

**Let's use ChatGPT to talk
with our data!**

A few words about myself



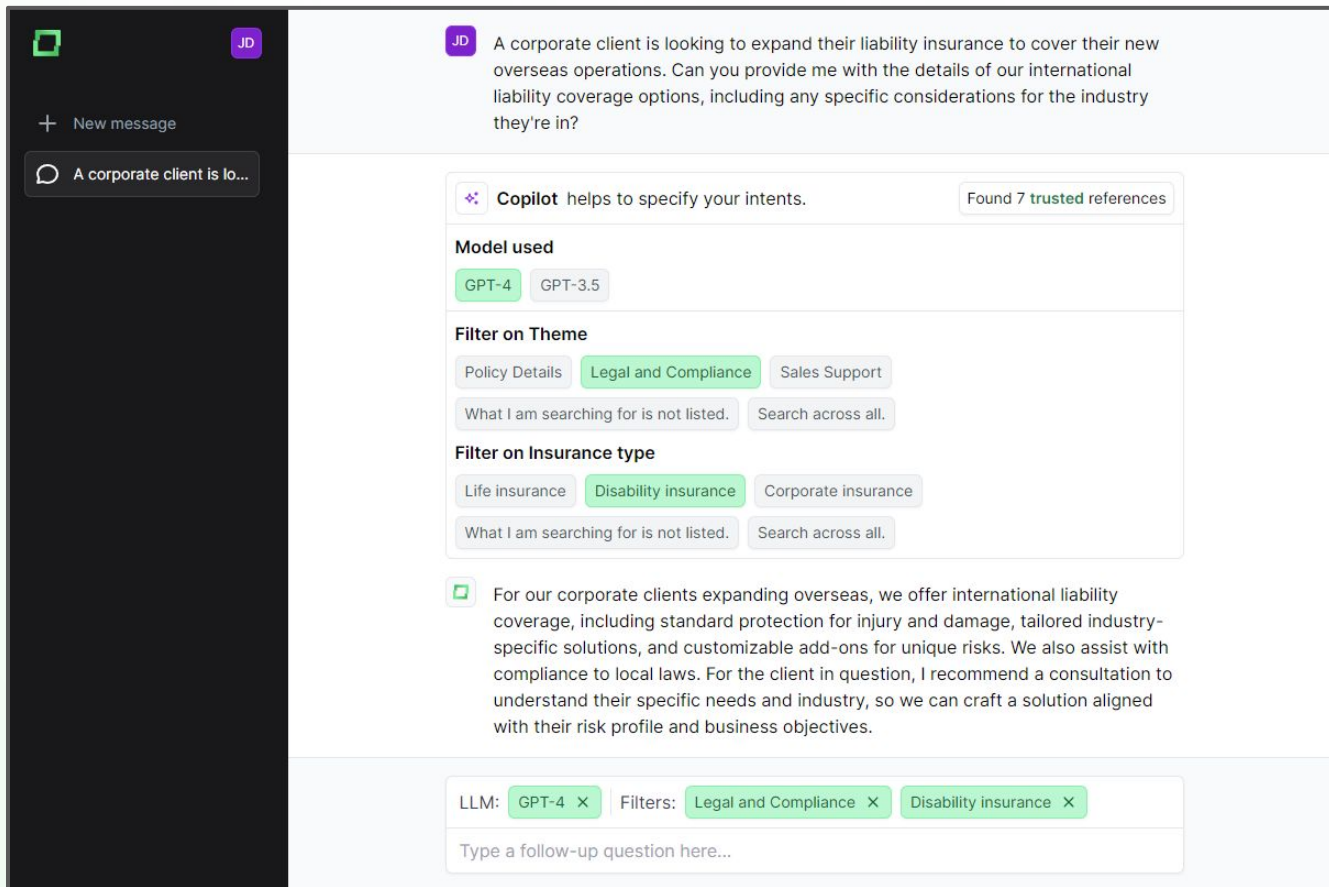
- Background in economics
- Data Scientist & Dev Advocate at Kern AI
- Mainly working in the domain of NLP



 Leonard Püttmann


 github.com/LeonardPuettmann

Our platform to chat with your data



The screenshot displays the Kern AI chat interface. On the left is a dark sidebar with a green square icon, a purple 'JD' label, a '+ New message' button, and a message preview: 'A corporate client is lo...'. The main chat area shows a message from 'JD' asking for details on international liability coverage. Below this is a 'Copilot' response box containing filters for 'Model used' (GPT-4, GPT-3.5), 'Filter on Theme' (Policy Details, Legal and Compliance, Sales Support), and 'Filter on Insurance type' (Life insurance, Disability insurance, Corporate insurance). The response text states that international liability coverage is offered, including standard protection, industry-specific solutions, and customizable add-ons, and recommends a consultation. At the bottom, a summary bar shows 'LLM: GPT-4' and 'Filters: Legal and Compliance, Disability insurance'. A text input field at the very bottom prompts the user to 'Type a follow-up question here...'.

JD A corporate client is looking to expand their liability insurance to cover their new overseas operations. Can you provide me with the details of our international liability coverage options, including any specific considerations for the industry they're in?

 **Copilot** helps to specify your intents. Found 7 **trusted** references

Model used

GPT-4 GPT-3.5

Filter on Theme


Policy Details Legal and Compliance Sales Support

What I am searching for is not listed. Search across all.

Filter on Insurance type

Life insurance Disability insurance Corporate insurance

What I am searching for is not listed. Search across all.

 For our corporate clients expanding overseas, we offer international liability coverage, including standard protection for injury and damage, tailored industry-specific solutions, and customizable add-ons for unique risks. We also assist with compliance to local laws. For the client in question, I recommend a consultation to understand their specific needs and industry, so we can craft a solution aligned with their risk profile and business objectives.

