



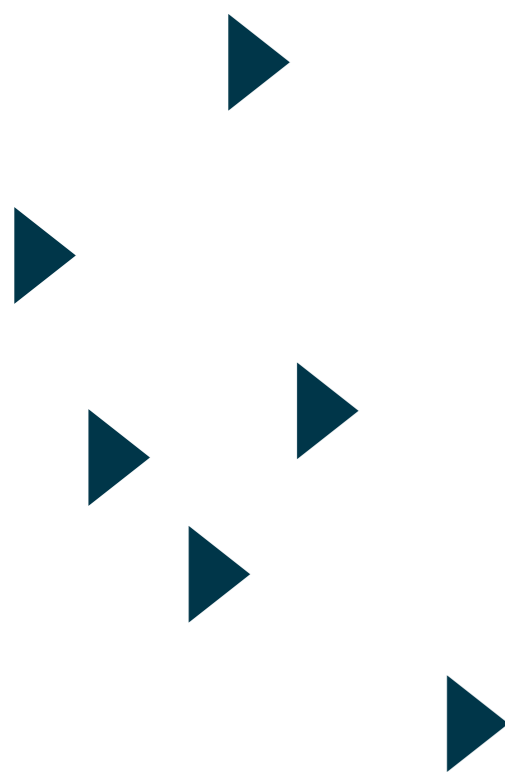
Conférence : « Les IA NoLimit »

GEM

**Frise chronologique
prospective des IA !**

16 avril 2026
Hubert **Kratiroff**

GEM Alpine
Business
School



EXPLORE

BEYOND

HORIZONS



NoLimit conférence

L'IA et la mobility-tech
expliquées avec bienveillance,
sous forme d'une frise chronologique
prospective des IA

par **hubertkratiroff**
le 16 avril 2026

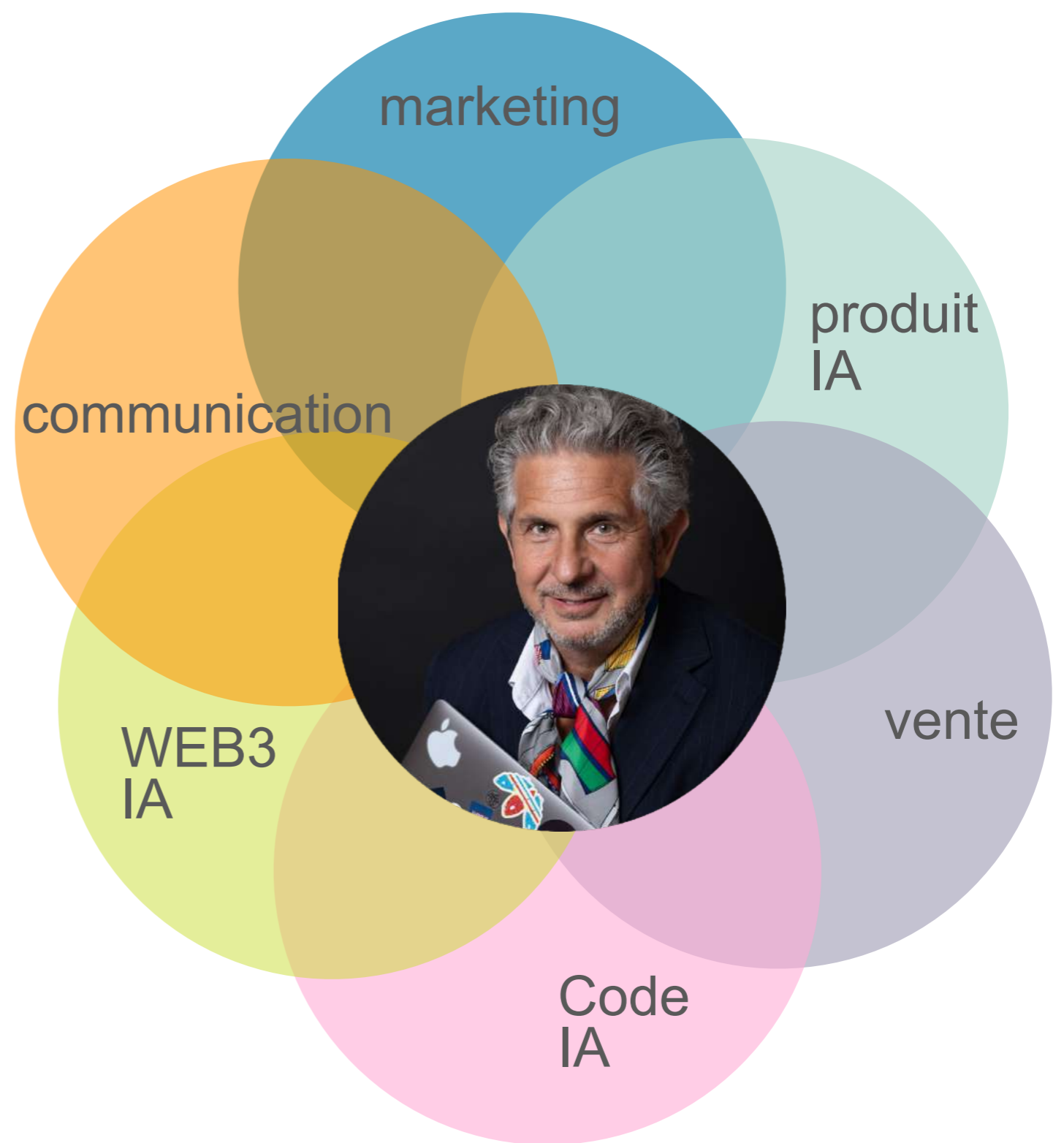


**CONFÉRENCE
IA nolimit**

- 1** ESG
Énergie fossile
- 2** Ampleur du sujet IA
Information en avalanche
- 3** **Frise Chronologique
TimeLine et Role Model**
- 4** Critiques
Risques

Professeur d'économie numérique

hubert@kratiroff.com





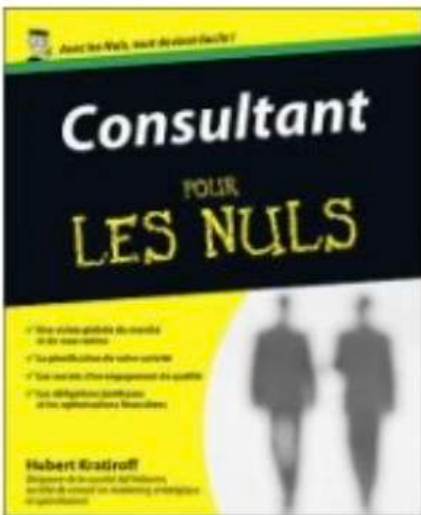
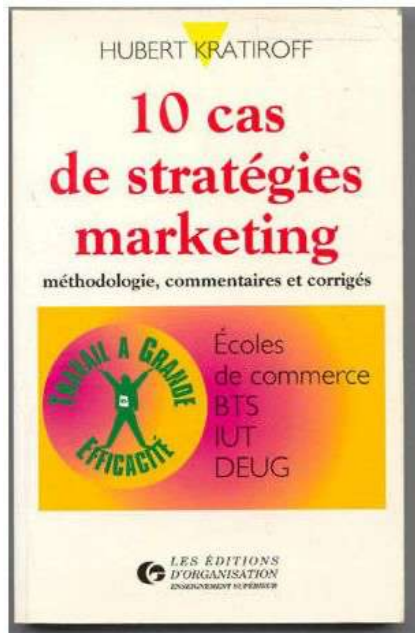


UN.patent

UNIVERSAL PATENT



la première innovation partagée est le Fireman Access





RECONSTRUCTION

■ *Software is eating the world*

STRATÉGIE
MARKETING
DE CROISSANCE

ÉCONOMIE NUMÉRIQUE

*Plateforme ou pas,
quelle plateforme ?*

chefdeproduit . com

Economie numérique ou digitale ? Les deux sont fortement synonymes.

Le motto de **Mark Andreessen** : «**Software is eating the world**» résume bien l'état des lieux. Tout est logiciel, tout est OS (operating system)

La transformation numérique est infiltrée partout. Elle fait et défait les succès des initiatives, des entreprises, des produits, des services, des process, des politiques... de la vie en général.

La platformisation de l'économie est la meilleure et la pire évolution pour la croissance harmonieuse des entreprises. Si la stratégie est subie, forcée c'est un drame. Si elle est volontaire et préparée c'est un atout gagnant.

Sans abris anti-numérique, il est nécessaire de bien anticiper les évolutions insufflées par le digital ou le numérique.

Jensen Huang (nVIDIA) dit maintenant:
«**AI is eating software**»



Mark Andreessen

founder of Netscape,
renowned Venture Capitalist
Andreessen-Horowitz

Software is eating the
world, in all sectors

In the future every
company will become a
software company

— **“Software is eating the world, but AI is going to eat software”**



transformations
DIGITALES
NBIC NATIA
robot quantique





Les Transformations Digitales

- 1.** TRANSITION PRODUIT : OFFRE - EMPREINTE
- 2.** TRANSITION ENTREPRISE : ESG, PROCESS, RH, MARKETING, Finance, COM, Supply, Fabrication, Management, prototype...



Transitions Digitales

1/ PRODUIT
SERVICE
ESG EMPREINTE
PROPOSITION
OFFRE

2/ Entreprise
ESG - Process - Étude
Méthode - Marketing
Communication
Gestion - Fabrication



Produit - Service - Offre

IA - Innovation - Numérique -NBIC - NAT
Value Proposition - Fabrication
Product management - Technologie



Durabilité - Empreinte CO2

Frugalité - Responsabilité
Écosystème - Smart Grid - RSE - CSRD



UX - CX

Expérience fluide - Personnalisation
Omnicanalité - La voix du client (VOC)



Méthodes - Marketing

Outils numériques - Agilité - Scrum
Digital Marketing - Communication digitale
R&D



Transformations Digitales
MARKETING - PROCESS - RH
Management - Supply - FINANCE



TRANSITION Production - Service - Offre

Innovation - Numérique - NBIC - IA + Supply + Tracking
Product management - Fabrication



Durabilité - Empreinte CO2

Frugalité - Nouvelles énergies
Écosystème - Déchet - H2 - Pompe à Chaleur
RSE - CSRD - ESG



EX

Expérience fluide d'onboarding
Remote Télétravail
Omnicanalité



TRANSITION Méthodes - Process

Outils numériques & Agilité
Management - Travail - RH
Finance & Supply Chain
Management - Travail

