

# Generative AI Nantes

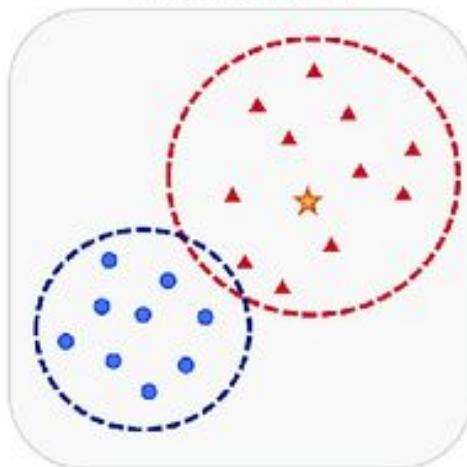
Nuit des meetups: LLM 101

-> [meetup.com/generative-ai-nantes](https://meetup.com/generative-ai-nantes)

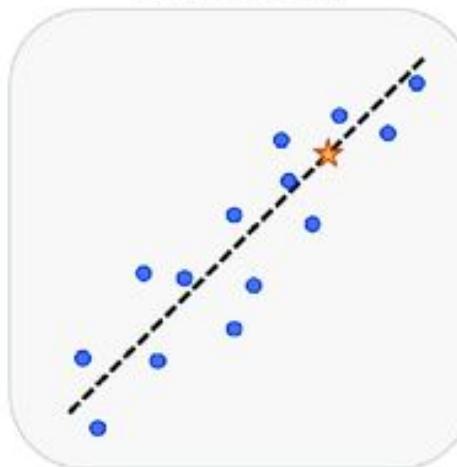


# Traditional machine learning

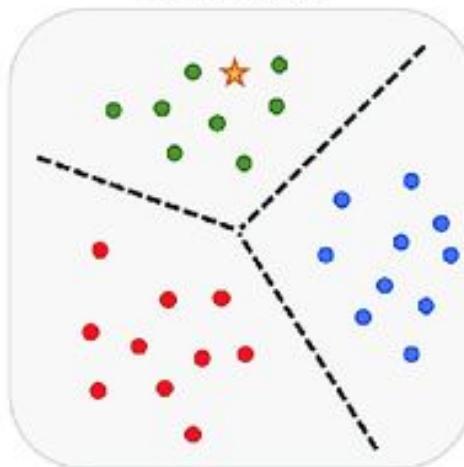
Classification



Regression

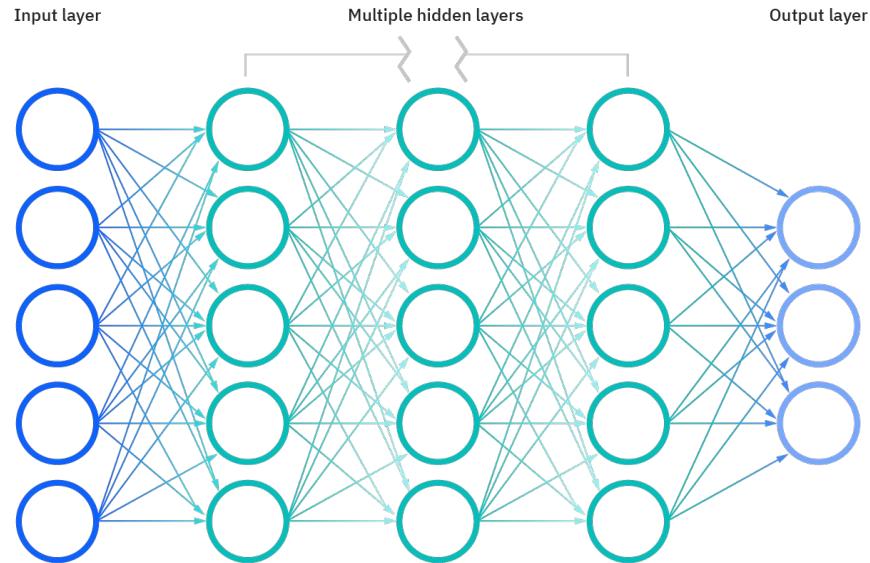


Clustering



Nice for structured data

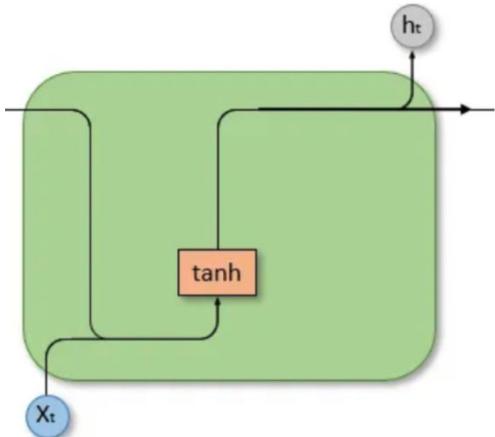
# Deep learning & neural networks



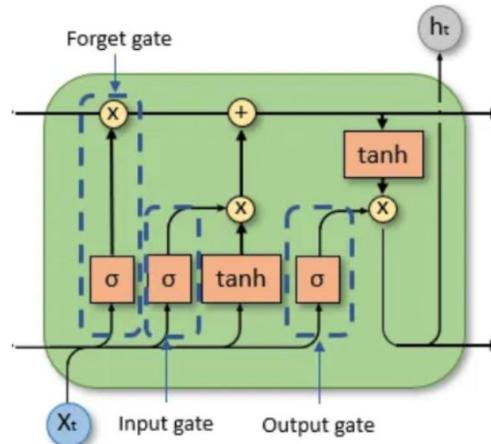
Nice for **unstructured** data

# Recurrent Neural Network

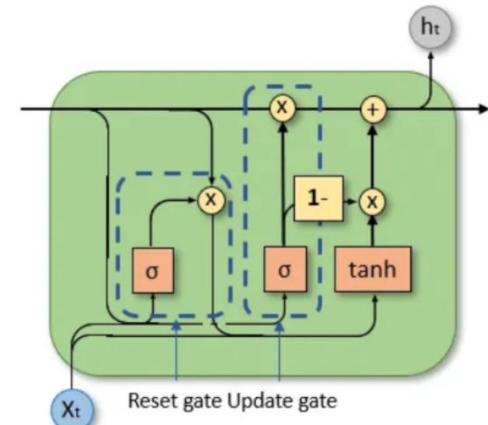
RNN



LSTM



GRU



Nice for predicting sequences: timeseries, audio, video, text...

