

A complex network graph with numerous blue nodes and connecting lines, set against a dark background.

“An ounce of prevention is worth a pound of cure”: establishing a gold standard-based evaluation in customer projects

MICES 2021, 01.07.2021

Bertram Sändig, Cornelia Werk

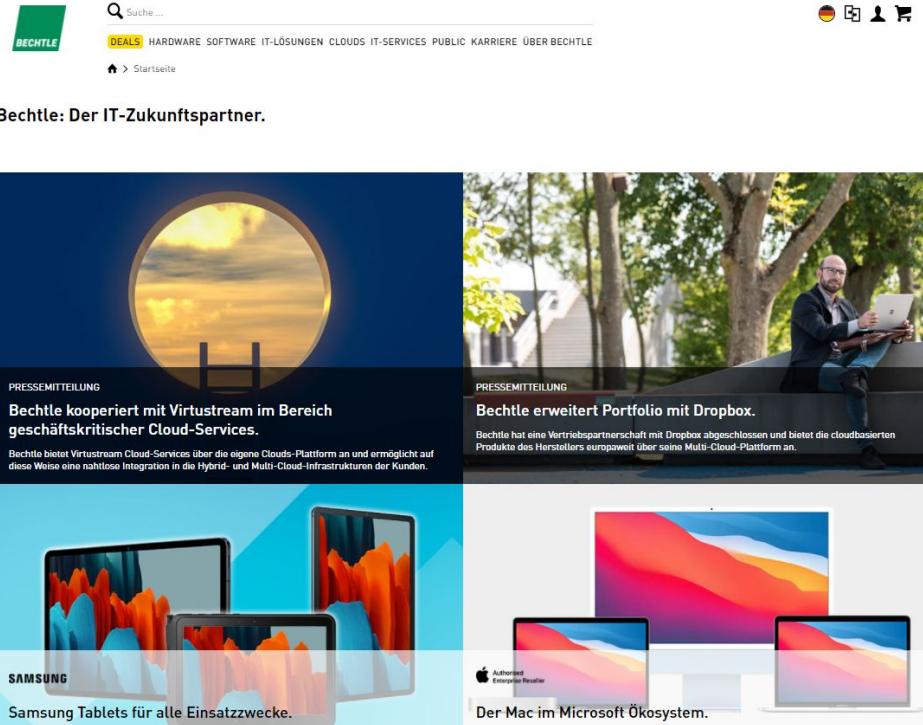
Agenda

1. Why do we need evaluation?
2. The basics of our evaluation.
3. Customer specifics
 - Building a corpus for Bechtle AG
 - Building a corpus for a German health insurance company
4. How to communicate.

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Why do we need evaluation? - An example



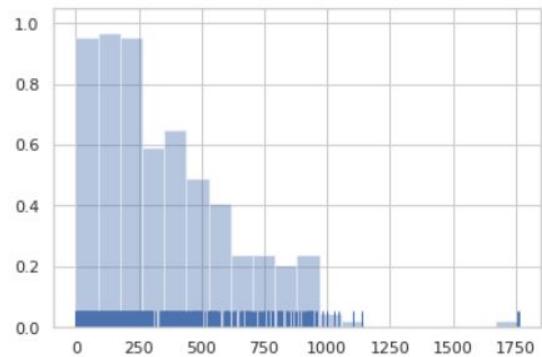
The screenshot shows the Bechtle website homepage. At the top, there is a navigation bar with the Bechtle logo, a search bar, and links for DEALS, HARDWARE, SOFTWARE, IT-LÖSUNGEN, CLOUDS, IT-SERVICES, PUBLIC, KARRIERE, and ÜBER BECHTLE. Below the navigation is a breadcrumb trail: Home > Startseite. The main content area features several news cards and product highlights:

- PRESSEMITTEILUNG**
Bechtle kooperiert mit Virtustream im Bereich geschäftskritischer Cloud-Services.
Bechtle bietet Virtustream Cloud-Services über die eigene Clouds-Plattform an und ermöglicht auf diese Weise eine nahtlose Integration in die Hybrid- und Multi-Cloud-Infrastrukturen der Kunden.
- PRESSEMITTEILUNG**
Bechtle erweitert Portfolio mit Dropbox.
Bechtle hat eine Vertriebspartnerschaft mit Dropbox abgeschlossen und bietet die cloudbasierten Produkte des Herstellers europaweit über seine Multi-Cloud-Plattform an.
- SAMSUNG**
Samsung Tablets für alle Einsatzzwecke.
- Der Mac im Microsoft Ökosystem.**

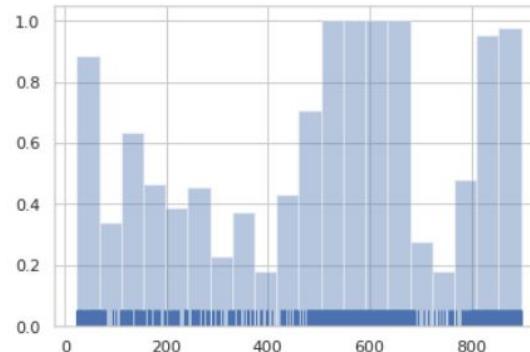


Why do we need evaluation? - An example

apple (before)



apple (after introducing stemming)



Why do we need evaluation?