LLM: GPT-4 × Filters: Legal and Compliance × Disability insurance ×

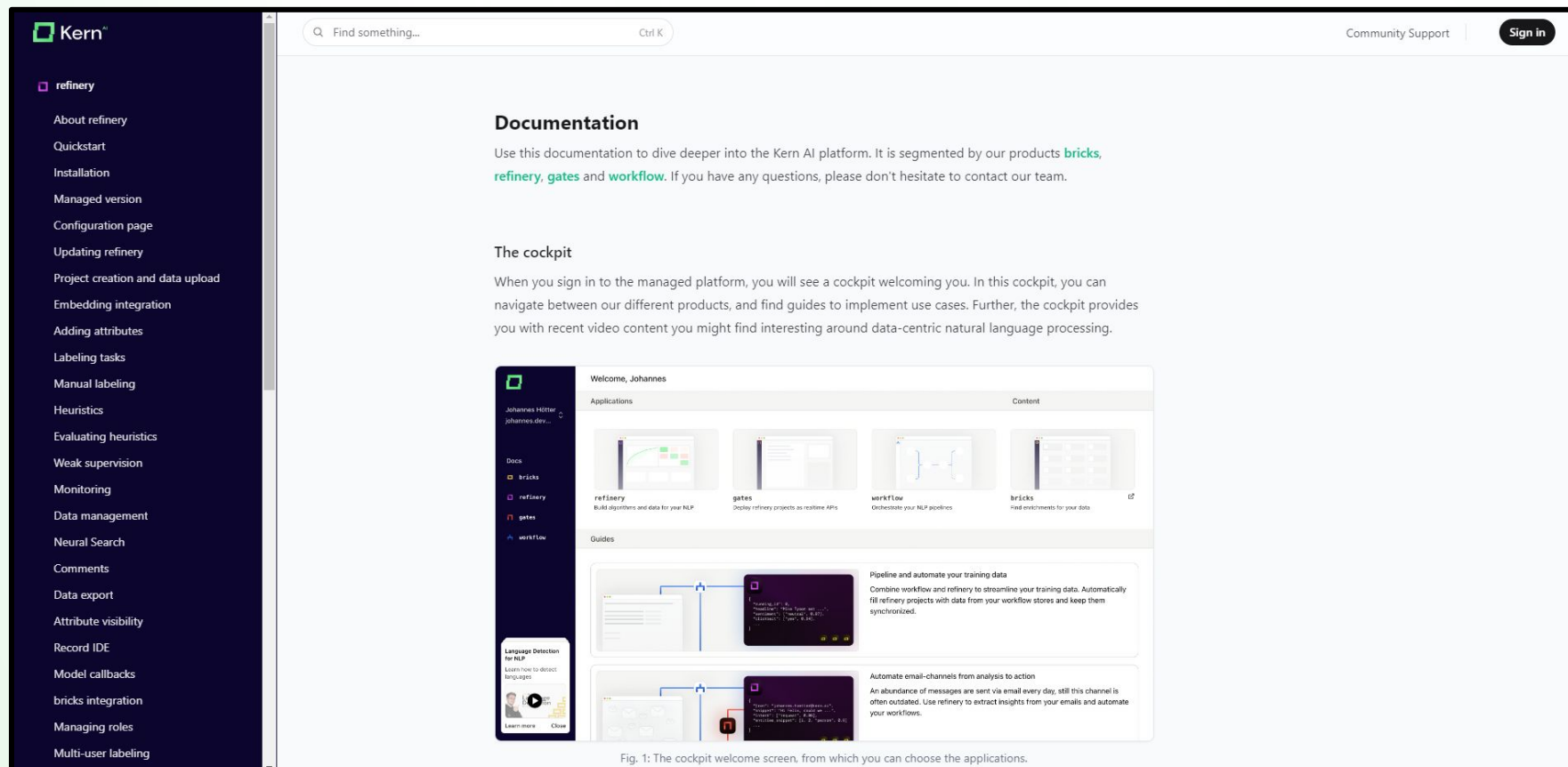
Type a follow-up question here...

Let's find out how the
underlying technology
works!

Our agenda for today

1. Project overview – what tools are we going to use
2. A gentle introduction to embeddings
3. Build your own “mini search engine” with qdrants vector DB
4. Enriching GPT models using OpenAIs Python API

Our software documentation (docs.kern.ai)



The screenshot displays the Kern AI documentation website. On the left is a dark sidebar with the Kern logo and a list of navigation items: refinery, About refinery, Quickstart, Installation, Managed version, Configuration page, Updating refinery, Project creation and data upload, Embedding integration, Adding attributes, Labeling tasks, Manual labeling, Heuristics, Evaluating heuristics, Weak supervision, Monitoring, Data management, Neural Search, Comments, Data export, Attribute visibility, Record IDE, Model callbacks, bricks integration, Managing roles, and Multi-user labeling. The main content area has a search bar at the top with the text 'Find something...' and a 'Ctrl K' shortcut. Below the search bar is the 'Documentation' section, which includes a paragraph about the documentation's structure and a section titled 'The cockpit' explaining the user interface. At the bottom of the main content area is a preview of the 'Cockpit' welcome screen. This screen shows a 'Welcome, Johannes' message, a list of applications (refinery, gates, workflow, bricks), and two guides: 'Pipeline and automate your training data' and 'Automate email-channels from analysis to action'.

Documentation

Use this documentation to dive deeper into the Kern AI platform. It is segmented by our products **bricks**, **refinery**, **gates** and **workflow**. If you have any questions, please don't hesitate to contact our team.

The cockpit

When you sign in to the managed platform, you will see a cockpit welcoming you. In this cockpit, you can navigate between our different products, and find guides to implement use cases. Further, the cockpit provides you with recent video content you might find interesting around data-centric natural language processing.

