



Gen AI meetup Nantes - 14th of May 2025

Who are we?



- kero (aka Clément Renault) - CTO & co-founder
- Rust advocate 4 life
- Kerollmops on the internet (GitHub, X/Twitter, etc)
- clement@meilisearch.com



- Thomas - COO & co-founder
- cool guy
- tpayet on the internet (GitHub, X/Twitter, etc)
- thomas@meilisearch.com

Agenda

What's up this evening?

- Introducing Meilisearch & why it's cool
- Full-text, semantic & hybrid search → How does it work?
- Model Context Protocol: Why we built our MCP server

Meilisearch?

What is Meilisearch?

Subtitle

- Open-source search API
 - Initially developed as an alternative to Algolia & Elastic
- Focus on developer experience → How to make it intuitive for the developer
- Search-as-you-type
- Milli-second latency, bucket-sort & prefix-search

Why are we looking at GenAI

Subtitle

- Semantic search, and how it improves recall, relevancy etc → cf kero
- MCP, and how it improves developer experience & end-user experience
- Conversational search & RAG (WIP)

Hybrid Search?

Is it edible?

Full-Text Search

SEARCH RESULTS

466 results found in 4ms

"Alien but the third"



District 9

2009 ★★★★★



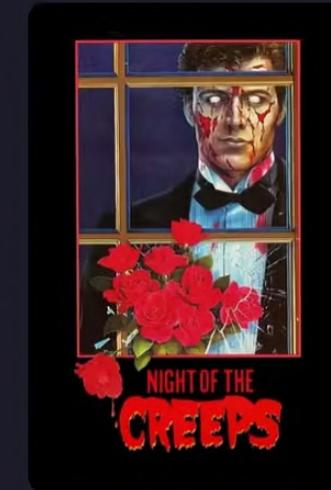
The Untamed

2016 ★★★★★



The Sheriff and the
Satellite Kid

1979 ★★★★★



Night of the Creeps

1986 ★★★★★



Doctor Who: The
Next Doctor

2008 ★★★★★



Village of the
Damned

1995 ★★★★★



SEARCH RESULTS

1000 results found in 5ms

"Film with a cat and water"



She and Her Cat

1999 ★★★★★



The Prince and the
Pauper

1990 ★★★★★



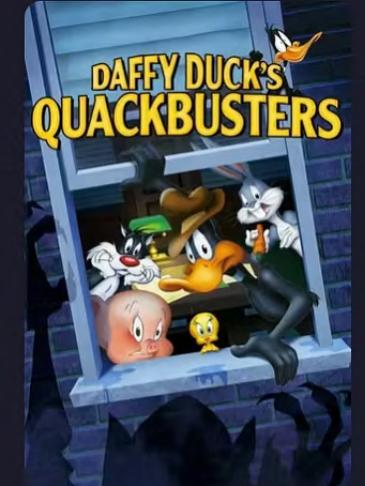
Cat People

1942 ★★★★★



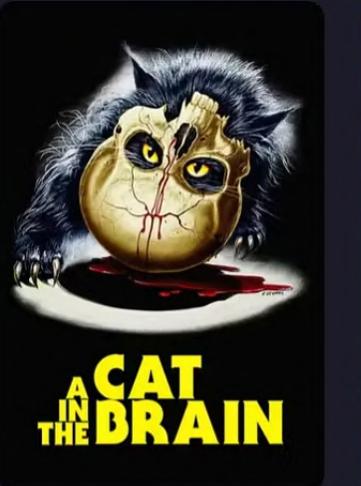
Last Action Hero

1993 ★★★★★



Daffy Duck's
Quackbusters

1988 ★★★★★



A Cat in the Brain

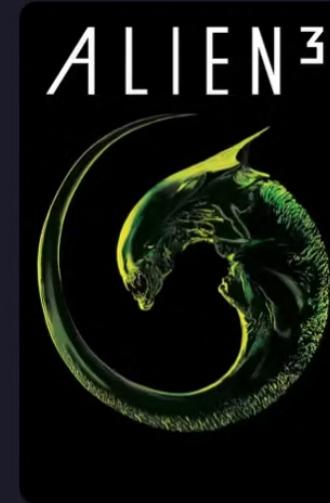
1990 ★★★★★

Full-Semantic Search

SEARCH RESULTS

1000 results found in 524ms

"Alien but the third"



