

Object Detection for Visual Analysis of Medieval Charters

Decoration and Its Makers in Papal Documents

Florian Atzenhofer-Baumgartner and Martin Roland



ÖSTERREICHISCHE
AKADEMIE DER
WISSENSCHAFTEN



IMAFO
INSTITUT FÜR
MITTELALTERFORSCHUNG



inom

Charters are written documents about acts of legal nature, issued and authenticated in accordance to certain formal requirements
(translated by Daniel Luger based on Ahasver von Brandt)



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763864 charters

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[Kloster Sonnenburg Urkunden](#)

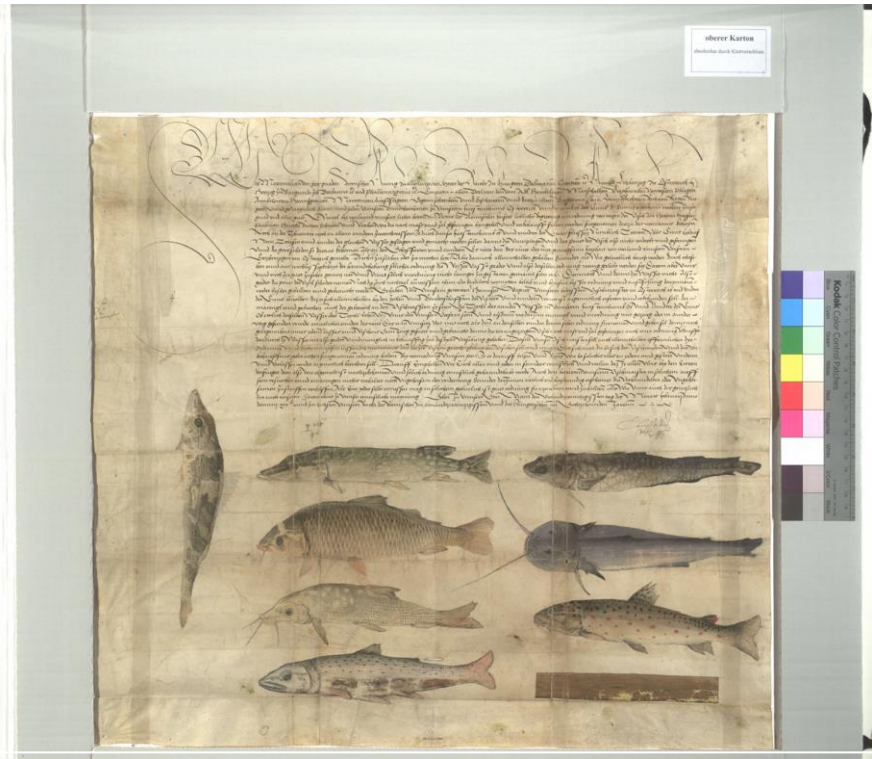
2026/03/26 - München, Bayerisches Hauptstaatsarchiv



https://www.monasterium.net/mom/IlluminierteUrkundenWappenbriefe/1444-07-04_Goettweig/charter



https://www.monasterium.net/mom/IlluminierteUrkunden/1334-11-10_Nuernberg/charter



<https://www.monasterium.net/mom/AT-WStLA/HAUrk/5825/charter>



https://www.monasterium.net/mom/IlluminierteUrkunden/1451-02-03_Mantua/charte

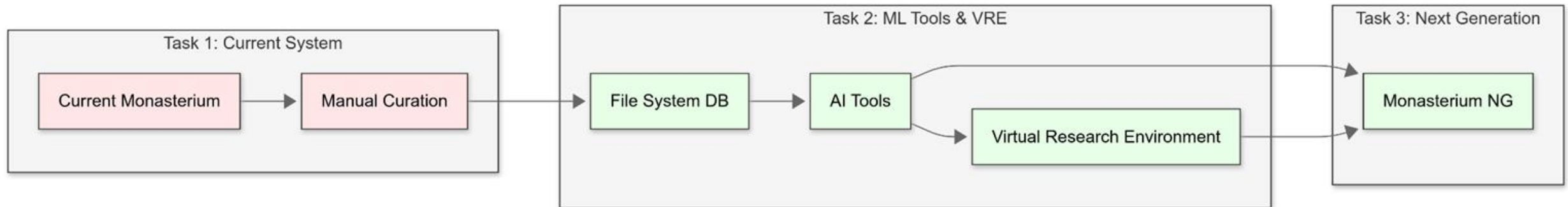
TL;DR:
We are building distant-reading
tools and pipelines for diplomatists.

mon

ATR



Retrieval

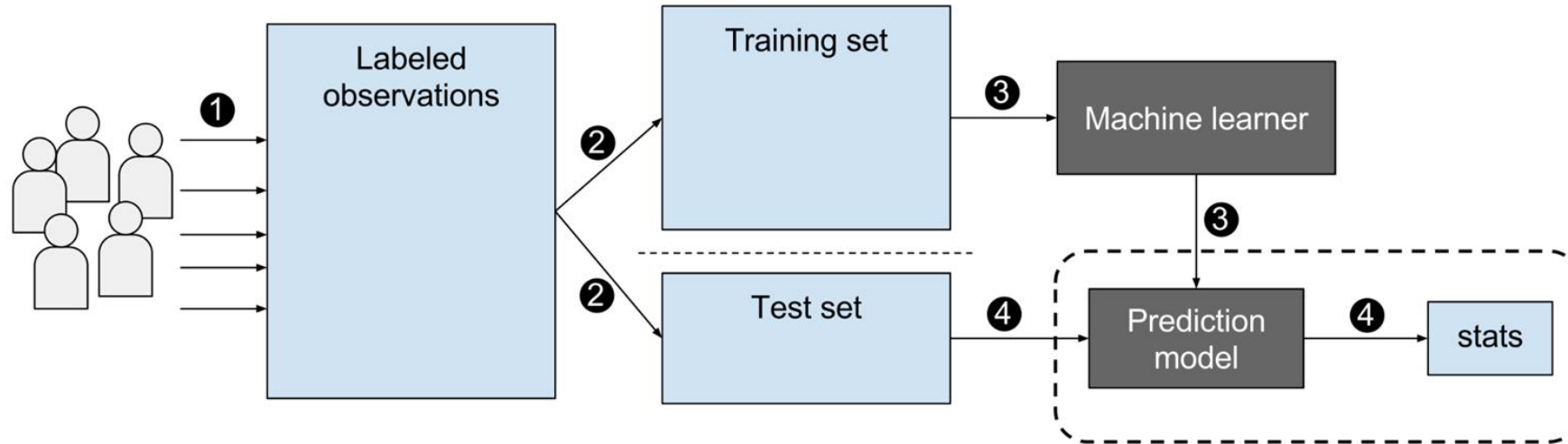


Kovács, T. (2025). FLAME: Formulaic Language Analysis in Medieval Expressions (Version 1.0.0) [Computer software]. GitHub.
<https://github.com/kreedit/FLAME>

Kovács, T. (2026). ANNIE: Annotation Interface for Named-entity & Information Extraction (Version 1.14) [Computer software]. GitHub.
<https://github.com/kreedit/ANNIE>

cf. Atzenhofer-B. (2026). Recommender Systems for Digital Humanities and Archives: Multistakeholder Evaluation, Scholarly Information Needs, and Multimodal Similarity. In Proceedings of the Nineteenth ACM Conference on Recommender Systems (pp. 1499-1505).

