


Promised too much? AI in use in the Image Archive of the ETH Library

Other Conference Item

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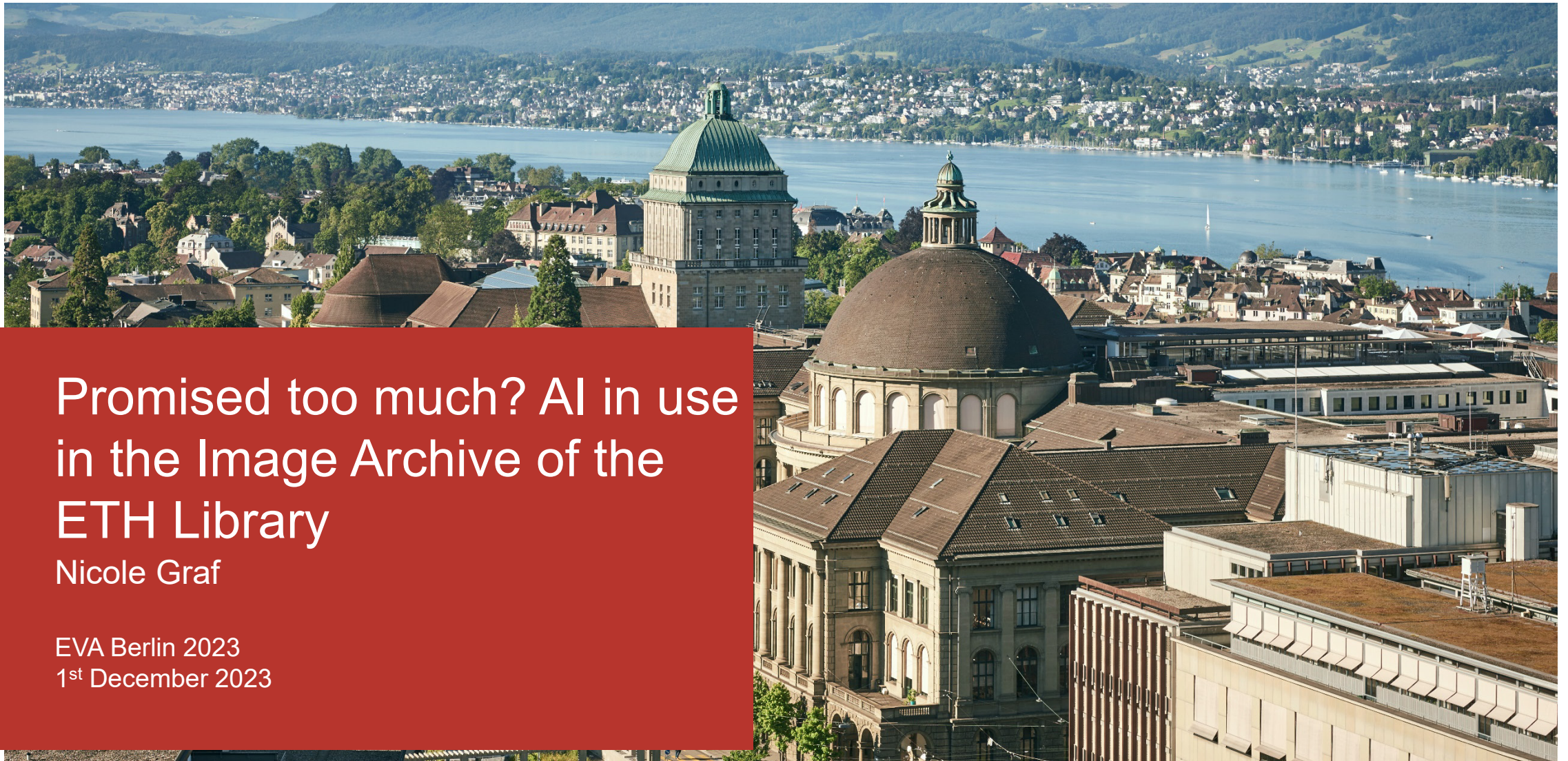
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Promised too much? AI in use in the Image Archive of the ETH Library

Nicole Graf

EVA Berlin 2023
1st December 2023

1st run through: Clarifai and DeepL do work

February 2021 to May 2022


Sounding out with Clarifai: Autotagging 1 million images

New automatically generated tags

- Until 2021, metadata layers were mainly based on human knowledge
- Since 2021, image classification: automatically generated keywords by artificial intelligence (AI), so-called autotagging
- Autotags in addition to the “intellectual” subject headings
- AI software: Clarifai, “General” model
- Why Clarifai? You have to take what's served → autotagging module is part of the catalogue software