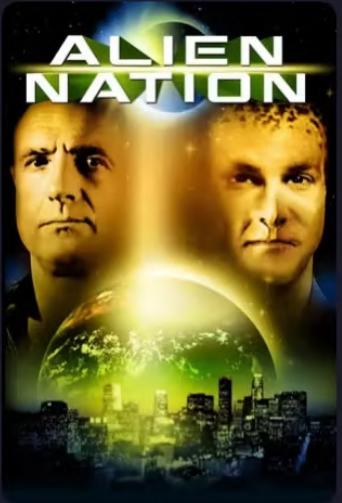
Alien³
1992 ★★★★★



Alien Hunter
2003 ★★★★★



The Secret of the
Third Planet
1981 ★★★★★



Alien Nation
1988 ★★★★★



Species III
2004 ★★★★★



Alien
1979 ★★★★★

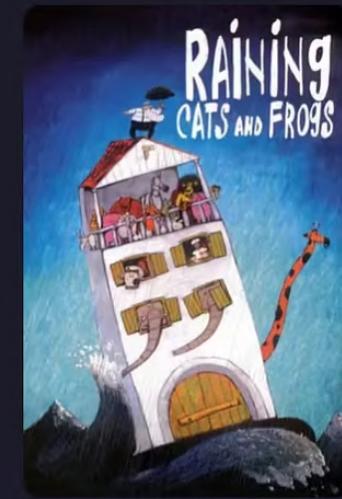


Impressive, very nice.

SEARCH RESULTS

1000 results found in 689ms

"Film with a cat and water"



Raining Cats and
Frogs
2003 ★★★★★



Flow
2024 ★★★★★



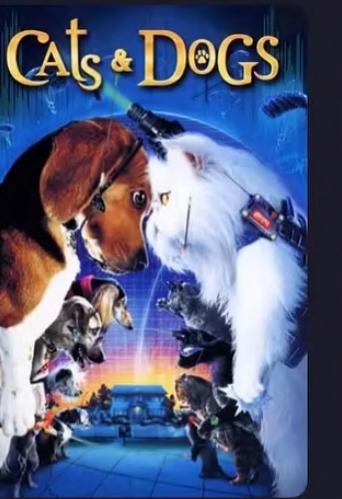
Catman
2021 ★★★★★



Kedi
2017 ★★★★★



Inside the Mind of a
Cat
2022 ★★★★★



Cats & Dogs
2001 ★★★★★

However...

semantic is not perfect, at all

Full-Semantic Search

SEARCH RESULTS

1000 results found in 662ms



Beverly Hills Cop II
1987 ★★★★★



Project A: Part II
1987 ★★★★★



Police Story 2
1988 ★★★★★



8 Mile
2002 ★★★★★



Cop and 1/2
1993 ★★★★★



Code of Silence
1985 ★★★★★

"Code 8 part II"



SEARCH RESULTS

1000 results found in 635ms



A Lizard in a
Woman's Skin
1971 ★★★★★



Porky's
1981 ★★★★★



Slugs
1988 ★★★★★



The Menu
2022 ★★★★★



The Blob
1988 ★★★★★



The Monster
1994 ★★★★★

"The Lobster"

Full-Text Search

SEARCH RESULTS 773 results found in 5ms

"Code 8 part II"

The search results for "Code 8 part II" show the following movies:

- Code 8 Part II** (2024) - ★★★★★
- Code 8** (2019) - ★★★★★
- Code 8** (2016) - ★★★★★
- The Forgotten** (2004) - ★★★★★
- Dark Encounter** (2019) - ★★★★★
- The Lost Prince** (2020) - ★★★★★

A large, blurry image of a man with his mouth wide open, looking shocked or screaming, is displayed on the right side of the results.