Welcome, Johannes

Applications

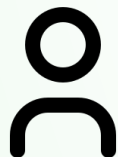
| Applications | Content |
|---|---|
| refinery Build algorithms and data for your NLP | gates Deploy refinery projects as realtime APIs |
| workflow Orchestrate your NLP pipelines | bricks Find enrichments for your data |

Guides

- Pipeline and automate your training data**
Combine workflow and refinery to streamline your training data. Automatically fill refinery projects with data from your workflow stores and keep them synchronized.
- Automate email-channels from analysis to action**
An abundance of messages are sent via email every day, still this channel is often outdated. Use refinery to extract insights from your emails and automate your workflows.

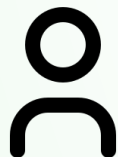
Fig. 1: The cockpit welcome screen, from which you can choose the applications.

Project overview

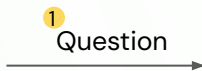


User

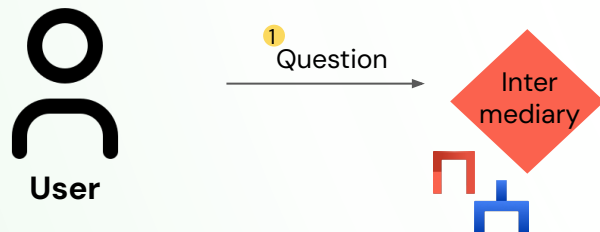
Project overview



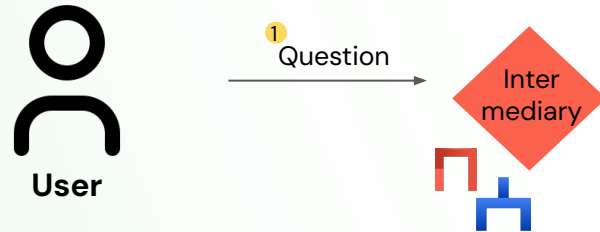
User



Project overview



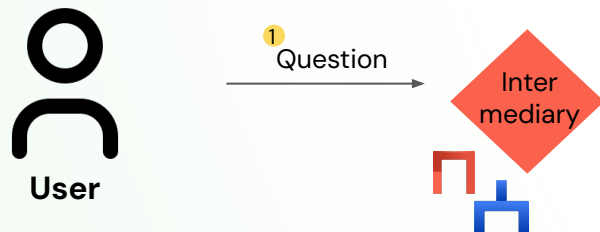
Project overview



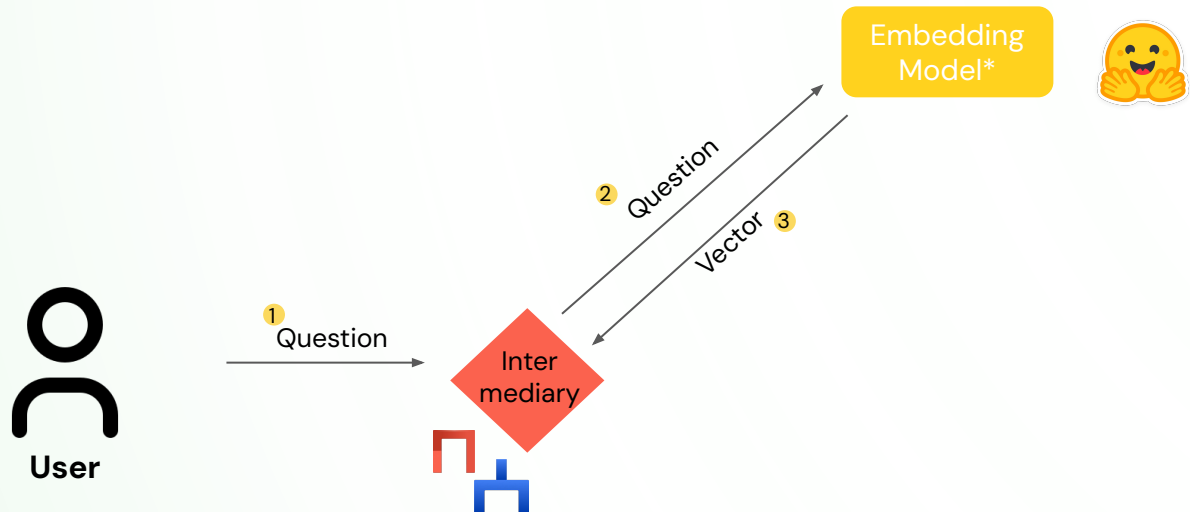
Note:

Today we are only going to do this part in a super simple manner! :-)