Autotagging with Clarifai in Cumulus backend

Autotagging control panel → Set status, select model, activate colour → Autotagging result

Field Name	Field Content
Record Name	Com_LC0653-025-000-022
Thumbnail	
Rating
▼ AutoTagging Control	
AutoTagging	Not autotagged yet
Autotag Model	no value
AutoTagging Color	<input type="checkbox"/>
AutoTagging Classification	<input type="checkbox"/>
AutoTagging Face	<input type="checkbox"/>




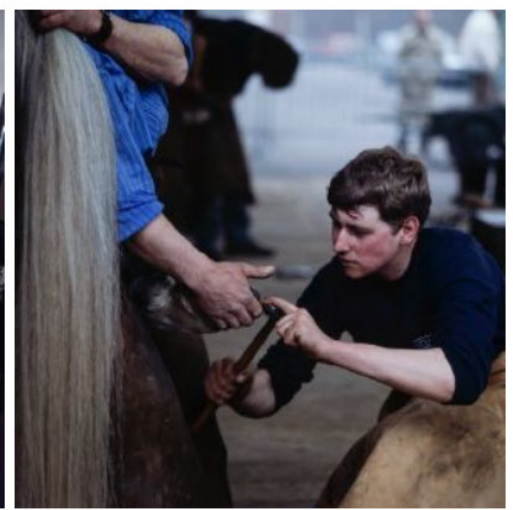
▼ AutoTagging Control	
AutoTagging	Not autotagged yet
Autotag Model	Not autotagged yet
AutoTagging Color	Pending
AutoTagging Classification	Autotagging successful
	Autotagging failed
	AutoTagging reviewed
	no value



▼ AutoTagging Control	
AutoTagging	Not autotagged yet
Autotag Model	General
AutoTagging Color	General
AutoTagging Classification	Wedding
	Travel
	Food
AutoTagging Face	Apparel
	no value

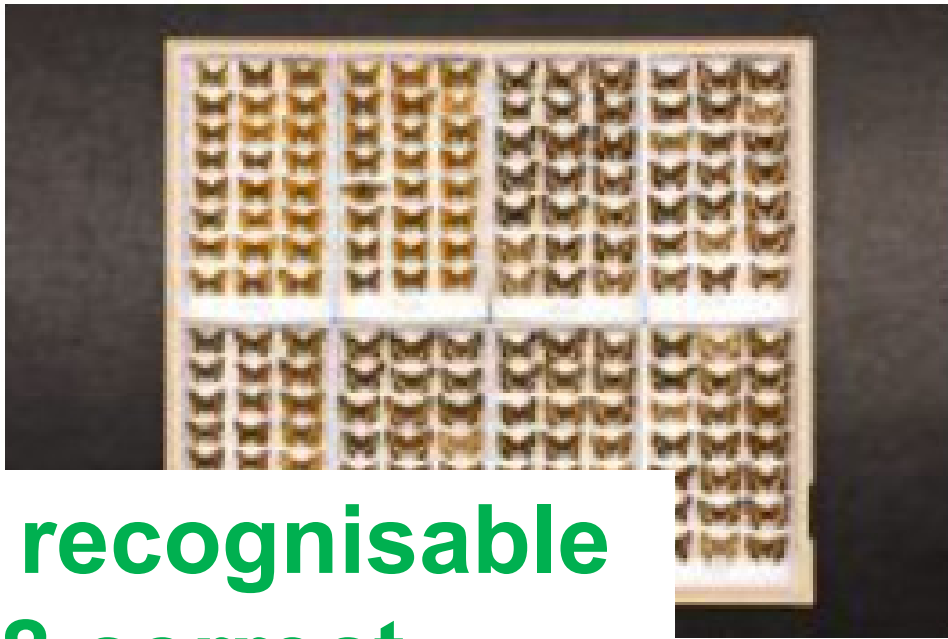
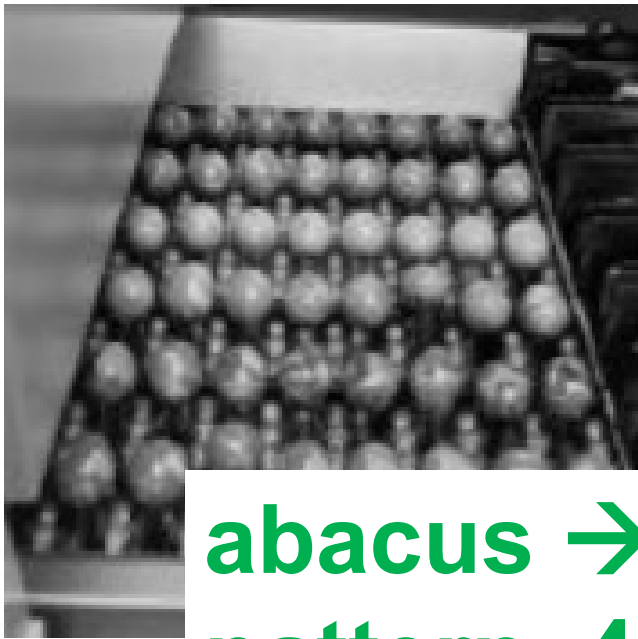
▼ AutoTagging Control	
AutoTagging	Not autotagged yet
Autotag Model	General
AutoTagging Color	<input checked="" type="checkbox"/>
AutoTagging Classification	<input type="checkbox"/>
AutoTagging Face	<input type="checkbox"/>

