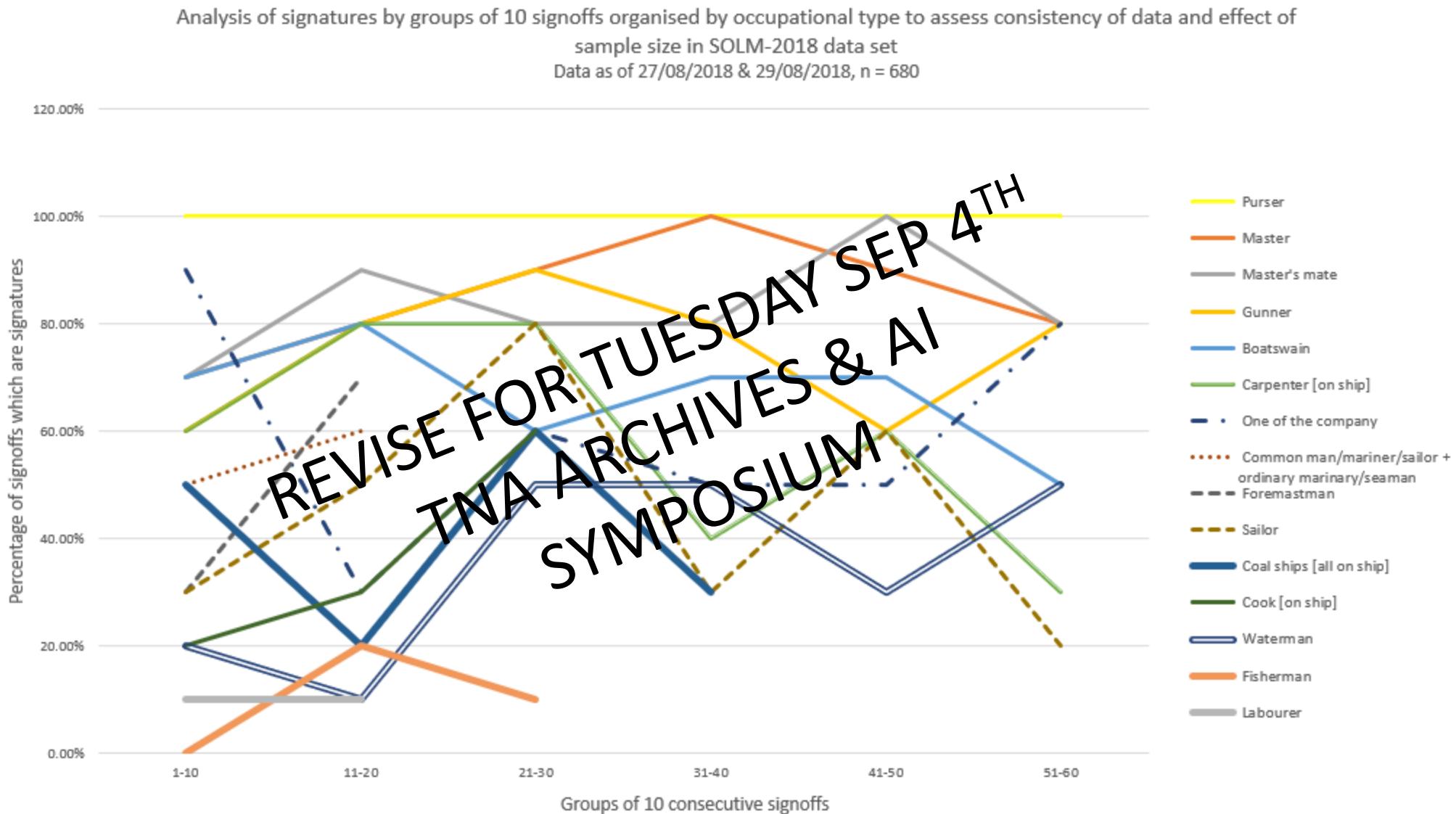
1637

Table 1.1d: HCA 13/53 [f.1r-100v] - Signoff frequency per manuscript page & location of merchants, data from 1637