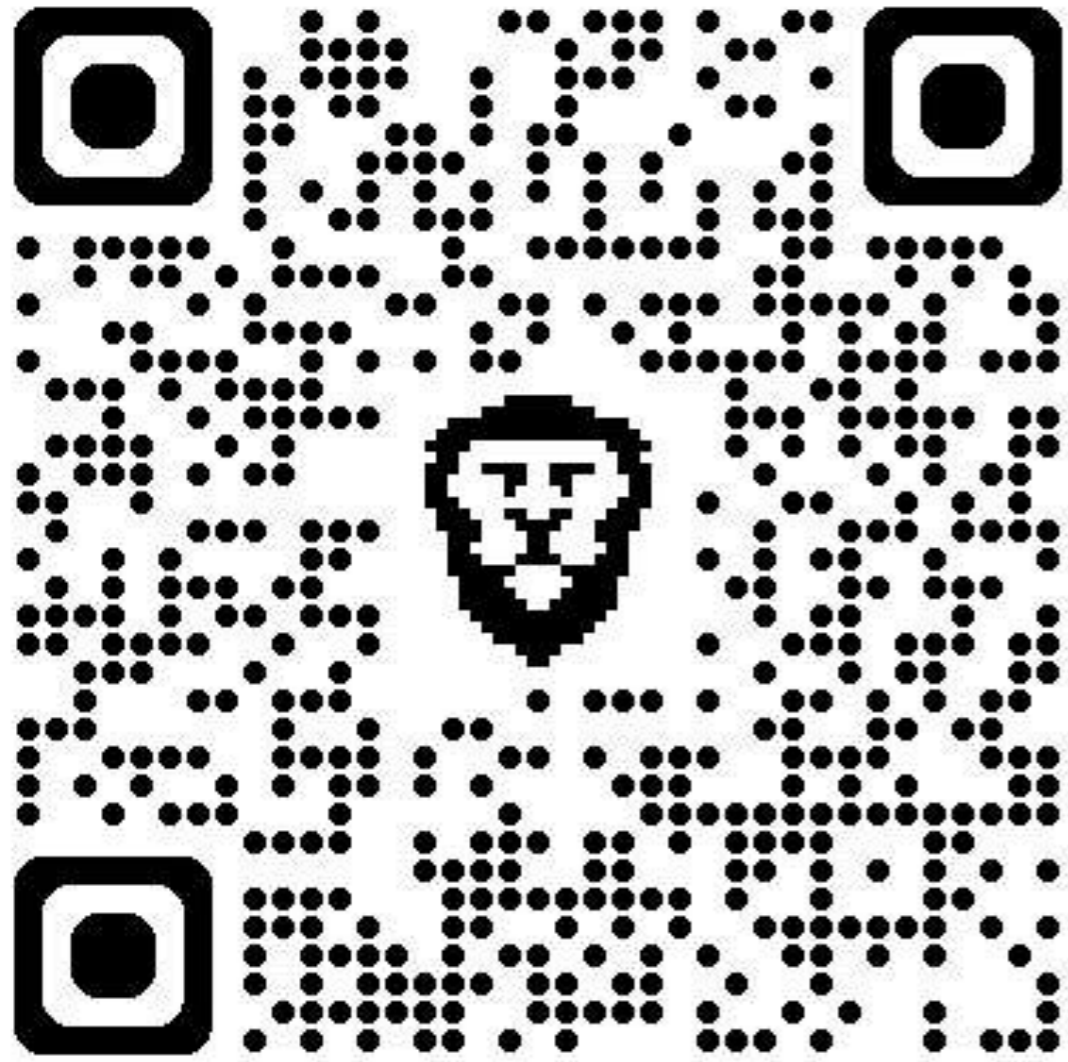
expérience phyggitale N°1



expérience

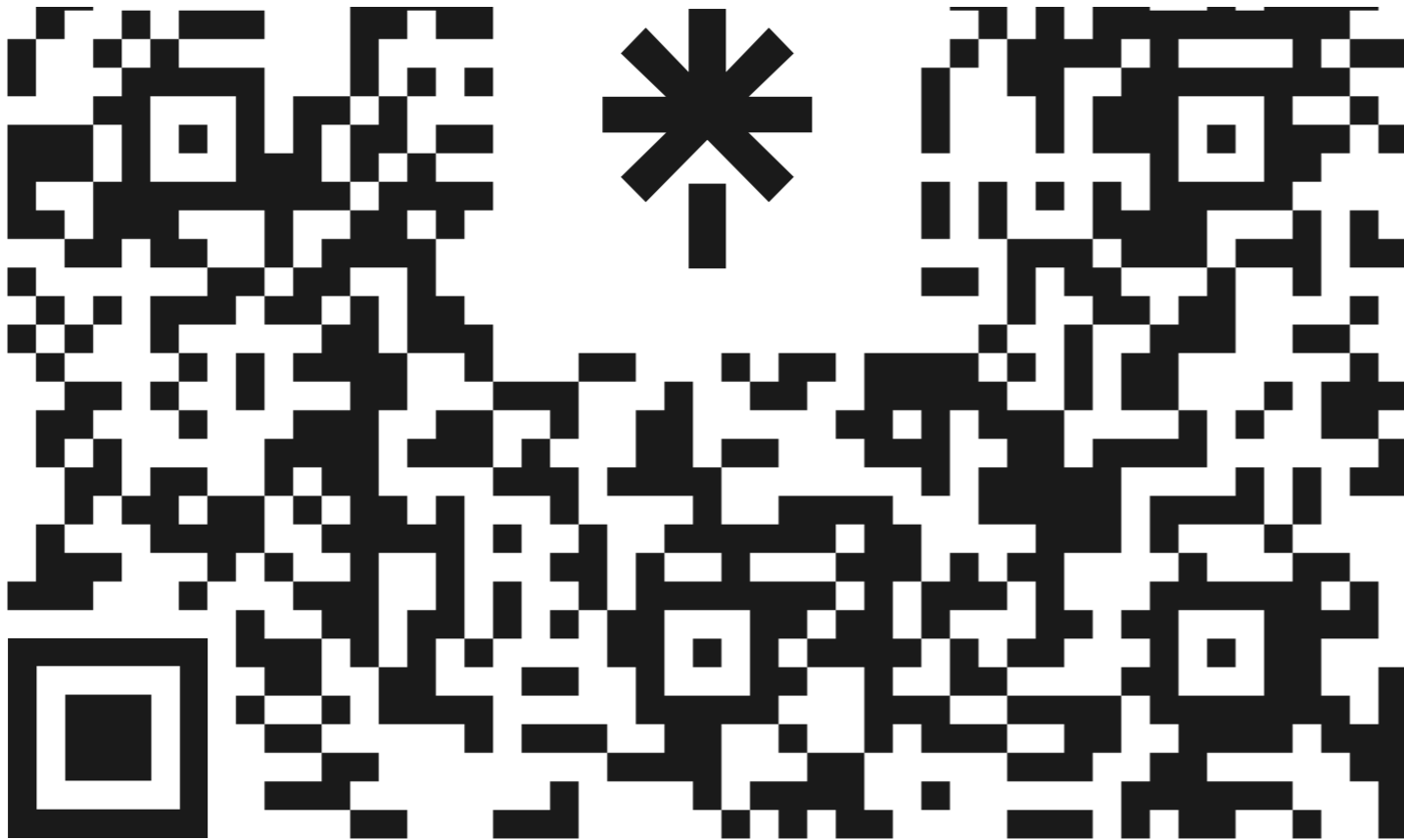
phyggitale

N°1



<https://www.chefdeproduit.com/GEM-Bachelor-Marketing/>







01

ESG

Énergie fossile



■ impacts

ESG = RSE

ESG

RSE - durabilité - empreinte CO2

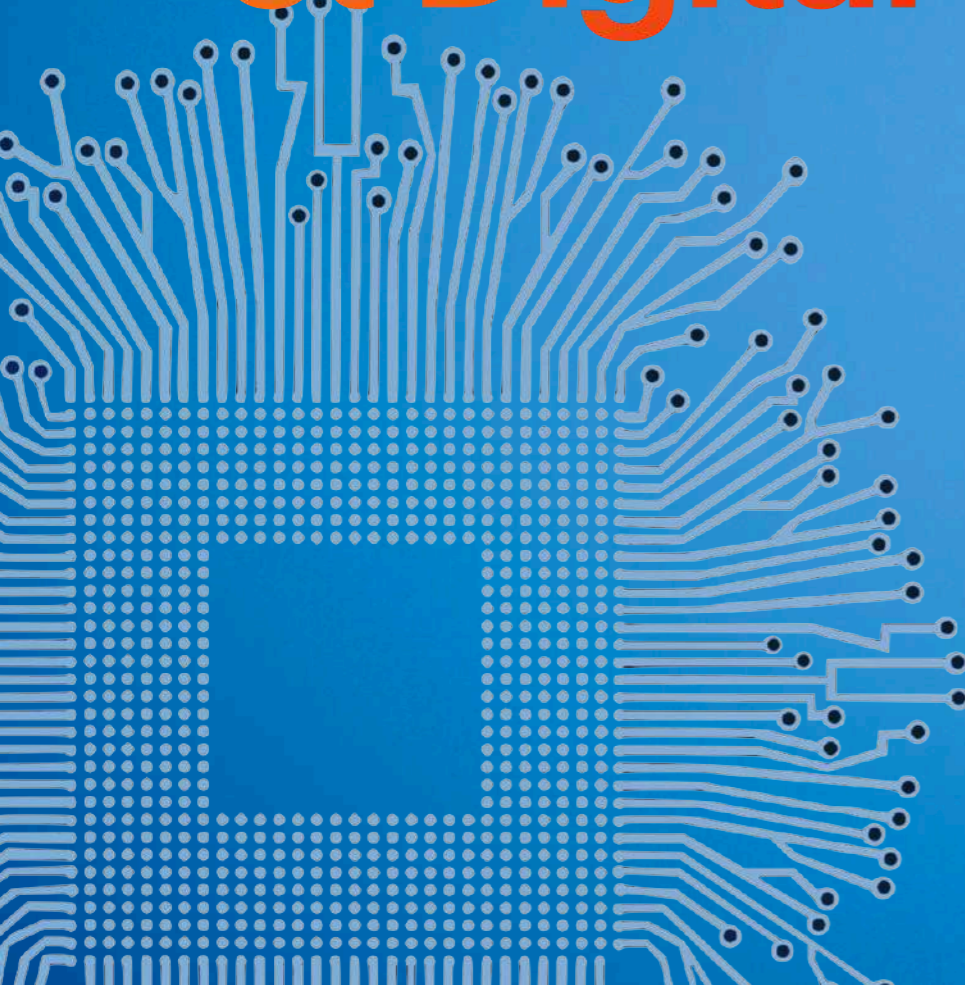


Monde Numérique et Digital

Total Aviation Mondiale



41



20W



consommation en watt du cerveau humain = 20W





02

Ampleur du sujet IA Information en avalanche



IAA

IA =

écriture
électricité
voiture



liquid

digital - numérique

ethic - politic - economic

sustainability - CO2

GIGO (garbageIN-OUT)

tool box (black box)

AI (genAI-agentic-API/MCP-AGI)