Field Name	Field Content
Record Name	Com_LC0653-025-000-022
Thumbnail	
Rating
▼ AutoTagging Control	
AutoTagging	Autotagging successful
Autotag Model	General
AutoTagging Color	<input checked="" type="checkbox"/>
AutoTagging Classification	<input type="checkbox"/>
AutoTagging Face	<input type="checkbox"/>
▼ AutoTagging Result	
Categories	Keywords
	architektur Architektur auto Auto einkauf (konsum) gebäude Gebäude handel
	Handel horizontal im Freien keine Person Reise stadt Stadt Strasse straße
	unternehmen Unternehmen Verkehrssystem vorrat Vorrat
AutoTaggingColor 1	
AutoTaggingColor 2	
AutoTaggingColor 3	
AutoTaggingColor 4	
AutoTaggingColor 5	no value
AutoTaggingColor 6	no value
AutoTaggingColor 7	no value
AutoTaggingColor 8	no value

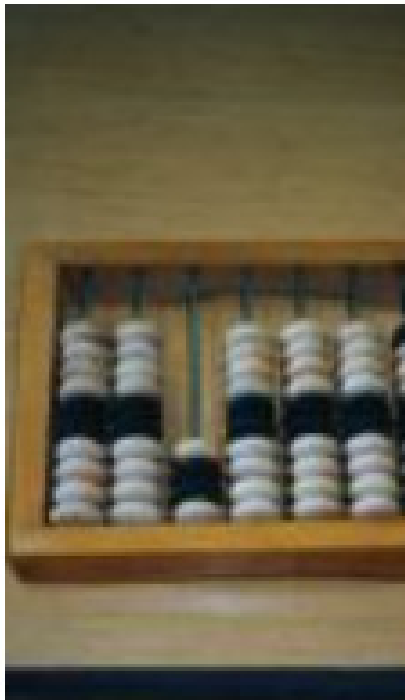


Drummer → top





abacus → recognisable pattern 4/8 correct



- Categories
 - ETHBIB.Bildarchiv
 - Keywords
 - General
 - Schreiben
 - Slate (Schreiben)
- With image
- License
- Orientation
- Colour
- Colour selection
- Period



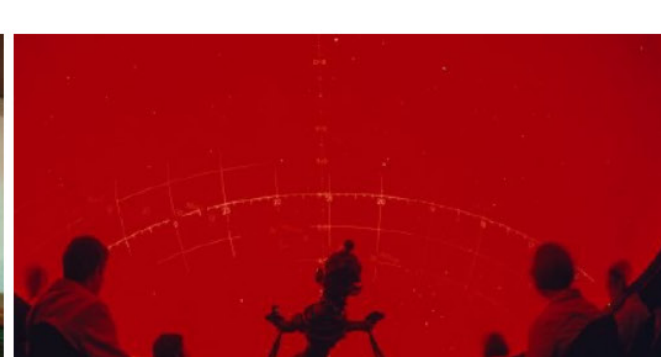
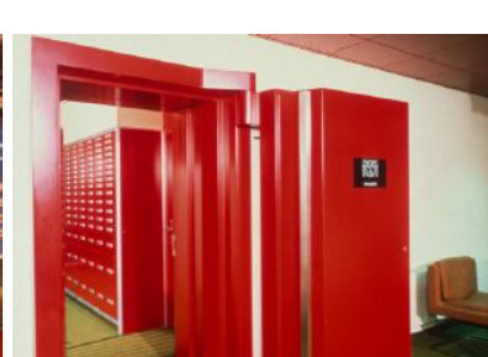
Categories: ⓘ