	1	2	3	4	5	6	7	8	9	10	Total
	r	p	r	r	r	r	r	r	r	r	

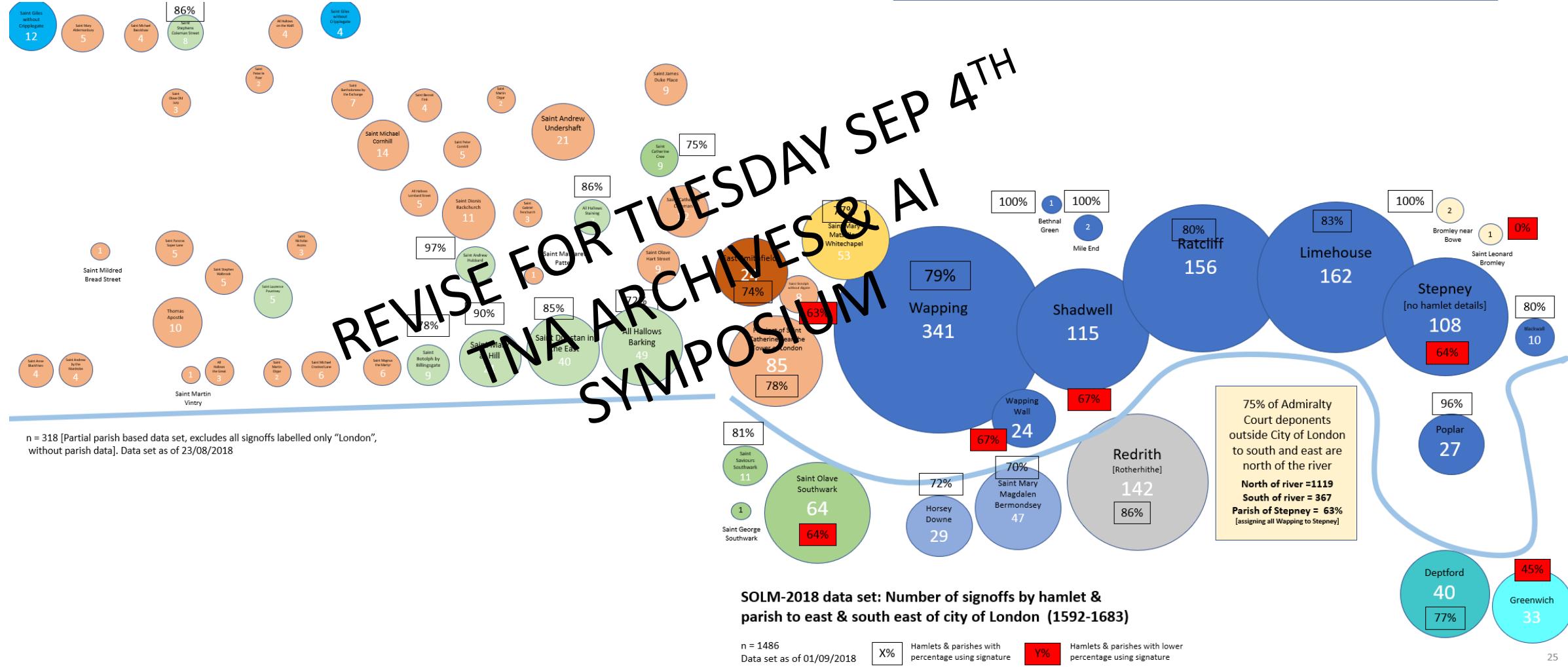
</

Some early results

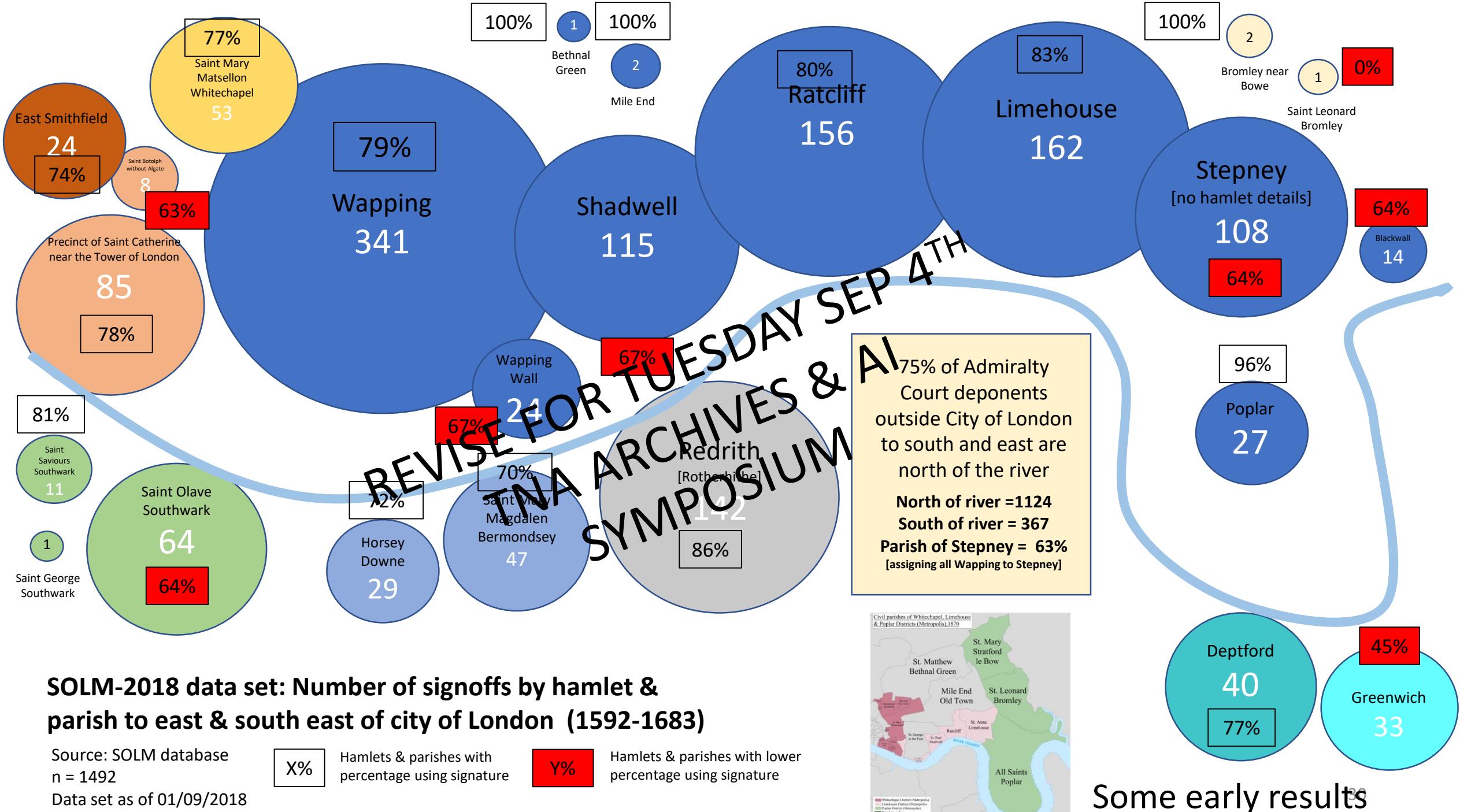


Some early results

Early/mid-C17th London – a linear maritime city, as seen in the location of High Court of Admiralty deponents, 1637 to 1667