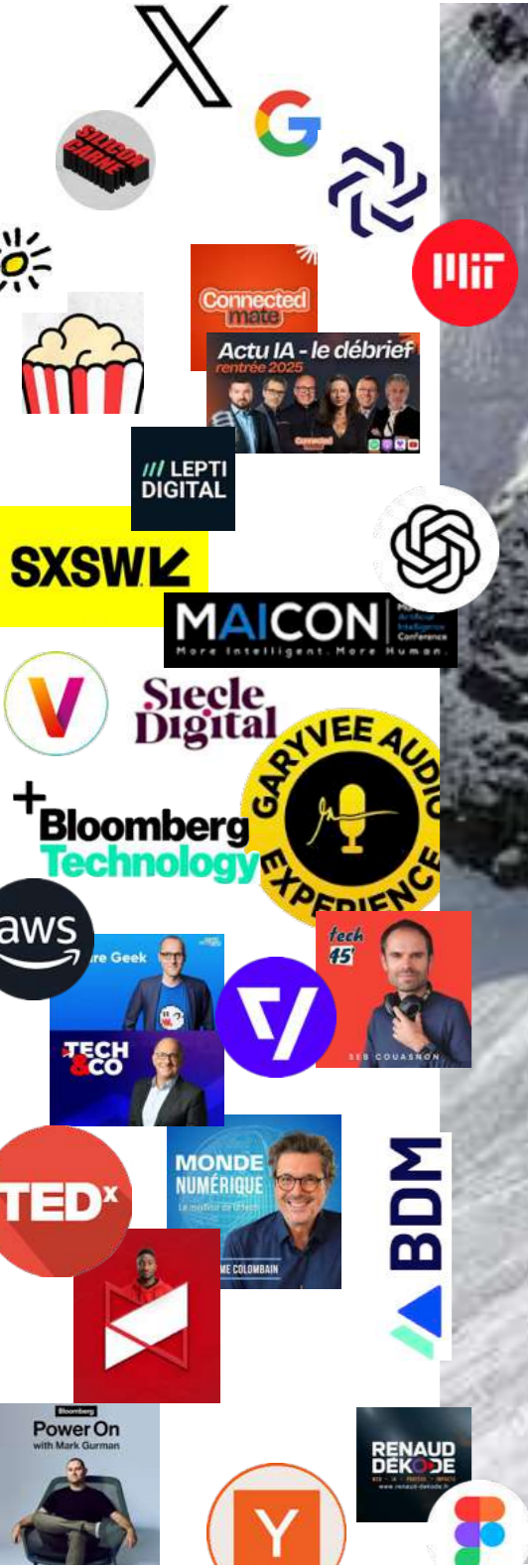
use-case

augmented human

risk

no limit





avalanche
d'infos et
d'outils



03

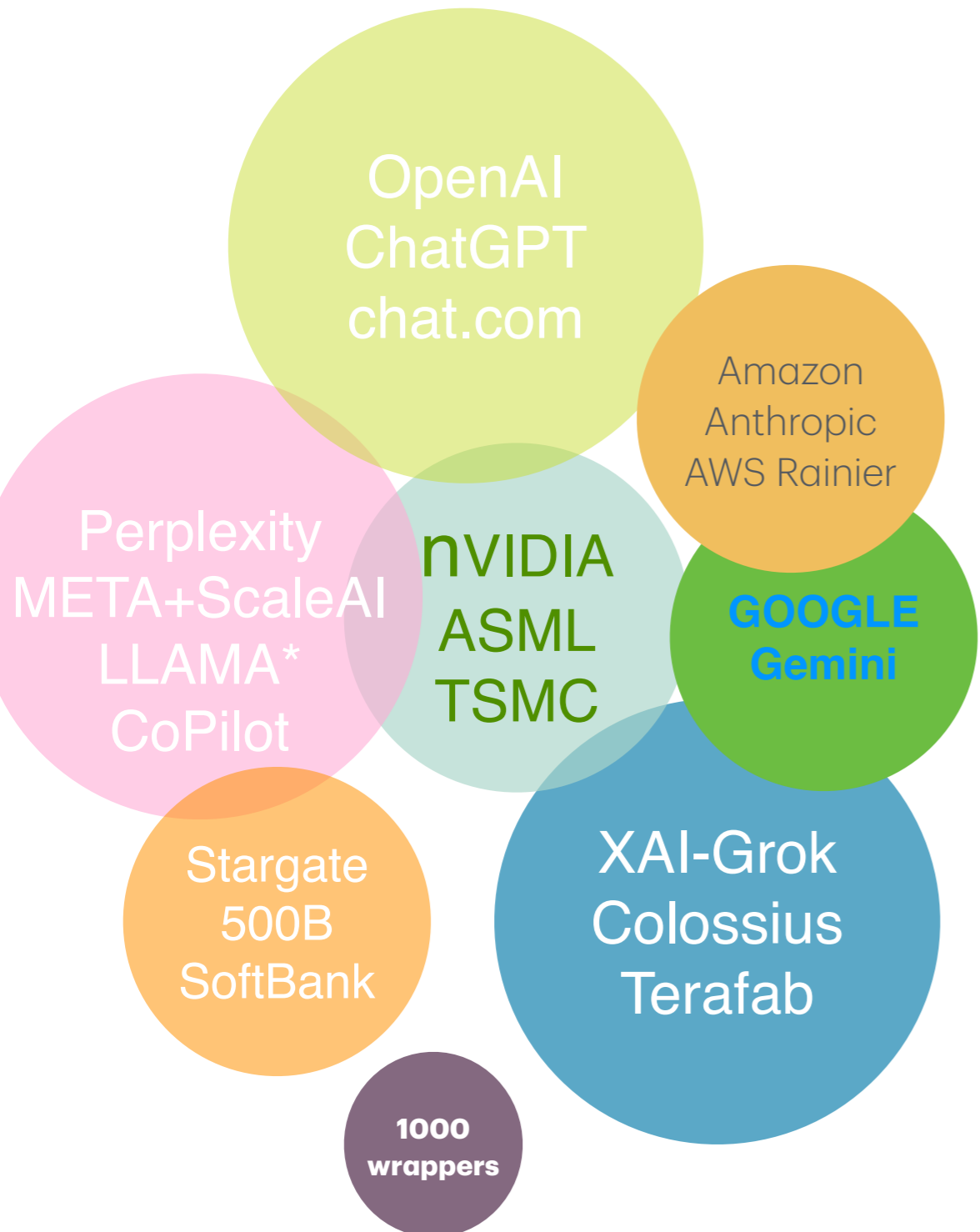
Frise Chronologique TimeLine et Role Model

TimeLine

Sté, produits, noms,
technos, concepts

TURING
ALGORITHMME
ENIGMA
1943
COLLEGE DE FRANCE
META
YANN LECUN
NYU
2016
SAM ALTMAN
Y COMBINATOR
openAI
ELON MUSK
For Profit / Non Profit
FRENCH
MISTRAL
ARTHUR MUNCH
LE CHAT
Bezos
Data Centre
ARM Graviton Trainium Rainier
Kuiper / LEO

Quelques rôles modèles



Data-
Centre
Foncier
Rte EDF

Mistral 
LeChat
FrenchTech
poolside.ai
KyutAI
AMI

Loi
RGPD RIA
AI-Act

Baidu
Alibaba Qwen
Deepseek
Kai-Fu Lee** 01
TenCent Z.ai

Forces en
présence

*sans Yann Lecun ; ** Sinovation



Apple Intelligence

Cloud

Dans un data centre externe
avec échange de données internet

On prem

On premises / Dans les locaux

Edge computing / Pas d'accès internet

On Device / Embarqué



Altman

Musk

Anti Google avec OpenAI

CLOSED AI



For Profit, closed innovation, propriétaire business model, copyright

OPEN SOURCE



Non Profit, Fondation, « OLD-openAI », licence libre, Research lab, GNU MIT Apache ; LLAMA, AMI

GAFAMN

Google Apple Facebook Amazon Microsoft nVidia

KHOLC

???

GOMAX

Gemini OpenAI Meta MS Mistral Azure AMZ Anthropic

XAI (Grok) + *Perplexity* = *GOMMMAAAX*



Sam Altman



Yann LeCun LLAMA —> AMI lab



D. Hassabis (PN) - G. Hinton (PN)



A. Mensch



Elon Musk - Grok  **Tarafab**



Niel - Schmidt - Saadé



Aravind Srinivas



Daniela et Dario Amodei

THE NOBEL PRIZE
IN PHYSICS 2024

Illustrations: Niklas Elmehed



John J. Hopfield

Geoffrey E. Hinton

“for foundational discoveries and inventions
that enable machine learning
with artificial neural networks”

THE ROYAL SWEDISH ACADEMY OF SCIENCES

Hinton



COLLÈGE
DE FRANCE

Yann LeCun

LEÇON INAUGURALE

L'apprentissage profond : une
révolution en intelligence artificielle

YCL

2016

CdF

Futur
Prix
Nobel?