Impressive, very nice.

SEARCH RESULTS 1000 results found in 4ms

"The Lobster"

The search results for "The Lobster" show the following movies:

- The Lobster** (2015) - ★★★★★
- Ebirah, Horror of the Deep** (1966) - ★★★★★
- "ANNIE HALL"**
- MULTIPLE MANIACS**
- TURKS & CAICOS**
- A Turtle's Tale 2: Sammy's Escape from Paradise** (2012) - ★★★★★

Why not both?



Hybrid Search

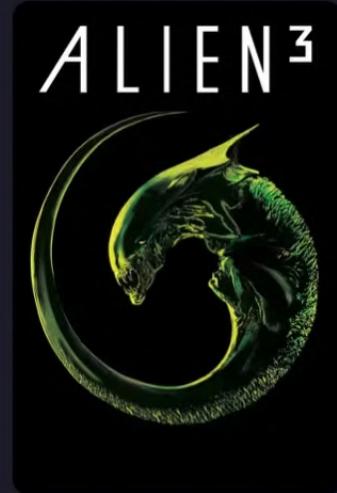
SEARCH RESULTS

1000 results found in 619ms



DISTRICT 9

District 9
2009 ★★★★★



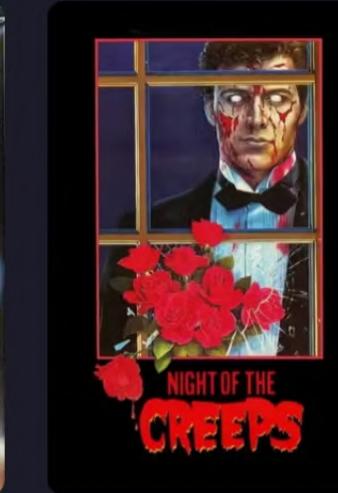
Alien³
1992 ★★★★★



The Untamed
2016 ★★★★★



The Sheriff and the
Satellite Kid
1979 ★★★★★



Night of the Creeps
1986 ★★★★★



Doctor Who: The
Next Doctor
2008 ★★★★★

"Alien but the third"



Impressive, very nice.

RESULTS

1000 results found in 597ms



Her Cat
★★★



Raining Cats and
Frogs
2003 ★★★★★



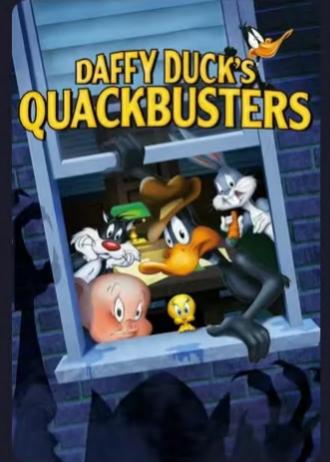
The Prince and the
Pauper
1990 ★★★★★



Cat People
1942 ★★★★★



Last Action Hero
1993 ★★★★★



Daffy Duck's
Quackbusters
1988 ★★★★★



Flow
2024 ★★★★★

"Film with a cat and water"

Hybrid Search

SEARCH RESULTS

1000 results found in 455ms



Code 8 Part II
2024 ★★★★★



Code 8
2019 ★★★★★



Code 8
2016 ★★★★★



The Forgotten
2016 ★★★★★



Dark Encounter
2004 ★★★★★



The Lost Prince
2020 ★★★★★



Impressive, very nice.