# Transformers (2017)

## Attention Is All You Need

Ashish Vaswani\*  
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Noam Shazeer\*  
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Niki Parmar\*  
Google Research  
nikip@google.com

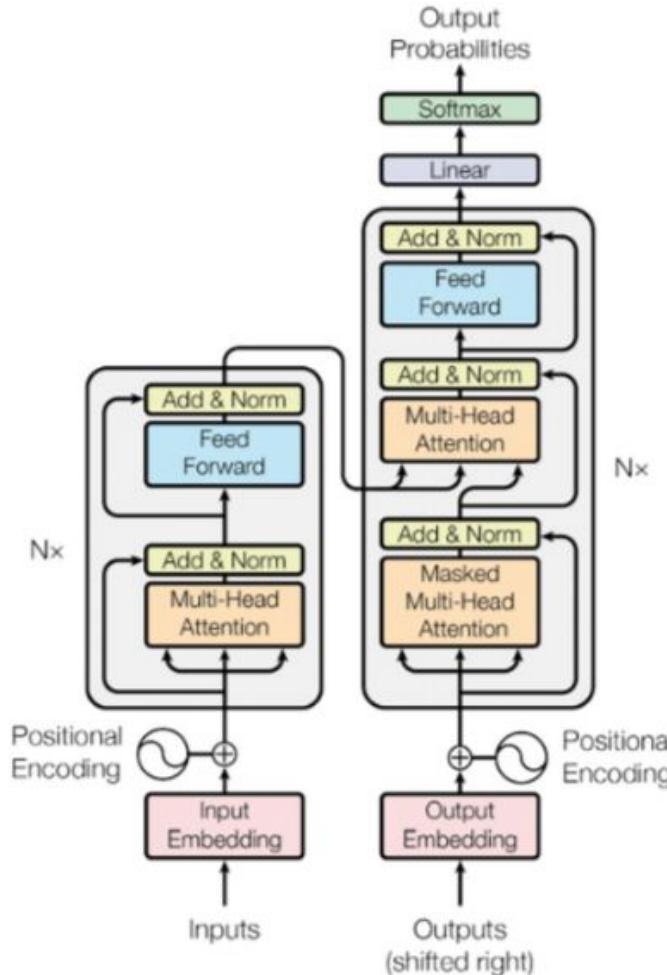
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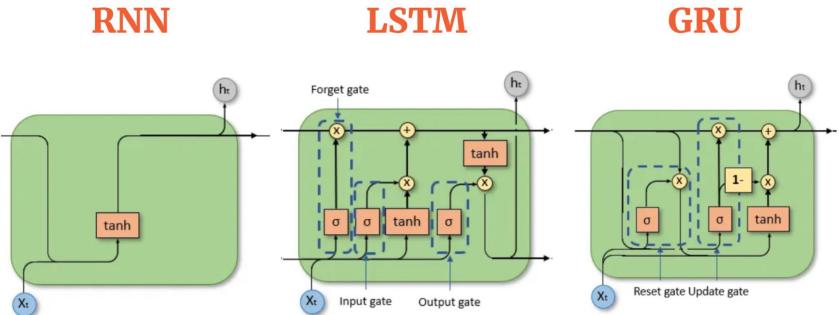




I have no interest in hearing about the rising interest rate of the bank

I have no interest in hearing about the rising interest rate of the bank

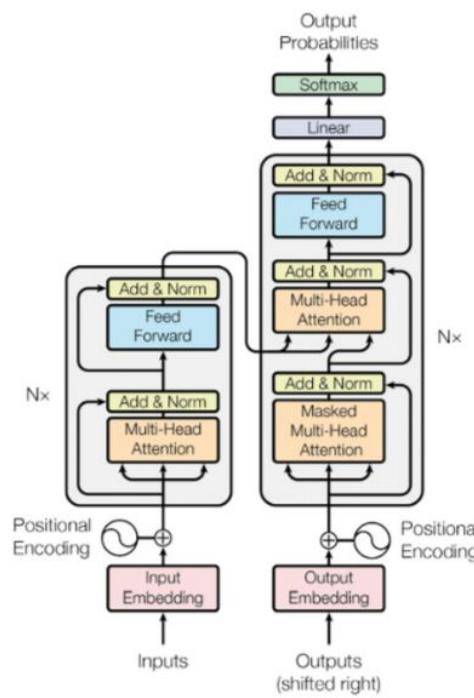




RNN

LSTM

GRU



Slow + sequential input

Fast + parallel input



GPT4  
CLAUDE 3  
MIXTRAL  
LLAMA 2  
GEMINI 1.5  
...

TEXT  
-EMBEDDING

DALL-E  
SDXL  
MIDJOURNEY

SORA  
RUNWAY ML  
HEY GEN  
LUMIERE

WHISPER  
GLADIA

ELEVEN LABS

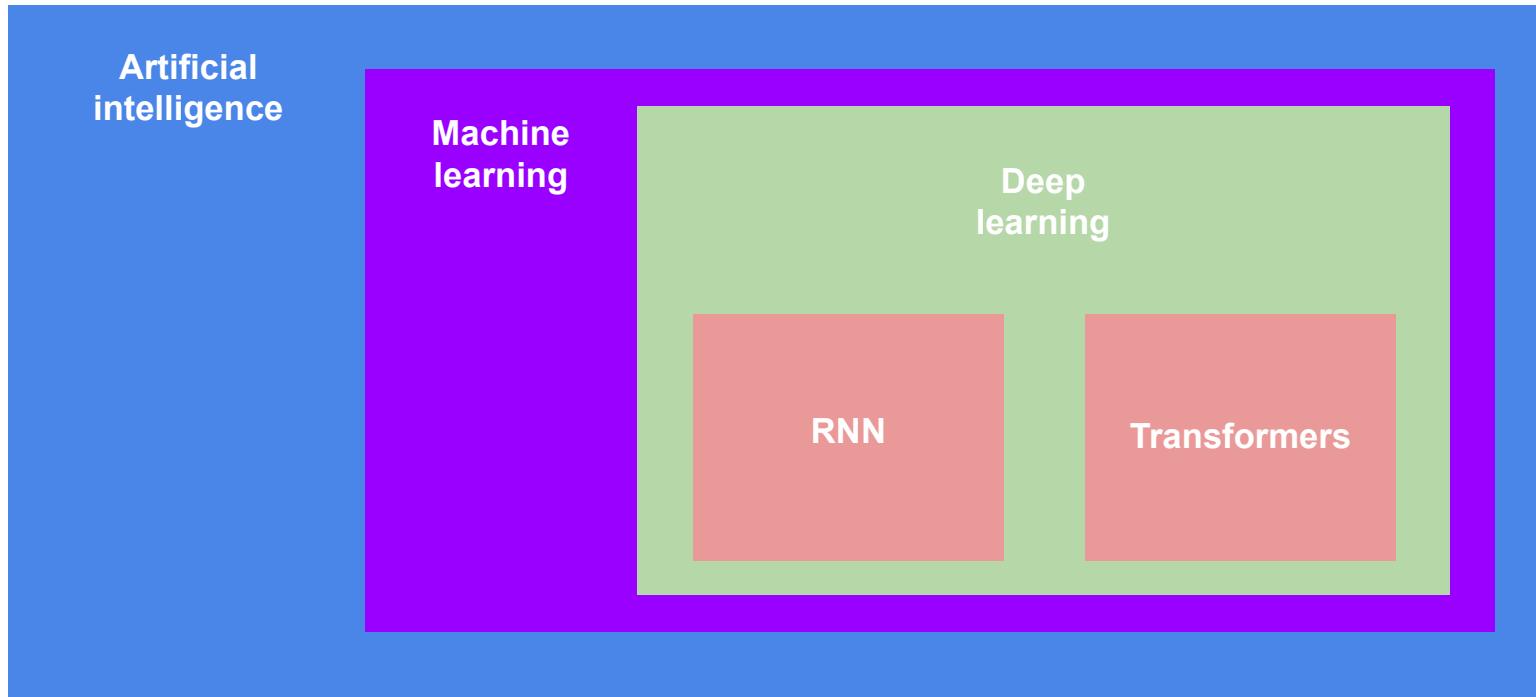
...