An example

	name
0	NETBACKUP APPL SAS3 SFF-8644
1	CO Netbackup 5240 Appl 14TB +3YES
2	CO Netbackup 5240 Appl 4TB +3YES
3	CO Netbackup 5240 Appl 4TB +3YES
4	Netbackup Bndl 5230 Appl 36TB 2ND +1YSS
5	CO NetBackup Appl DB WLS Server T3 1YRBS
6	CO NetBackup Appl DB WLS Server T3 1YRNW
7	Check Point SandBlast TE Appl TE250X
8	Check Point SandBlast TE Appl TE100X
9	Check Point 3100 NG Threat Prev Appl
10	Check Point 5100 NG Threat Prev Appl
11	Check Point 730 Sec Appl Threat&Sandbl
12	Check Point 1430 NG Threat Prevent Appl
13	Check Point 910 NG Thr Prev&SB NGTX Appl
14	Check Point 5100 NG Th Prev&SB NGTX Appl
15	Check Point 730 Sec Appl Threat Prev Sec
16	Check Point Smart-1 410 NG Sec Man Appl
17	Check Point 910 Next Gen Thr Prev Appl
18	Check Point Smart-1 405 NG Sec Man Appl
19	HPE Aruba 3Y FC NBD Exch CP C2kDL20 Appl
20	HPE Aruba 1Y FC NBD Exch CP C2kDL20 Appl
21	HPE Aruba 5Y FC NBD Exch CP C2kDL20 Appl
22	OtterBox iPad Pro Defender Case
23	Apple iPad mini 4 128 GB WiFi+Cell grau
24	OtterBox iPhone 7/8 Defender Case
25	Apple iPhone 7/8 Leder Case braun
26	Apple iPhone 7/8 Plus Leder Case schwarz
27	Apple iPhone 7/8 Plus Leder Case blau
28	Apple iPhone XR Clear Case

Why do we need evaluation? - An example



arcserve®

ARC Appl 9048 OLP

Hersteller-Nr.: NAAD9048FLWBC7N00C

Bechtle-Nr.: 4435171

Produkttyp: Appliance



27.342,00

Bruttopreis: 32.536,98 € inkl. 5.194,98 € MwSt.



Auf Lager.

Nur noch wenige Stück verfügbar, ggf. auch längere Lieferzeit.



IN DEN WARENKORB

Why do we need evaluation? - An example



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IN DEN WARENKORB

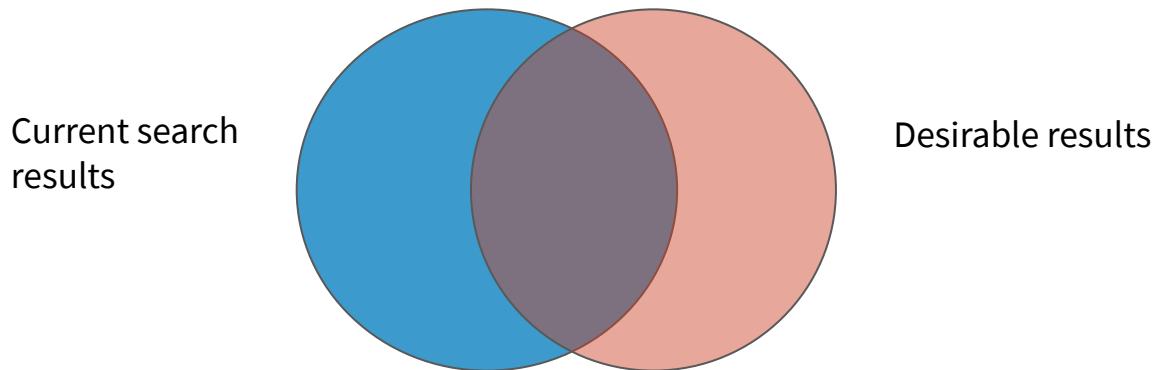
ARC Appl 9048 OLP

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Our way to evaluate in general

- Define examples of search queries and (ideally) all desirable results
- whenever a change has been made to the search configuration:
 - evaluate by means of these examples



Our way to evaluate in general

- Define examples of search queries and (ideally) all desirable results
- whenever a change has been made to the search configuration:
 - evaluate by means of these examples

name	type	family	categories	keep
Apple MacBook Pro TB 13 256 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing▶	<input checked="" type="checkbox"/>
Apple MacBook Pro TB 13 128 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing▶	<input checked="" type="checkbox"/>
Apple MacBook Air 256 GB silber	Ultrabook	Apple MacBook Air 2019	Mobile Computing▶	<input checked="" type="checkbox"/>
Apple MacBook Air 256 GB gold	Ultrabook	Apple MacBook Air 2019	Mobile Computing▶	<input checked="" type="checkbox"/>
Apple MacBook Air 128 GB silber	Ultrabook	Apple MacBook Air 2019	Mobile Computing▶	<input checked="" type="checkbox"/>
Apple MacBook Air 128 GB spacegrau	Ultrabook	Apple MacBook Air 2019	Mobile Computing▶	<input checked="" type="checkbox"/>
Apple MacBook Pro 13 512 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing▶	<input checked="" type="checkbox"/>
Apple MacBook Pro 15 256 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing▶	<input checked="" type="checkbox"/>
Apple MacBook Pro 15 512 GB spacegrau	Notebook	Apple MacBook Pro 2019	Mobile Computing▶	<input checked="" type="checkbox"/>
Apple MacBook Air			Inhaltsseiten.	<input checked="" type="checkbox"/>
Apple MacBook Pro			Inhaltsseiten.	<input checked="" type="checkbox"/>