"Code 8 part II"

SEARCH RESULTS

1000 results found in 558ms



The Lobster
2015 ★★★★★



Ebirah, Horror of the Deep
1966 ★★★★★



Annie Hall
1977 ★★★★★



Multiple Maniacs
1970 ★★★★★



Turks & Caicos
2014 ★★★★★



A Turtle's Tale 2:
Sammy's Escape
from Paradise
2012 ★★★★★

Arroy is based on Annoy

A well known Spotify vector store



Spotify®

15.6M

Of embeddings indexed on 64GiB of RAM.

99%

The relevancy on high number of dimensions for recall @100.



From C++ to Rust

Three weeks of work with four hands

VS

Fusion ranking?

Just don't!

Other search engine's hybrid search is based on a fusion ranking formula. As you can see, it interleaves good results for "gaming PC" with bad ones. The good results come from the semantic search. Only the documents' ranking is used to inter rank documents, as it is not capable of comparing full-text with the semantic results' scores.

The screenshot shows a search interface with three search modes at the top: 'Typesense', 'Hybrid search', and 'openai-3-s...'. The results are displayed in a grid of cards:

- Sennheiser - G4ME ONE Open Air PC Gaming Headset** (0.51)
G4ME™ ONE Feel the rush, the beats, the tension and the awesome sound - not your headset. The Sennheiser G4ME™ ONE open acoustic gaming headset features an extremely accurate and natural sound experience. The open...
- CyberPowerPC - Gamer Supreme Desktop - Intel Core i...** (0.50)
CyberPowerPC Gamer Supreme Desktop: Take gameplay to the next level with this desktop, which uses NVIDIA GeForce GTX 970 graphics powered by 4GB dedicated video memory to deliver lush images when connected to an external display. The...
- NVIDIA - SHIELD Wireless Controller - Black** (0.25)
Designed for use with most NVIDIA SHIELD tablets and portable devices, this NVIDIA SHIELD 945125702500000 wireless controller features a host of precision controls and an integrated microphone to enhance your Android and PC gaming experience.
- CyberPowerPC - Gamer Xtreme Desktop - Intel Pentium...** (0.25)
CyberPowerPC Gamer Xtreme Desktop: Immerse yourself in gaming and entertainment with this computer, which features an efficient processor, vivid graphics and a 3D-ready design. Use the Bluetooth interface and the wide range o...
- PNY - 4GB DDR3 SDRAM Memory Module** (0.17)
Optima Memory is the perfect upgrade to boost the performance of your PC, for casual gaming or your Windows 7 or OS X 10.6 experience. PNY memory upgrades improve the overall system performance for an outstanding value with speeds and...

About Recall and Precision

Two metrics to analyze and benchmark solutions

A Couple of Definitions

01

all documents

All the documents in the dataset. Relevant and non-relevant.

