

Filigranes pour tous, two years later

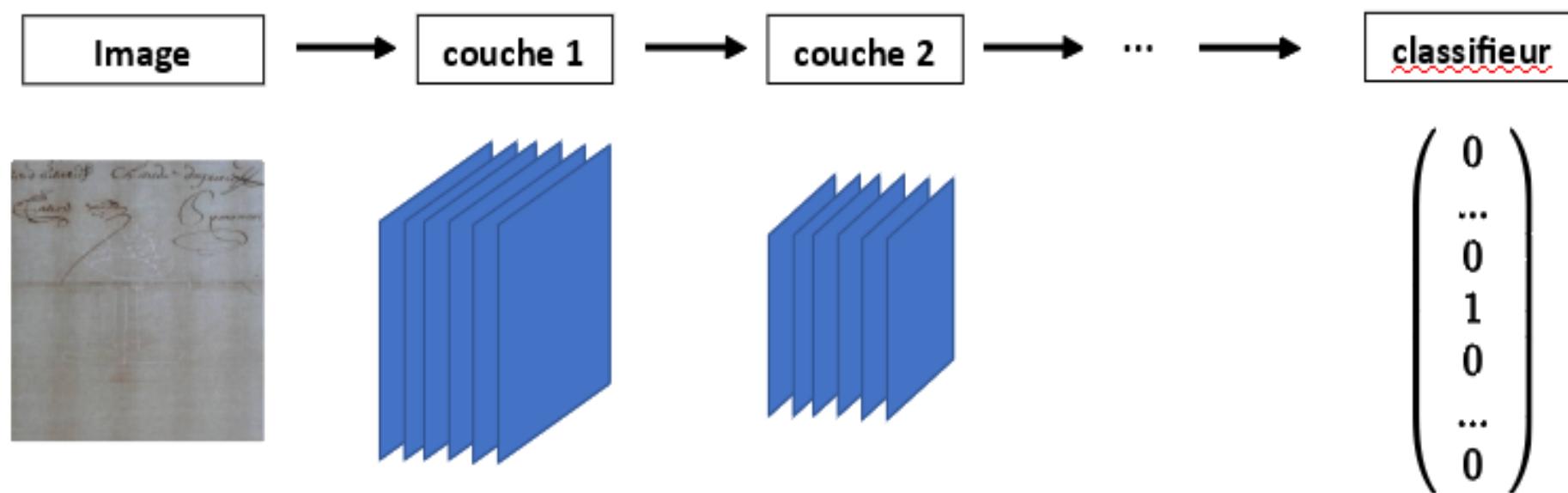
A prototype of the watermark ID app

Ilaria Pastrolin
École nationale des chartes (Paris)