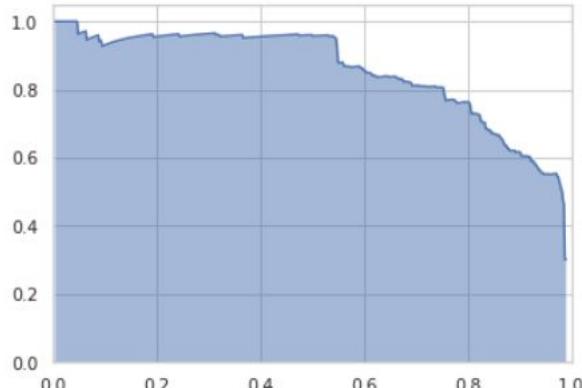
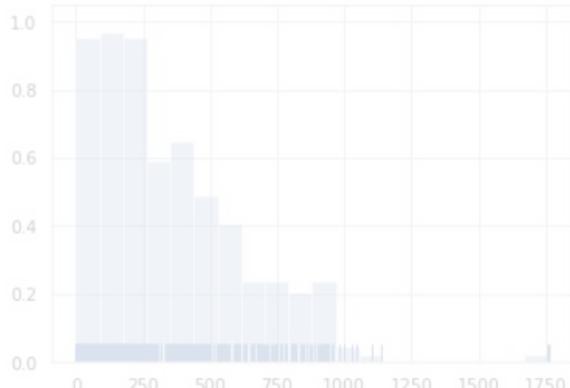
Search Query: “macbook”

MAP (mean average precision)

puts emphasis on higher ranked results

$$\text{AveP} = \frac{\sum_{k=1}^n P(k) \times \text{rel}(k)}{\text{number of relevant documents}}$$

apple



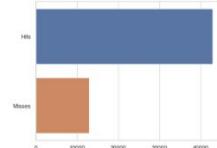
Precision Top-20:
100.0%
maP: 85.0%

Query results: 1767
Target: 537
False positives: 1236
False negatives: 6

Our way to evaluate in general

Overall

42935 of 55869 top results

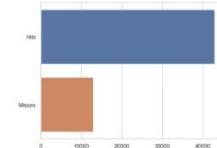


Precision Top-20: 76.3%
mAP: 67.7%

Query results: 92464
Target: 55869
False positives: 40983
False negatives: 4388
Number of queries: 123

Overall

42935 of 55869 top results



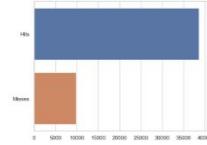
Precision Top-20: 81.6%
mAP: 73.1%

Query results: 92464
Target: 55869
False positives: 40983
False negatives: 4388
Number of queries: 123

Evaluation Groups

01_einwort

38618 of 48471 top results



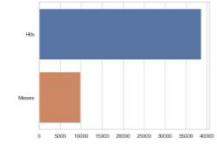
Precision Top-20: 85.2%
mAP: 80.1%

Query results: 84167
Target: 48471
False positives: 37516
False negatives: 1820
Number of queries: 66

Evaluation Groups

01_einwort

38618 of 48471 top results

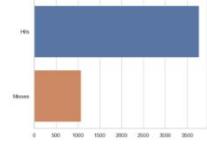


Precision Top-20: 89.9%
mAP: 84.6%

Query results: 84167
Target: 48471
False positives: 37516
False negatives: 1820
Number of queries: 66

02_zweiwort

3774 of 4842 top results

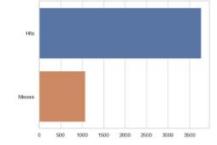


Precision Top-20: 91.7%
mAP: 78.2%

Query results: 6900
Target: 4842
False positives: 2773
False negatives: 635
Number of queries: 32

02_zweiwort

3774 of 4842 top results



Precision Top-20: 86.4%
mAP: 80.3%

Query results: 6900
Target: 4842
False positives: 2773
False negatives: 635
Number of queries: 32

Before

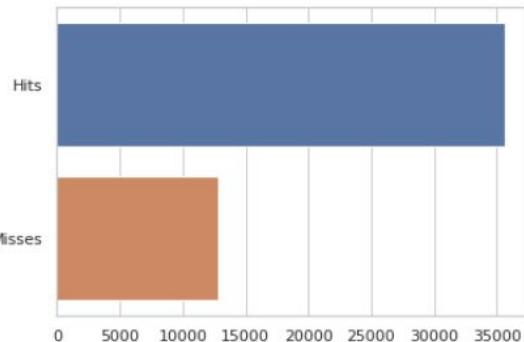
After

Our way to evaluate in general

Evaluation Groups

01_einwort

35656 of 48471 top results



Precision Top-20:
79.0%
maP: 74.1%

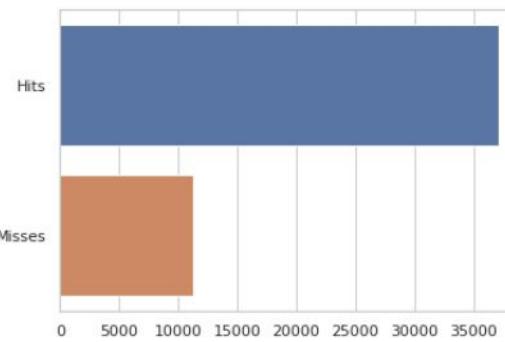
Query results: 108846
Target: 48471
False positives: 62114
False negatives: 1739