02

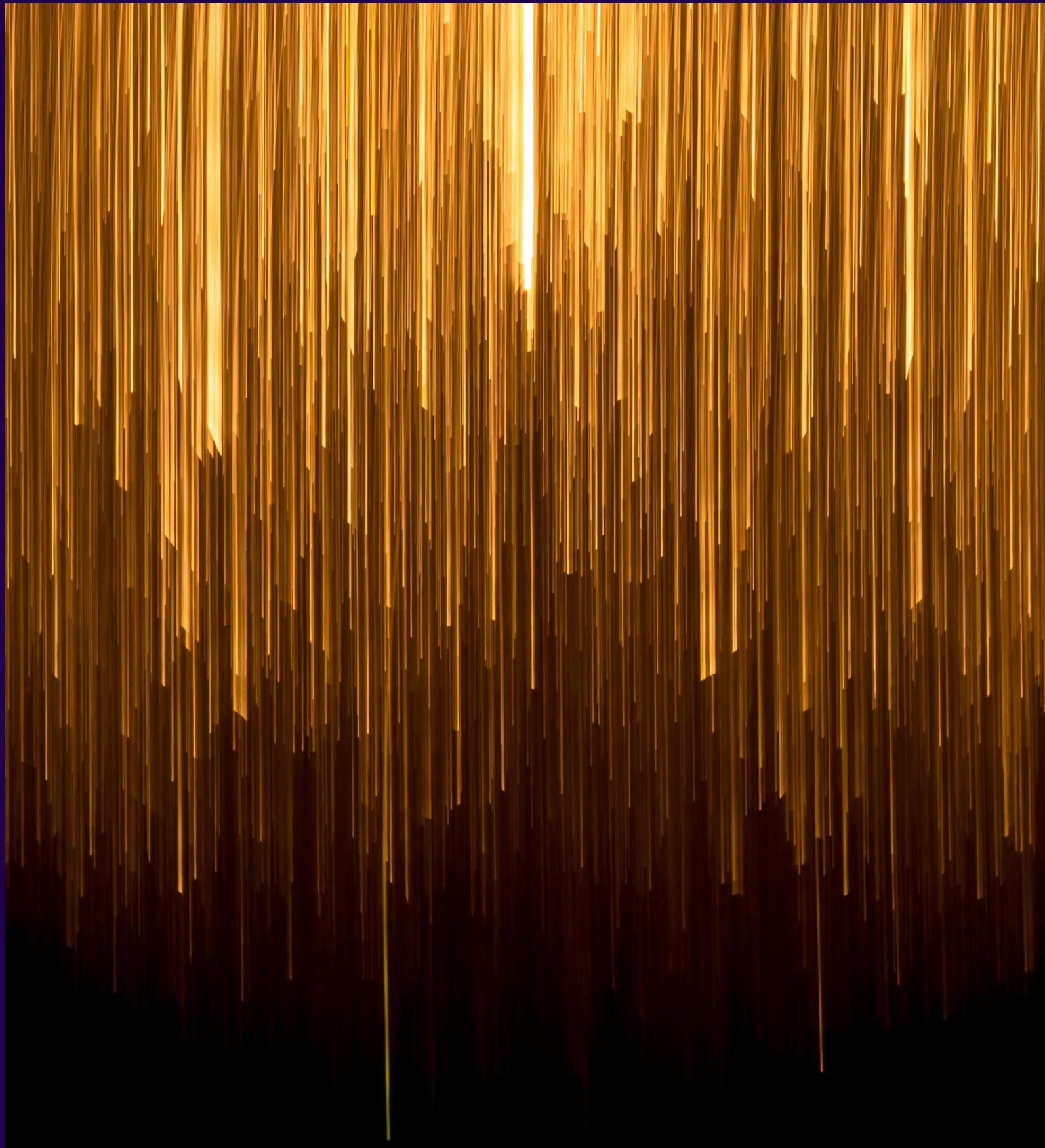
all relevant documents

All the relevant documents are known to be relevant for the user query.

03

retrieved documents

All documents returned by the engine to the search query. Relevant or non-relevant.