History

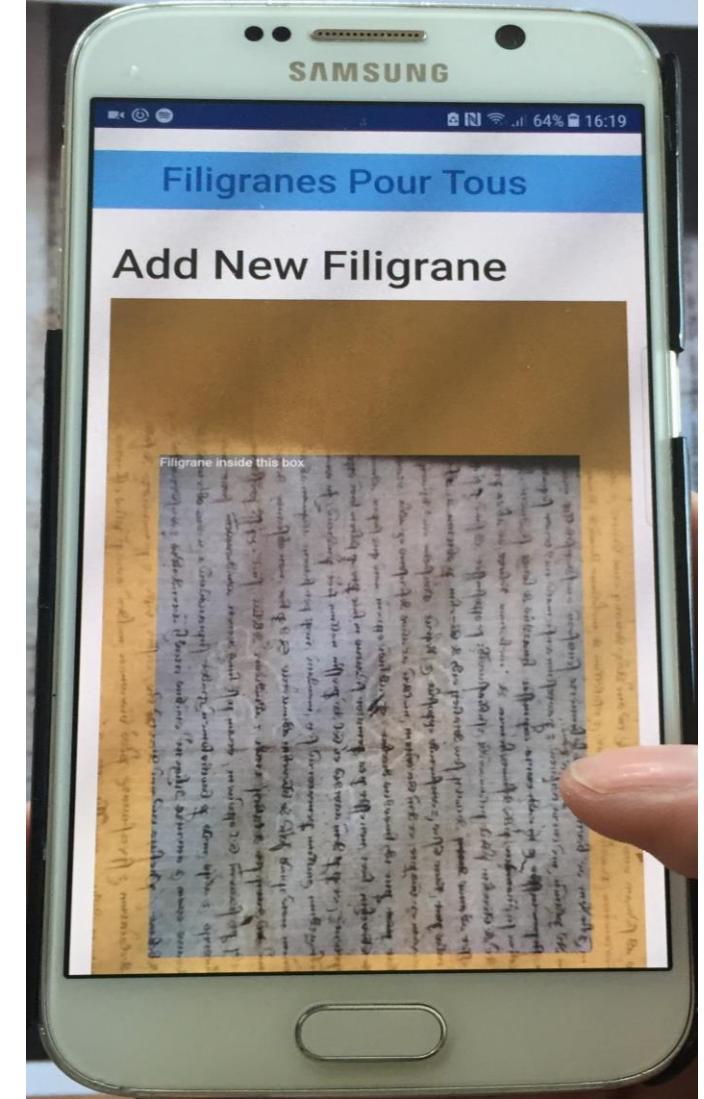
- **March 2017:** «the research centre Jean-Mabillon (*École nationale des chartes*) is one of the winners of the call for tenders of the **IRIS** [*Initiatives de Recherches Interdisciplinaires et Stratégiques*] ‘Science des données, Donnée de la Science’ of the university PSL – Paris Sciences Lettres».
- **October 2017:** the project is presented at the 4th International Conference ‘Watermarks in Digital Collections’, Vienna, Austria.
- **École nationale des chartes** (Christine Bénévent, Oumayma Bounou, Tom Monnier, Ilaria Pastrolin, Olivier Poncet (person in charge), Marc Smith); **École de Ponts ParisTech** (Mathieu Aubry, Xi Shen); **INRIA – Institut National de Recherche en Informatique et en Automatique** (Pierre-Guillaume Raverdy, Josef Sivic); **IRHT – Institut de Recherche et d’Histoire des Textes** (François Bougard, Bruno Bon); **Archives nationales** (Marie-Françoise Limon-Bonnet).
- **January 2018 – January 2020.**

Deep learning: convolutional neural network (CNN, or ConvNet)