$$\begin{pmatrix} 0 & 0 & 0 & 4 \\ 1 & 0 & 0 & -2 \\ 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & 2 \end{pmatrix}$$



# Architecture: Zoom out

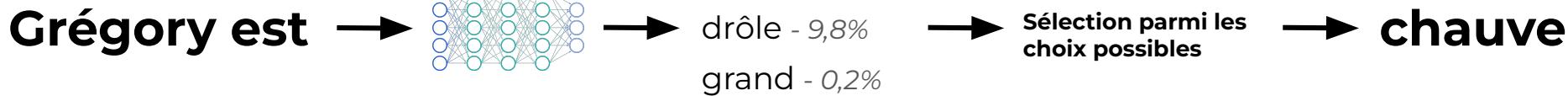


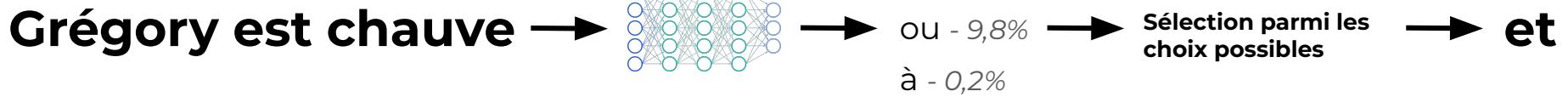
# Large Language Models (LLM)

NLP

Learn the language  
Learn concepts  
Discover the world

Foundation model





et - 90%

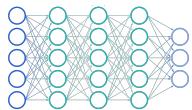
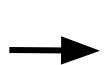
ou - 9,8%

à - 0,2%

Sélection parmi les  
choix possibles

→ et

**Grégory est chauve et**



sympa - 90%  
fatigué - 9,8%  
habillé - 0,2%



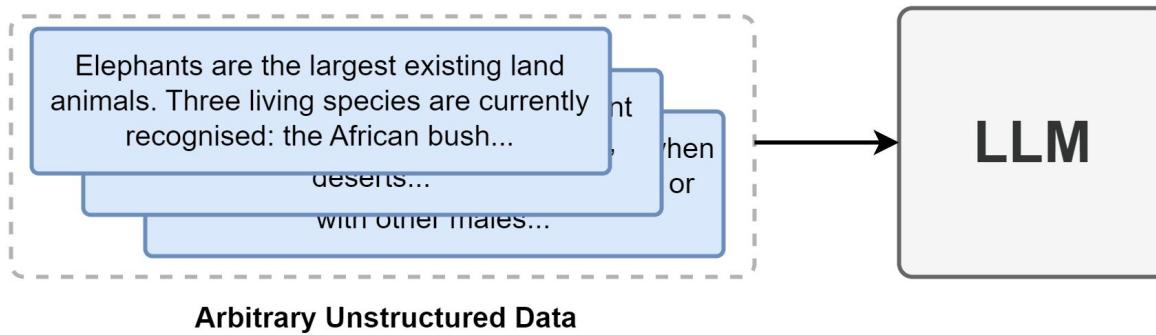
**sympa**

**Grégory est chauve et sympa**

# Building LLM

## Step 1: unsupervised training

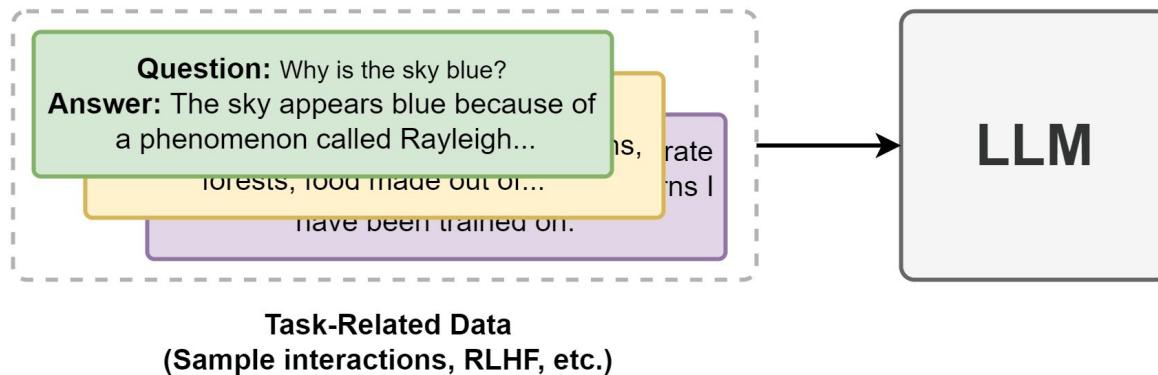
### Stage 1: Pretraining (Expensive, Unaligned)



# Building LLM

## Step 2: alignment

### Stage 2: Instruction Tuning (Cheap, Where Alignment Happens)



# Building LLM

## Step 2: alignment



# Enrich LLM

## Prompting

You are an individual who has adopted a healthier lifestyle over the past year, resulting in better physical and mental well-being. Inspired by your journey, a few friends have asked for advice on starting their own health journeys.

Write a message to share in a group chat with interested friends.

The message should outline the steps you took, share some challenges and how you overcame them, and offer to support them as they embark on their own journeys.

Use motivational and empathetic language.