- View collection
- Archives + Libraries
- ETHICS
- Information technology equipment
- Reportage photography
- Unknown
- Zurich-Oberstrass

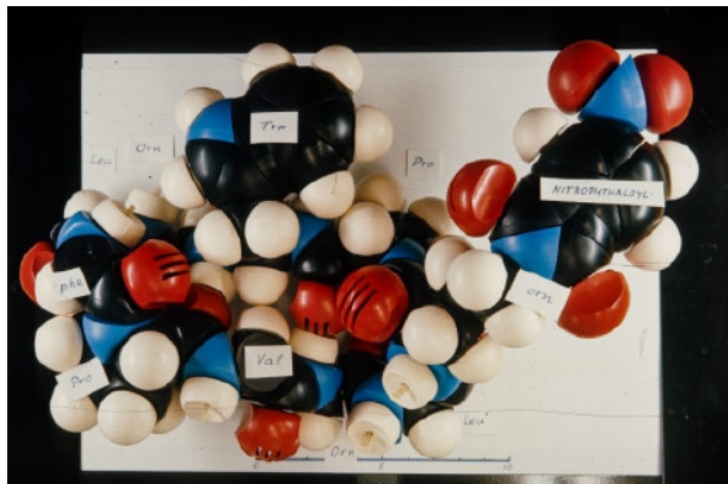
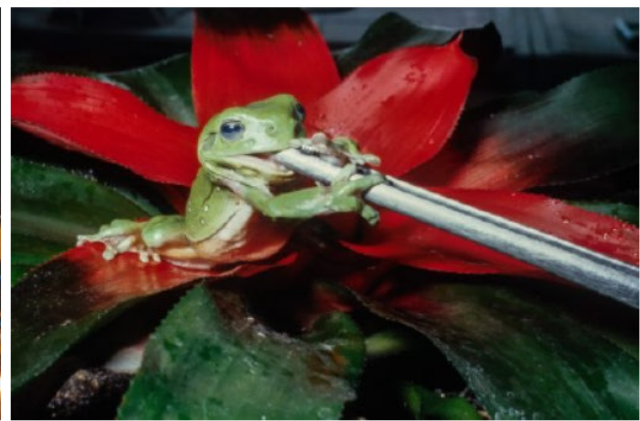
Keywords:

- Büro
- Computer
- Erwachsener
- Innenaufnahme
- Konzentration
- Mann
- Menschen
- Möbel
- Schreiben
- Schreibtisch
- Technologie
- Unternehmen

writing → new hits



Color: FireBrick



DeepL (2022–)

New machine translated metadata fields

1. Title (English)
2. Caption (English)
3. Is part of (English)
4. Comments (English)

Results

- Mostly good translations
- Problematic: Swiss place names such as Brunnen ("Fountain"), Baden ("Bathing") or Speicher ("Memory").
- Abbreviations such as "v. S." [from South], "v. N. O." [from North-East] are not recognized
- Swiss terms such as ARA (wastewater treatment plant) not recognized
- Translate each language individually

Autotranslate with DeepL Pro in Cumulus backend

Autotranslate control panel: Set status

Field Name	Field Content
Record Name	Com_L23-0914-0001-0003
AutoTranslate Start Beschreibung	erledigt
Caption (German)	ja nein
AutoTranslate Start Titel	erledigt no value
Title (German)	! London, Chelsea, 352 King's Road
AutoTranslate Start Enthalten in	erledigt
Is part of (German)	! London, 1974. Reportage mit 68 Bildern (Auswahl digitalisiert, keine zusätzlichen Motive vorhanden)
AutoTranslate Start Kommentare	erledigt
Comments (German)	! Anonym: (wahrscheinlich) Chelsea, 313 King's Road (Chelsea Rare Books)

Autotranslate result



Field Name	Field Content
Caption	! Natural science antique shop with instruments
Title	! London, Chelsea, 352 King's Road
Is part of	! London, 1974. reportage with 68 pictures (selection digitized, no additional motifs available)
Comments	! Anonymous: (probably) Chelsea, 313 King's Road (Chelsea Rare Books)