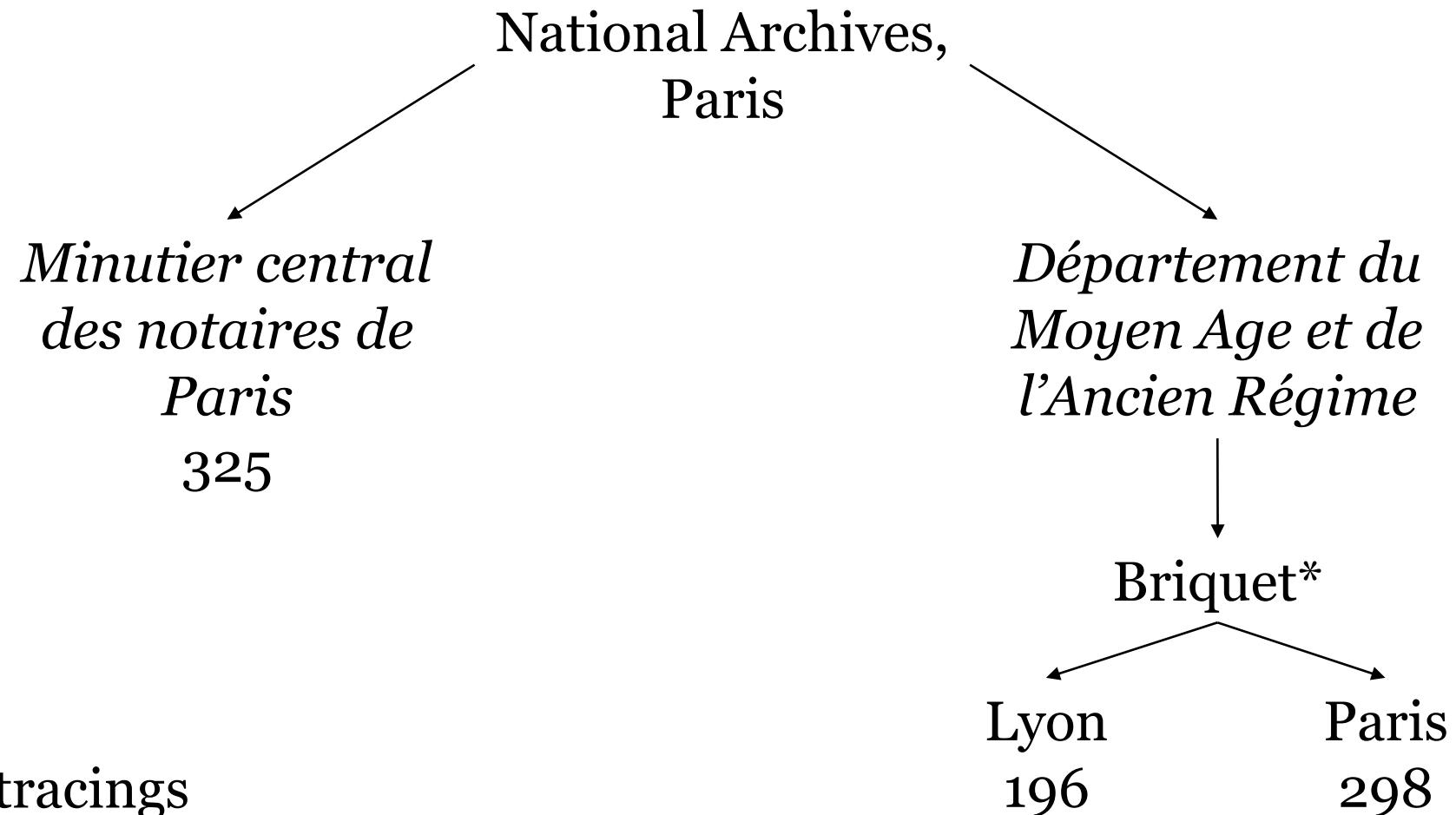
Motivations

- For **digital humanities**
 - Easy to recognize the watermark on a document
 - Dating and locating the document
- For **computer vision**
 - Cross-domain image matching
 - One shot recognition



Our web-application for watermark recognition

Data acquisition



Data acquisition

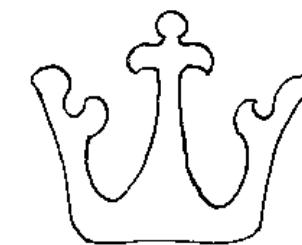
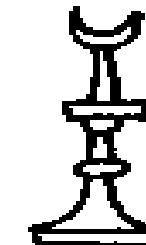
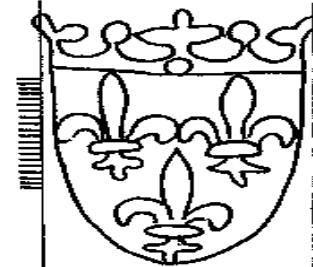
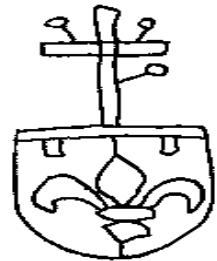
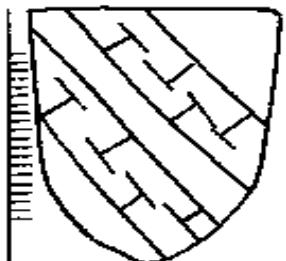
- **Photographs**

- Collected from National Archives in Paris
 - classes with watermarks not available in Briquet (notarial archives)
 - classes with paired with their Briquet tracing (Lyon and Paris)



- **Tracings**

- Cropped more than 16.000 tracings available online, from the Briquet catalogue
http://www.ksbm.oeaw.ac.at/_scripts/php/BR.php

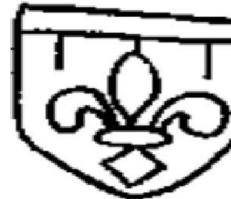


[Montrer plus](#)

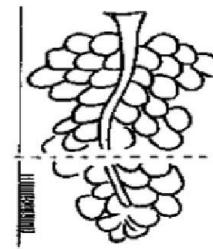
Identifier le filigrane

[Nouvelle image](#)[Chercher les correspondances](#)

1530

[Details](#)

13008

[Details](#)