recall vs relevancy

The Recall

$$\frac{allRelevantDocs \cap retrievedDocs}{allRelevantDocs}$$

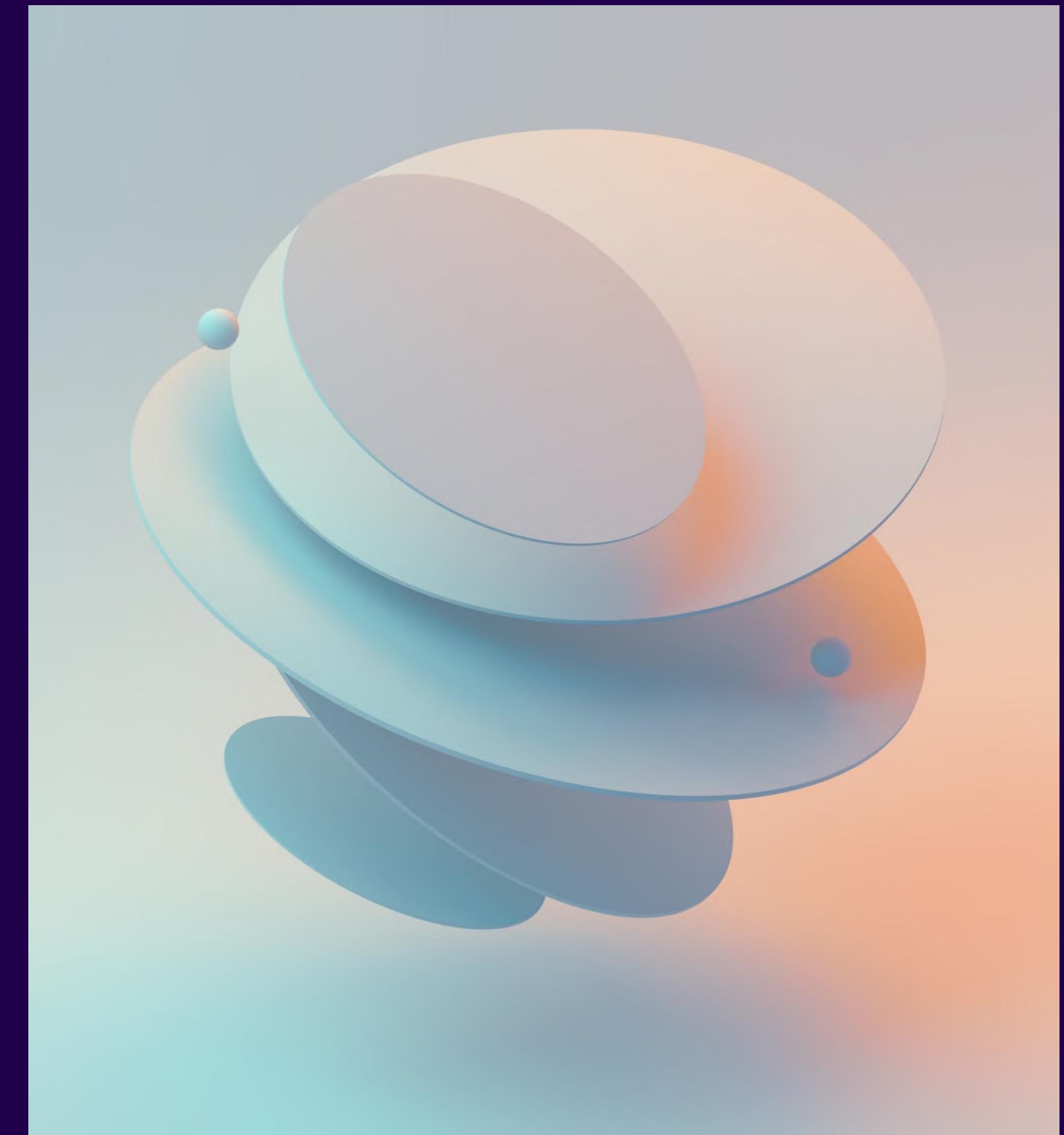
Recall is the share of relevant documents returned relative to the total number of relevant ones. The higher it is, the more exhaustive it is which means its capacity to return relevant documents is high.