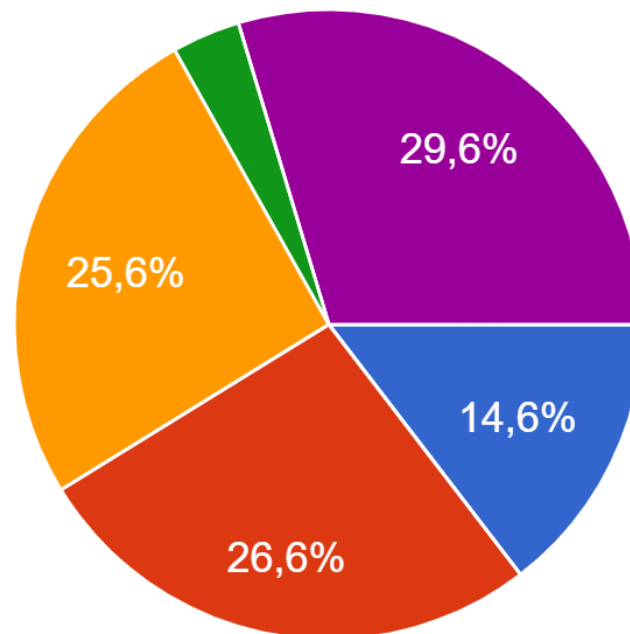
Effort & costs

	Autotagging	Autotagging Colour	Autotranslate
Number of records	825,804	503,262	1,142,019
Average seconds per record	20-30	2	3
Number of records per night	1,899	7,700	8,800
Start date	21.02.2021	17.05.2022	15.03.2022
End date	16.05.2022	15.07.2022	15.07.2022
Number of productive nights (Mon-Sun)	449	65	112
Costs	USD 1.20 / 1000 unit = USD 1594		EUR 500 / 25 Mio. characters = EUR 2700

User survey in May 2022: «Do you use the keywords?»

Nutzen Sie die Keywords (gelb markiert)?

199 Antworten



66,8 %

- Ja, ich nutze sie regelmässig
- Ja, ich habe sie schon ausprobiert (nutze sie selten)
- Nein, aber ich entdecke sie gerade dank dieser Umfrage!
- Nein, ich nutze sie nicht mehr
- Nein, ich nutze sie nie

Online-Umfrage Mai 2022, Bericht

2nd run: qualitative analysis and editing of the autotags

July 2023 to today

First criticism is growing...

Results

- Alphabetical keyword list of 4.600 tags
- More generic, many details, partly also contradictory
- Very good to questionable autotags
- Autotags were initially neither checked nor corrected... We also forbid our crowd to do so!
- We wanted to leave the autotags as they were (the effort has been so great)

But criticism is growing

- But, on closer inspection, we also found simply incorrect and problematic autotags
- Employees see our intellectual work becoming somewhat diluted
- The difference between keywords (AI) and subject headings is not clear in the web frontend
- Academics in seminars accused us of reproducing stereotypes and biases
- More and more presentations from GLAM institutions on AI show the same results: cats and dogs. But is this it?

Kategorien

Kategorien durchsuchen...

— ETHBIB.Bildarchiv

- + Bestände
- + Fotografien
- + Genre

— Keywords

— General

- Abakus
- Abbild
- Abbildung
- Abblocken
- Abdeckung
- Abend
- Abenddämmerung
- Abendessen
- Abenteuer
- Abfahrt
- Abfall
- Abfalleimer
- Abfluss



Bildinformationen

Bildcode:	Ans_01693-005
Fotograf:	Unbekannt
Titel: ⓘ	Zürich, ETH Zürich, Hauptgebäude (HG), Hauptbibliothek, Katalogsaal, ETHICS Online-Abfrage
Originaltitel:	Zürich, ETH Zürich, Hauptgebäude (HG), Hauptbibliothek, Katalogsaal, ETHICS Online-Abfrage
Datierung: ⓘ	15.04.1986