Format output as a JSON: {"message": ""}

# Enrich LLM

## Few-shot learning

roses are: red

violets are: blue

maroons are:

maroon

# Enrich LLM

## Problems:

- LLM has outdated knowledge
- LLM does not have access to private data
- LLM have limited context size

# **How to Enrich a LLM ?**

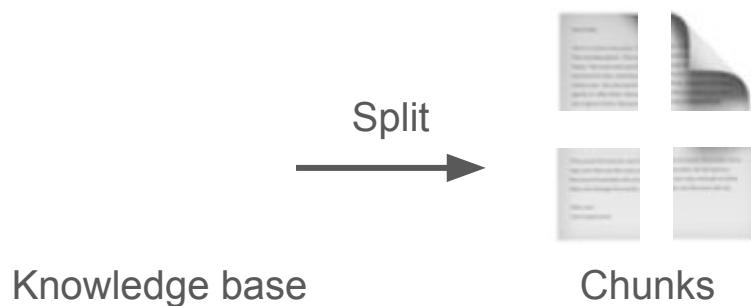
**Enrich LLM**

**Retrieval Augmented Generation (RAG)**

Knowledge base

# Enrich LLM

## Retrieval Augmented Generation (RAG)



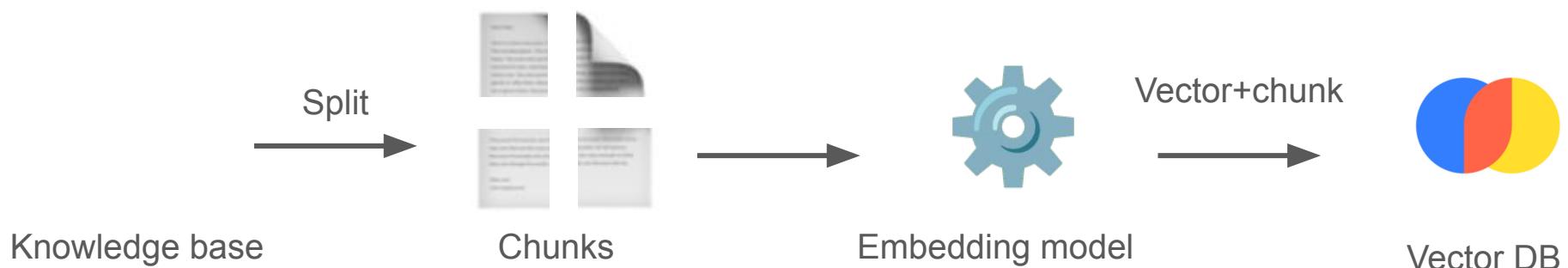
## Enrich LLM

### Retrieval Augmented Generation (RAG)



## Enrich LLM

### Retrieval Augmented Generation (RAG)



# Enrich LLM

## Retrieval Augmented Generation (RAG)

User question



Vector DB

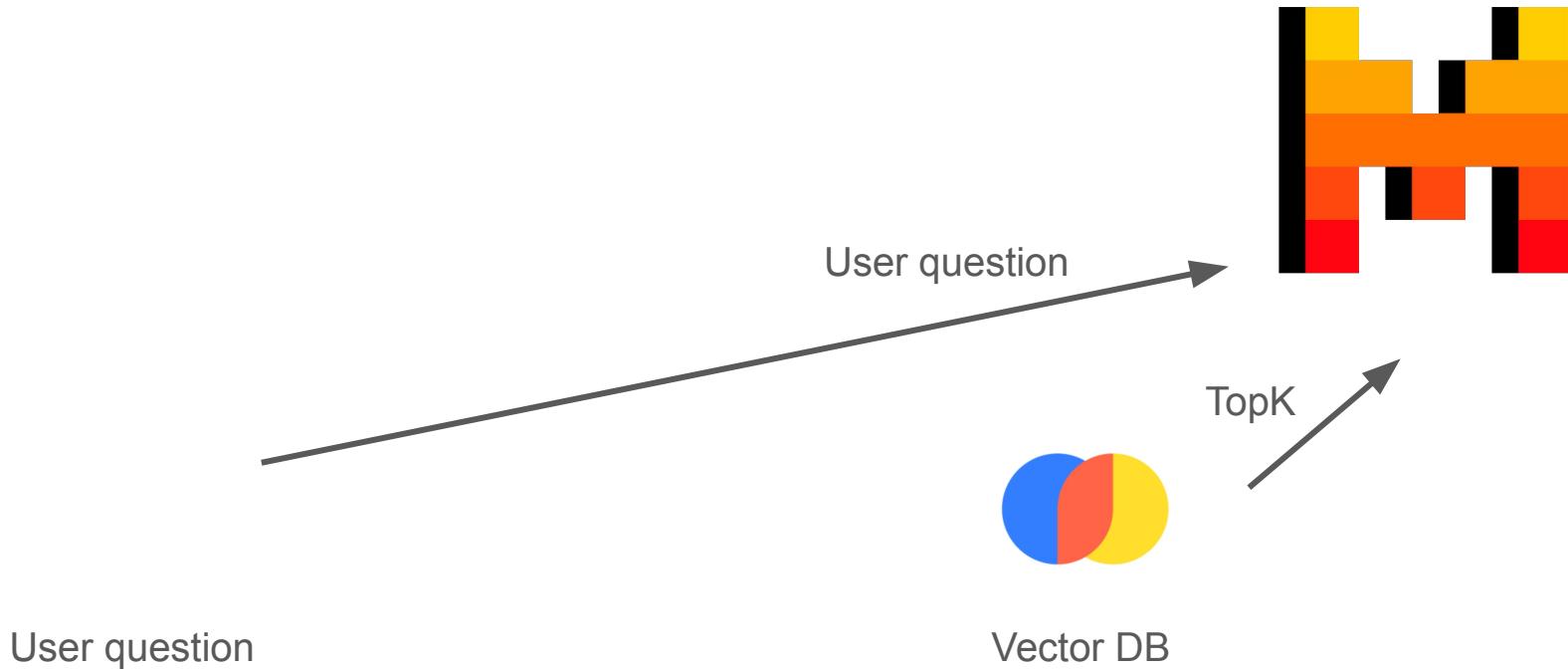
## Enrich LLM

### Retrieval Augmented Generation (RAG)



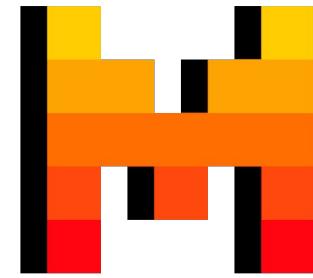
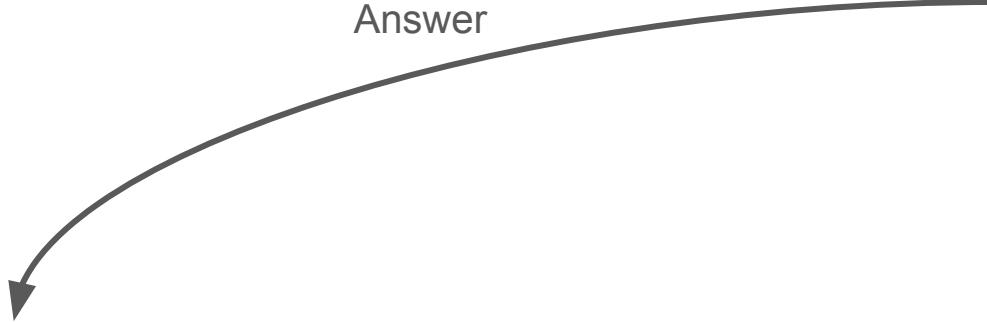
# Enrich LLM