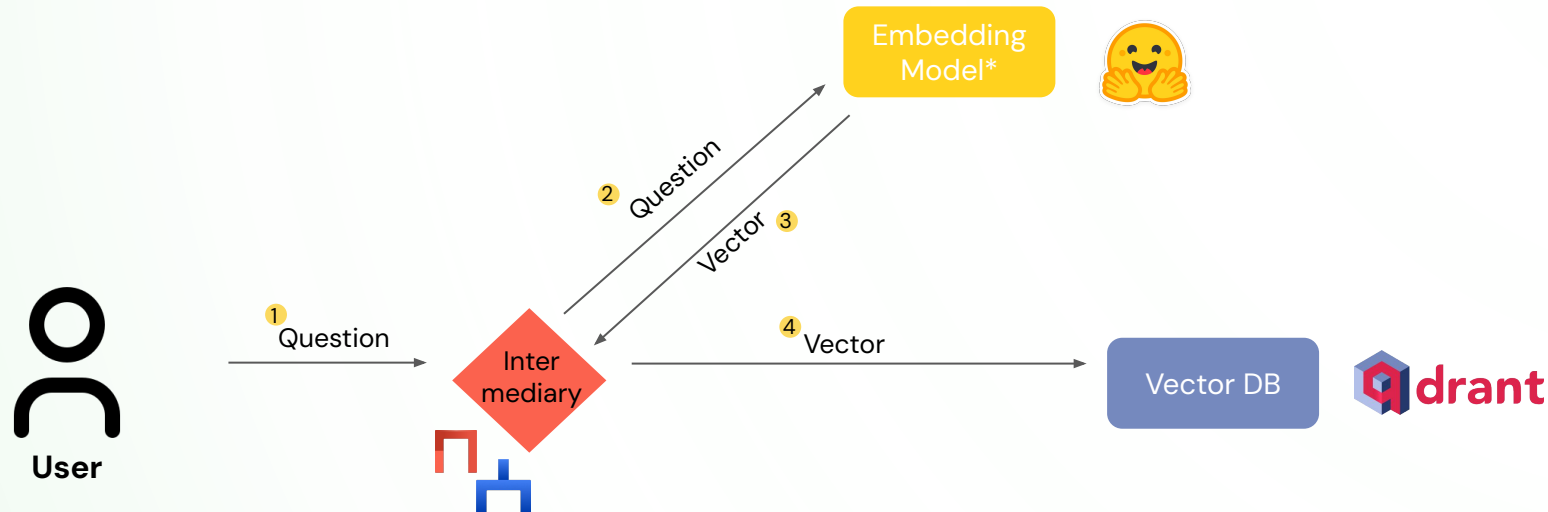
Project overview



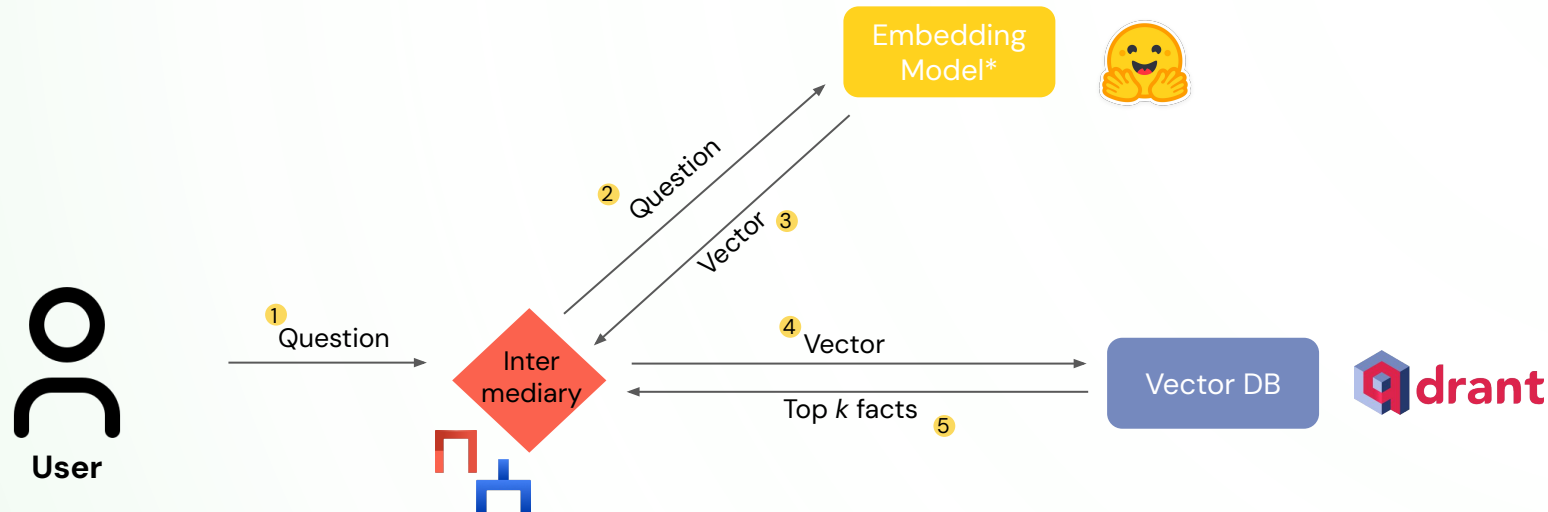
Project overview



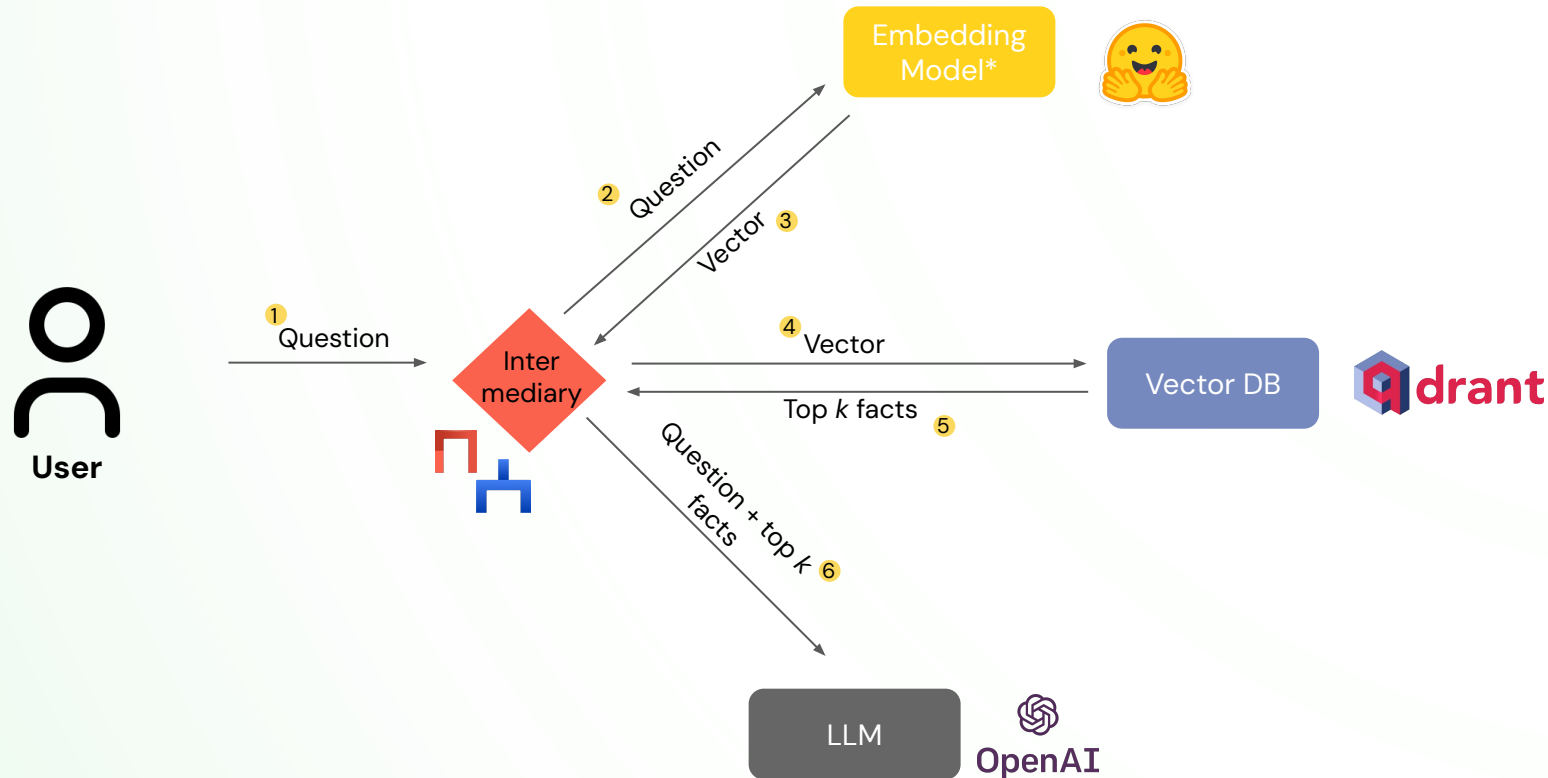
Project overview



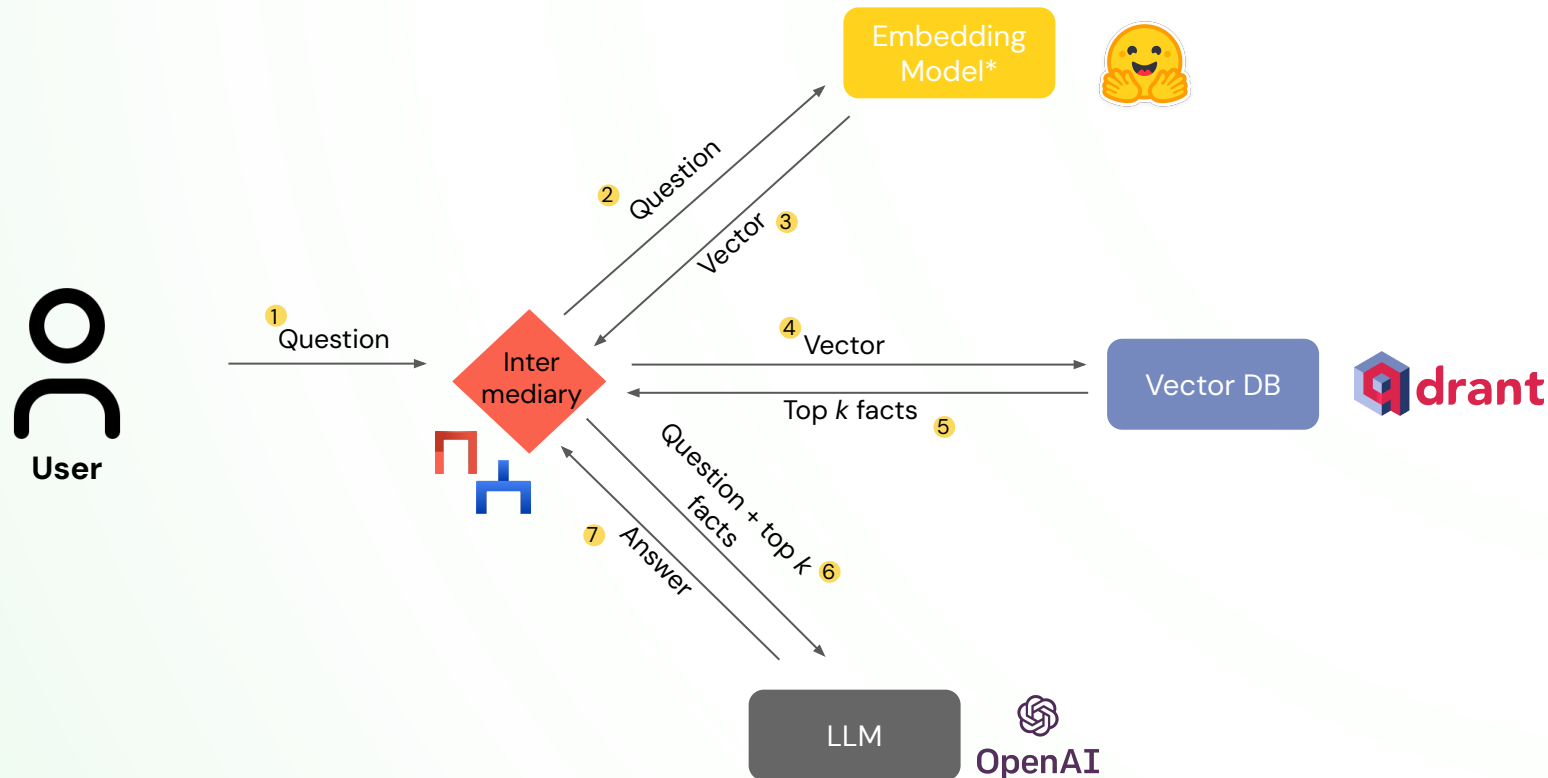
Project overview



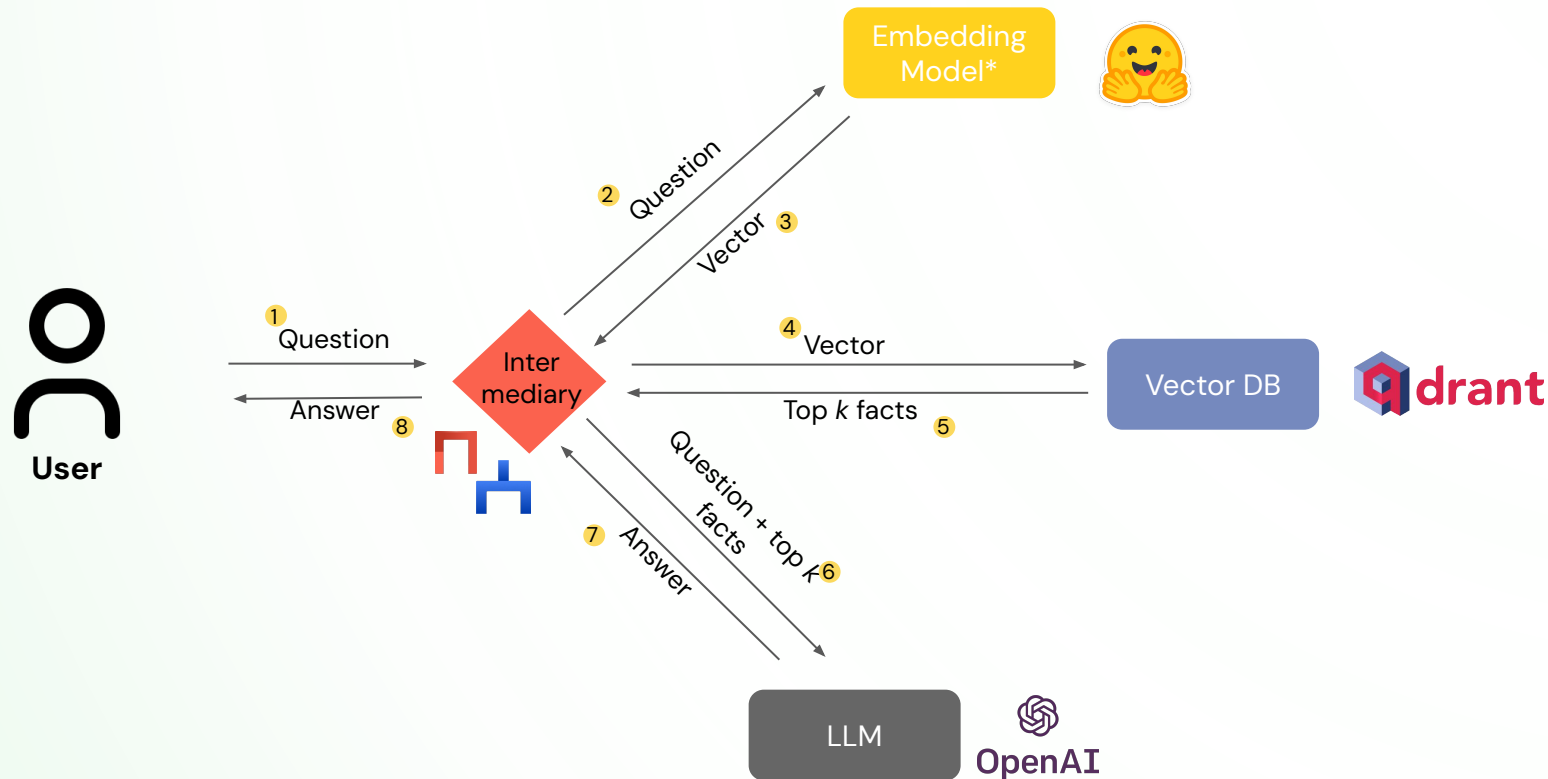
Project overview



Project overview