Object detection



https://commons.wikimedia.org/wiki/File:Supervised_machine_learning_in_a_nutshell.svg

Object detection for general purposes

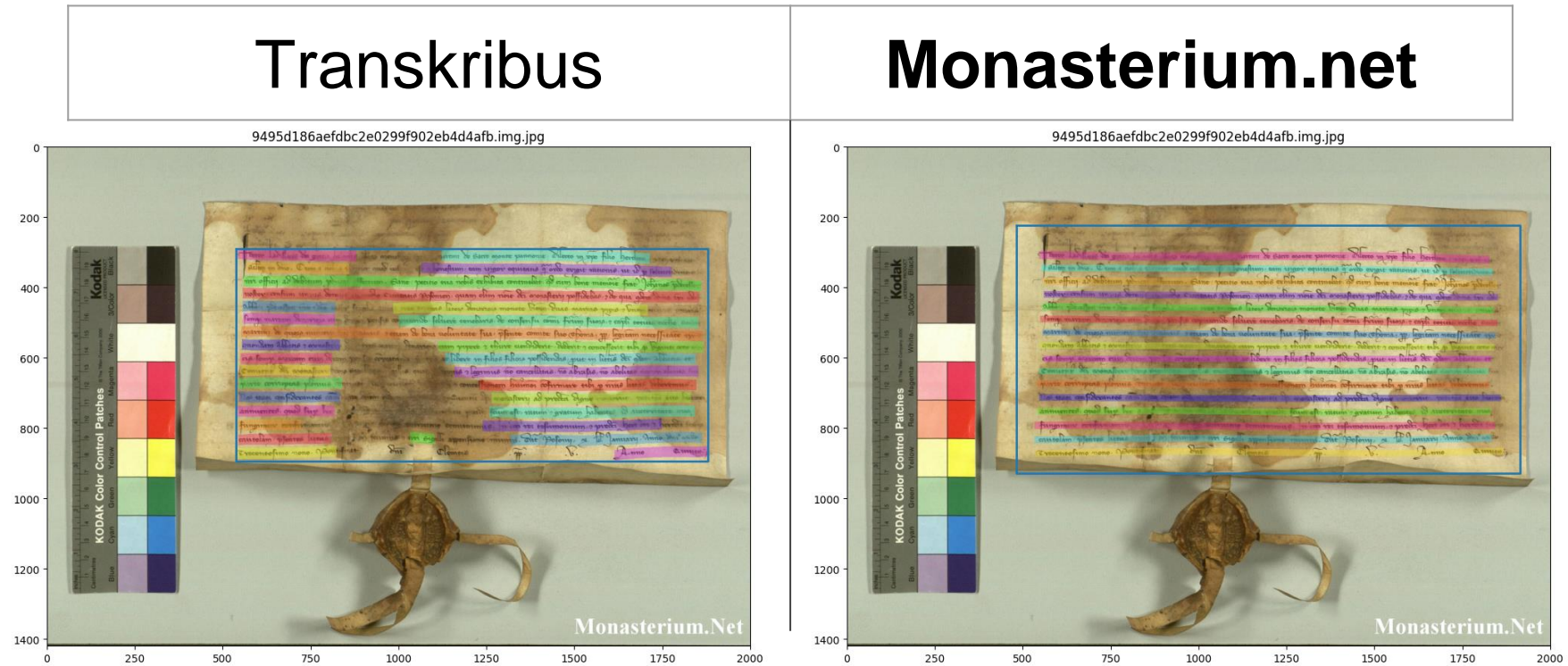
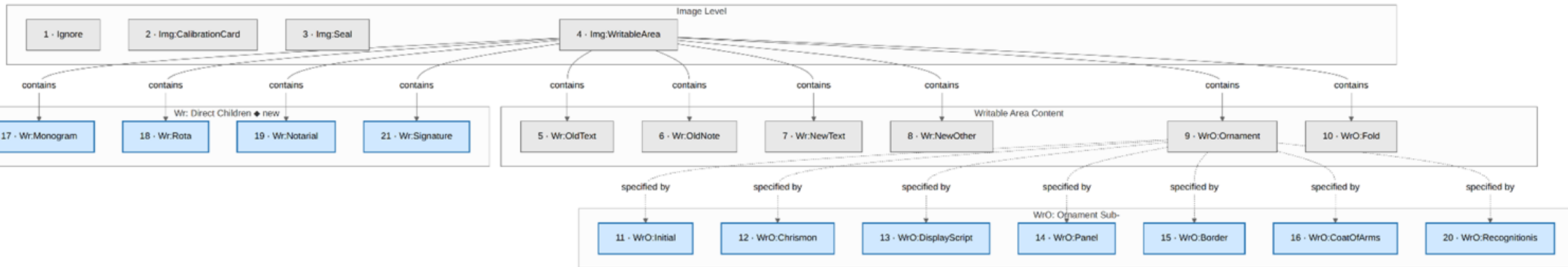


Figure: Performance comparison of line segmentation engines (selected, not indicative)

Towards specific use cases: Campaigns

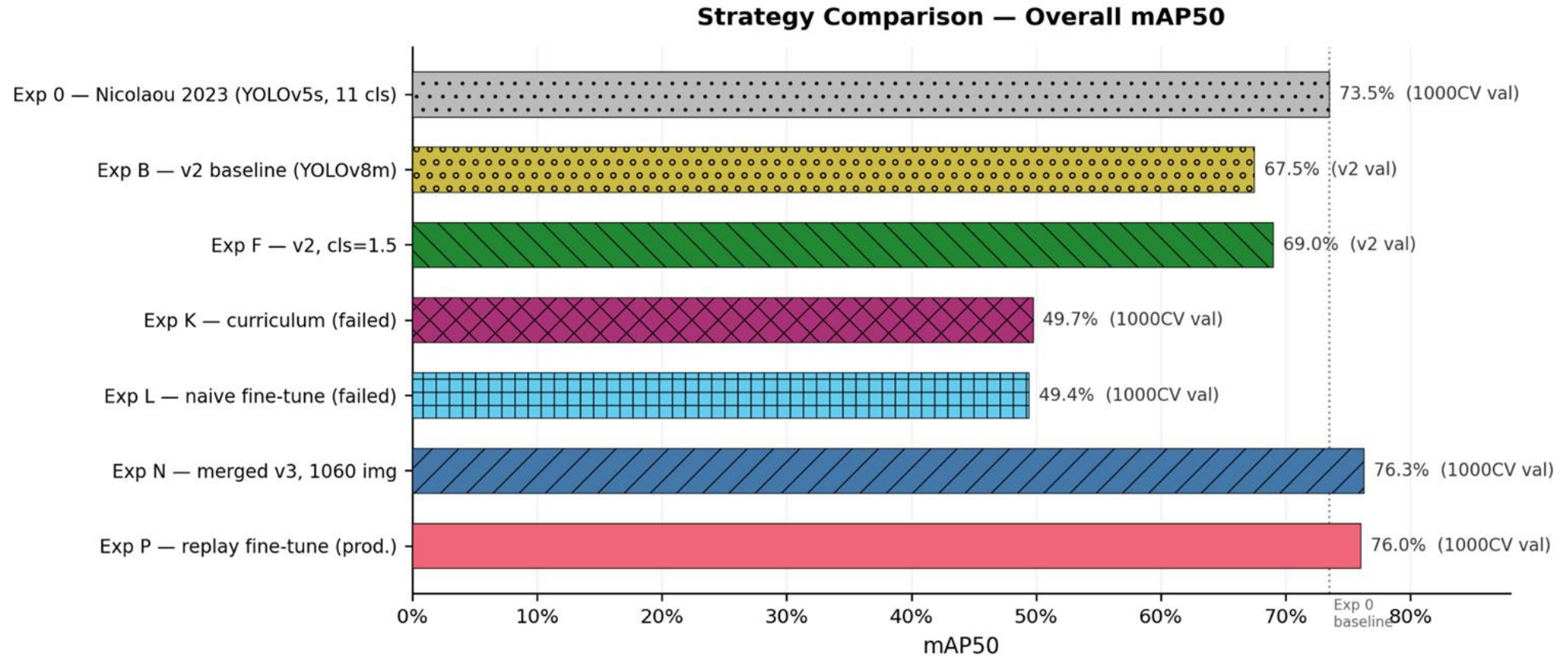
From 10 to 21 classes.