Source: SOLM-2018 database



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<http://chronoscopic.org>

GitHub:

<https://github/Signsofliteracy/Signoff>

Twitter:

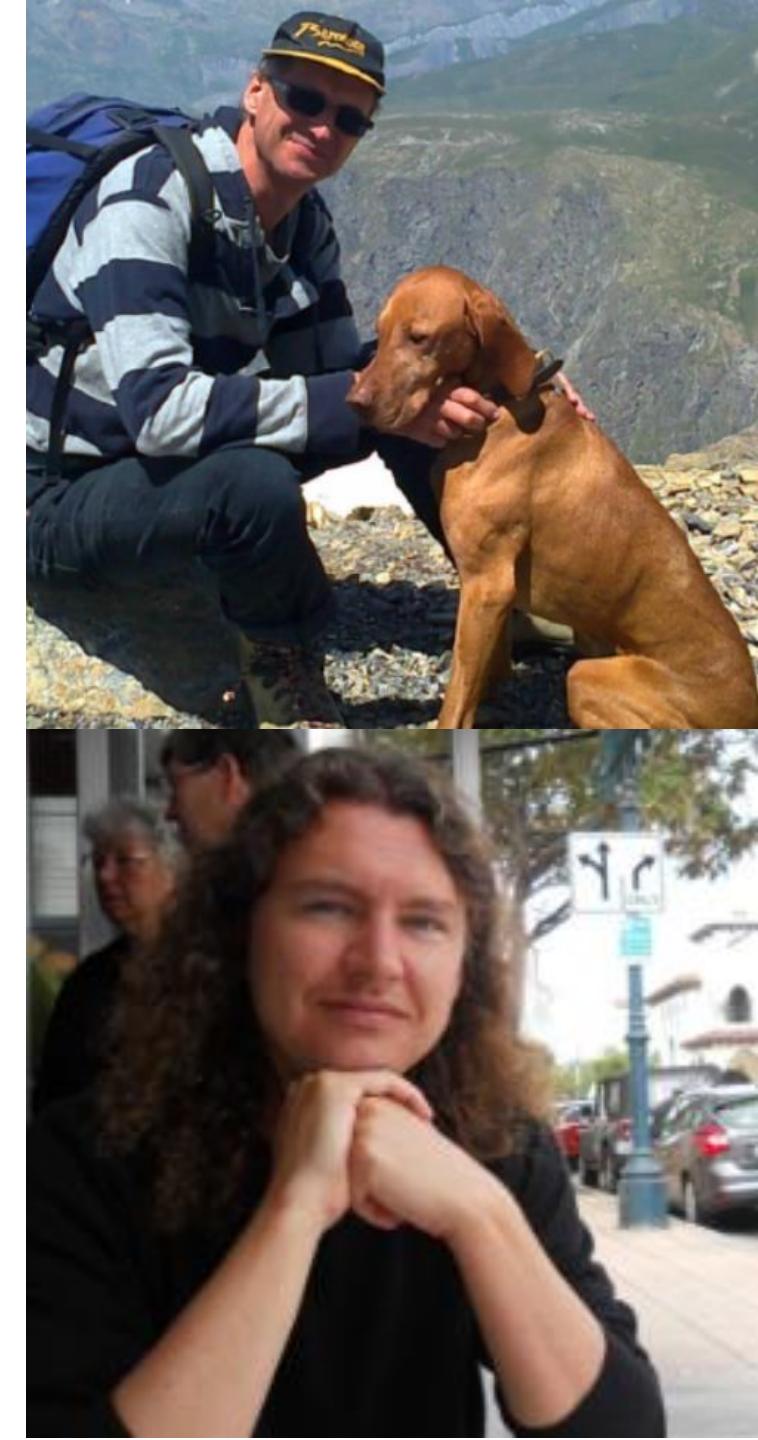
[Marinelivesorg](https://twitter.com/Marinelivesorg)