Before

Evaluation Groups

01_einwort

37187 of 48471 top results



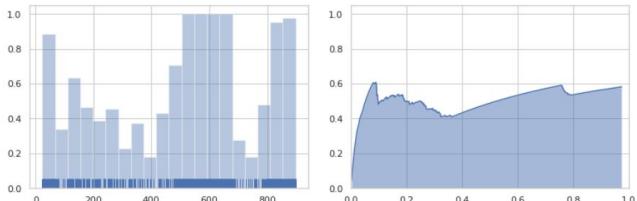
Precision Top-20:
85.7%
maP: 78.8%

Query results: 114011
Target: 48471
False positives: 66532
False negatives: 992

After

Our way to evaluate in general

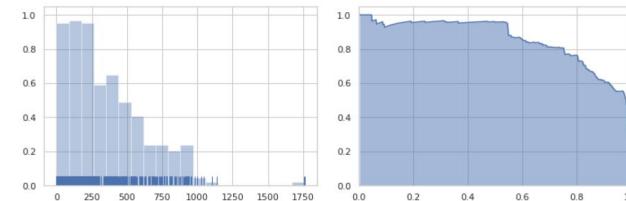
apple



Precision Top-20:
0.0%
maP: 49.3%

Query results: 904
Target: 537
False positives: 381
False negatives: 14

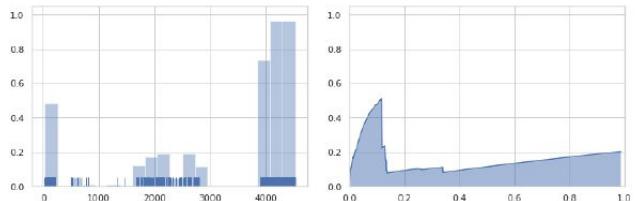
apple



Precision Top-20:
100.0%
maP: 85.0%

Query results: 1767
Target: 537
False positives: 1236
False negatives: 6

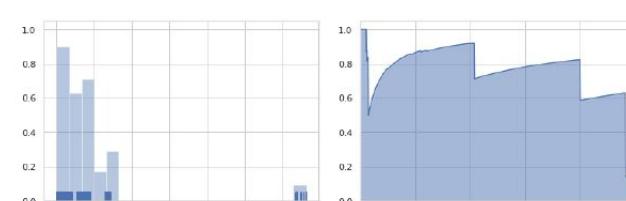
drucker



Precision Top-20:
0.0%
maP: 15.8%

Query results: 6625
Target: 929
False positives: 5709
False negatives: 13

drucker



Precision Top-20:
95.0%
maP: 75.6%

Query results: 6637
Target: 929
False positives: 5709
False negatives: 1

Before

After

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Building a corpus for Bechtle AG

use the available search to get potential results

use a hyper-sensitive search (plus augmented queries) to get a near complete candidate list

name	type	family	categories	keep	fam.name	-syn	name	-syn	-ngram
Apple MacBook Pro TB 13 256 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing	✓	✓	✓	✓	✓	✓
Apple MacBook Pro TB 13 128 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing	✓	✓	✓	✓	✓	✓
Apple MacBook Air 256 GB silber	Ultrabook	Apple MacBook Air 2019	Mobile Computing	✓	✓	✓	✓	✓	✓
Apple MacBook Air 256 GB gold	Ultrabook	Apple MacBook Air 2019	Mobile Computing	✓	✓	✓	✓	✓	✓
Apple MacBook Air 128 GB silber	Ultrabook	Apple MacBook Air 2019	Mobile Computing	✓	✓	✓	✓	✓	✓
Apple MacBook Air 128 GB spacegrau	Ultrabook	Apple MacBook Air 2019	Mobile Computing	✓	✓	✓	✓	✓	✓
Apple MacBook Pro 13 512 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing	✓	✓	✓	✓	✓	✓
Apple MacBook Pro 15 256 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing	✓	✓	✓	✓	✓	✓
Apple MacBook Pro 15 512 GB spacegrau	Notebook	Apple MacBook Pro 2019	Mobile Computing	✓	✓	✓	✓	✓	✓
Apple MacBook Air			Inhaltsseiten.	✓					
Apple MacBook Pro			Inhaltsseiten.	✓					
Compulocks MacBook Schlossadapter	Diebstahlschutz		Büroausstattung	✗		✓	✓	✓	
Targus CityLite 30,48 cm (12") Sleeve	Schutzhülle	Targus CityLite Taschen	Mobile Computing	✗					
Targus CityLite 38,1 cm (15) Sleeve	Schutzhülle	Targus CityLite Taschen	Mobile Computing	✗					
Targus CityLite 33 cm (13") Sleeve	Schutzhülle	Targus CityLite Taschen	Mobile Computing	✗					
Compulocks MacBook Pro Schlossadapter	Diebstahlschutz		Büroausstattung	✗		✓	✓	✓	
Compulocks MacBook Pro Schlossadapter	Diebstahlschutz		Büroausstattung	✗		✓	✓	✓	
Compulocks Ledge Macbook Diebstahlsch	Diebstahlschutz		Büroausstattung	✗		✓	✓	✓	
Apple MacBook Lederhülle braun	Schutzhülle		Mobile Computing	✗		✓	✓	✓	
Apple MacBook Lederhülle blau	Schutzhülle		Mobile Computing	✗		✓	✓	✓	
Targus MacBook 39,1cm(15,4")Magn. Blic	Blickschutz		Büroausstattung	✗		✓	✓	✓	
Port Zürich MacBook 15 Sleeve	Schutzhülle		Mobile Computing	✗		✓	✓	✓	
Port Zürich MacBook 13 Sleeve	Schutzhülle		Mobile Computing	✗		✓	✓	✓	