Project overview



**Let's find out how we can
easily preprocess our data**

If we want to use our
text in an algorithm, we
need to process it first!

But how?

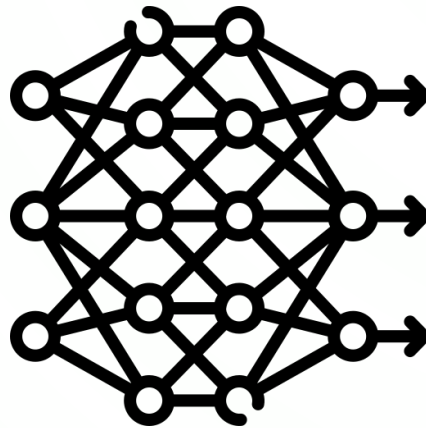
Embeddings =

Turning our words and sentences* into numbers that still have the same **meaning** and **context**.

*this is also possible with images, videos, etc, but we'll focus on text.

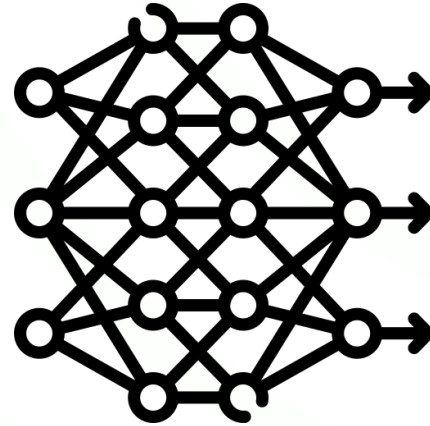
We can create these embeddings with the help of **neural networks***

These neural networks/LMs have seen a lot of text data, and we can use them to **convert strings into vectors** without losing lots of information.