338

[Details](#)BIBLIOTHÈQUE
NATIONALE

PSL



IRHT



Lirias

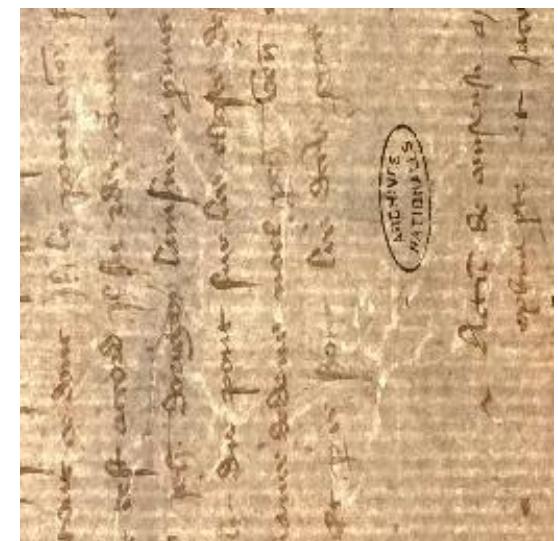
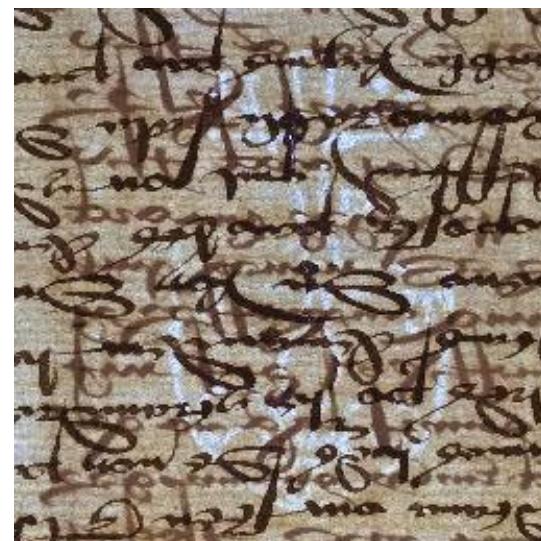
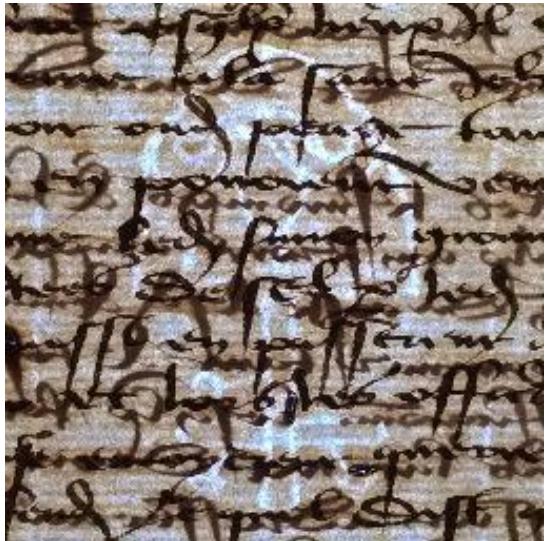
Ecole
nationale
des
chartes

BnF

Université
Paris-Sorbonne

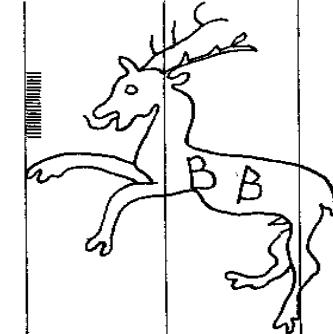
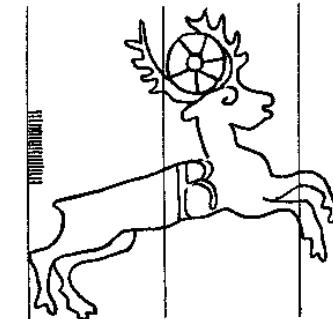
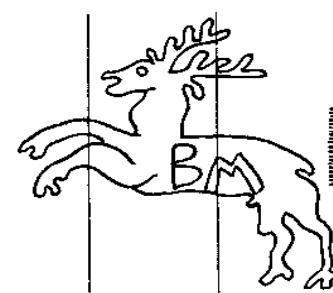
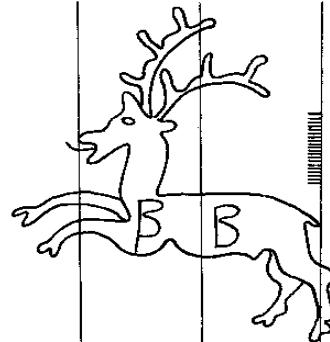
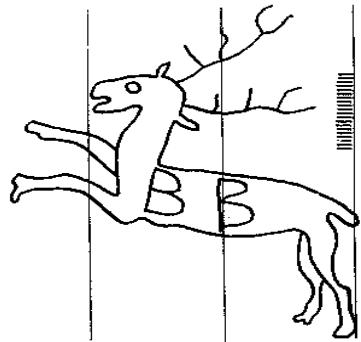
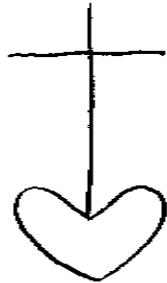
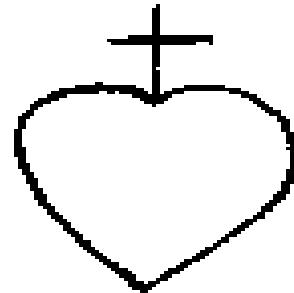
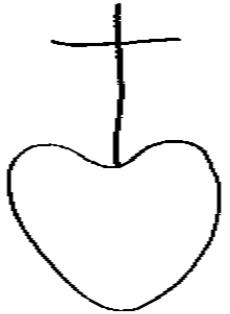
Challenges