Building a corpus for a German health insurance company (HIC)

- Intranet search for different user groups

Suche

Bereich

- Alle Bereiche (39)
- + Leistungen (24)
- + Pflege (10)
- + Unternehmenskommunikation (5)
- Beitrag (3)
- + Marketing und Vertrieb (2)
- Personal (1)
- Geschäftsraummanagement (1)
- Mitarbeitervertretung/Gesetzliche Vertretung (1)
- Politik (1)

Format

WIM Unternehmensauskunft Webseiten Geschäftsvorfälle

brille kostenübernahme

79 Ergebnisse für brille kostenübernahme.

Sortieren nach: Relevanz | Einträge pro Seite: 25 |

< 1 2 ... 4 >

Textfragment Textsammlung: E-Mail-Textbausteine Hilfsmittel
Allgemeine Anfrage - Kostenübernahme Brille (E-Mail-Textbaustein)
Aktualisiert am 08.07.2019
Wofür dient dieser E-Mail-Textbaustein? Der Baustein beinhaltet die gesetzlichen Leistungsvoraussetzungen zur Kostenübernahme

Nachschlagewerk-Kapitel Nachschlagewerk: Arbeitsunfälle und Berufskrankheiten
6.3.5 Sehhilfen
Aktualisiert am 31.10.2014

Helfen Sie mit, die Suche zu verbessern.



Tipps zur erfolgreichen Suche >

Register nutzen, Suchergebnisse einschränken, in Nachschlagewerken und Prozessen suchen

Beratung

Beratung A-Z
Einschränkungen
Geschäftsbetrieb
Online Angebote
Produkte und
Wettbewerbs

HIC: Goldstandard-based evaluation

Clustering

- Problem: many different **variants** of similar queries

```
"anforderung original-unterlagen",  
"original unterlagen anfordern",  
"anforderung originalunterlagen",  
"angeforderte originalunterlagen",  
"original-unterlagen anfordern",  
"original-unterlagen anfordernden",  
"anforderung von originalunterlagen"
```

- Solution: measuring distances and clustering of all queries in multi-dimensional vector space

HIC: Goldstandard-based evaluation

Query selection

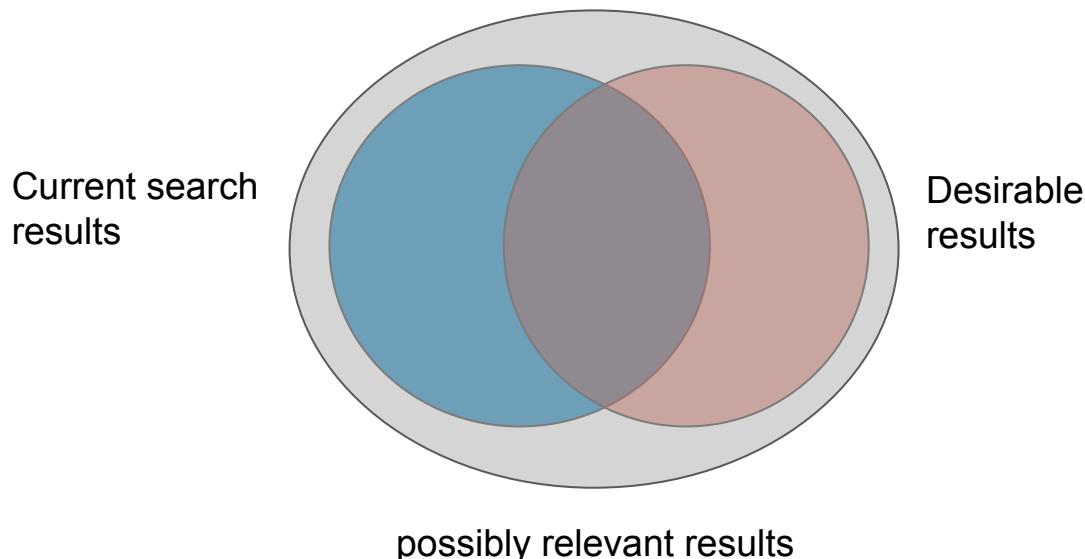
- Goal: heterogeneous mix of queries
- Assuring heterogeneity by including queries:
 - from different topics
 - which include special characters
 - whose token number differs
 - where synonyms, decomposition and/or stemming are necessary

```
[  
  {"query": "mitgliedsbescheinigung in englisch",  
   "count": 1,  
   "hit count": 1}  
,  
  {"query": "mitgliedsbescheinigung auf englisch",  
   "count": 4,  
   "hit count": 9}  
,  
  {"query": "mitgliedsbescheinigung englisch",  
   "count": 27,  
   "hit count": 11}  
,  
  {"query": "englische mitgliedsbescheinigung",  
   "count": 3,  
   "hit count": 1}  
,
```

HIC: Goldstandard-based evaluation

Obtain (all) desirable results for each query

- Goal: too many results
- query search index with query variants



HIC: Goldstandard-based evaluation

Query Enrichment

- Goal: too many results
- query search index
with query variants

```
{  
  "query": "bariatische op",  
  "variants": [  
    "bariatische op",  
    "bariatische operation",  
    "bariatrie operation",  
    "bariatrie operieren",  
    "bariatrie op",  
    "adipositaschirurgischer eingriff",  
    "adipositas-chirurgischer eingriff",  
    "adipositas op",  
    "adipositas operation",  
    "adipositas operieren",  
    "bariatischer eingriff",  
    "adipositaschirurgie"  
  ]  
},
```

HIC: Goldstandard-based evaluation

Discard irrelevant search results

- Goal: Goldstandard corpus of (all) relevant results to each query
- Users decide about relevance of search result

Suchanfrage: mammographie einladung



Suchergebnis: <https://wim.prod.d001.loc/wim/a-501380>,

Hilfreich

Nicht hilfreich

Weiß nicht

Link defekt

Gibt es zur Suchanfrage "mammographie einladung" zusätzliche Dokumente in WIM, welche Sie für ein sinnvolles Suchergebnis halten? Dann ergänzen Sie sie gern hier, bevor es mit der nächsten Suchanfrage weitergeht.