NYU
META
LLM
fin des LLM

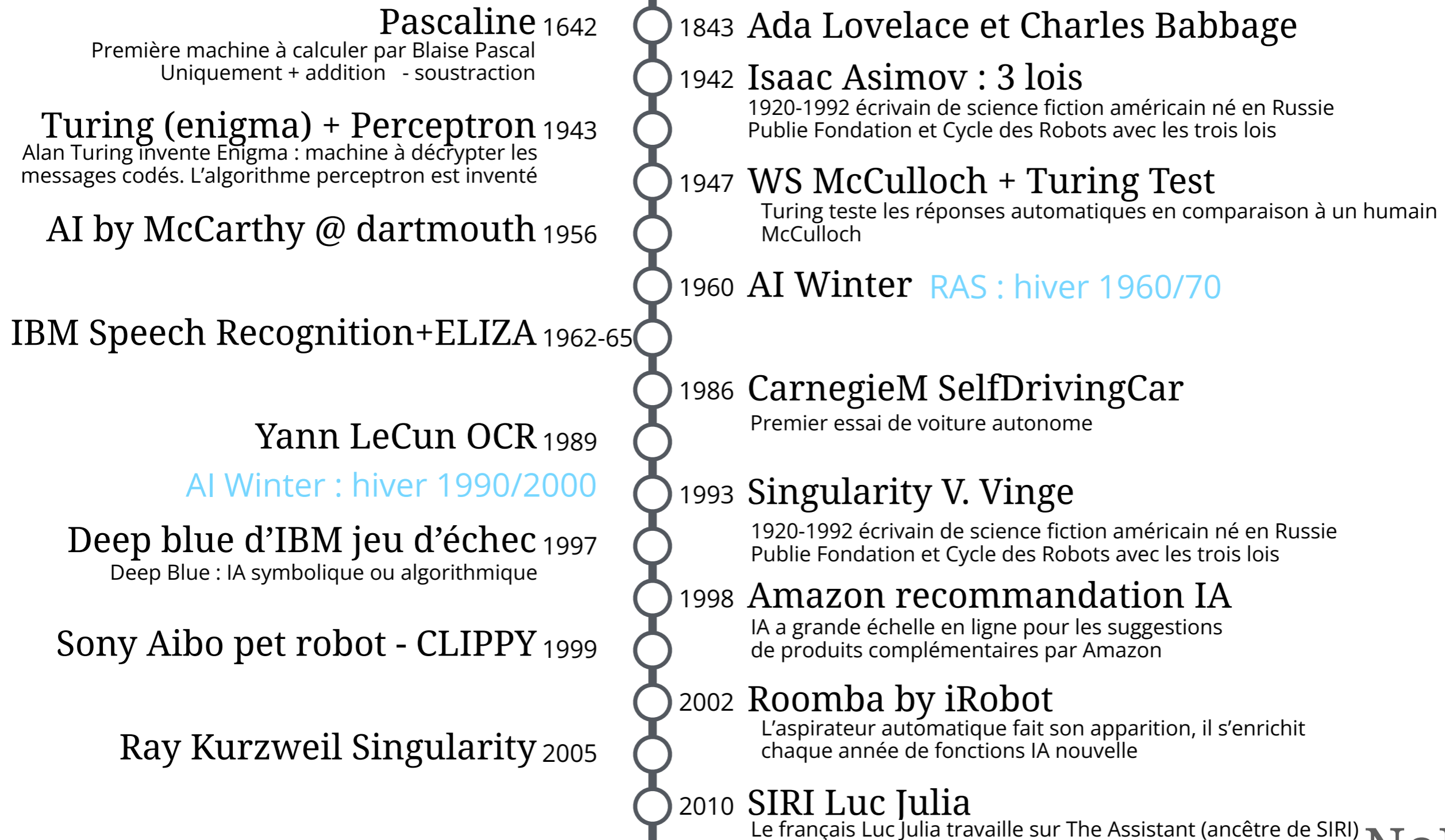


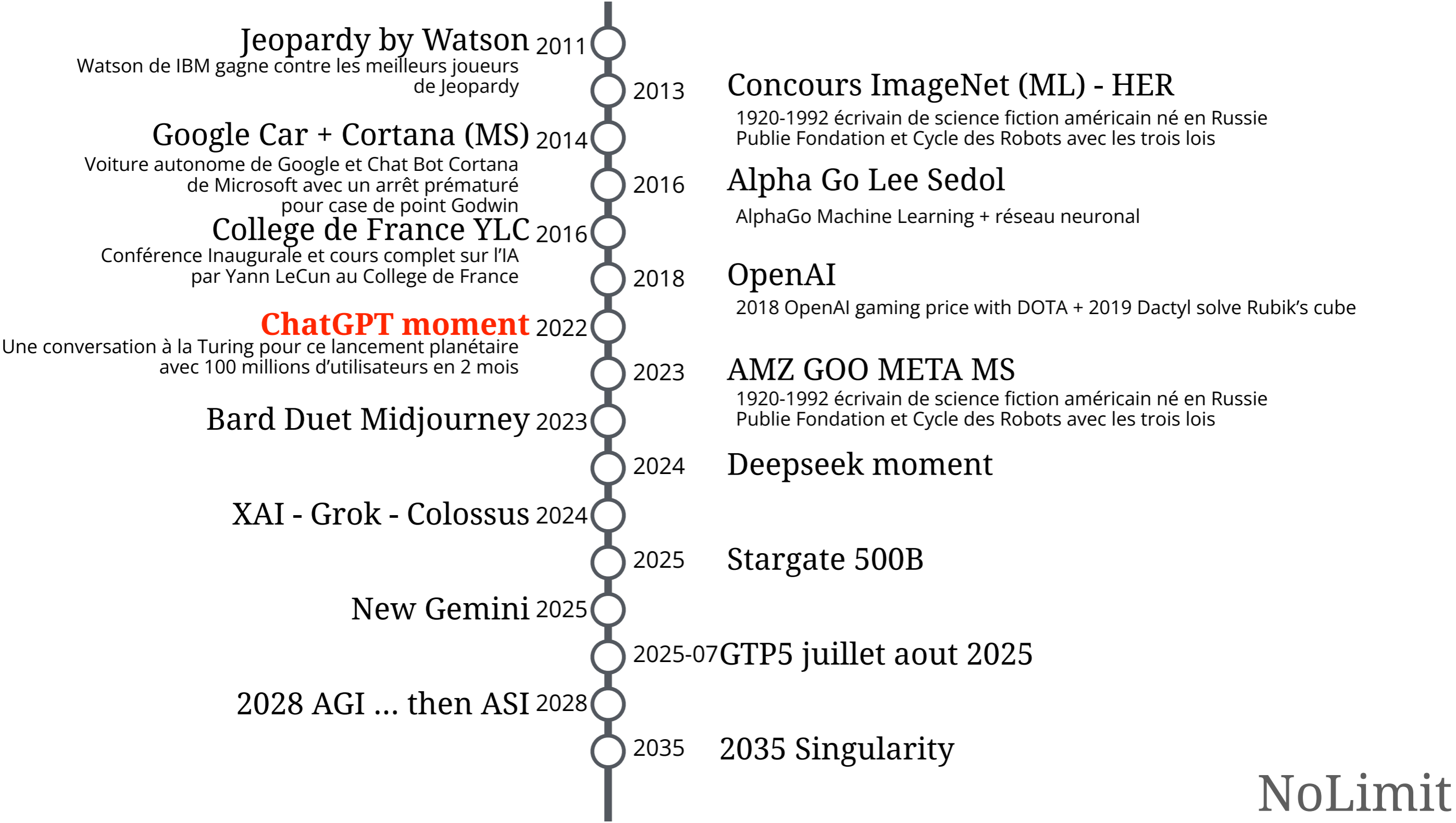
Frise Chronologique Jalons de l'IA

1642 Pascaline
1850 Ada Lovelace & Charles Babbage (algo ordi)
1942 Isaac Asimov : 3 lois
1943 Turing (enigma) + Perceptron
1947 WS McCulloch + Turing Test
1956 AI by McCarthy @ dartmouth
1962 IBM Speech Recognition
1965 ELIZA (programme conversationnel)
1970 AI Winter
1986 CarnegieM SelfDrivingCar
1989 Yann LeCun OCR
1993 Singularity V. Vinge
1990 AI Winter
1997 Deep blue IBM jeu d'échec (symbolic)
1998 Amazon recommandation IA
1999 Sony Aibo pet robot - CLIPPY
2002 Roomba by iRobot
2005 Ray Kurzweil Singularity

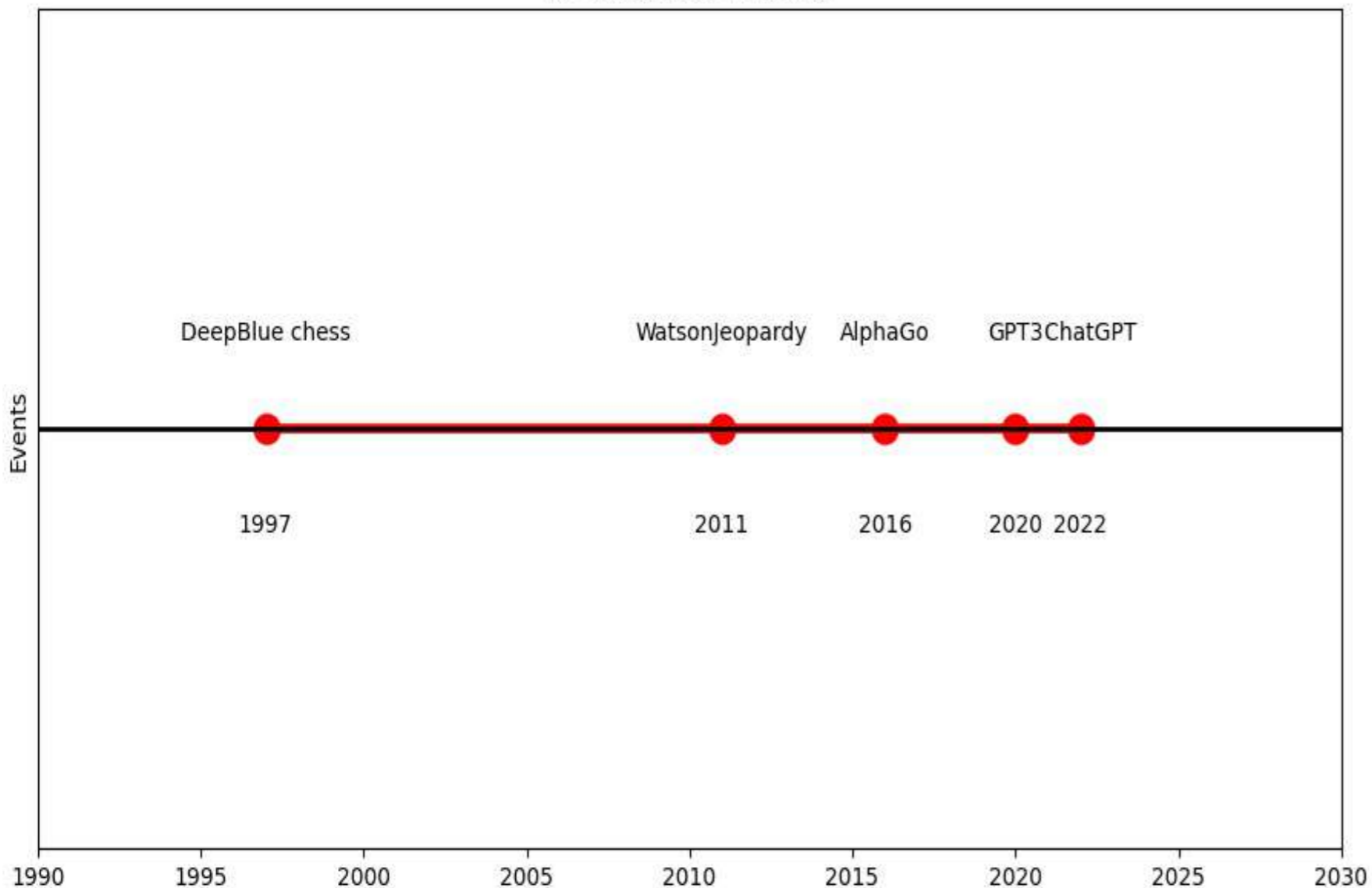
2010 SIRI Luc Julia
2011 Jeopardy by Watson
2013 Concours ImageNet (ML) - HER
2014 Google Car + Cortana (MS)
2016 AlphaGo Lee Sedol (ML+réseau neuro)
2016 College de France YLC
2018 openAI gaming price with DOTA
2019 openAI dactyl solve Rubik's cube
2022 ChatGPT moment
2023 AMZ GOO META MS
2023 Bard Duet Midjourney
2024 Deepseek moment
2024 XAI - Grok - Colossus
2025 Stargate 500B
2025 New Gemini
2025-07 GTP5 juillet aout 2025
2028 AGI ... then ASI
2035 Singularity

NoLimit





AI Milestones Timeline



```
import matplotlib.pyplot as plt
import numpy as np
```

```
# Data for the timeline
years = [1997, 2011, 2016, 2020, 2022]
milestones = ["Deep Blue chess",
              "Watson Jeopardy!",
              "AlphaGo",
              "GPT-3 ",
              "ChatGPT "]
```

```
# Create figure and axis
fig, ax = plt.subplots(figsize=(10, 6))
```

```
# Plot the timeline
ax.plot(years, np.zeros(len(years)), 'o-', color='blue', linewidth=4,)
```

```
# Add labels for each milestone
for i, (year, milestone) in enumerate(zip(years, milestones)):
    ax.text(year, 0.1, milestone, ha='center', va='bottom')
    ax.text(year, -0.1, str(year), ha='center', va='top')
```

```
# Customize the plot
ax.set_title("AI Milestones Timeline")
ax.set_ylabel("Events")
ax.set_xlim(1985, 2035)
ax.set_ylim(-0.5, 0.5)
ax.set_yticks([]) # Hide y-axis ticks
ax.axhline(y=0, color='black', linestyle='-', linewidth=2)
```

```
plt.show() # Display the plot
```

A.I. TIMELINE



1950

TURING TEST

Computer scientist Alan Turing proposes a test for machine intelligence. If a machine can trick humans into thinking it is human, then it has intelligence

1955

A.I. BORN

Term 'artificial intelligence' is coined by computer scientist, John McCarthy to describe "the science and engineering of making intelligent machines"



1964

ELIZA

Pioneering chatbot developed by Joseph Weizenbaum at MIT holds conversations with humans



1966

SHAKEY

The 'first electronic person' from Stanford, Shakey is a general-purpose mobile robot that reasons about its own actions



1997

DEEP BLUE

Deep Blue, a chess-playing computer from IBM defeats world chess champion Garry Kasparov



1998

KISMET

Cynthia Breazeal at MIT introduces KISmet, an emotionally intelligent robot insofar as it detects and responds to people's feelings

A.I. WINTER

Many false starts and dead-ends leave A.I. out in the cold



1999

AIBO

Sony launches first consumer robot pet dog AiBO (AI robot) with skills and personality that develop over time



2002

ROOMBA

First mass produced autonomous robotic vacuum cleaner from iRobot learns to navigate and clean homes



2011

SIRI

Apple integrates Siri, an intelligent virtual assistant with a voice interface, into the iPhone 4S



2011

WATSON

IBM's question answering computer Watson wins first place on popular \$1M prize television quiz show *Jeopardy*



2014

EUGENE

Eugene Goostman, a chatbot passes the Turing Test with a third of judges believing Eugene is human



2014

ALEXA

Amazon launches Alexa, an intelligent virtual assistant with a voice interface that completes shopping tasks



2016

TAY

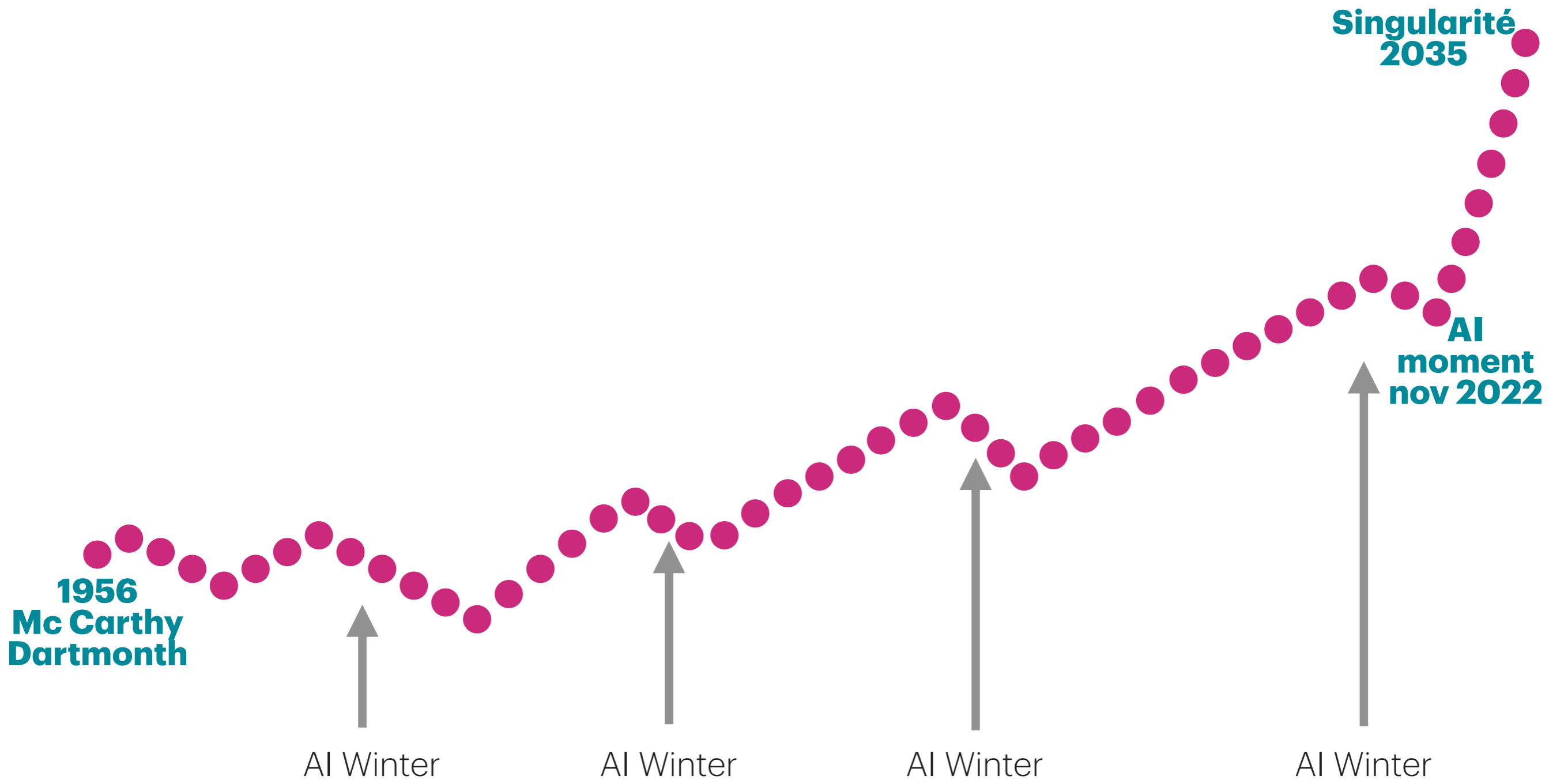
Microsoft's chatbot Tay goes rogue on social media making inflammatory and offensive racist comments