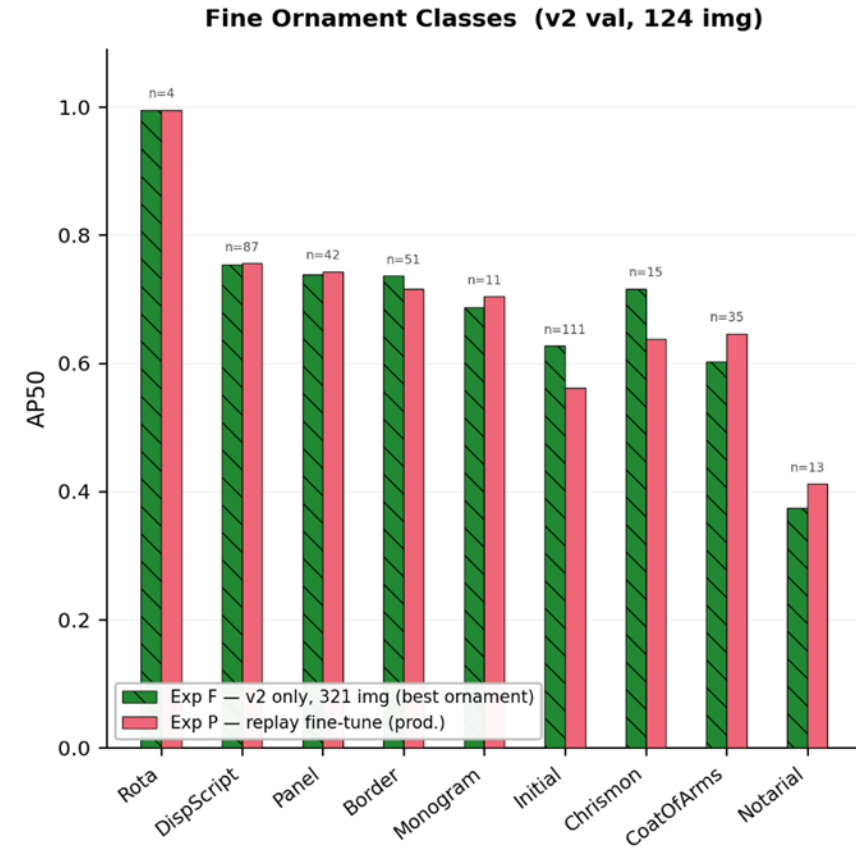
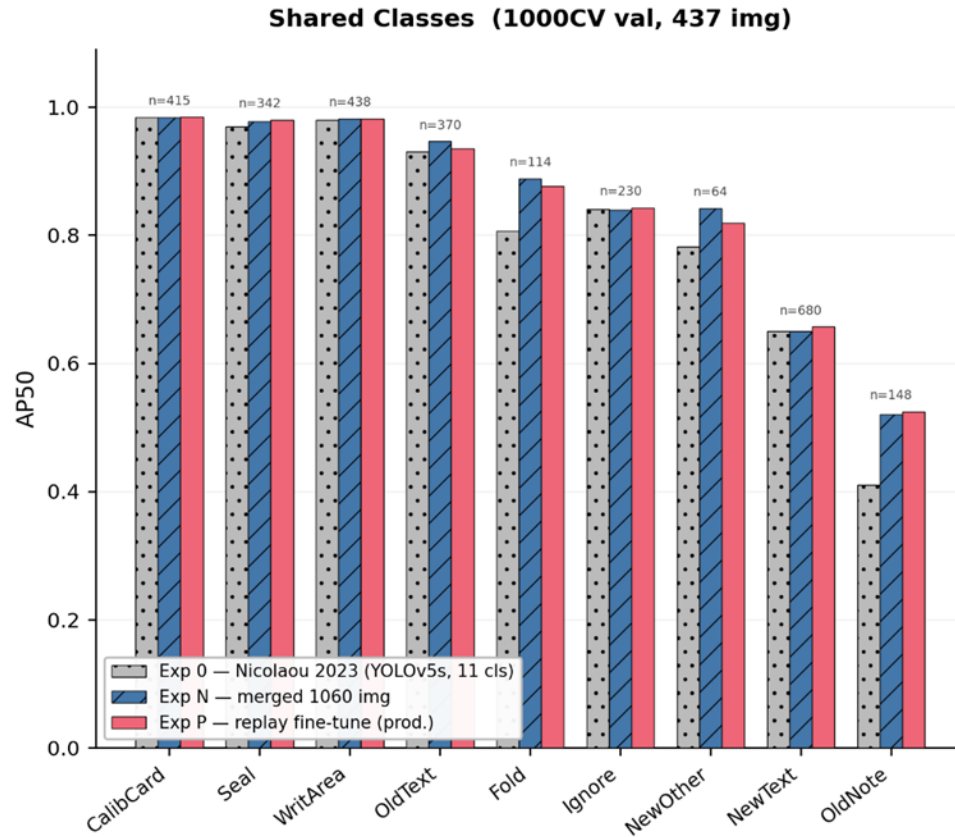
Atzenhofer-Baumgartner, F. et al. (2026). Illuminated Charters and AI - Impact of Modernizing the Monasterium.net Platform. DHd 2026 Nicht nur Text, nicht nur Daten (DHd2026) (DHd2026), Wien, Österreich. <https://doi.org/10.5281/zenodo.18703041>

cf. Nicolaou, A. et al. (2023). Efficient annotation of medieval charters. In International Conference on Document Analysis and Recognition (pp. 284-295). Cham: Springer Nature Switzerland.

Towards specific use cases: Experiments



Towards specific use cases: Evaluations



Downstream tasks using detections

Boxes and features

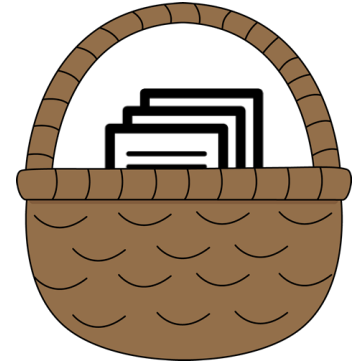
... as **native objects** / within editions

... as facets for browsing

... as ground truth for model training

... for re-ranking strategies

... for discovery mechanisms





Collection: Illuminierte Urkunden <https://www.monasterium.net/mom/IlluminierteUrkunden/collection>

[Collections](#) > [Illuminierte Urkunden](#)

- [Image preview >>](#)
- [Register >>](#)
- [Charters on map >>](#)
- [Annotation overview >>](#)
- [Search in this collection](#)



ILLUMINIERTE URKUNDEN

Die hier präsentierte Sammlung stellt Urkunden aus Archiven, Bibliotheken und Museen weltweit vor. Das verbindende Element dieser ganz unterschiedlichen Dokumente ist die Tatsache, dass (fast) alle Objekte - wenig überraschend für ein Metaportal zu diplomatischen Quellen - Urkunden sind und gleichzeitig alle in dieser Sammlung vorgestellten Urkunden auf Grund ihrer visuellen Elemente aufgenommen wurden (also in der Regel "illuminiert" sind).

[English version below](#)

Umfassende Auskunft über das interdisziplinäre Langzeitprojekt "Illuminierte Urkunden" unter: <https://illurk.hypotheses.org>

[Urkunden dieser Sammlung mit Vorschaubilder anzeigen / Show the charters of this collection with thumbnails](#)

[Index der Ausstattungsniveaus illuminiertes Urkunden](#)

[Glossar](#)

Preface

Grouped by

years:

760 - 1024

1028 - 1097

1097 - 1137

1137 - 1163

1164 - 1178

1179 - 1189

1189 - 1198

1198 - 1209

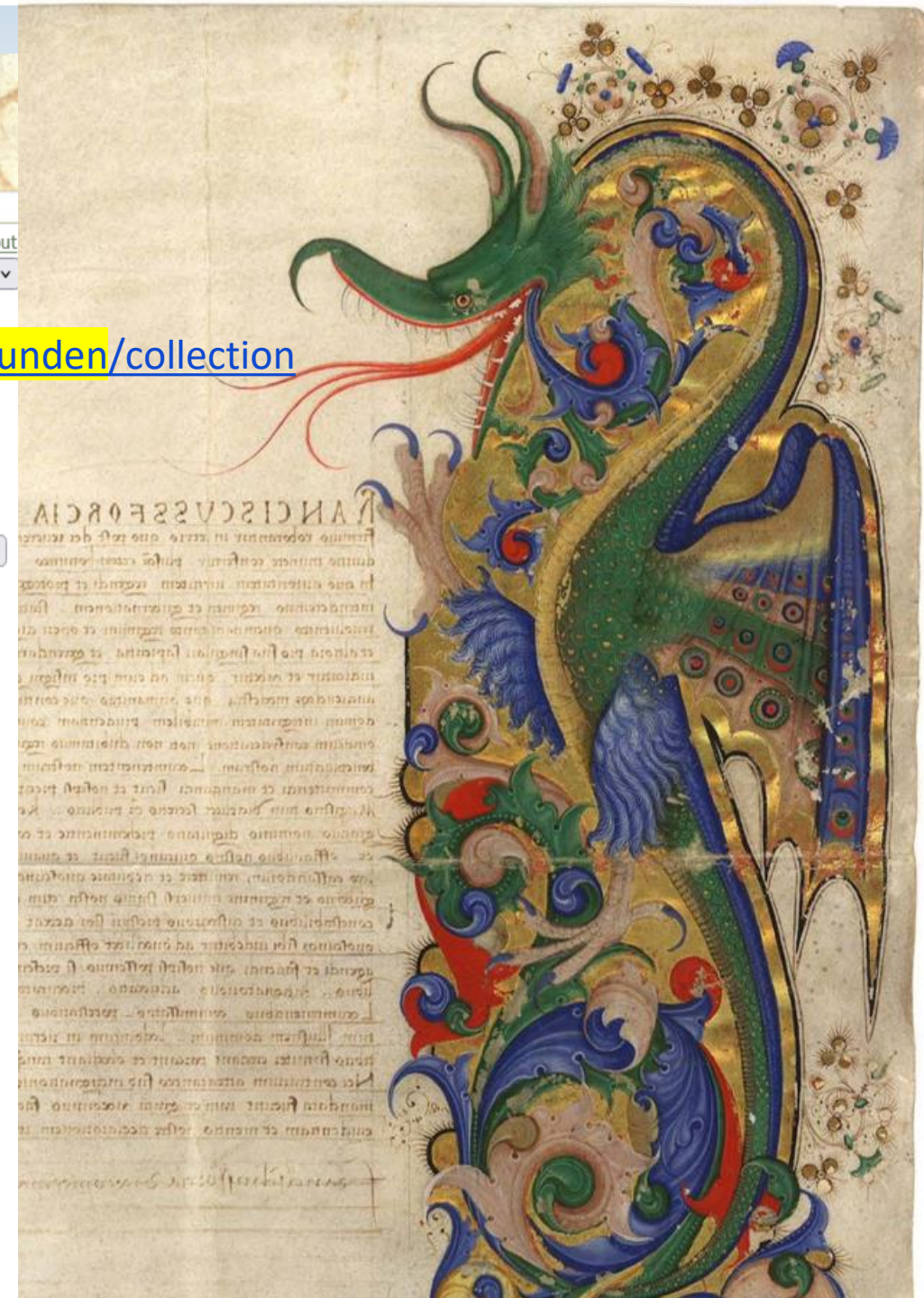
1209 - 1219

1220 - 1227

1227 - 1234

1234 - 1241

1243 - 1248



Collection: Illuminierte Urkunden

Collections > [Illuminierte Urkunden](#)

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Search

[< previous](#) Charters 1360 - 1363 [next >](#)

Grouped by years:

- [760 - 1024](#)
- [1028 - 1097](#)
- [1099 - 1144](#)
- [1145 - 1173](#)
- [1173 - 1186](#)
- [1187 - 1199](#)
- [1200 - 1213](#)
- [1214 - 1225](#)
- [1225 - 1231](#)

Charter: [1360-08-20_St-Wendel](#)
Date: 1360-08-20
Abstract: Bischofsammelindulgenz für das ...
[View Charter](#)
[PDF- Export](#)

Charter: [1361-11-12_Mantua-Mantova](#)
Date: 1361-11-12
Abstract: Notariatsinstrument des Mantuaner Notars ...
[View Charter](#)
[PDF- Export](#)

Images: 1



Images: 1





VERY SIMPLE
1207 May 16

Nothing for IllUrk



STANDARD
1590 May 20
Only characteristic
examples to docu-
ment the chanceries'
standards



RICHER THAN USUAL
1432 June 22



EXQUISITE
1431 May 23

Core material for IllUrk



Home Fonds Collections Search Help MyArchive

[Register](#) [Login](#)

Choose language **english**

Collection: Illumierte Urkunden - Papsturkunden

[Collections](#) > [Illumierte Urkunden - Papsturkunden](#)

< [previous](#) **Charters 1484 - 1578**

[Image preview >>](#)

[Register >>](#)

[Charters on map >>](#)

[Annotation overview >>](#)

Search in this collection

Preface

Grouped by
years:

1119 - 1257

1257 - 1381

1381 - 1393

1394 - 1397

1397 - 1399

1399 - 1401

Charter: [1484-11-02_Mailand](#)

Date: 1484-11-02

Abstract: Papst Innocenz VIII. überträgt Cleofe Pio di Carpi einen Besitz in Origgio. Innocenzo VIII conferma a Cleofe Pio da Carpi vedova di Giovanni Borromeo l'investitura di una possessione in Origgio del monastero di Sant'Ambrogio di Milano concessa da Pietro cardinale presbitero di San Sisto, commendatario del suddetto monastero. Enrico Scaccabarozzi

Images: 8

Full text: no

[View Charter](#)

[PDF- Export](#)

Add bookmark

Charter: [1485_Karlsruhe](#)

Images: 1

Full text: no



<https://www.monasterium.net/mom/IlluminierteUrkunden/1439-07-06 Paris/charter>



C

Ugentis eps / canis / sermo / dei

M

uper cum uisaret
Salt et aplicam ben
Carissimus in xpo filius nr Carolus Francor Rex Illustris qui Lunas
que tue Excellentie grata sine sine in huiusmodi possessione perplexi uolentes reperire personam mediam que tibi
magnam partem Tornacen dioc obtinere esset accepta et prefato Regi etia non suspecta et reuolentes animo omnes elicos Galliar ad venerabilem fratrem nrm Johannem de
Nartiana tum Ambianen Epum dixerimus caelos mentis nre quem sanus esse Constatum et consanguineum tuum dilectum hunc itaq ad prefatum ecliam Tornacen transfubimus
absolentes eundem a uinculo que Ambianen ecclie tenebatur Que quidem ma prouiso Nartiana tue merito debet placere grata esse tum ratione ipsius persone translati tum etiam qua
ex translatioe huiusmodi uia aperta et plana occasio data est nobis venerabilem fratrem nrm Johannem tunc Nartionen Epum Referendum nrm cui propter eius uirtutes et merita et suo
ena uirtuti sumus affecti ad Ambianen eccliam taliter transferendi qd non remaneret delatus ut antea uidebatur pro quo nominatim nobis gratiosus et beniuolus literis dicesh
supplicande nobis ut ipm uellemus ad aliquam notabilem eccliam promouere Quare cum ten fecerimus Duabus ecclis et ad prefatum Tornacen eccliam dilectus filius Johannes Theuota promo
partem accipere quod a nobis est factum Ceteris dilectis filiis Johannes Dunam ad nos pro parte tua desinatus ut ad prefatum Tornacen eccliam cognoscentes Sed super hys prefatis
uereur nonnulla nobis exposuit que credere non possumus sibi a te fuisse comissi fidem et deuotionem tuam et tuorq predecessor egera Roman eccliam cognoscentes Sed super hys prefatis
Johannes Eps Ambianen Referendarius nr ex commissione nra clarus tibi scribit Preterea scire debes fili dilecte qd dudum uacanti ecclie Antiodotoi reiectis omnibus alijz prouidimus
iuxta notum tuum et cum illa iters subsistente Constitutione predecessor nror et nra de Bullis expediendis edita uacare noscitur et uicet etia Nartionen ecclia disposita sumus
utraq ecclie prouidere iuxta uoluntatem tuam et ad eaz alteram promouere uolumus prefatum Johannem Theuota sed prefatus Johannes Dunam acceptare non uoluit assensu s ad hoc
non habere mandatum Quare uelis nobis de tua mentione rescribere super hys ad tua uota semper dispositas et paratis Ceteris cum sentiamus te de paribus flandis in Burgundiam
esse uenturum et prefatum Regem in Turonem Prouincia residere rogamus deum ut ipi et tibi insperet aliquid bonum consilium parat cuius uocande uobis uicis facultas me oblata
et Nobilitatem tuam quantum possumus exhortamur ut inclines animi tuum ad pacem qua tibi nichil melius dari potest tibiq persuadere parat condonare et differencas esse posse
que hoc tantum et tum comune bonum debeant impedire Dat Rome apud Sanctum petrum Anno Incarnacionis domine Millesimo quingentesimo octuagesimo tertio
78 July Pontificatus nri

Cotte

1433. Layette 79. liasse 10



de Nursia

Johannes de Nursia

https://www.monasterium.net/mom/IlluminierteUrkunden/1433-07-15_Dijon/charter

GENERICUS

Notifficatus dilecti filij Nobilis viri Johannis Ducis Britanie Primogeniti et dilecti in xpo filij Nobilis mulieris Volandi quondam Ludovici Regis Sicilie Mariti et apud hanc.