Physische Beschreibung: ⓘ Fotografie : Silbergelatine-Abzug

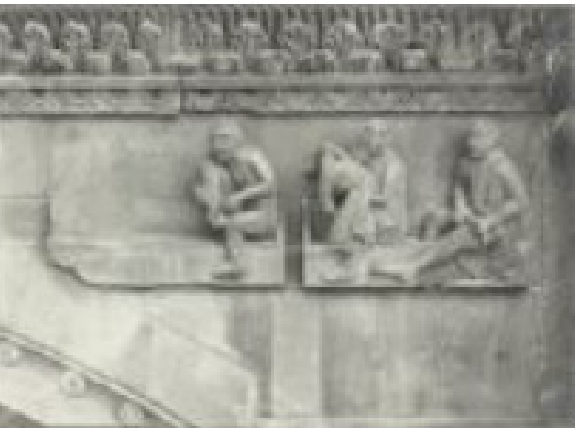
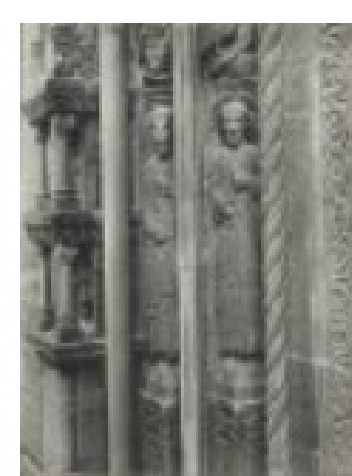
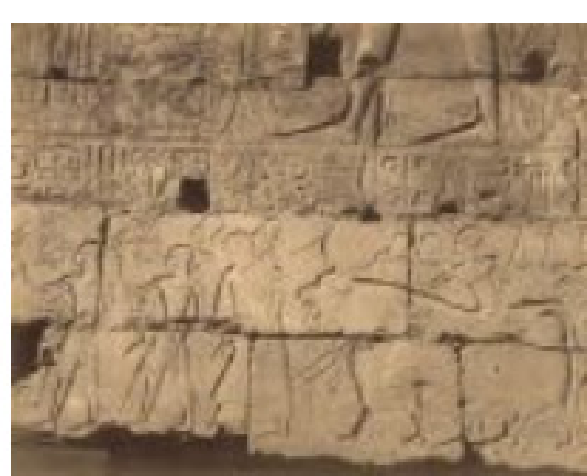
Farbe: ⓘ schwarz/weiss

Form: ⓘ Querformat

Mass: ⓘ 9 x 13 cm

Kategorien: ⓘ Ansichtensammlung Archiv + Bibliothek ETHICS Geräte der Informationstechnik (Computer) Reportagefotografien Unbekannt Zürich-Oberstrass

Schlagwörter: Büro Computer Erwachsener Innenaufnahme Konzentration Mann Menschen Möbel Schreiben Schreibtisch Technologie Unternehmen



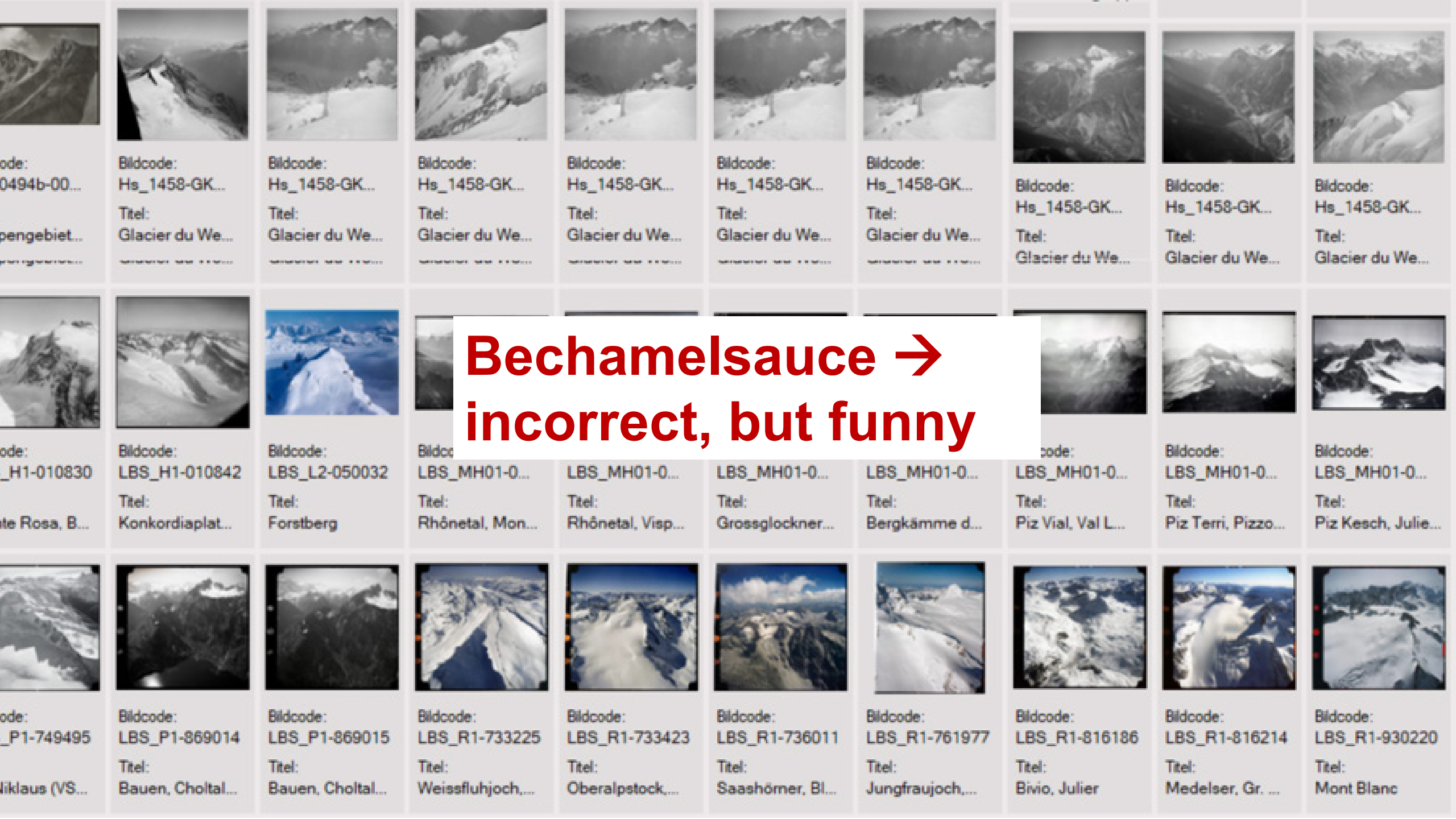
**Erleichterung →
mistranslation from
relief**