## Retrieval Augmented Generation (RAG)

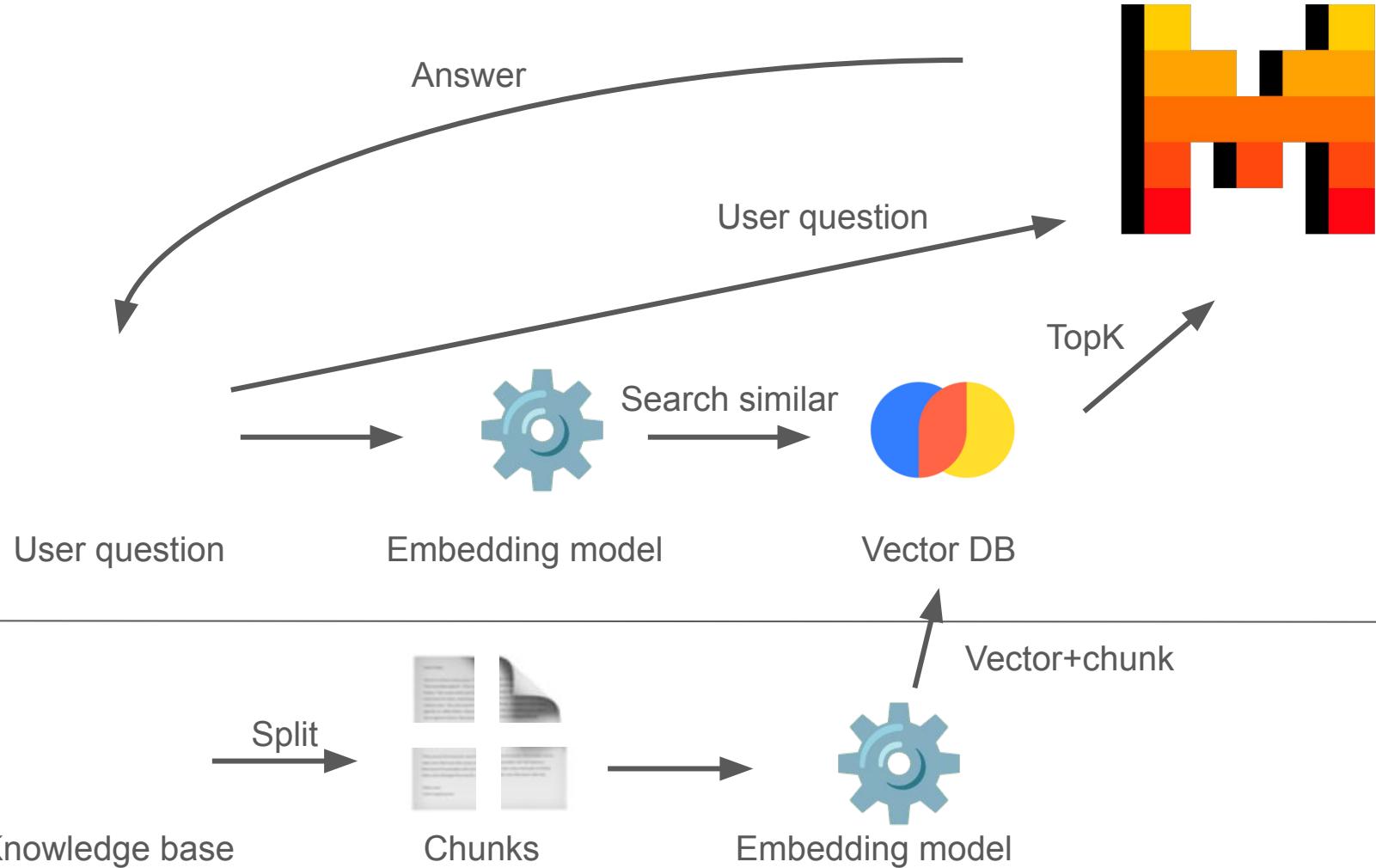


# Enrich LLM

## Retrieval Augmented Generation (RAG)



User question



## Enrich LLM

## Fine-tuning



I love being able to chat with support

Last Saturday at 9:49 AM

Feature request



Fuck off. Stop bothering me with the newsletter! 🤬

Hater

Last Wednesday at 2:53 PM

Question



Ras

Last Friday at 4:31 PM



1peu plus rapide

Last Friday at 4:57 PM

Feedback



Sehr guter service

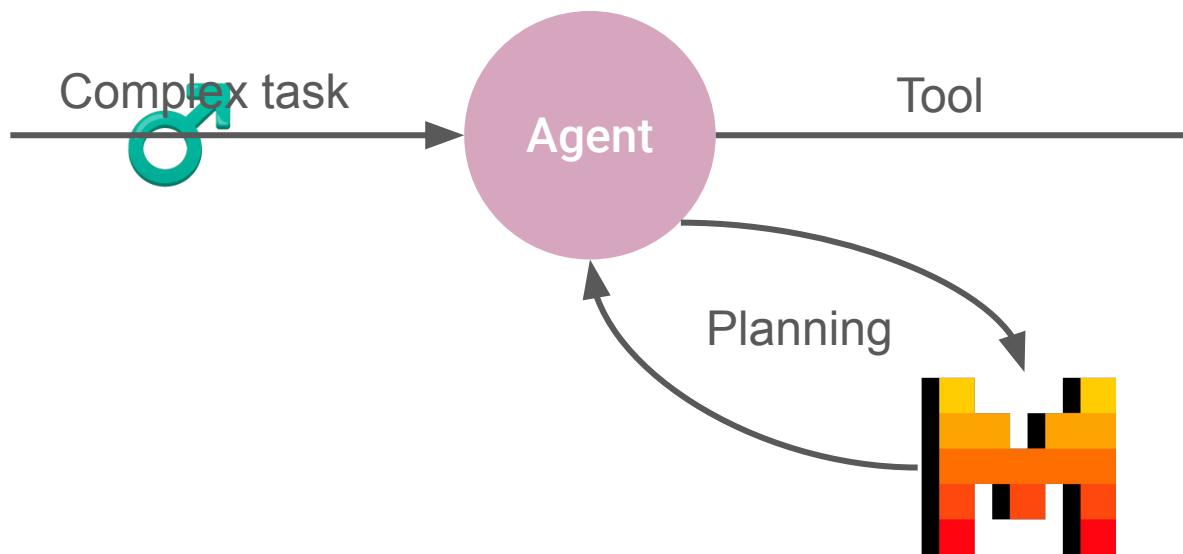
Last Wednesday at 9:22 AM

Bug report

Thankful

## Enrich LLM

### ReAct / Agent



 python™

 stripe

 Swagger

 PostgreSQL