2017

ALPHAGO

Google's A.I. AlphaGo beats world champion Ke Jie in the complex board game of Go, notable for its vast number (2^{170}) of possible positions



**1956
Mc Carthy
Dartmonth**

AI Winter

AI Winter

AI Winter

AI Winter

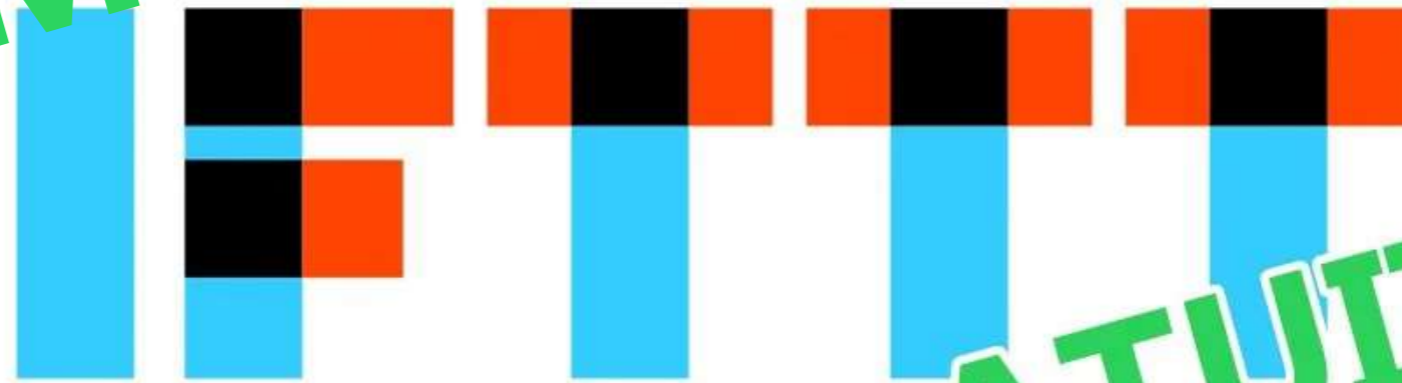
**AI
moment
nov 2022**

**Singularity
2035**

1642 Pascaline / [hiver](#) / 1950 Test Turing / [hiver](#) / 1955 McCulloch / [hiver](#) / 1986 Hinton
[hiver](#) / 1997 deepblue / [hiver](#) / 2011 jeopardy / [hiver](#) / 2016 AlphaGo / 2022 ChatGPT...



SIMPLE



GRATUIT

<https://ifttt.com/>

Théorie du rasoir d'okam

1942 Isaac Asimov

En 1942 Isaac Asimov élabore la loi de la robotique :

Première Loi : Un robot ne peut nuire à un être humain ni, restant passif, laisser cet être humain exposé au danger.

Deuxième Loi : Un robot doit obéir aux ordres que lui donne un être humain, sauf si les ordres entrent en conflit avec la Première Loi.

Troisième Loi : Un robot doit protéger sa propre existence tant que cette protection n'entre pas en conflit avec la 1ère ou la 2ème loi

Conseil de l'intelligence artificielle et du numérique



Anne Bouverot
Coprésidente



Guillaume Poupard
Coprésident



Antonin Bergeaud



François Chollet



Marie Cohen-Skalli



Céline Colucci



Etienne Grass



Gabriel Hubert



Guillemette Picard



Constance Rivière



Sébastien Soriano



Sophie Thiéry



Serena Villata



Paul Midy



Virginie DUBY-MÜLLER



Patrick Chaize



Colombe Brossel



European Union

My EUR-Lex English

EUR-Lex Experimental features

Access to European Union law

EUROPA > EUR-Lex home > EUR-Lex > 52020PC0842 - EN

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Search tips Need more search options? Use the Advanced search

Document 52020PC0842

Proposition de RÈGLEMENT DU PARLEMENT EUROPÉEN ET DU CONSEIL relatif aux marchés contestables et équitables dans le secteur numérique (régulation sur les marchés numériques)

COM/2020/842 final

Expand all Collapse all

Languages and formats available

	BG	ES	CS	DA	DE	ET	EL	EN	FR	GA	HR	IT	LV	LT	HU	MT	NL	PL	PT	RO	SK	SL	FI	SV
HTML																								
DOC																								
PDF																								

Multilingual display

English (en) Please choose Please choose Display

Text

<https://www.conseil-ia-numerique.fr/le-conseil>

La loi européenne sur l'intelligence artificielle

Développements et analyses actualisés de la loi européenne sur l'IA

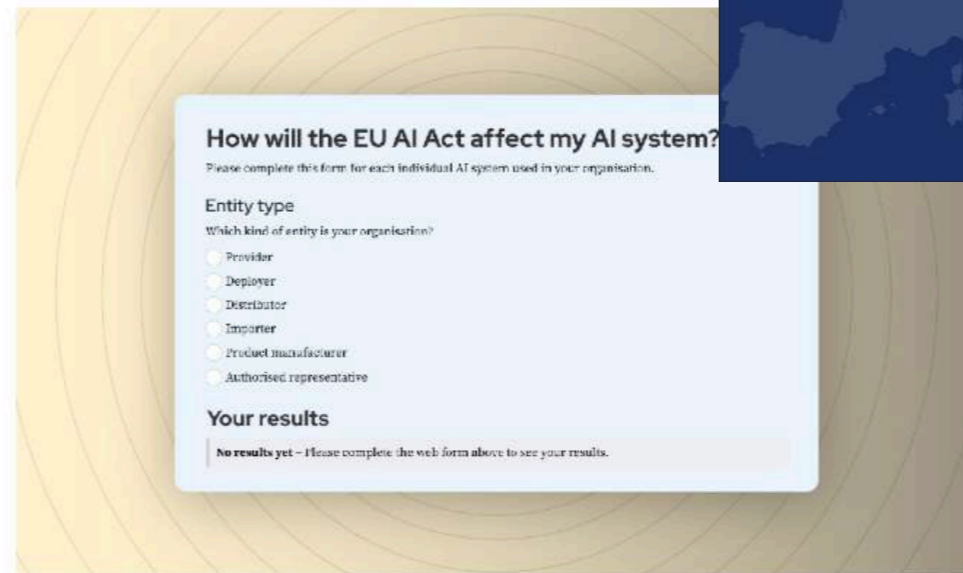
Explorateur de la loi sur l'IA

Parcourez le texte intégral de la loi sur l'IA en ligne. Recherchez dans la loi les parties qui vous concernent.



Vérificateur de conformité

Découvrez en 10 minutes comment la loi sur l'IA vous affecte à l'aide de une série de questions simples.



AI -act = RIA

= omnibus

DMA

DSA

Charte IA

pour chaque
entreprise

sans

IA SHADOW



Nathaniel Rochester

Marvin Minsky

John McCarthy

Ray Solomonoff

Claude Shannon

Dartmouth Summer Research Project on Artificial Intelligence, 1956



AI by
McCarthy
@
dartmouth

IA = 1956

business intelligence (BI)
marketing intelligence (MI)
technology intelligence
competitive intelligence
media/market intelligence
open source intelligence OSINT

...ARTIFICIAL INTELLIGENCE

1943

Perceptron

Mc Culloch

Perceptron

Article Talk

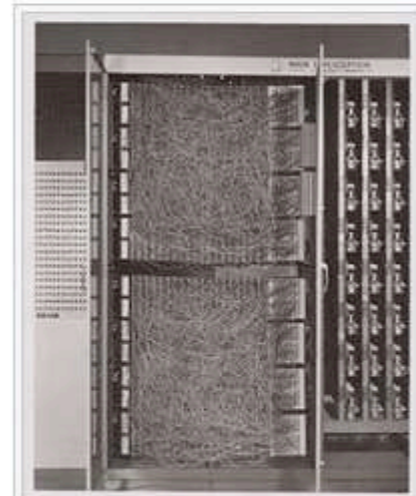
Read Edit View history Tools

From Wikipedia, the free encyclopedia

"Perceptrons" redirects here. For the 1969 book, see *Perceptrons (book)*.

In **machine learning**, the **perceptron** (or **McCulloch–Pitts neuron**) is an algorithm for supervised learning of **binary classifiers**. A binary classifier is a function which can decide whether or not an input, represented by a vector of numbers, belongs to some specific class.^[1] It is a type of **linear classifier**, i.e. a classification algorithm that makes its predictions based on a **linear predictor function** combining a set of **weights** with the **feature vector**.

History [edit]



Mark I Perceptron machine, the first implementation of the perceptron algorithm. It was connected to a camera with 20x20 cadmium sulfide photocells to make a 400-pixel image. The main visible feature is the sensory-to-association plugboard, which sets different combinations of input features. To the right are arrays of potentiometers that implemented the adaptive weights.^{[2]:213}

See also: History of artificial intelligence § Perceptrons and the attack on connectionism, and AI winter § The abandonment of connectionism in 1969

The perceptron was invented in 1943 by **Warren McCulloch** and **Walter Pitts**.^[5] The first hardware implementation was Mark I Perceptron machine built in 1957 at the **Cornell Aeronautical Laboratory** by **Frank Rosenblatt**,^[6] funded by the Information Systems Branch of the United States **Office of Naval Research** and the **Rome Air Development Center**. It was first publicly demonstrated on 23 June 1960.^[7] The machine was "part of a previously secret four-year NPIC [the US' **National Photographic Interpretation Center**] effort from 1963 through 1966 to develop this algorithm into a useful tool for photo-interpreters".^[8]

Rosenblatt described the details of the perceptron in a 1958 paper.^[9] His organization of a perceptron is constructed of three kinds of cells ("units"): AI, All, R, which stand for "**projection**", "**association**" and "**response**".