recall vs precision

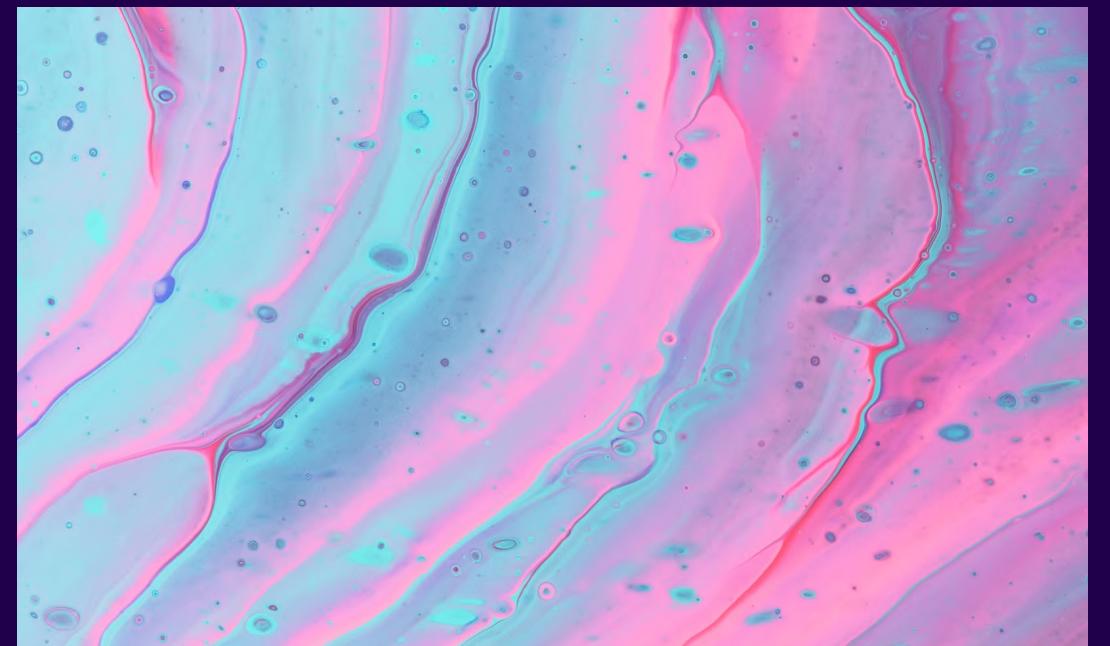
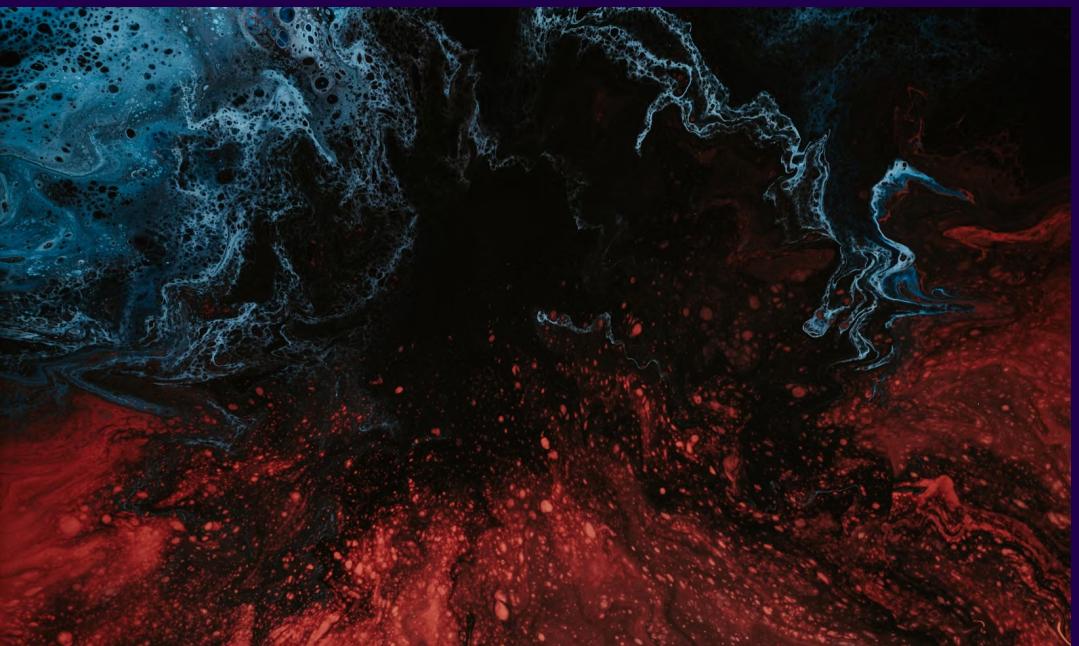
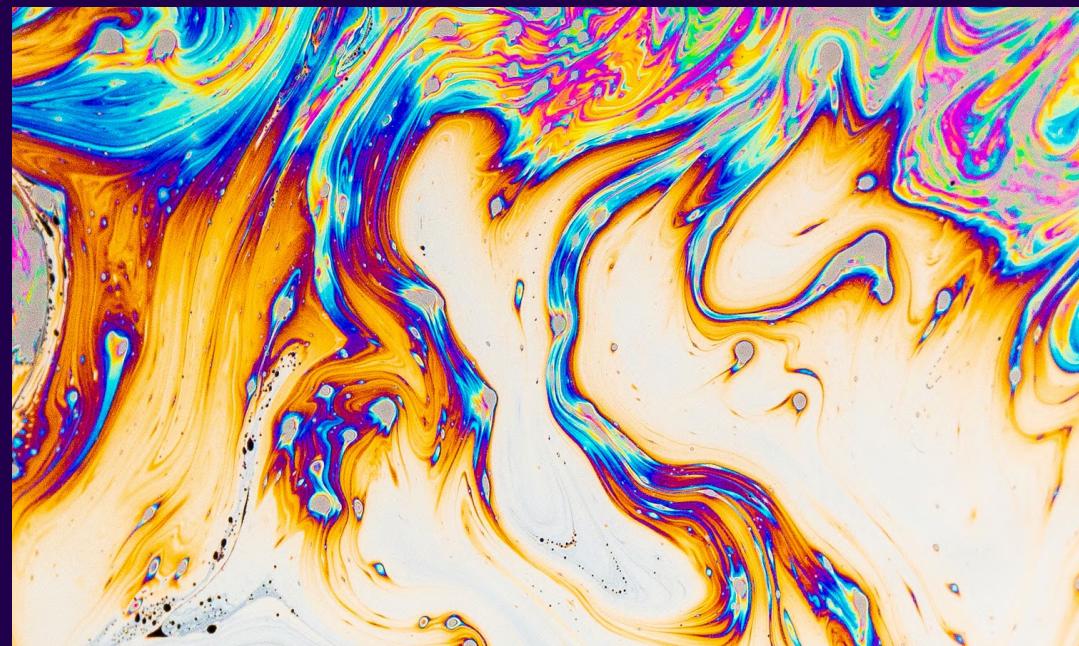
The Precision