- Cluttered images



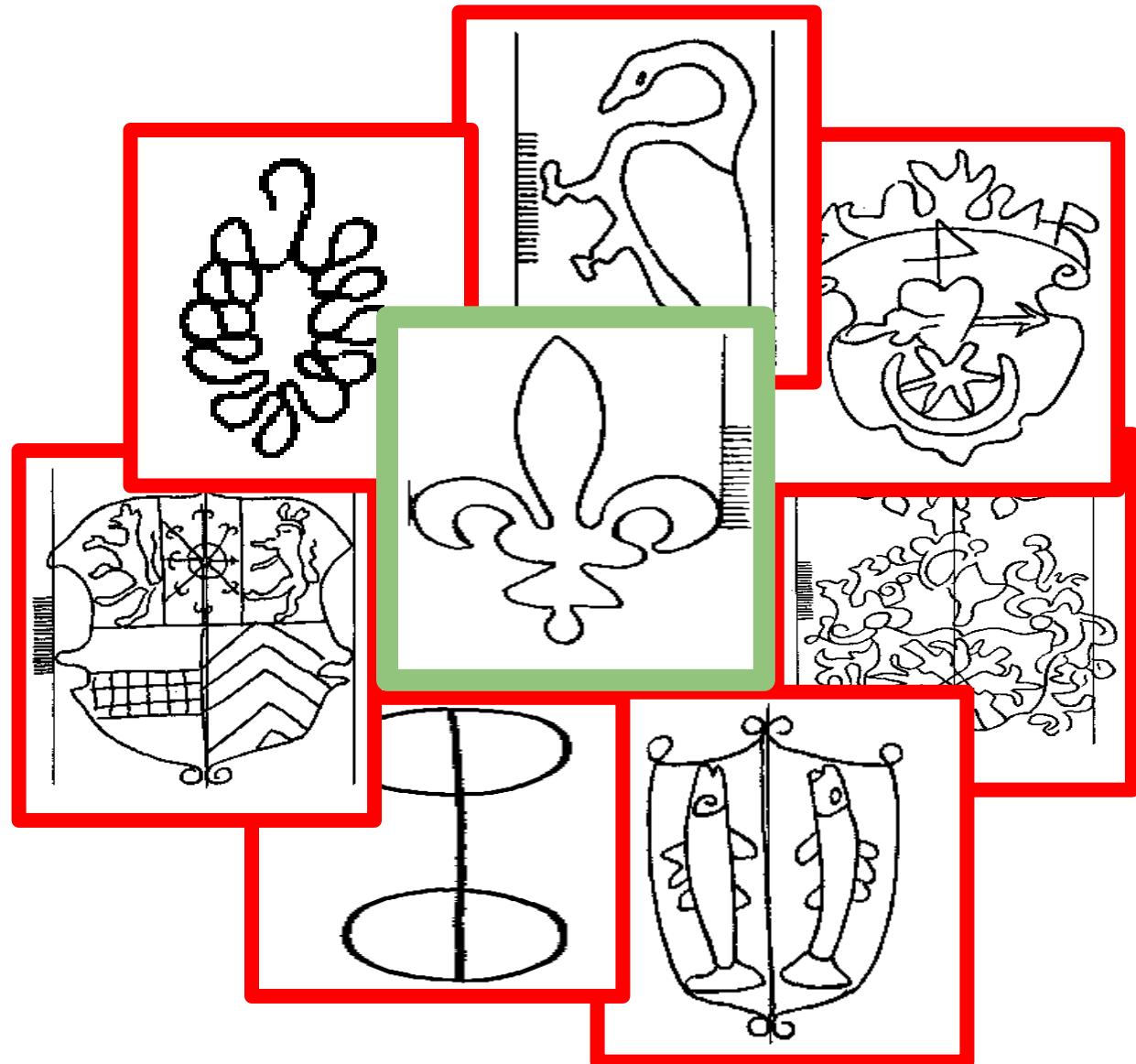
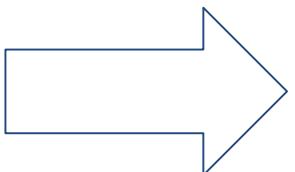
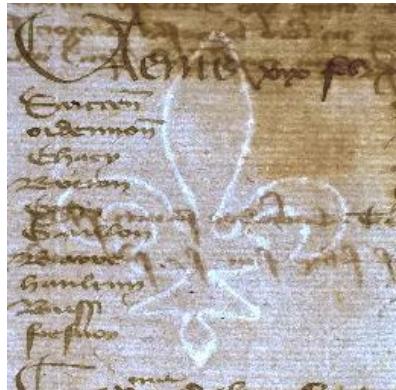
Challenges