Geben Sie Ihre Antwort ein...

Agenda

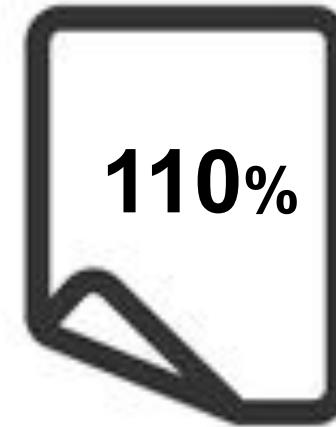
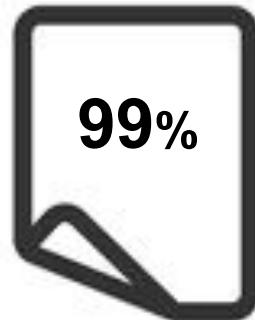
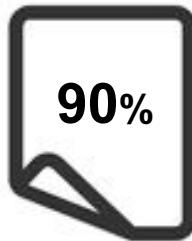
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How to communicate



Decision makers

Report overall progress
and enable permanent
quality control



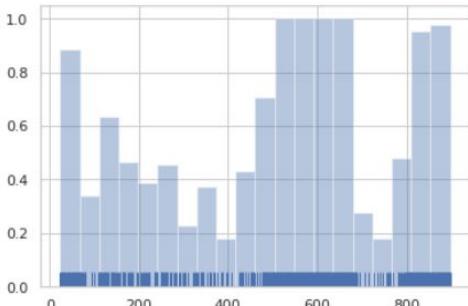
How to communicate



Developers

To be able to reproduce issues,
make them visible

apple



	name
0	NETBACKUP APPL SAS3 SFF-8644
1	CO Netbackup 5240 Appl 14TB +3YES
2	CO Netbackup 5240 Appl 4TB +3YES
3	CO Netbackup 5240 Appl 4TB +3YES
4	Netbackup Bndl 5230 Appl 36TB 2ND +1YSS
5	CO NetBackup Appl DB WLS Server T3 1YRBS
6	CO NetBackup Appl DB WLS Server T3 1YRNW
7	Check Point SandBlast TE Appl TE250X
8	Check Point SandBlast TE Appl TE100X
9	Check Point 3100 NG Threat Prev Appl
10	Check Point 5100 NG Threat Prev Appl
11	Check Point 730 Sec Appl Threat&Sandbl
12	Check Point 1430 NG Threat Prevent Appl
13	Check Point 910 NG Thr Prev&SB NGTX Appl
14	Check Point 5100 NG Th Prev&SB NGTX Appl
15	Check Point 730 Sec Appl Threat Prev Sec
16	Check Point Smart-1 410 NG Sec Man Appl
17	Check Point 910 Next Gen Thr Prev Appl
18	Check Point Smart-1 405 NG Sec Man Appl
19	HPE Aruba 3Y FC NBD Exch CP C2KDL20 Appl
20	HPE Aruba 1Y FC NBD Exch CP C2KDL20 Appl
21	HPE Aruba 5Y FC NBD Exch CP C2KDL20 Appl
22	OtterBox iPad Pro Defender Case
23	Apple iPad mini 4 128 GB WiFi+Cell grau
24	OtterBox iPhone 7/8 Defender Case
25	Apple iPhone 7/8 Leder Case braun
26	Apple iPhone 7/8 Plus Leder Case schwarz
27	Apple iPhone 7/8 Plus Leder Case blau
28	Apple iPhone XR Clear Case

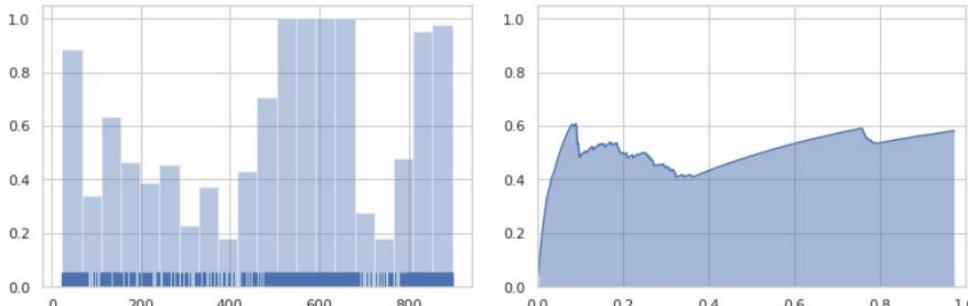
How to communicate



Data Scientists

Identify issues on a broader scale
and compare possible solutions

apple



Precision Top-20:

0.0%

maP: 49.3%

Query results: 904

Target: 537

False positives: 381

False negatives: 14

A flawed goldstandard is better than none

Perfectionism can paralyze you



A flawed goldstandard is better than none

Complete result list for many queries?