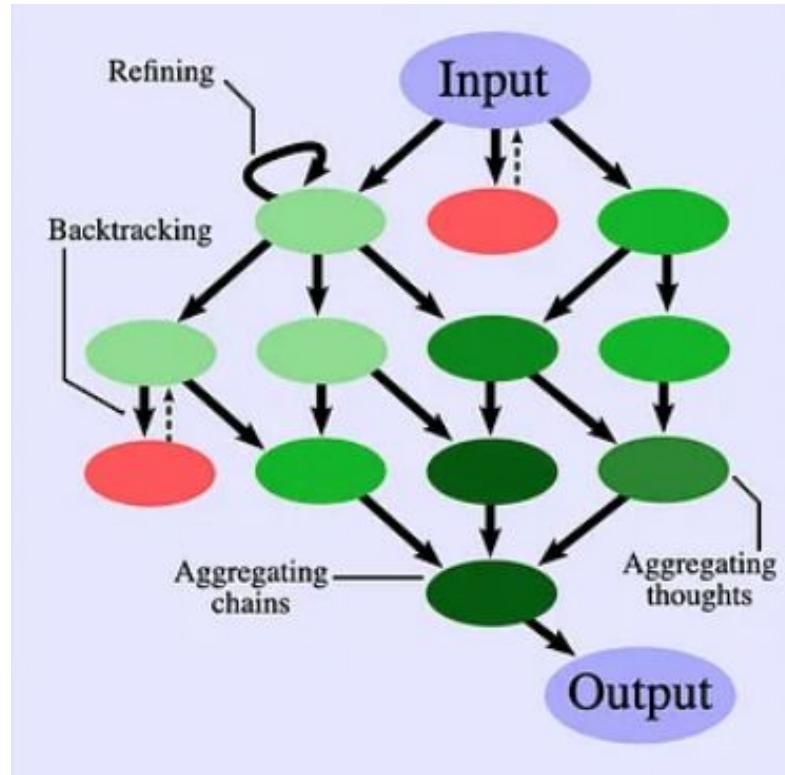
 Google

 chroma

...

# Graph of Thoughts

Enrich LLM

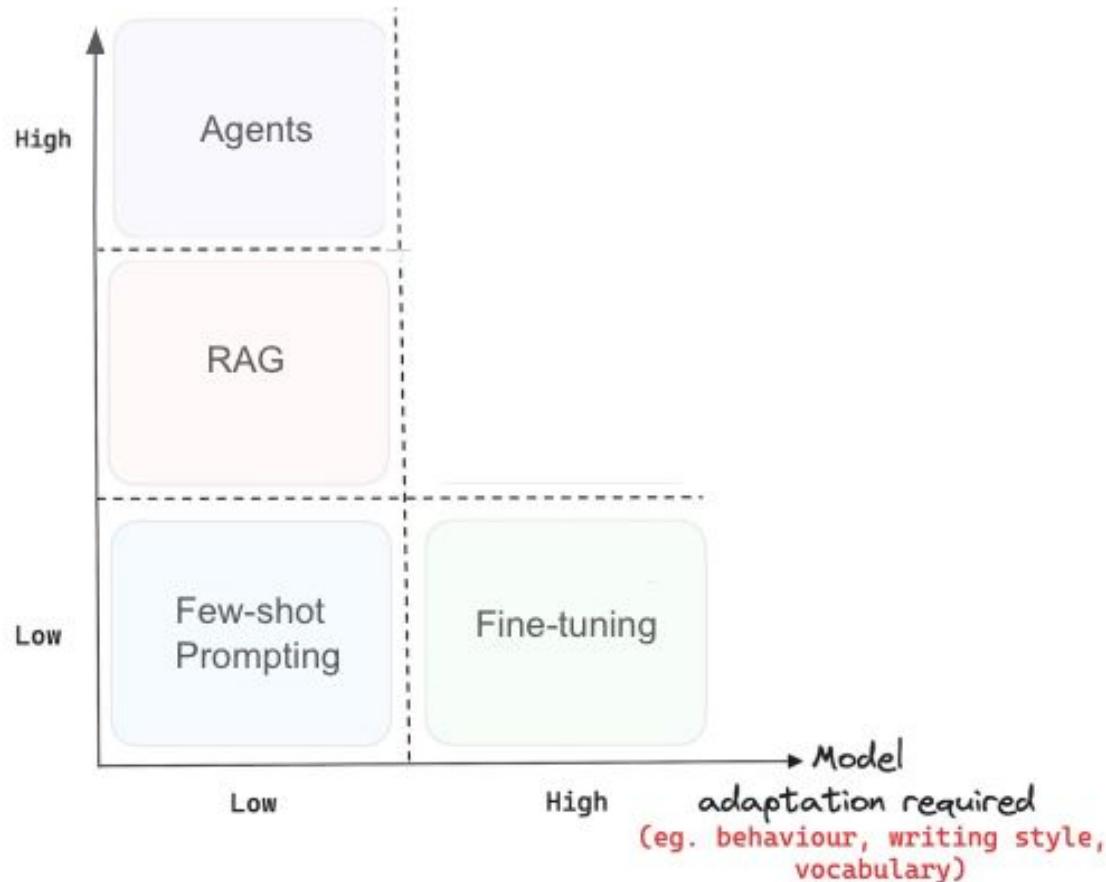


# Native LLM function calling

```
{  
  type: "function",  
  function: {  
    name: "get_current_weather",  
    description: "Get the current weather in a given location",  
    parameters: {  
      type: "object",  
      properties: {  
        location: {  
          type: "string",  
          description: "The city and state, e.g. San Francisco, CA",  
        },  
        unit: { type: "string", enum: ["celsius", "fahrenheit"] },  
      },  
      required: ["location"],  
    },  
  },  
},
```