- Very similar categories

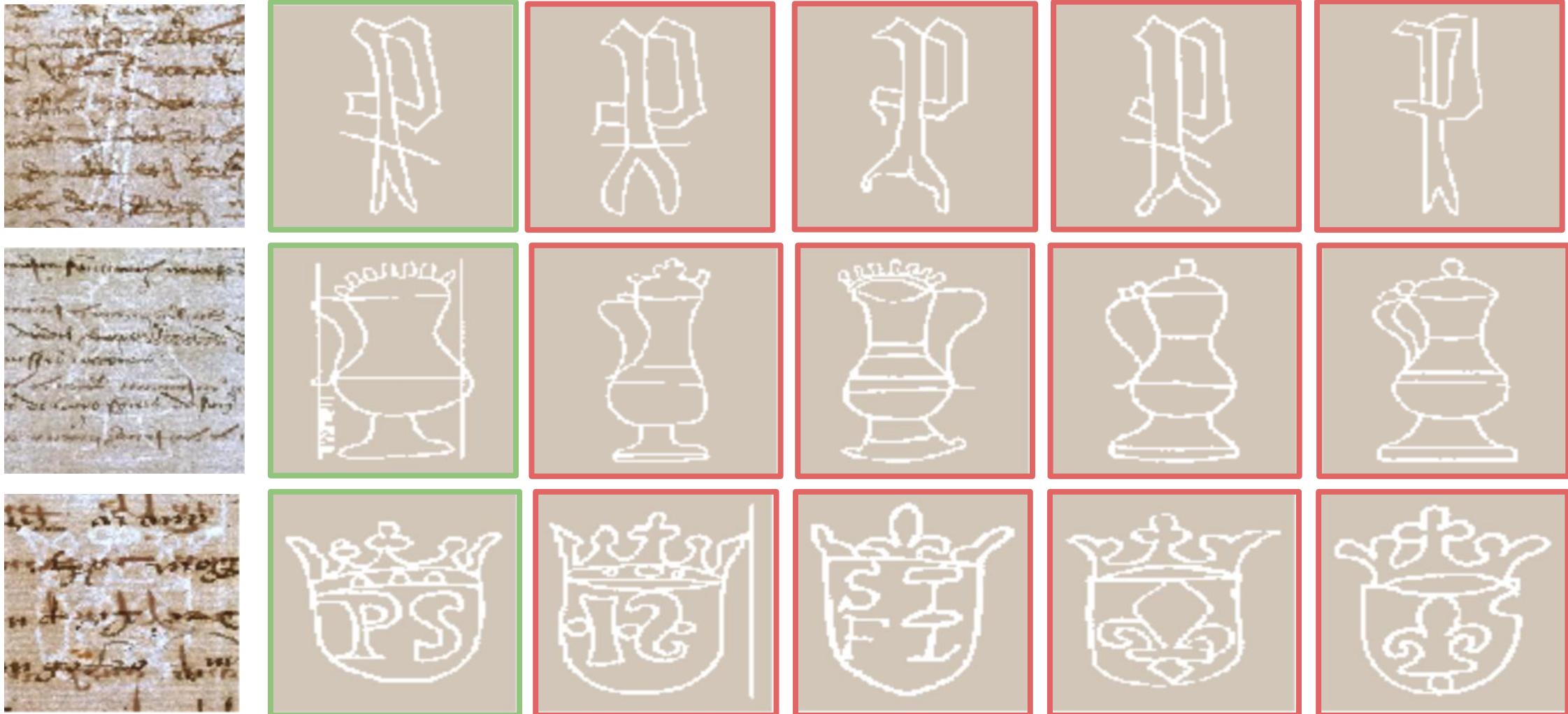


Challenges

- Search amongst more than 16.000 watermarks in a different visual domain

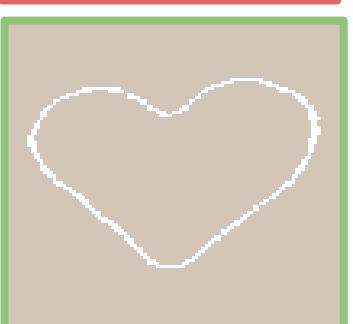
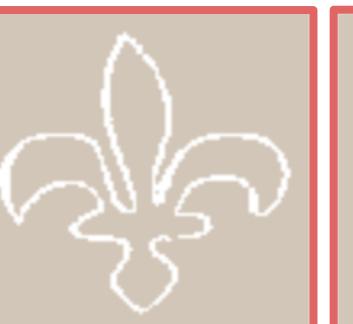
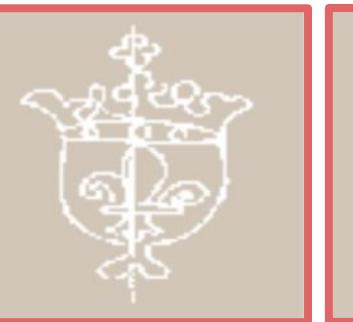


Results: 50% TOP-1 accuracy



Query Image Top-5 matches