*there are other methods for embeddings, too. But we'll focus on the one with neural networks for today.

Simply put, these embeddings are created using the **weights/parameters** of the neural network.



Raw text data

I love Capybaras
and Cats.

Raw text data

I love Capybaras
and Cats.

*Human readable, but
not (easily) usable in
an algorithm.*

Raw text data

*Vectorized data
(embeddings)*

I love Capybaras
and Cats.



[0.131, -0.231, 0.003,
-0.289,
0.093, -0.177,
-0.143, 0.289,
0.063, 0.057]

*Human readable, but
not (easily) usable in
an algorithm.*

Raw text data

I love Capybaras
and Cats.

*Human readable, but
not (easily) usable in
an algorithm.*

*Vectorized data
(embeddings)*

[0.131, -0.231, 0.003,
-0.289,
0.093, -0.177,
-0.143, 0.289,
0.063, 0.057]

*Not readable, but
usable in an
algorithm!*

We can then use these
embeddings...

We can then use these
embeddings...

For training a machine
learning model
-> **Classification** or
entity extraction



We can then use these
embeddings...

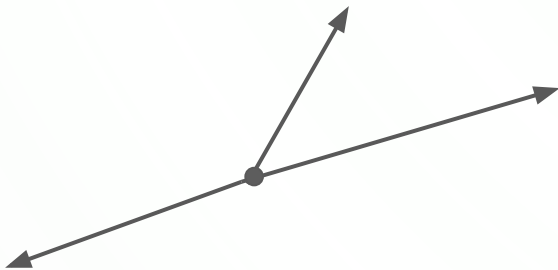
For training a machine
learning model
-> **Classification** or
entity extraction



Or for **information
retrieval**

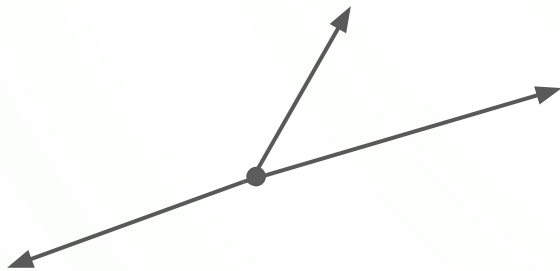


We can **compare our
vectorized text** to
easily find relevant
information.

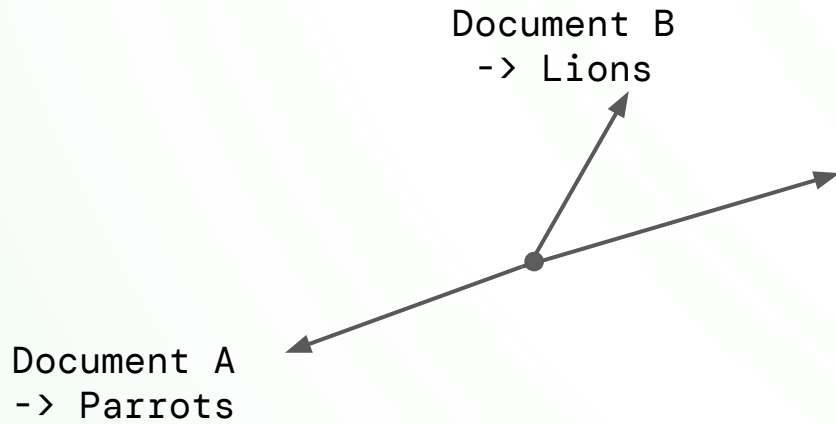


We can **compare our
vectorized text** to
easily find relevant
information.

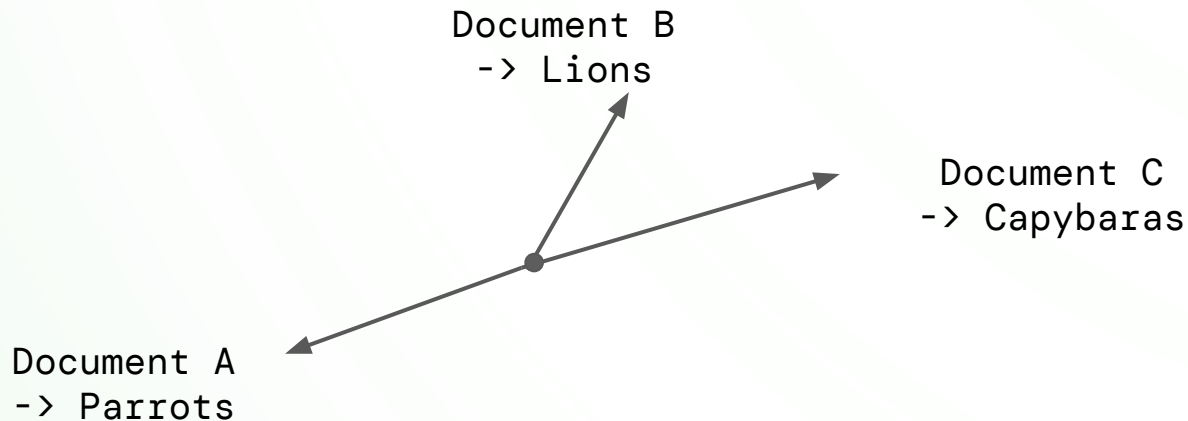
Document A
-> Parrots



We can **compare our
vectorized text** to
easily find relevant
information.