Et si coniunctio copule conjugalis in certis consanguinitatis et affinitatis gradibus sacris sit Canonibus interdicte Nonnunquam tamen aplice sedis cunctis benignitas rigorem iuris mansuetudine temperans super hijs interdum prouide dispensat et quod negat uis seueritas ex gratia sue benignitatis indulget cum id personarum loco et tempore qualitate pensata conspiciat secundum deum salubriter expedire. Oblate siquidem nobis pro parte uira petitionis scietis continetur quod nos ex certis rationabilibus causis desideratis inuicem matrimonialiter copulati sed quia duplici Tertio et Quadrupli Quarto consanguinitatum gradibus estis inuicem coniuncti desiderium uirum huiusmodi adimplere nequitas dispensatione iuris [redacted] pro parte uira nobis fuit humiliter supplicatum ut pro uideri sibi super hac de oportune dispensationis gratia de benignitate aplice digni [redacted] remissis et alijs certis necessarijs causis nobis expositis huiusmodi supplicationibus inclinati uobiscum dum tamen tu filia Volans propter hoc rapta non [redacted] edimentis que ex consanguinitatibus huiusmodi proueniunt et quibus uis alijs similibus uel minoribus non obstantibus matrimonium in simul contrahere et in eo perpetua contrahere remanere libere et licite ualeatis auctoritate aplice de specialis dono gratie dispensamus Prolem ex huiusmodi matrimonio suscipiendam legitimam nunciantes. Nulli ergo omnino hominum liceat hanc paginam nostre dispensationis infringere uel ei ausu temerario contraire. Siquis autem ex attemptate presumpserit indignationem omnipotentis dei et beatorum Petri et Pauli Apolor eius se nouerit incursurum.

Datum Rome apud Sancti Iulij Imperium Anno Incarnationis dominice Millesimoquadringentesimo primo

x kl Junij Pontificatus Nostri Anno Primo

https://www.monasterium.net/mom/IlluminierteUrkunden/1431-05-23_Nantes/charter

Duplicata

M. C.

Quadragesimo



Pattern Recognition
Visual Tools to find Decoration

Layout Classes (10 classes with instances)

#	Class Name	Count	View
1	Wr:NewText	1521216	Browse →
2	Img:CalibrationCard	1048921	Browse →
3	Img:WritableArea	918336	Browse →
4	Wr:OldText	831695	Browse →
5	Ignore	656772	Browse →
6	Img:Seal	647043	Browse →
7	WrO:Ornament	429723	Browse →
8	Wr:OldNote	248949	Browse →
9	WrO:Fold	223365	Browse →
10	Wr:NewOther	207303	Browse →

Filters

Class

All Classes

All Classes

- Wr:NewText (1677087)
- Img:CalibrationCard (1283757)
- Img:WritableArea (1098620)
- Wr:OldText (962457)
- Img:Seal (712248)
- Ignore (593163)
- Wr:NewOther (367193)
- WrO:Fold (249576)
- Wr:OldNote (241947)
- WrO:Initial (37742)
- WrO:DisplayScript (30416)**
- WrO:Panel (15732)
- Wr:Notarial (11762)
- WrO:Border (10887)
- WrO:CoatOfArms (8570)
- WrO:Chrismon (1950)
- No Class (1913)
- Wr:Monogram (1659)
- Wr:Rota (874)
- WrO:Ornament (117)
- WrO:Recognitionis (61)

S. K. Gerdmann
Der Staber / www.staber.de

4314

Marburg, Staatsarchiv (DE-
HSAAMA)Size: 891*208px
Date: 16240512

901

Marburg, Staatsarchiv (DE-
HSAAMA)Size: 3021*913px
Date: 12440208

461

Marburg, Staatsarchiv (DE-
HSAAMA)Size: 413*231px
Date: 12550508

24R7

Marburg, Staatsarchiv (DE-
HSAAMA)Size: 548*274px
Date: 14710512

Filters

Class

All Classes

All Classes

Wr:NewText (1677087)

Img:CalibrationCard (1283757)

Img:WritableArea (1098620)

Wr:OldText (962457)

Img:Seal (712248)

Ignore (593163)

Wr:NewOther (367193)

WrO:Fold (249576)

Wr:OldNote (241947)

WrO:Initial (37342)

WrO:DisplayScript (30416)

WrO:Panel (15732)

Wr:Notarial (11762)

WrO:Border (10887)

WrO:CoatOfArms (8570)

WrO:Chirsson (1950)

No Class (1913)

Wr:Monogram (1659)

Wr:Rota (874)

WrO:Ornament (117)

WrO:Recognitionis (61)

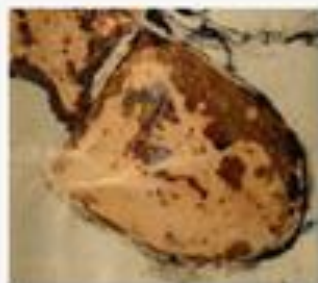


1405-04-15_Budapest

Illuminierte Urkunden

Size: 201*177px

Date: 14050415



1405-04-15_Budapest

Illuminierte Urkunden

Size: 298*262px

Date: 14050415



1405-04-18_

Illuminierte Urkunden

Size: 124*151px

Date: 14050418



1405-04-18_

Illuminierte Urkunden

Size: 389*258px

Date: 14050418



78713

Családi levéltárak (P
szekcióból) (HU-MNL-
DLCSLP)

Size: 42*71px

Date: 14060608

B 2130 / Kloster Liesborn /
Urkunden, Nr. 198 - aLandesarchiv NRW Abteilung
Westfalen (DE-LANRW)