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Ffion Boyd	Professor Cheryl Fury	Sue Jones	Frances Owen	John Sheridan	Dr Suze Zijlstra
Katie Broke	Steve Garnett	Menno Jonker	Gordon O'Sullivan	Dr Deborah Sherlock	Dr Cäcilia Zirn
Dr James Brown	Dr Perry Gauci	Dr Sam Kaislaniemi	Dr Katherine Parker	Dr Rainer Simon	and the ever helpful but
Dr Andy Burn	Marja Geesink	Ross Keel	Tim Parry-Williams	Ida Sjoberg	anonymous @_mapnut
Elio Calcagno	Jaap Geraerts	Dr Patricia Keller	David Pashley	Petr Sloup	
Joshua Calloway	Helen Good	William Kellett	Dr Michael Pearce	Dr Edmond Smith	
Michelle María Early Capistrán	Dr Jamie LH Goodall	Sara J Kerr	Dr Cathryn Pearce	Tilly Smith	
Rachel Carter	Guy Grannum	Heather Knight	Elizabeth Pimblett	Dr Stephen Snelders	
Cynthia Chin	Colin Greenstreet	Iris Kramer	Dr Sophie Pittman	Professor Humphrey Southall	
Nicola Clarke	Francesca Greenstreet	Dr Marcin Krygier	Professor Simone Paolo	Dr Craig Spence	
Freyalyn Close-Hainsworth	John Kuhn	John Lambert	Ponzetto	Daniel Stewart-Roberts	
Dalton Coker	Justin Grierson	Dr Craig Lambert	Mark Ponte	Dr Hannah Steyne	
Dr Giovanni Colavizza	Tracey E Griffiths	John Layt	Dr Peter Pridal	Ian Stoll	
Dr Justin Colson	Dr Adam Grimshaw	Deborah Leem	Dr Jo Pugh	Michael Stoner	
Sam Cottrell	Karen Gunnell	Dr Sjoerd Levelt	Seif Al Rashidi	Dr Chad Stolper	
Kevin Daniells	Yerevag Hagopian	Amalia Skarlatou Levi	Dr Peter Rauxloh	Peter Taylor	
Thierry Daunois	Dr Mark Hailwood	John Levin	Patrizia Rebullia	Dr Carl Thompson	
Dr John Davies	Finn Halligan	M. L. Logue			

Discussion

For discussion at Archives & AI symposium, Tuesday, September 4th, 2018

	2018	2019	2020	2021	2022	2023
Q1		Historical literacy network meeting (1)				
Q2	IIIF Conference Staatsarchiv Amsterdam workshop DH Benelux	Historical literacy network meeting (2)				+ <div style="border: 1px solid blue; padding: 10px;"><p>Machine learning enabled manuscript archivists</p><p>Image processing</p><p>Natural Language Programming</p><p>Key word spotting</p><p>Controlled vocabularies</p><p>Programmable decision rules</p><p>IIIF visibility</p></div>
Q3	Archives & AI Sheffield DH Congress	Kaggle competition	Huntington library visit			
Q4	Kaggle visit Stanford University visit					
	SOLM-2018	SOLM-2018	SOLM-2022	SOLM-2021	SOLM-2022	SOLM-2023

**Archives and AI symposium
SOLM-2018
Supplementary material**

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Reading list