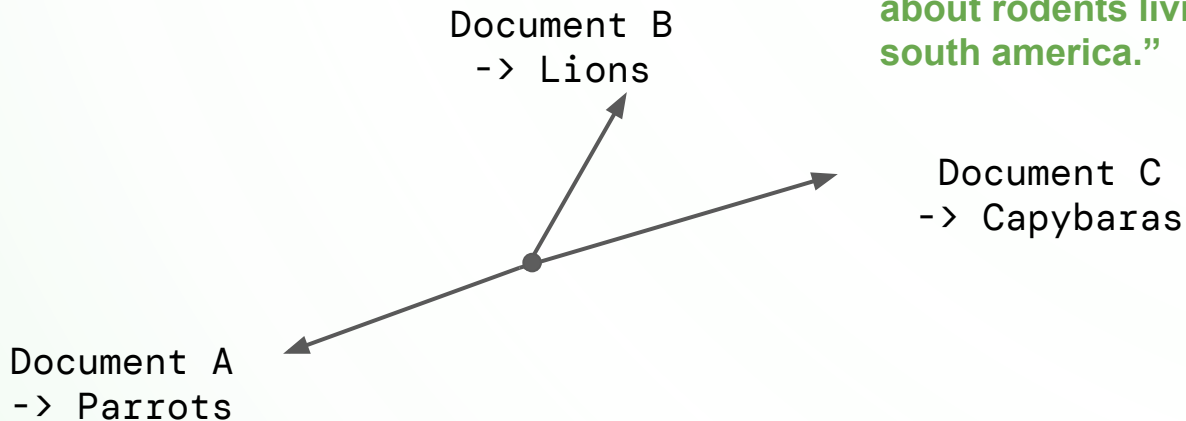


We can **compare our
vectorized text** to
easily find relevant
information.

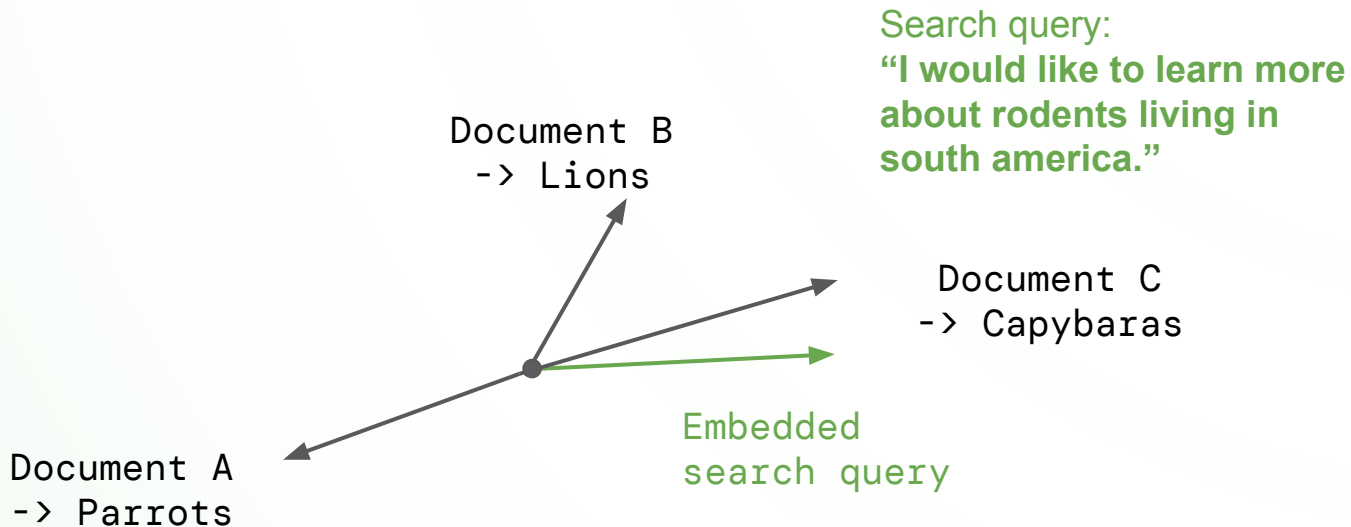


We can **compare our vectorized text** to easily find relevant information.

Search query:
“I would like to learn more about rodents living in south america.”



We can **compare our vectorized text** to easily find relevant information.



LLMs have great
knowledge about the
world in general.

LLMs have great
knowledge about the
world in general.

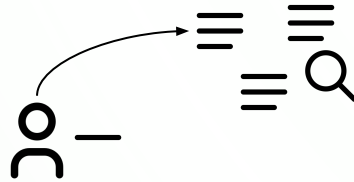
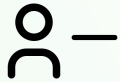
But they often lack
specific **domain** or
expert knowledge.

Take the **prompt** that a
user asks to a LLM.

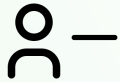
—
jo

Take the **prompt** that a user asks to a LLM.

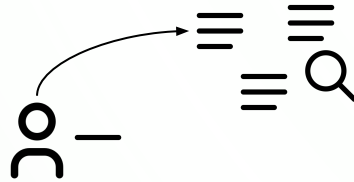
Use this prompt to **retrieve relevant information** from our knowledge base.



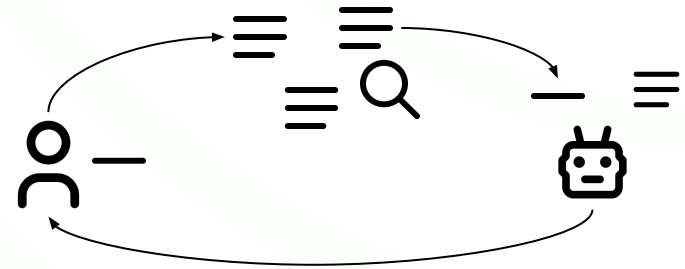
Take the **prompt** that a user asks to a LLM.



Use this prompt to **retrieve relevant information** from our knowledge base.



Feed the results as **context** to the LLMs.



Demo time!

Let's jump into some code. :-)