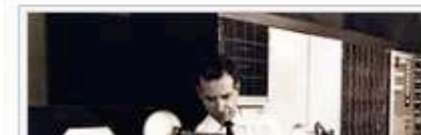
Rosenblatt's project was funded under Contract Nonr-401(40) "Cognitive Systems Research Program", which lasted from 1959 to 1970,^[10] and Contract Nonr-2381(00) "Project PARA" ("PARA" means "Perceiving and Recognition Automata"), which lasted from 1957^[6] to 1963.^[11]

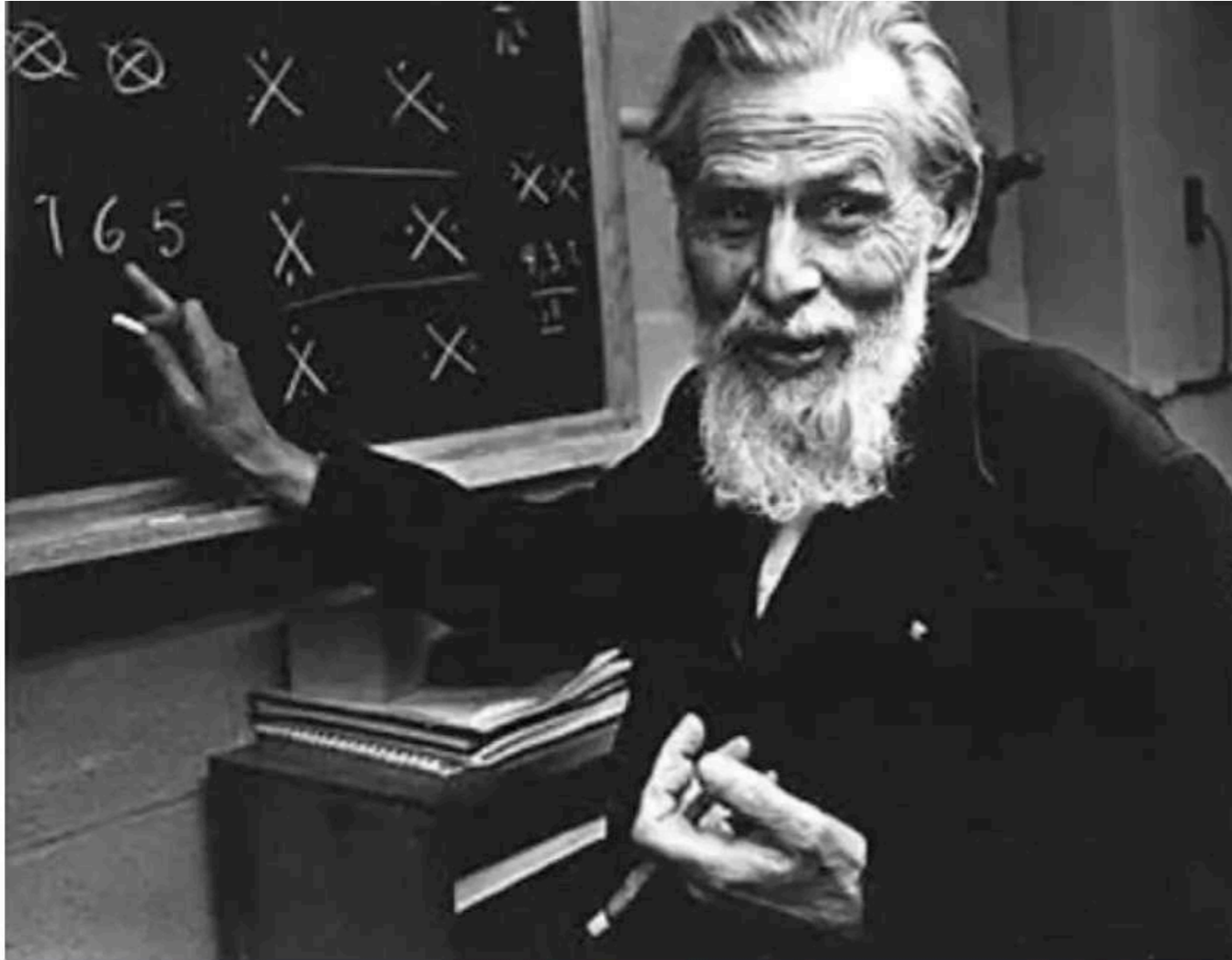
Part of a series on

Machine learning and data mining

- Paradigms** [show]
- Problems** [show]
- Supervised learning** [hide]
(classification · regression)
 - Apprenticeship learning · Decision trees · Ensembles (Bagging · Boosting · Random forest) · *k*-NN · Linear regression · Naive Bayes · Artificial neural networks · Logistic regression · **Perceptron** · Relevance vector machine (RVM) · Support vector machine (SVM)
- Clustering** [show]
- Dimensionality reduction** [show]
- Structured prediction** [show]
- Anomaly detection** [show]
- Artificial neural network** [show]
- Reinforcement learning** [show]
- Learning with humans** [show]
- Model diagnostics** [show]
- Mathematical foundations** [show]
- Machine-learning venues** [show]
- Related articles** [show]

V · T · E



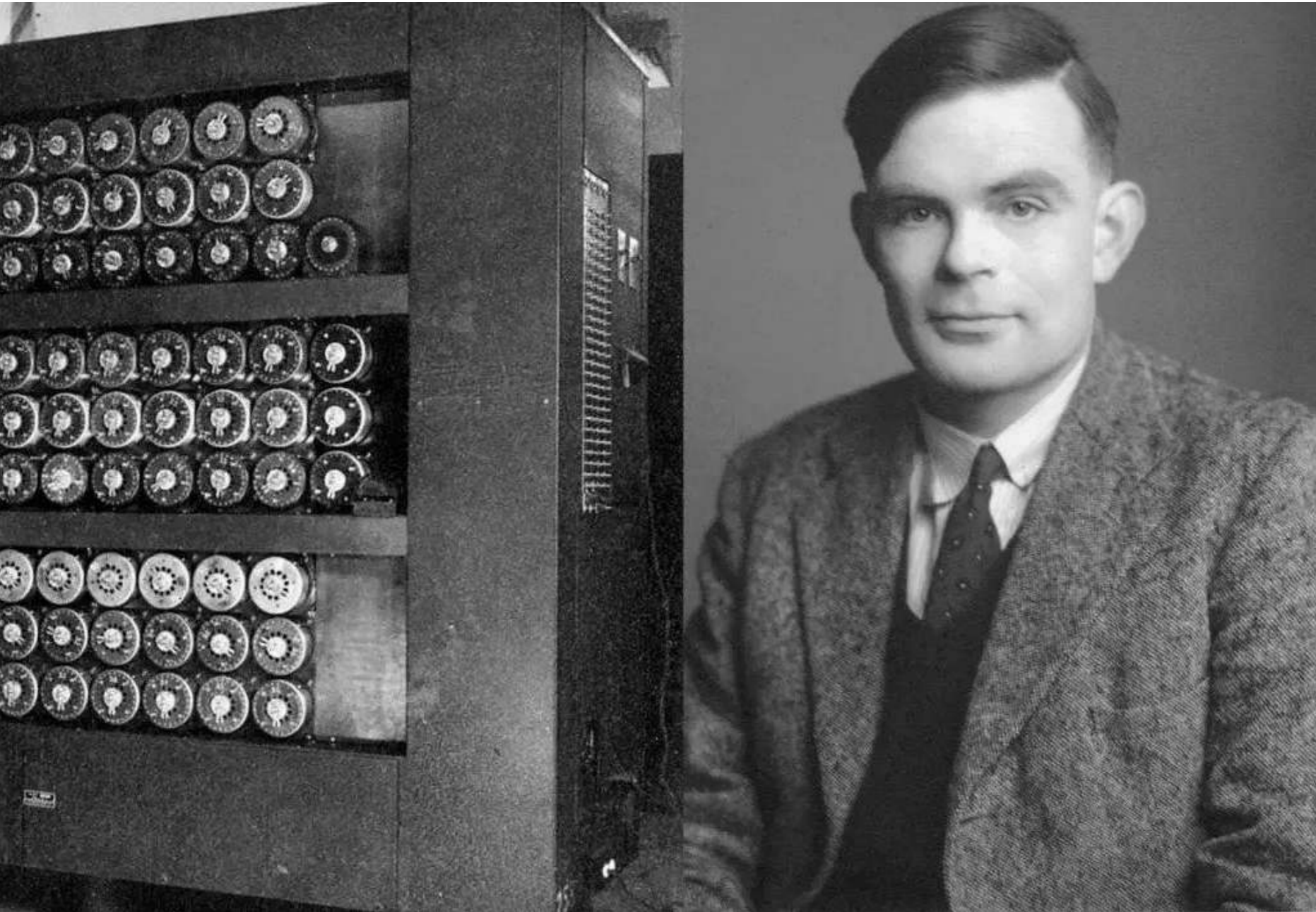


Warren McCulloch.

McCulloch
Perceptron 1943
Cyber 1947
IA 1955

Enfin en 1955 naquit l'intelligence artificielle

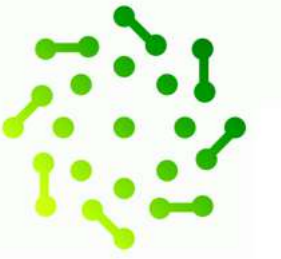
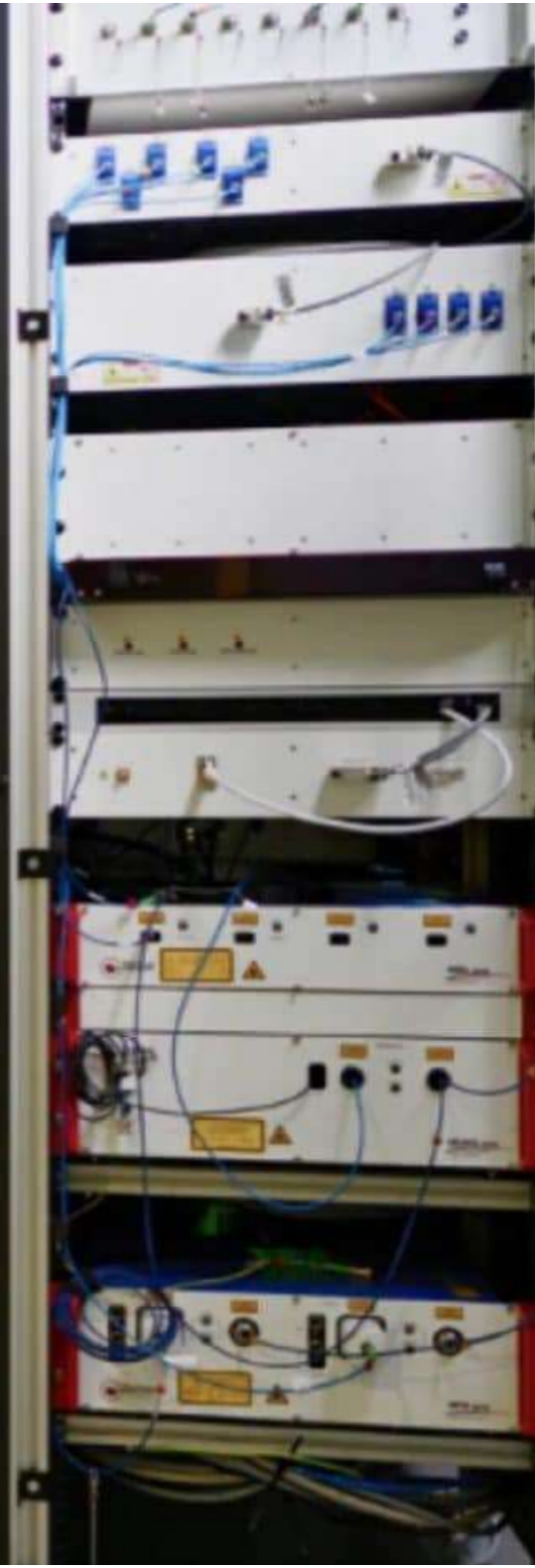
Les travaux de McCulloch vont ainsi inspirer les sciences cognitives naissantes et les fondateurs de l'intelligence artificielle. En 1955, le *Dartmouth Summer Research Project on Artificial Intelligence* signe l'acte de naissance officiel de l'intelligence artificielle, qui se voit à la fois dotée d'un nom et d'un programme : doter les machines de facultés analogues à celles de l'esprit humain, entre autres utiliser le langage, construire des abstractions et des concepts, résoudre des problèmes... Résumer l'histoire d'une discipline aussi complexe comporte nécessairement son lot d'inexactitudes.