Crime → flop





**Bechamelsauce ->
incorrect, but funny**

Bildcode:
0494b-00...

Titel:
engebiet...

Bildcode:
Hs_1458-GK...

Titel:
Glacier du We...

Bildcode:
Hs_1458-GK...

Titel:
Glacier du We...

Bildcode:
Hs_1458-GK...

Titel:
Glacier du We...

Bildcode:
Hs_1458-GK...

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Hs_1458-GK...

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Hs_1458-GK...

Titel:
Glacier du We...

Bildcode:
Hs_1458-GK...

Titel:
Glacier du We...

Bildcode:
_H1-010830

Titel:
te Rosa, B...

Bildcode:
LBS_H1-010842

Titel:
Konkordiaplat...

Bildcode:
LBS_L2-050032

Titel:
Forstberg

Bildcode:
LBS_MH01-0...

Titel:
Rhônetal, Mon...

Bildcode:
LBS_MH01-0...

Titel:
Rhônetal, Visp...

Bildcode:
LBS_MH01-0...

Titel:
Grossglockner...

Bildcode:
LBS_MH01-0...

Titel:
Bergkämme d...

Bildcode:
LBS_MH01-0...

Titel:
Piz Vial, Val L...

Bildcode:
LBS_MH01-0...

Titel:
Piz Terri, Pizzo...

Bildcode:
LBS_MH01-0...

Titel:
Piz Kesch, Julie...

Bildcode:
_P1-749495

Titel:
niklaus (VS...

Bildcode:
LBS_P1-869014

Titel:
Bauen, Choltal...

Bildcode:
LBS_P1-869015

Titel:
Bauen, Choltal...

Bildcode:
LBS_R1-733225

Titel:
Weissfluhjoch...

Bildcode:
LBS_R1-733423

Titel:
Oberalpstock...

Bildcode:
LBS_R1-736011

Titel:
Saashörner, Bl...

Bildcode:
LBS_R1-761977

Titel:
Jungfrauoch...