Size: 1060*1119px

Date: 14079903



1407-08-22_Mailand

Illuminierte Urkunden -
Lombardei-it

Size: 1718*2069px

Date: 14070822



1407-08-22_Mailand

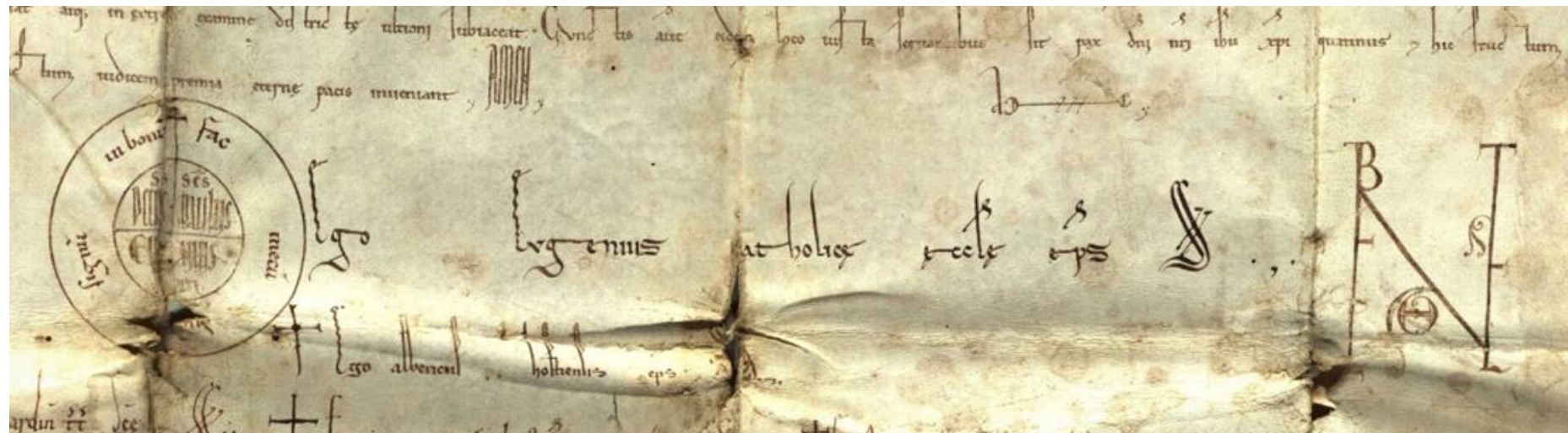
Illuminierte Urkunden -
Lombardei-it

Size: 614*773px

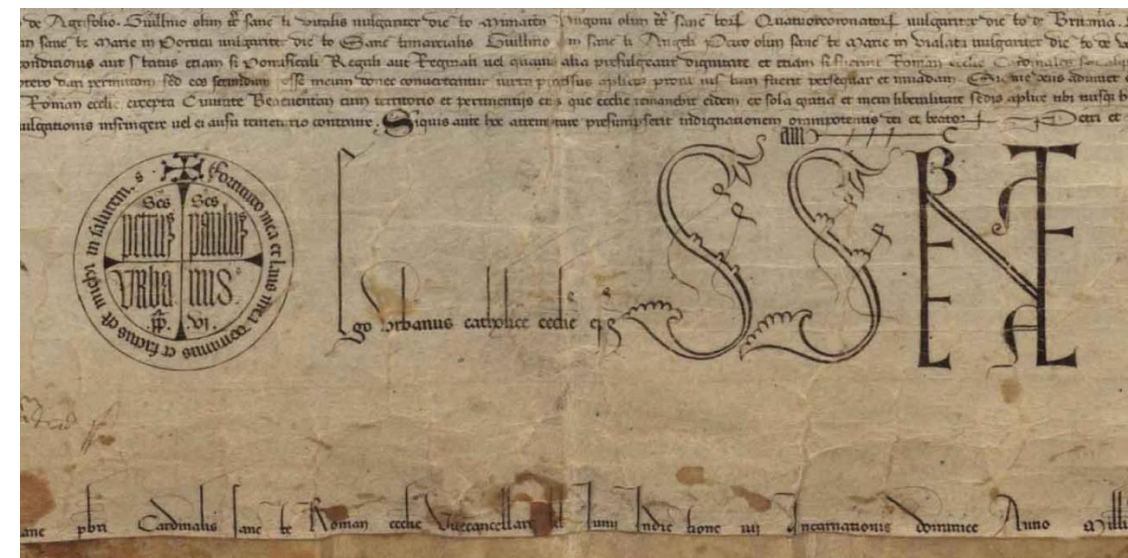
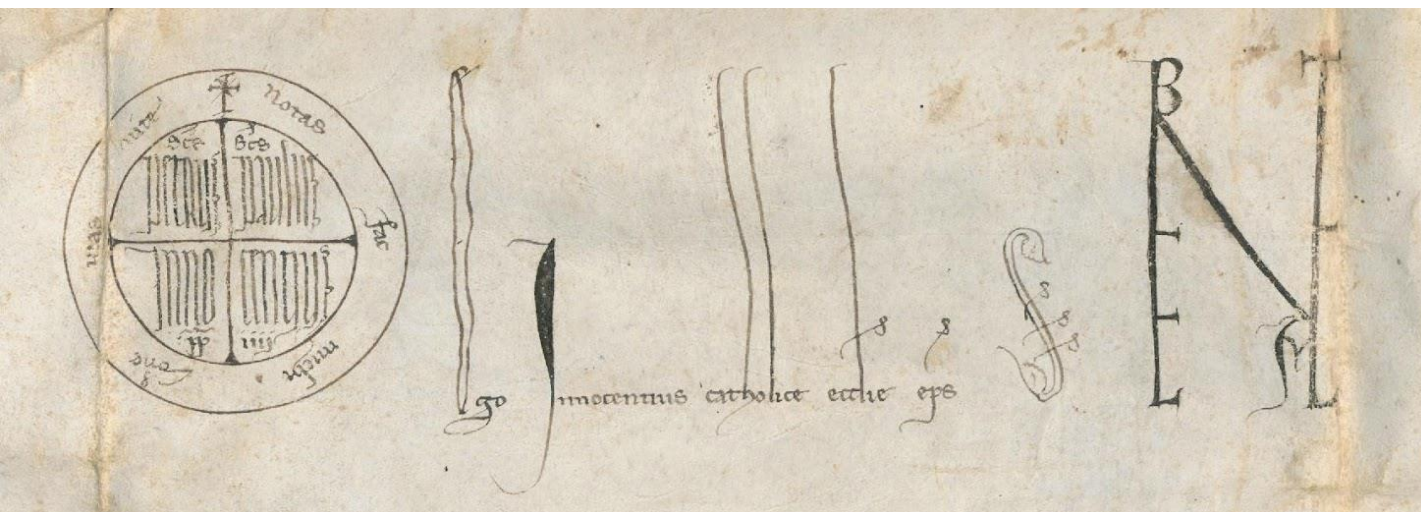
Date: 14070822

Charter Specific Signs: For Papal Documents „Rota“ and „Benevalete“

[https://www.monasterium.net/mom/IlluminierteUrkunden/1146-05-04 Reichersberg/charter](https://www.monasterium.net/mom/IlluminierteUrkunden/1146-05-04_Reichersberg/charter)



[https://www.monasterium.net/mom/IlluminierteUrkunden/1251-01-03 Innsbruck/charter](https://www.monasterium.net/mom/IlluminierteUrkunden/1251-01-03_Innsbruck/charter)



[https://www.monasterium.net/mom/IlluminierteUrkunden/1381-06-01 Valladolid/charter](https://www.monasterium.net/mom/IlluminierteUrkunden/1381-06-01_Valladolid/charter)

Found 874 objects of class "Wr:Rota"

Filters

Class

Wr:Rota (874)

Archive

Search Archive...

AT-StiAFiecht (8)

DE-LANRWR (33)

AT-StiASL (8)

HU-MNL-DLKINL (7)

AT-StiAWilten (5)

AT-StiAMB (5)

AT-StiAScho (5)

IT-BSNSP (11)

DE-StaAWo (3)

DE-LHAKO (7)

[Show more](#)

Year Filter

Year Range: 0 - 2023



Apply Year Filter

Tip: Use filters on the left to narrow down by class, archive, or date range

Oldest first



5

München, Bayerisches
Hauptstaatsarchiv (DE-
BayHStA)Size: 308×267px
Date: 11390329

App. dipl. 1

Göttingen, Diplomatischer
Apparat der Georg-August-
Universität (DE-GAUnivGoet)Size: 513×472px
Date: 11391125

Nr. 898, S. 21-22

Chartularium Sangallense 03
(1004-1277) (CSG-03)Size: 340×330px
Date: 11390412

1139 II 26

Heiligenkreuz, Stiftsarchiv (AT-
StiAH)Size: 304×286px
Date: 11390226

6

Landeshauptarchiv Koblenz
(DE-LHAKO)Size: 1301×1137px
Date: 11390323

11390409

Wien, Diözesanarchiv (AT-
DAW)Size: 188×180px
Date: 11390409

3

Sankt Paul im Lavanttal,
Stiftsarchiv (AT-StiASp)Size: 382×386px
Date: 11401123

1140 II 26-27

Zwettl, Stiftsarchiv (AT-StiAZ)

Size: 381×372px
Date: 11400226

Class

Wr:Rota (874)



Archive

Search Archive...

AT-StiAFiecht (8)

DE-LANRWR (33)

AT-StiASL (8)

HU-MNL-DLKINL (7)

AT-StiAWilten (5)

AT-StiAMB (5)

AT-StiAScho (5)

IT-BSNSP (11)

DE-StaAWo (3)

DE-LHAKO (7)

[Show more](#)

Year Filter

Year Range: 0 - 2023



Apply Year Filter



5

München, Bayerisches
Hauptstaatsarchiv (DE-
BayHStA)

Size: 308×267px
Date: 11390329



App. dipl. 1

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1139 II 26

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6

Landeshauptarchiv Koblenz
(DE-LHAKO)

Size: 1301×1137px
Date: 11390323



11390409

Wien, Diözesanarchiv (AT-
DAW)

Size: 188×180px
Date: 11390409



3

Sankt Paul im Lavanttal,
Stiftsarchiv (AT-StiAStP)

Size: 382×386px
Date: 11401123



1140 II 26-27

Zwettl, Stiftsarchiv (AT-StiAZ)

Size: 381×372px
Date: 11400226

Found 14 objects of class "Wr:Monogram"

Filters

Class

All Classes

Archive

Search Archive...

Year Filter

Year Range: 1139 - 1140



Apply Year Filter

Tip: Use filters on the left to narrow down by class, archive, or date range

Random (Explore)

**Morbio 1 (51)**

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Size: 255×253px
Date: 11399999

**Morbio 1 (51)**

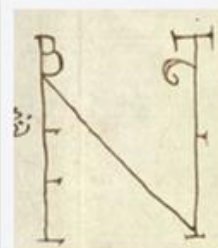
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**A.4.B.2**

St. Gallen, Stiftsarchiv (CH-StiASG)

Size: 362×380px
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**AUR 1139105**

Haus-, Hof- und Staatsarchiv (AT-HHStA)

Size: 294×336px
Date: 11390105



3

Sankt Paul im Lavanttal, Stiftsarchiv (AT-StiASiP)

Size: 359×377px
Date: 11401123

**AT-KLA 418-B-C.1277 SI**

Kärntner Landesarchiv (AT-KLA)

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**1140 II 26-27**

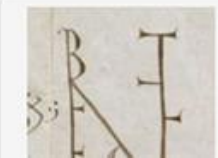
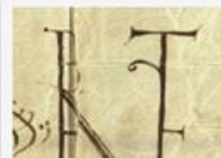
Zwettl, Stiftsarchiv (AT-StiAZ)

Size: 354×425px
Date: 11400226

**1139 X**

Zwettl, Stiftsarchiv (AT-StiAZ)

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Date: 11391001



in nomine domini Amen



Ego Innocentius catholice ecclesie episcopus

✠ Ego Conradus habinensis episcopus ✠

✠ Ego Theodericus & Rufinus episcopi ✠

✠ Ego Gerardus presbiter curie & legatus in terra sancta ✠

Morbio 16 (7)