OpenAI:	✓	gpt-3.5	✓
gpt-4			
Llama2:	✗		
Mistral:	✓		
Gemini:	✓		
PaLM:	✗		
Flan-T5:	✗		
Claude 3:	✓		
Cohere:	✗		

External Knowledge  
Required



4 takeaways

External Knowledge  
Required



4 takeaways



# LangChain

adaptation required  
(eg. behaviour, writing style,  
vocabulary)



JS githubCopilot.js

```
plugins: JS githubCopilot.js > ⚡ do
    // find all images
    // and add a green border around them
    // and class "githubCopilot" to them
function go() {
    var images = document.getElementsByTagName('img');
    for (var i = 0; i < images.length; i++) {
        if (images[i].className.indexOf('githubCopilot') == -1) {
            images[i].className += ' githubCopilot';
            images[i].style.border = '1px solid green';
        }
    }
}
```



File main



0

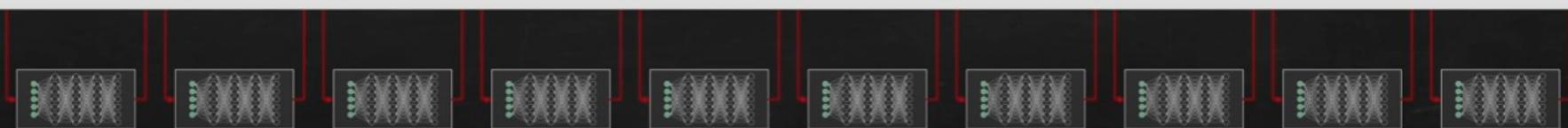
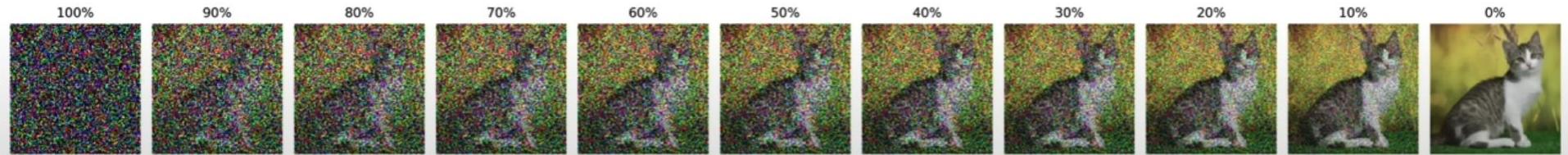
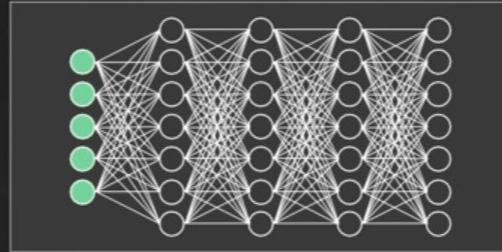
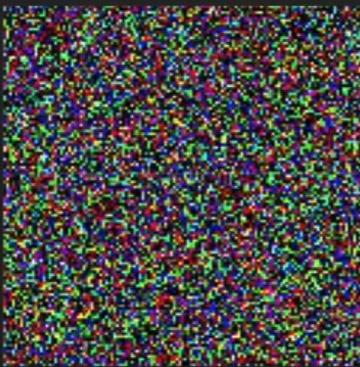


0

spaces: 4 UFT-8 LF JavaScript 25 IP 0



des images ?





phone photo of [DECRIRE LA SCENE] posted to reddit in 2019, --style raw --s 0 --ar 9:16 --v 6.0



# Midjourney



# MAGNIFIC AI



# SHIFT

nantes

## LE HACKATHON GEN AI

Du **31 Mai** au **2 Juin**, tu as exactement 48h pour créer le futur en intégrant de l'**IA Générative** dans un produit tech !

Tout ça au **Palace**, à Nantes.





Voilà l'image de référence pour influencer les générations Midjourney



L'image de référence n'est pas respectée dans les générations cependant toutes les générations gardent a peu près le même style.



Jusqu'à la nouvelle mise jour qui perturbe tout le processus.





08/03/2024

people talking --sref <https://s.mj.run/-Amds9U-gU> --ar 16:9



01/04/2024

people talking --sref <https://s.mj.run/-Amds9U-gU> --ar 16:9

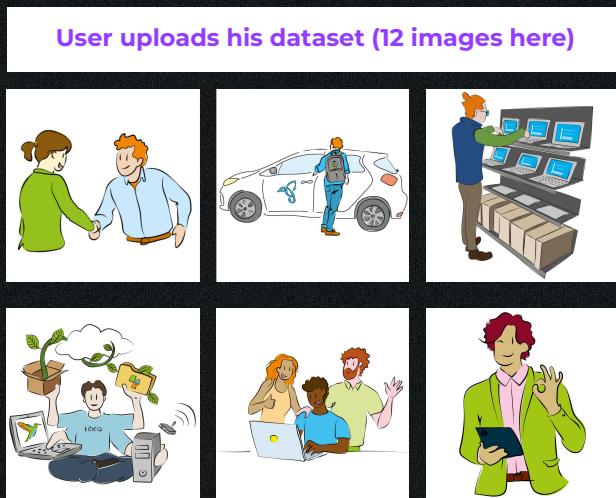
## Image de référence



# Training example: Tibco



**Usecase:** training on illustration style



Tibco's model is created

after 45 mn of automated work



User generates images with simple prompts in a few seconds



# # CONF'

**Dmitry Kuzovkin**

*Head of AI @ Seelab*

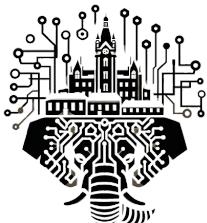
**Matthieu Grosselin**

*CEO @ Seelab*



Le 17/04/2024 à 19h

Chez Lucca, 3 rue Michel Columb, Nantes



“Use case de fine-tuning d'un modèle de génération d'image”



[sfΞir] lonestone



Whisper examples:

Accent



One of the most famous landmarks on the Borders, it's three hills and the myth is that Merlin, the magician, split one hill into three and left the two hills at the back of us which you can see. The weather's never good though, we stay on the Borders with the mists on the Yildens, we never get the good weather and as you can see today there's no sunshine, it's a typical Scottish Borders day.

Note: Whisper transcribed "Eildons" as "Yildens"











← → ⌂

platform.openai.com  
Translation Available



Screeb

Gmail Mika  
Unread Emails

Gmail Simon  
1 Recent

/ <10 - Emails Catch All - ...

➢ Prospection B2B

Master DB - Google Sh...