Bildcode:
LBS_R1-816186

Titel:
Bivio, Julier

Bildcode:
LBS_R1-816214

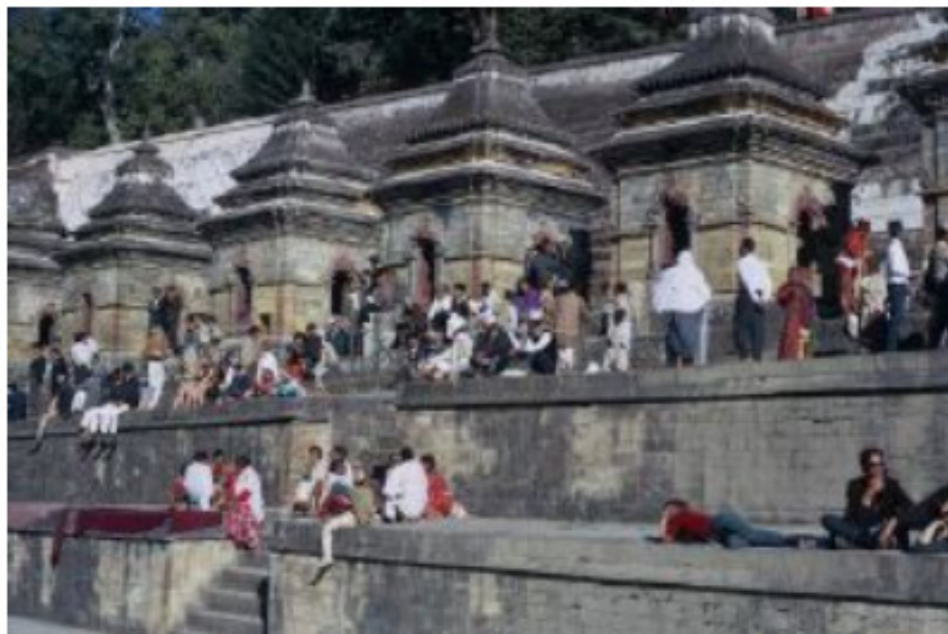
Titel:
Medelser, Gr. ...

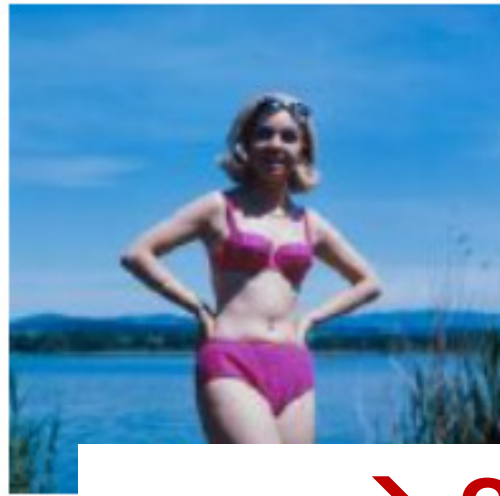
Bildcode:
LBS_R1-930220

Titel:
Mont Blanc

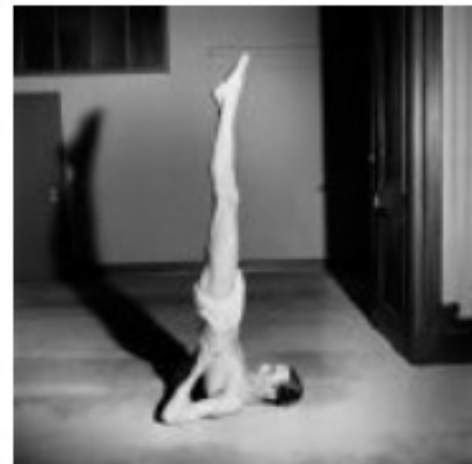


Ritual → biased





sexy → ???



Analysing the autotags (work in progress)

After the 1st run: 4'585 tags from aasfresser to Zypressenholz

The following corrections are made

1. Merge of lower/upper case: 617 tags
2. Deletion of incorrect/problematic autotags, additional criteria such as:
 - Mainly incorrect tags with hits under 10 images
 - Mainly incorrect tags with few hits, but where many more images would be available
 - Mainly incorrect tags with topics that are not prioritized ETH
3. 86 % of tags analysed (only «S» in progress): 1,486 tags are ok (44 %), 1877 tags are deleted
4. Next steps: semantic evaluation of the tags: which tags work, which do not?
 - **Word type:** verb, noun, adjective, pronoun, ...
 - **Content:** Architecture, nature, plants, humans, food, concepts,...

Conclusion

- **Pragmatic approach**
 - “There’s an opportunity, let's take it.”
 - AI can be a valuable tool for indexing of image data.
 - Additional knowledge layers might help users to discover our content in a new way.
 - However, it is important to recognise the limitations of AI and to take these into account when applying it.
- **It’s a process rather than a project**
- **Next steps**
 - The qualitative analysis provides valuable insights for the development and application of AI-supported image classification methods.
 - Defining more specific tasks and approaches, also in cooperation with researchers from Computer Science and/or Digital Humanities.
 - Participation in discussions about ethical frameworks.

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