SS



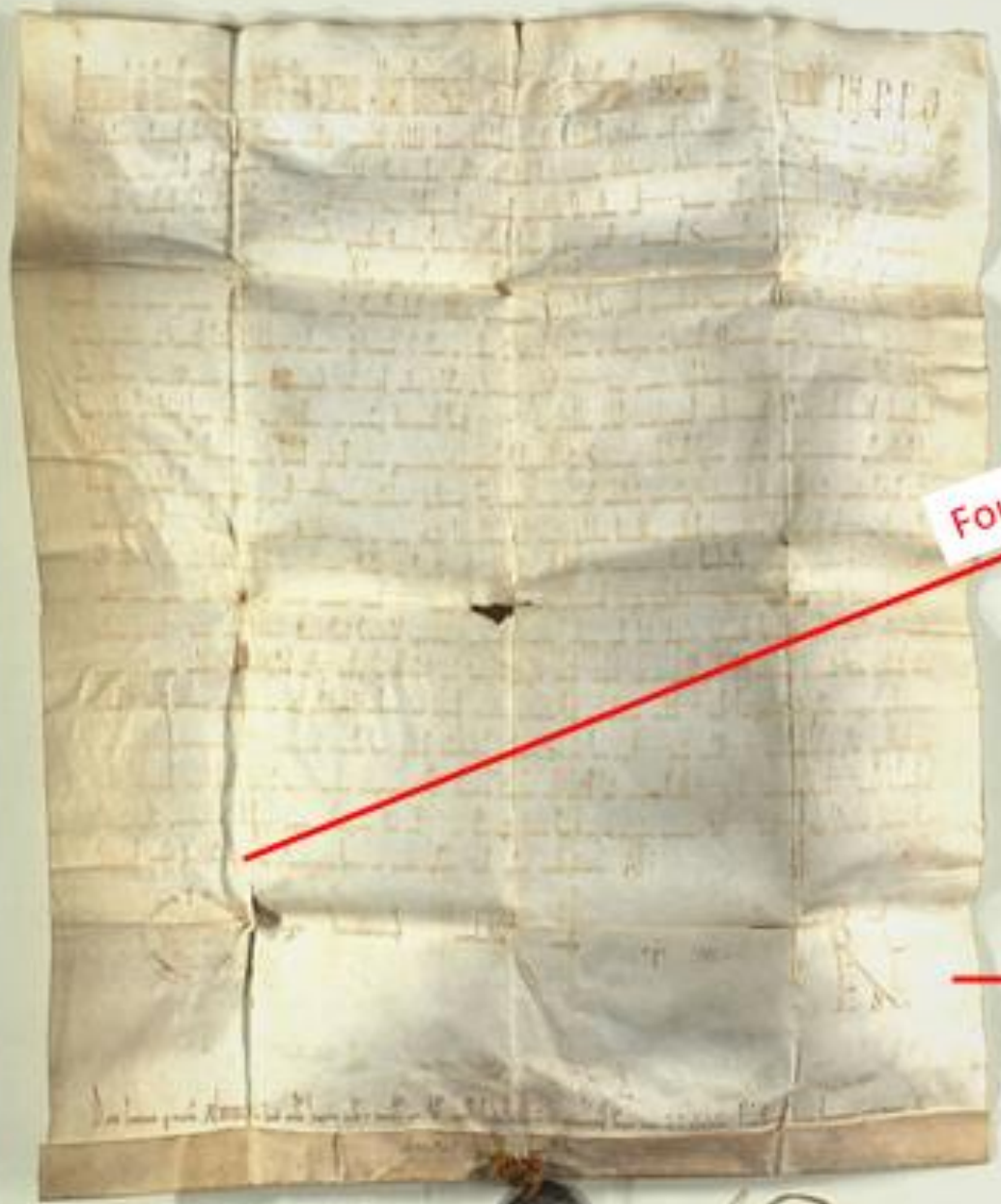
in nomine domini Amen



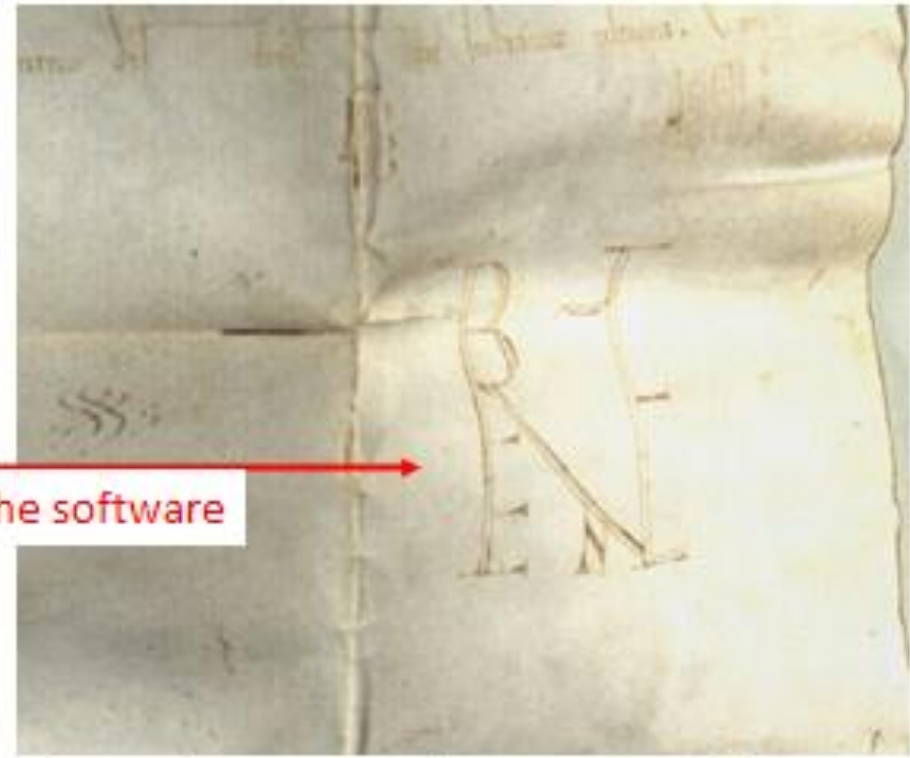
Ego Innocentius catholice ecclesie episcopus

Data scriptum per manus Innocentii de hominibus ecclesie...





Found by the software



Not found by the software

430



ugenuis
Tornacen ecclia et pro eius prouisie
Tornacen dominium tenet Nos qui

Explore Layout Objects

Found 11142 objects of class "WrO:Initial"

Filters

Class

WrO:Initial (11142)

Archive

Search Archive...

IT-ASPz (62)

DE-LANRWR (1510)

HU-MNL-DLCSLA (157)

AT-StIASL (110)

HU-MNL-DLKINL (798)

DE-StALB (56)

IT-BSNSP (169)

HU-MNL-DLGYUJ (156)

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Year Filter

Year Range: 1370 - 1450



Apply Year Filter

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Oldest first



1232
Marburg, Staatsarchiv (DE-HStAMa)
Size: 149x271px
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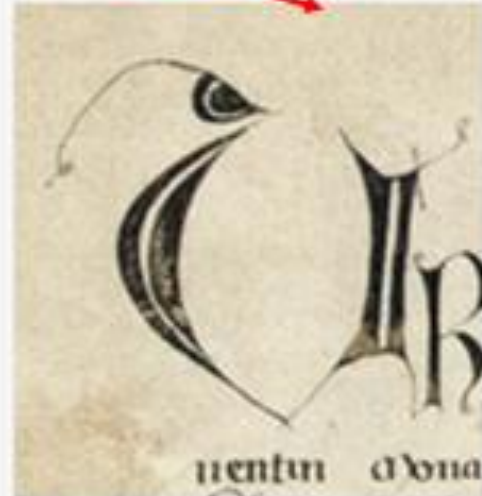
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Date: 13700125



512
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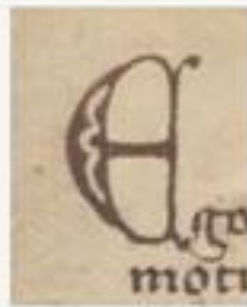
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Date: 13700125



2379
Marburg, Staatsarchiv (DE-HStAMa)
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Date: 13700925



2227 (inv. 1)
Slovenský národný archív (SK-SNA)
Size: 222x328px
Date: 13700702



B 2149 / Kloster Marienfeld / Urkunden, Nr. 215
Landesarchiv NRW Abteilung Westfalen (DE-LANRW)W
Size: 266x330px
Date: 13701123