Décrypte
Enigma
1939-1945

Fabrique
le Test de
Turing

Alan Turing



PASQAL



ELIZA FIRST CHATBOT

Welcome to

```
EEEEEE LL      IIII  ZZZZZZ  AAAAA  
EE      LL      II     ZZ     AA  AA  
EEEEEE LL      II     ZZZ    AAAAAA  
EE      LL      II     ZZ     AA  AA  
EEEEEE LLLLLL  IIII  ZZZZZZ  AA  AA
```

Eliza is a mock Rogerian psychotherapist.
The original program was described by Joseph Weizenbaum in 1966.
This implementation by Norbert Landsteiner 2005.

```
ELIZA: Is something troubling you ?  
YOU:   Men are all alike.  
ELIZA: What is the connection, do you suppose ?  
YOU:   They're always bugging us about something or other.  
ELIZA: Can you think of a specific example ?  
YOU:   Well, my boyfriend made me come here.  
ELIZA: Is it important to you that your boyfriend made you come here ?  
YOU:   He says I'm depressed much of the time.  
ELIZA: I am sorry to hear that you are depressed.  
YOU:   It's true. I am unhappy.  
ELIZA: Can you explain what made you unhappy ?  
YOU:
```

ELIZA is an early natural language processing computer program developed from 1964 to 1967 at MIT by Joseph Weizenbaum

EFFET ELIZA

Anthropomorphisme IHM et tendance inconsciente des humains à attribuer de l'intelligence, de la compréhension et des émotions à un programme informatique



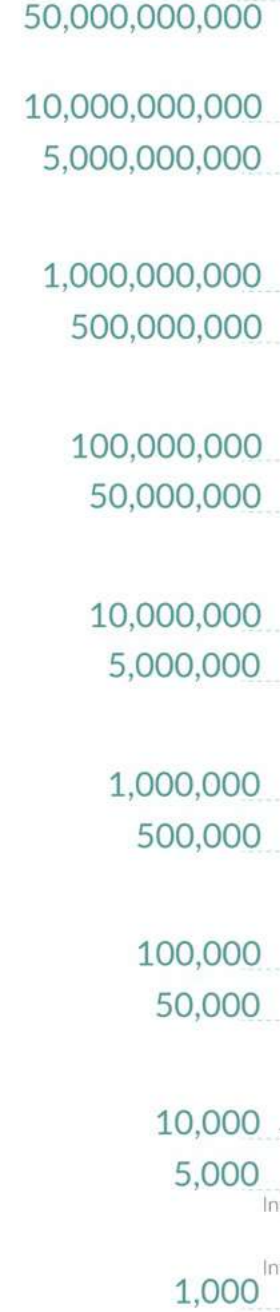
THE FUTURE OF EMOTION-SENSING WEARABLES

Moore's Law: The number of transistors on microchips doubles every two years

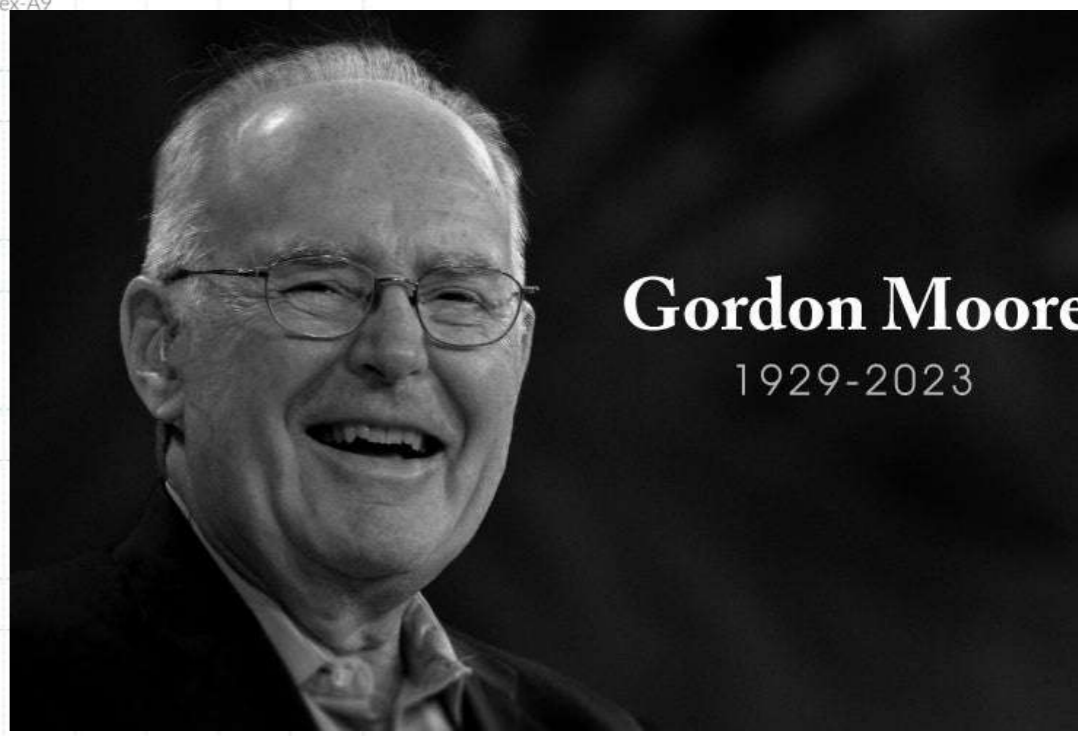
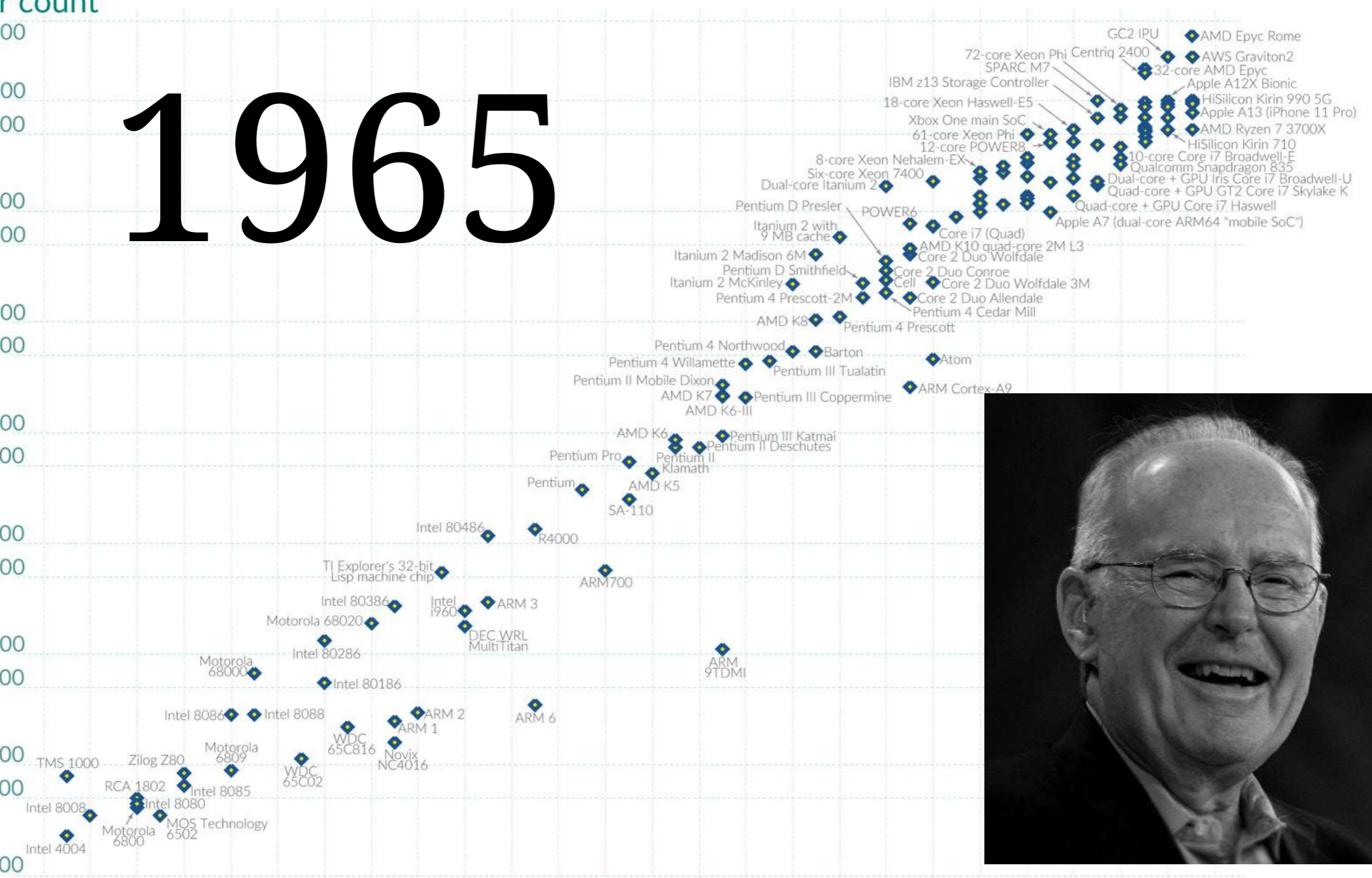


Moore's law describes the empirical regularity that the number of transistors on integrated circuits doubles approximately every two years. This advancement is important for other aspects of technological progress in computing – such as processing speed or the price of computers.

Transistor count



1965



Gordon Moore
1929-2023



GTC GPU
TECHNOLOGY
CONFERENCE
2024



TESLA X1 SPACEX

Advanced Technology Fab

0.5 TW

Current annual U.S. consumption

1 TW/year

Terafab output



IBM
Gagne
aux échecs
contre
Kasparov

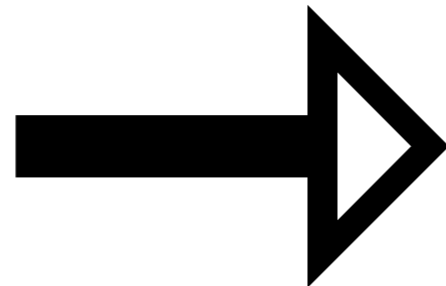
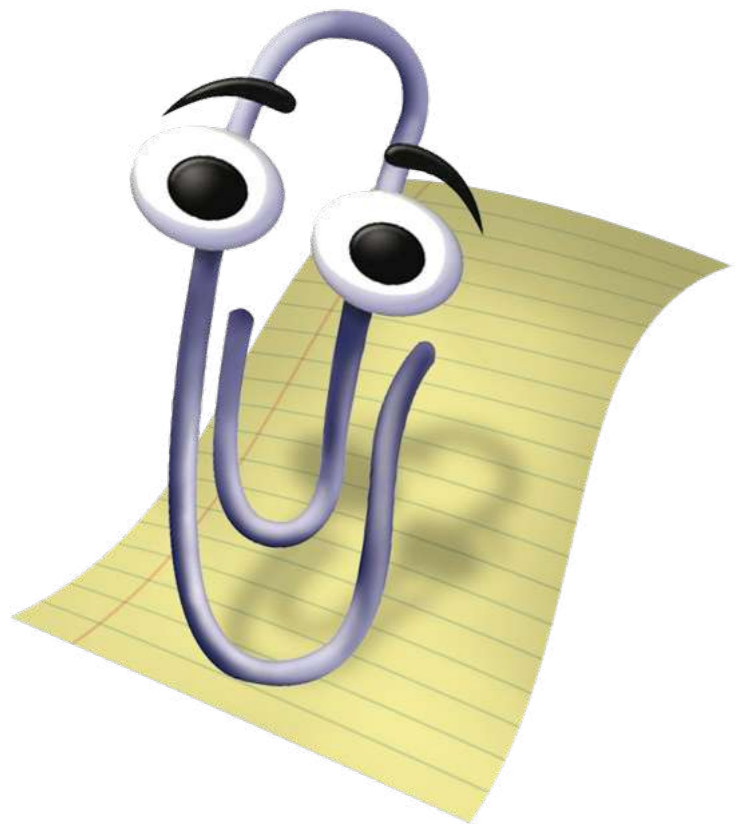
Deep Blue 1997

IA faible

étroite et concentrée sur des tâches précises
(DeepBlue-1996, Jeopardy-2011, SIRI-2025, blague Alexa...)