Un / Airtable

Campaign overview

Screeb

+ New Tab

Playground - OpenAI API

Playground - OpenAI API

Get a YouTube Transcri...

Gladia

(6) Cheerz Meetup Tec...

Arc is ready to update!  
Click to restart



# Playground

Chat ⚙

Your presets ⚙

Save

View code

Share

...

## SYSTEM

Tu es spécialisé dans le résumé de conférences, tu sais mettre en avant les bonnes informations et ne rater aucun détails importants.

Ton objectif est de faire 2 parties.

La première partie sera un résumé détaillé d'un meetup dont le texte te sera fourni par la suite.

La seconde partie sera des citations qui te sembleront pertinentes et importantes à relever.

Voici le texte du meetup :

X

## USER

Enter a user message here.

⊕ Add message

4

Submit



## Model

gpt-4-turbo-preview ⚙

Temperature 0



Maximum length 4095



## Stop sequences

Enter sequence and press Tab



Top P 0.95



Frequency penalty 0



Presence penalty 0



🔒 API and Playground requests will not be used to train our models. [Learn more](#)



IIIElevenLabs







Runway: Gen2

## Video-to-video editing

Diffusion models have enabled a plethora of methods for editing images and videos from text prompts. Below we apply one of these methods, SDEdit,<sup>32</sup> to Sora. This technique enables Sora to transform the styles and environments of input videos zero-shot.

Input video



put the video in space with a rainbow road

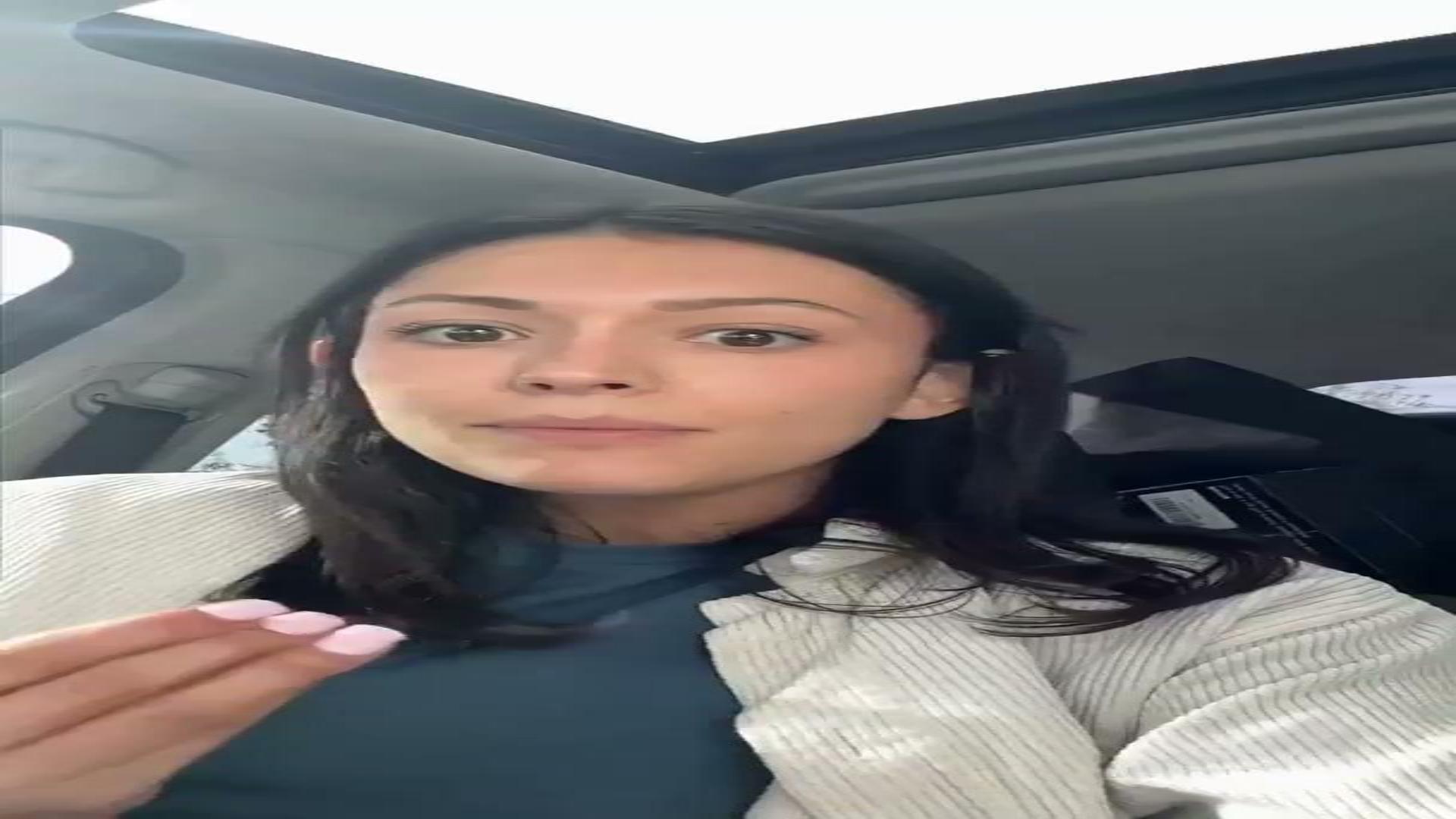


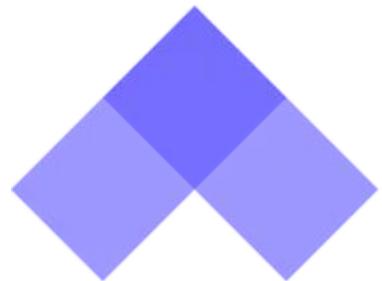




OpenAI  
**INTRODUCING**  
SORA - Text ToVideo







arcads





**HeyGen**



Ubique

ubique.live

Features How it works? FAQ Pricing Blog Sign Up / Log In →

# Grow your engagement rates with compelling video messages

Record a single video message. We will personalize all the others.

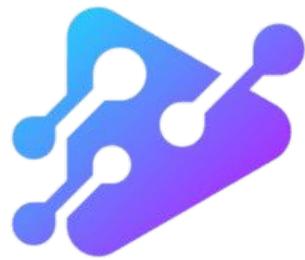


Log In →

Pause 00:00

FEATURED ON

Speaker icon, CC icon, Magnifying glass icon, Gear icon, Video camera icon, X icon



U B I Q U E

# SHIFT nantes



## LE HACKATHON GEN AI

Du **31 Mai** au **2 Juin**, tu as exactement 48h pour créer le futur en intégrant de l'**IA Générative** dans un produit tech !

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