Apple MacBook Pro TB 13 256 GB silber
Apple MacBook Pro TB 13 256 GB spacegrau
Apple MacBook Pro TB 13 128 GB silber
Apple MacBook Pro TB 13 128 GB spacegrau
Apple MacBook Air 256 GB silber
Apple MacBook Air 256 GB gold
Apple MacBook Air 256 GB spacegrau
Apple MacBook Air 128 GB silber
Apple MacBook Air 128 GB gold
Apple MacBook Air 128 GB spacegrau
Apple MacBook Pro 13 512 GB silber
Apple MacBook Pro 15 512 GB silber
Apple MacBook Pro 15 256 GB silber
Apple MacBook Pro 13 256 GB silber
Apple MacBook Pro 15 512 GB spacegrau
Apple MacBook Pro 13 512 GB spacegrau
Apple MacBook Pro 13 256 GB spacegrau
Apple MacBook Pro 15 256 GB spacegrau

Compulocks MacBook Schlossadapter
Targus CityLite 30,48 cm (12") Sleeve
Targus CityLite 38,1 cm (15") Sleeve
Targus CityLite 33 cm (13") Sleeve
Compulocks MacBook Pro Schlossadapter
Compulocks MacBook Pro Schlossadapter
Compulocks Ledge Macbook Diebstahlschutz
Apple MacBook Lederhülle braun
Apple MacBook Lederhülle blau

Targus MacBook 39,1cm(15,4")Magn. Blick.
Port Zürich MacBook 15 Sleeve
Port Zürich MacBook 13 Sleeve
Port Zürich MacBook 12,0 Sleeve
Kensington MacBook Pro 15 Blickschutz
Kensington MacBook Pro 13 Blickschutz
Thule Subterra MacBook 15 Tasche
Targus MacBook 33,8cm magn. Blickschutz
ARTICONA MacBook Pro 15 Blickschutz

Compulocks MacBook Pro Schloss Adapter
Compulocks MacBook Pro Schloss Adapter
Compulocks MacBook Air Schloss Adapter
3M GFMR13 MacBook Retina Blickschutz
Compulocks MacBook Pro Adapter + Schloss
3M PFNAP003 MacBook Pro 15 Blickschutz
3M PFNAP006 MacBook Air 11. Blickschutz
3M MacBook Pro 15 (2016) Blendschutz

DICOTA MacBook Pro 15 Blickschutz, magn.
DICOTA MacBook Pro 13 Blickschutz, magn.

Apple MacBook Pro 15 Lederhülle braun
Apple MacBook Pro 15 Lederhülle blau
Apple MacBook Pro 15 Lederhülle schwarz
Apple MacBook Pro 13 Lederhülle braun
Apple MacBook Pro 13 Lederhülle blau

Apple MacBook Pro 13 Lederhülle schwarz
UAG Plasma MacBook Pro 15 Schutzhülle
UAG Plasma MacBook Pro 13 Schutzhülle

DICOTA MacBook Pro 13 Retina Blickschutz
Thule Vectros MacBook Pro 15 Bumper
3M MacBook Pro 15 (2016) Blickschutz
3M MacBook Pro 13 (2016) Blickschutz
3M MacBook Pro 13 (2016) Blendschutz
3M GFNAP001 MacBook Air 11,6 Blickschutz
3M MacBook 30,5 cm (12") Blickschutz
3M MacBook Pro 38cm (15") Blickschutz

Case Logic Reflect MacBook Pro 13 Sleeve
3M GFNAP00 MacBook Air 33 cm Blickschutz
3M GFNAP006 Gold MacBook Pro 15 Blicksch
3M GFNAP006 Gold MacBook Pro 13 Blicksch
BTI MacBook 33cm (13") 3C Akku
BTI MacBook Pro 33cm (13") Akku
BTI MacBook Pro 38,1cm (15") Akku
BTI MacBook (13") 33cm 6C Akku

A flawed goldstandard is better than none

There is no single correct ranking



Apple MacBook Pro TB 13 256 GB silber
Apple MacBook Pro TB 13 256 GB spacegrau
Apple MacBook Pro TB 13 128 GB silber
Apple MacBook Pro TB 13 128 GB spacegrau
Apple MacBook Air 256 GB silber
Apple MacBook Air 256 GB gold
Apple MacBook Air 256 GB spacegrau
Apple MacBook Air 128 GB silber
Apple MacBook Air 128 GB gold
Apple MacBook Air 128 GB spacegrau
Apple MacBook Pro 13 512 GB silber
Apple MacBook Pro 15 512 GB silber
Apple MacBook Pro 15 256 GB silber
Apple MacBook Pro 13 256 GB silber
Apple MacBook Pro 15 512 GB spacegrau
Apple MacBook Pro 13 512 GB spacegrau
Apple MacBook Pro 13 256 GB spacegrau
Apple MacBook Pro 15 256 GB spacegrau