A 6028 / Kloster Beninghausen / Urkunden, Nr. 258
Landesarchiv NRW Abteilung Westfalen (DE-LANRW)W
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Date: 13700506



503

Marburg, Staatsarchiv (DE-HStAMa)

Size: 521x550px

Date: 13700125

URBANUS eps servus servorum dei. Omnes his hinc Nobati et Con-
uentu adna Teri in Herffelde ordinis sancti benedicti maguntin diocesis Salt et aplice leg.
Cum a nobis petatur quod nisi cum et et hinc tam vigor equitatis quam ordo
exigit rationis ut ad per sollicitudinem officii sui ad debitum perducatur effectum. Ea propter dile-
cti in domino filii nostri in Christo nos dilectionibus grato concurrentes assensu omnes libertates et immu-
nitates a predecessoribus nostris Romanis Pontificibus sine per privilegia seu alias indulgentias nobis et
adna Teri nos concessas necnon libertates et exemptiones secularium ex hac hominum a Regibus et
Principibus et aliis christi fidelibus rationabiliter nobis et adna Teri predicto indulgas sicut eas iuste
et iustice obtinens nobis et per nos eidem adna Teri auctoritate apostolica confirmamus et presentis scrip-
ti patramus communitus. Nulli ergo omnino hominum liceat hanc paginam nostre confirmationis infringere
nec ei ausu temerario contraire. Siquis autem hoc attemptare presumpserit indignationem omnipoten-
tis dei et beatorum Petri et Pauli Apostolorum eius se noverit incursurum. Dat. Rome apud Sanctum Petrum
Quintidi nonas februarii Pontificatus nostri Anno Octavo.

Re. de Colandris.

Re. de Colandris.



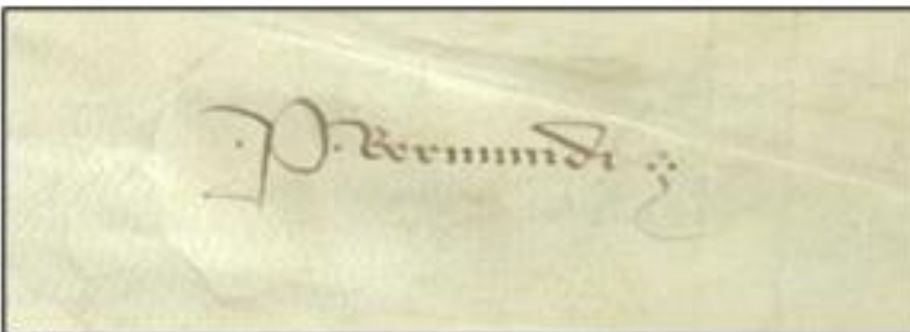
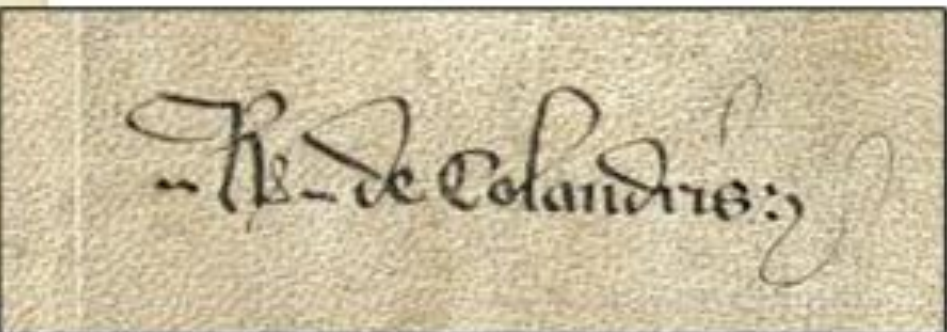
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Marburg, Staatsarchiv (DE-HStAMa)
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1540
Národní archiv (CZ-NA)
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AUR 1053 III 12
 Haus-, Hof- und Staatsarchiv
 (AT-HHStA)
 Size: 581x541px
 Date: 10530312

Leo IX



4
 München, Bayerisches
 Hauptstaatsarchiv (DE-
 BayHStA)

Size: 359x217px
 Date: 10750324

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Gregory VII



Morbio 8 (14)
 Universitäts- und
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 Anhalt (DE-ULBST)

Size: 1358x1237px
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Urban II



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BU 277
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 Stiftsarchiv (AT-StAStP)

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 Date: 10990125

Urban II



1
 Sankt Paul im Lavanttal,
 Stiftsarchiv (AT-StAStP)

Size: 493x453px
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Urban II



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Alfonso VII (León
 and Castile)



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 Pannonhalmi Bencés
 Főapátság Levéltára (HU-
 PBFL)

Size: 294x261px
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Paschal II



7
 Marburg, Staatsarchiv (DE-
 HStAMa)

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 Date: 11110415

Paschal II



Morbio 9 (4)
 Universitäts- und
 Landesbibliothek Sachsen-
 Anhalt (DE-ULBST)

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Calixtus II



AUR 1123 II 19
 Haus-, Hof- und Staatsarchiv
 (AT-HHStA)

Size: 348x318px
 Date: 11230219

Calixtus II

(...)
 and 874 more hits
 Some false, some
 misinterpreted,
 Many expanding
 our knowlegde
 and a few
 groundbreaking.



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Id est que utilitatem et commodum



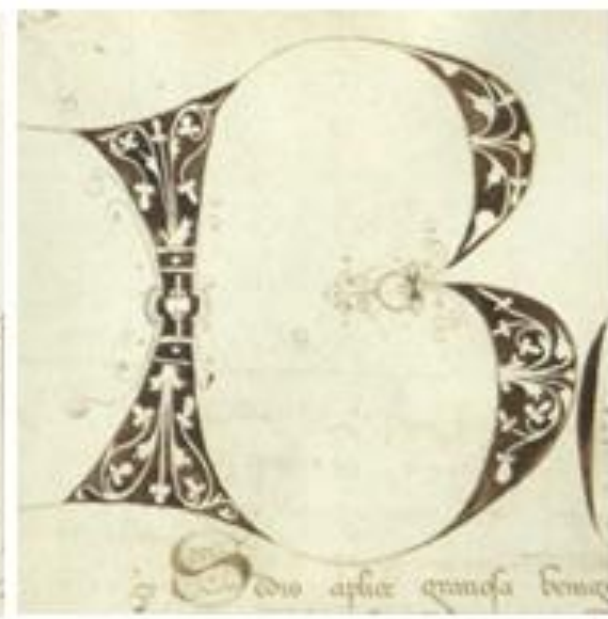
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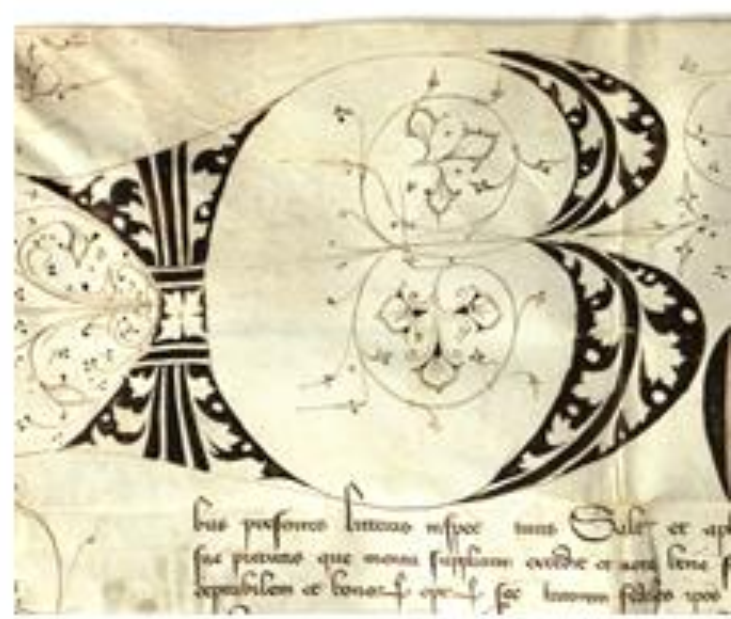
Sacra religio sub qua dilect



Iniquis Roman[us] eccle



Sedis ap[osto]lice gr[ati]a h[ab]et



bus p[ro]p[ri]is l[itte]ras n[ost]ras tunc Salu[m] et ap[osto]lice
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deparabilem et honor[abilem] op[er]e f[aci]t h[ab]ere p[ro]p[ri]o

Object Detection for Visual Analysis of Medieval Charters

Decoration and Its Makers in Papal Documents

Florian Atzenhofer-Baumgartner and Martin Roland



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