$$\frac{allRelevantDocs \cap retrievedDocs}{RetrievedDocs}$$

Precision is the share of relevant documents returned by the response. The higher it is more precise is the engine which means its capacity to ignore irrelevant documents is high.



Why Meilisearch's Hybrid Search is better?



No TF-IDF/BM25

Supports instant search by understanding prefixes and out-of-the-box typo-tolerance. Built for instant and relevant retrieval.

Easy to setup

Just a few settings to set up Hybrid Search.

No fusion ranking

Using a more intelligent algorithm to compare full-text results with semantic results.

Questions?

Model Context Protocol

What is the MCP

Standard pushed by Anthropic

- MCP stands for Model Context Protocol
- Open protocol for managing context between apps & LLMs
- It's well documented → so it's easy to implement a server or a client

Implementing your own MCP server

- Initially we did to explore and understand the purpose of the protocol
- It's plug-and-play with Claude Desktop (3.5 Sonnet)
- It gives a glimpse of the agents & co-pilot you'll be able to build with LLMs
- Easy to implement via Claude & `llms.txt`

Use-cases & Demo

- For support at Meilisearch
- For developers of Meilisearch
- For developers using Meilisearch
- Demo!

You should build yours

- It's mostly an API wrapper
- Relatively easy to implement tools
- Once you have an MCP, the next step is to have a copilot or agent who with the right context can augment your users!

Questions?

Thank you 



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