Compulocks MacBook Schlossadapter
Targus CityLite 30,48 cm (12") Sleeve
Targus CityLite 38,1 cm (15") Sleeve
Targus CityLite 33 cm (13") Sleeve
Compulocks MacBook Pro Schlossadapter
Compulocks MacBook Pro Schlossadapter
Compulocks Ledge Macbook Diebstahlschutz
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Port Zürich MacBook 12,0 Sleeve
Kensington MacBook Pro 15 Blickschutz
Kensington MacBook Pro 13 Blickschutz
Thule Subterra MacBook 15 Tasche
Targus MacBook 33,8cm magn. Blickschutz
ARTICONA MacBook Pro 15 Blickschutz
Compulocks MacBook Pro Schloss Adapter
Compulocks MacBook Pro Schloss Adapter
Compulocks MacBook Air Schloss Adapter
3M GFMR13 MacBook Retina Blickschutz
Compulocks MacBook Pro Adapter + Schloss
3M PFNAP003 MacBook Pro 15 Blickschutz
3M PFNAP006 MacBook Air 11. Blickschutz
3M MacBook Pro 15 (2016) Blendschutz
DICOTA MacBook Pro 15 Blickschutz, magn.
DICOTA MacBook Pro 13 Blickschutz, magn.
Apple MacBook Pro 15 Lederhülle braun
Apple MacBook Pro 15 Lederhülle blau
Apple MacBook Pro 15 Lederhülle schwarz
Apple MacBook Pro 13 Lederhülle braun
Apple MacBook Pro 13 Lederhülle blau
Apple MacBook Pro 13 Lederhülle schwarz
UAG Plasma MacBook Pro 15 Schutzhülle
UAG Plasma MacBook Pro 13 Schutzhülle
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3M GFNAP006 Gold MacBook Pro 13 Blickschutz
BTI MacBook 33cm (13") 3C Akku
BTI MacBook Pro 33cm (13") Akku
BTI MacBook Pro 38,1cm (15") Akku
BTI MacBook (13") 33cm 6C Akku

A flawed goldstandard is better than none

a goldstandard can be iteratively improved upon

name	type	family	categories	keep	fam.name	-syn	name	-syn	-ngram
Apple MacBook Pro TB 13 256 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing►	<input checked="" type="checkbox"/>	✓	✓	✓	✓	✓
Apple MacBook Pro TB 13 128 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing►	<input checked="" type="checkbox"/>	✓	✓	✓	✓	✓
Apple MacBook Air 256 GB silber	Ultrabook	Apple MacBook Air 2019	Mobile Computing►	<input checked="" type="checkbox"/>	✓	✓	✓	✓	✓
Apple MacBook Air 256 GB gold	Ultrabook	Apple MacBook Air 2019	Mobile Computing►	<input checked="" type="checkbox"/>	✓	✓	✓	✓	✓
Apple MacBook Air 128 GB silber	Ultrabook	Apple MacBook Air 2019	Mobile Computing►	<input checked="" type="checkbox"/>	✓	✓	✓	✓	✓
Apple MacBook Air 128 GB spacegrau	Ultrabook	Apple MacBook Air 2019	Mobile Computing►	<input checked="" type="checkbox"/>	✓	✓	✓	✓	✓
Apple MacBook Pro 13 512 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing►	<input checked="" type="checkbox"/>	✓	✓	✓	✓	✓
Apple MacBook Pro 15 256 GB silber	Notebook	Apple MacBook Pro 2019	Mobile Computing►	<input checked="" type="checkbox"/>	✓	✓	✓	✓	✓
Apple MacBook Pro 15 512 GB spacegrau	Notebook	Apple MacBook Pro 2019	Mobile Computing►	<input checked="" type="checkbox"/>	✓	✓	✓	✓	✓
Apple MacBook Air			Inhaltsseiten.	<input checked="" type="checkbox"/>					
Apple MacBook Pro			Inhaltsseiten.	<input checked="" type="checkbox"/>					
Compulocks MacBook Schlossadapter	Diebstahlschutz		Büroausstattung P►	<input type="checkbox"/>			✓	✓	✓
Targus CityLite 30,48 cm (12") Sleeve	Schutzhülle	Targus CityLite Taschen	Mobile Computing►	<input type="checkbox"/>					
Targus CityLite 38,1 cm (15) Sleeve	Schutzhülle	Targus CityLite Taschen	Mobile Computing►	<input type="checkbox"/>					
Targus CityLite 33 cm (13") Sleeve	Schutzhülle	Targus CityLite Taschen	Mobile Computing►	<input type="checkbox"/>					
Compulocks MacBook Pro Schlossadapter	Diebstahlschutz		Büroausstattung P►	<input type="checkbox"/>			✓	✓	✓
Compulocks MacBook Pro Schlossadapter	Diebstahlschutz		Büroausstattung P►	<input type="checkbox"/>			✓	✓	✓
Compulocks Ledge Macbook Diebstahlschutz	Diebstahlschutz		Büroausstattung P►	<input type="checkbox"/>			✓	✓	✓
Apple MacBook Lederhülle braun	Schutzhülle		Mobile Computing►	<input type="checkbox"/>			✓	✓	✓
Apple MacBook Lederhülle blau	Schutzhülle		Mobile Computing►	<input type="checkbox"/>			✓	✓	✓
Targus MacBook 39,1cm(15,4")Magn. Blic► Blickschutz			Büroausstattung Z►	<input type="checkbox"/>			✓	✓	✓
Port Zürich MacBook 15 Sleeve	Schutzhülle		Mobile Computing►	<input type="checkbox"/>			✓	✓	✓
Port Zürich MacBook 13 Sleeve	Schutzhülle		Mobile Computing►	<input type="checkbox"/>			✓	✓	✓

A flawed goldstandard is better than none

Perfectionism can paralyze you

There is no one right answer to a query

There is no one right ranking of a search result

All metrics are somewhat flawed

The actual biggest advantage is: A goldstandard is a great dev-tool

It shows you when you broke your system