Results: challenging examples



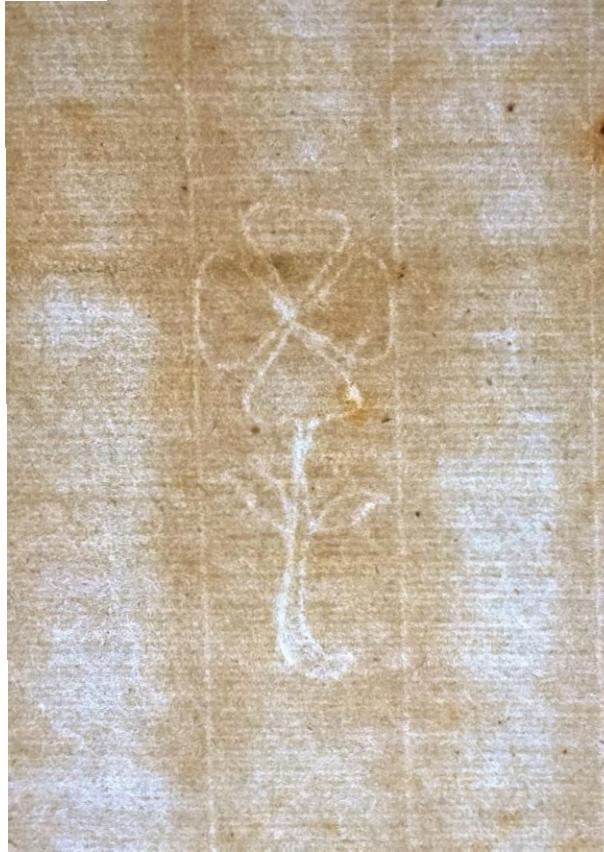
Query Image

Top-5 matches

Current state

Three databases:

1. Briquet's **tracings**
2. **Photographs** from the National Archives (MC and DMAAR)
3. **Open** to crowdsourcing
 1. Bernstein contributors
 2. Anyone



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