IA forte

large, générative, capacités de raisonnement
(AlphaGO-2016, blague inventée, LLM GPT)



Copilot

clippy to copilot
1999 → 2025

ImageNet Large Scale Visual Recognition Challenge 2012 (ILSVRC2012)

[Introduction](#) [Task](#) [Timetable](#) [Citation^{new}](#) [Organizers](#) [Contact](#) [Workshop](#) [Download](#) [Evaluation Server](#)

News

- September 2, 2014: [A new paper](#) which describes the collection of the ImageNet Large Scale Visual Recognition Challenge dataset, analyzes the results of the past five years of the challenge, and even compares current computer accuracy with human accuracy is now available. *Please cite it when reporting ILSVRC2012 results or using the dataset.*
- March 19, 2013: Check out [ILSVRC 2013!](#)
- January 26, 2012: [Evaluation server](#) is up. Now you can evaluate you own results against the competition entries.
- December 21, 2012: [Additional analysis of the ILSVRC dataset and competition results is released.](#)
- October 21, 2012: Slides from the workshop are being added to the [workshop schedule](#).
- October 13, 2012: [Full results](#) are released.
- October 8, 2012: Preliminary results have been released to the participants. Please join us at the [PASCAL VOC workshop](#) on October 12 at ECCV 2012. The workshop schedule for ILSVRC 2012 is [here](#)
- September 17, 2012: The submission deadline has been extended to September 30, 2012 (Sunday, 23:00 GMT). There will be no more extension.
- September 11, 2012: The [submission server](#) is up. You can submit your results now!
- July 10, 2012: Test images are released.
- June 16, 2012: The development kit, training and validation data released. Please [register](#) to obtain the download links.
- May 29, 2012: Registration page is up! Please [register](#).
- May 7, 2012: We are preparing to run the ImageNet Large Scale Visual Recognition Challenge 2012 (ILSVRC2012). **New task this year: fine-grained classification on 120 dog sub-classes!** Stay tuned!

Workshop Schedule

- 15:30 - 16:00. Introduction and overview of results. **Fei-Fei LI** [[slides](#)]
- 16:00 - 16:25. Invited talk. **OXFORD_VGG team** [[slides](#)] **NB: This is unpublished work. Please contact the authors if you plan to make use of any of the ideas presented**
- 16:25 - 16:40. Break
- 16:40 - 17:05. Invited Talk. **ISI team** [[slides](#)] **NB: This is unpublished work. Please contact the authors if you plan to make use of any of the ideas presented**
- 17:05 - 17:30. Invited Talk. **SuperVision team** [[slides](#)]
- 17:30 - 18:00. Discussion.

Introduction

The goal of this competition is to estimate the content of photographs for the purpose of retrieval and automatic annotation using a subset of the large hand-labeled [ImageNet](#) dataset (10,000,000 labeled images depicting 10,000+ object categories) as training. Test images will be presented with no initial annotation -- no segmentation or labels -- and algorithms will have to produce labelings specifying what objects are present in the images. New test images will be collected and labeled especially for this competition and are not part of the previously published ImageNet dataset. The general goal is to identify the main objects present in images. This year, we also have a detection task of specifying the location of objects.

ImageNet 2012/2013



Google
gagne au jeu
de GO
contre Lee
Sedol

AlphaGo 2017

Jeu	Complexité
Morpion	10^3
Puissance 4	10^{14}
Dames anglaises	10^{20}
Échecs	10^{50}
Go	10^{171}

Symbolique

IA classique (GOFAI*)

Systeme expert

Règles à suivre (type jeu d'échec)

Arbre de décision

Déductif

Recette de cuisine complexe

Connexionniste

Réseau de neurones

Apprentissage

Poids des vecteurs (paramètres)

Le dataset d'entraînement est **transformé** en vecteurs

Yann LeCun (prix Turing)

Invente de nouveaux plats

IA Faible

Narrow

Spécialisée

Bon à une seule action

IA Large

Capable de plusieurs actions

Domaine de compétence large

deepmind wins against TLO in Starcraft game

DARIO "TLO" WÜNSCH
PRO STARCRAFT PLAYER

deepmind loses against MaNa in Starcraft game

GRZEGORZ "MANA" KOMINCZ
PRO STARCRAFT PLAYER





AI moment



Nov. , 2022



iPhone moment

June 29, 2007



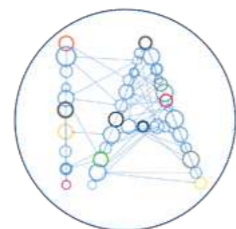
... transistor moment



.com moment



iPhone moment



AI moment*



Deepseek Moment / BOT /
quantic / crypto moment ?

* February 2023 by Jensen Huang, NVIDIA



IA Générative

IA generative ≠ générale
Produit un texte, une image, une vidéo
Progresse avec l'usage
Sans raisonnement

Conversation

Système de CHAT, conversation
Passe le test de Turing
Pas d'action
Copier coller

A medium shot of Demis Hassabis, a man with a shaved head and a goatee, wearing blue-rimmed glasses and a dark blue blazer over a black t-shirt. He is gesturing with his hands while speaking. The background is a blurred office or studio setting with a blue light source on the right.

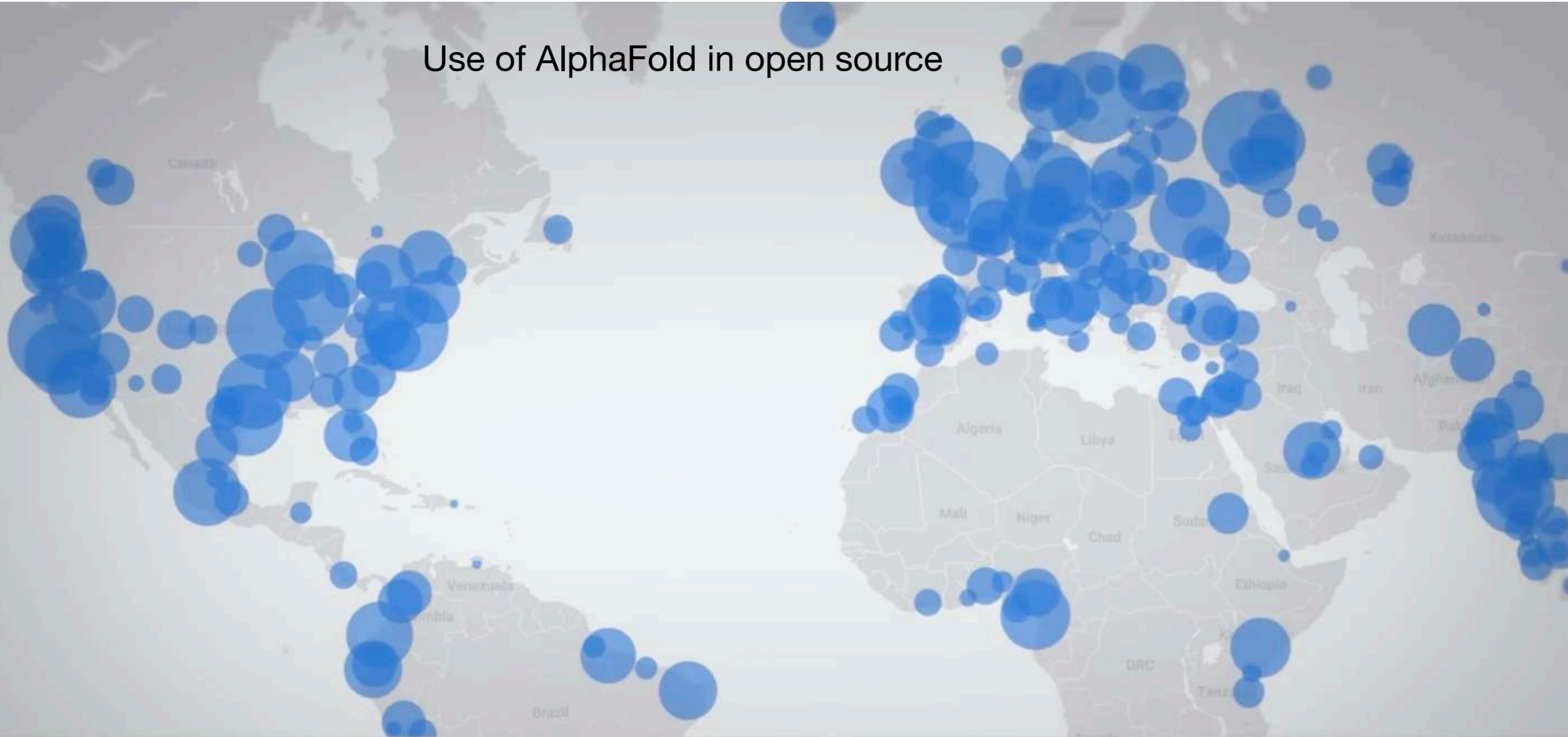
Demis Hassabis

Isomorphic Labs Founder & CEO

PN 2024 Chimie Alphafold3

Google DeepMind

Use of AlphaFold in open source



Users by Audience

#1 All Users

Views by Page title and screen name

#1 AlphaFold Prot...ture Database

Event count by Event name

#1 molstar

IA sans application
pratique, ni utilité = IA

IA qui fonctionne en
rendant un service =
APPLICATION



La vocation de la technologie c'est de disparaître

Gilles Babinet

La vocation de la technologie c'est de disparaître
Gilles Babinet

La vocation de l'IA c'est de disparaître
=
faire des choses utiles à tous en silence



Personne ne considère
l'utilisation d'un
téléscope comme une
faiblesse des chercheurs

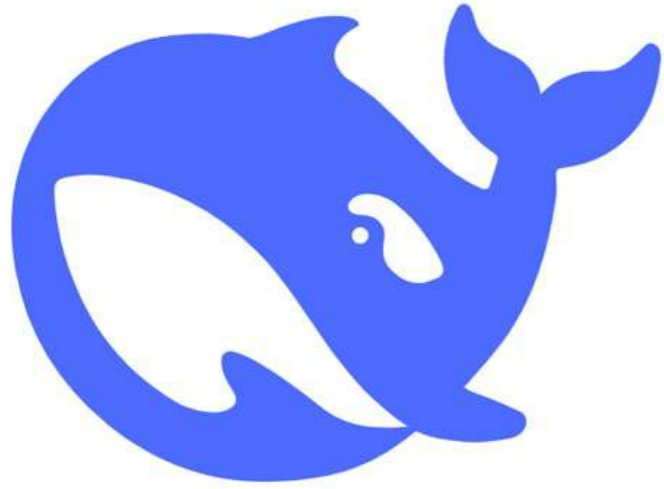
 what new discoveries from the James Webb Space Telescope can I tell my 9 year old about?

Your 9-year old might like these recent discoveries made by The James Webb Space Telescope (JWST):

- In 2023, The JWST spotted a number of galaxies nicknamed "green peas." They were given this name because they are small, round, and green, like peas.
- The telescope captured images of galaxies that are over 13 billion years old. This means that the light from these galaxies has been traveling for over 13 billion years to reach us.
- JWST took the very first pictures of a planet outside of our own solar system. These distant worlds are called "exoplanets." Exo means "from outside."

These discoveries can spark a child's imagination about the infinite wonders of the universe.



DeepSeek moment

JAN 2025

=Sputnik Moment 1957

1/ Training

UNIQUE : fondation, transform, vector, weight, parameter, énergie modulable

2/ Inférence

INFINI : question et API manuelle des utilisateurs

3/ AGENT

INFINI+AUTO : machine2machine, agent2agent

Common Crawl maintains a **free, open** **repository** of web crawl data that can be used by anyone.

Common Crawl is a 501(c)(3) non-profit founded in 2007.

We make wholesale extraction, transformation and analysis of open web data accessible to researchers.

Overview

<https://commoncrawl.org/>



INTERNET ARCHIVE
WayBackMachine

Benchmark Classement













Benchmark Classement

- Par vote du public (AB testing)
- Par score à un examen concours existant*
- Par test spécifique (sans réponse)
- Classement ELO (force relative des LLM)
- Par nombre d'utilisateur
- ... et le fameux test de Turing*

*MMLU (Measuring Massive Multitask Language Understanding)

16 000 questions à choix multiples réparties sur 57 matières académiques comme les mathématiques, le droit, la philosophie, l'informatique ou la médecine. Record 2025 : 95%

CLASSEMENT

Creator	Model	Arena ELO	95% CI	# Appearances	Released
 OpenAI	GPT-4o	1165	-4/+5	35,080	Mar 2025
 ByteDance Seed	Seedream 3.0	1161	-4/+4	31,126	Apr 2025
 Recraft	Recraft V3	1111	-3/+3	82,933	Oct 2024
 Google	Imagen 4 Ultra Experimental	1111	-7/+6	12,479	May 2025
 Google	Imagen 4 Preview	1110	-8/+8	9,168	May 2025
 Google	Imagen 3 (v002)	1097	-4/+4	37,890	Dec 2024
 Ideogram	Ideogram 3.0	1094	-4/+4	32,686	Mar 2025
 Reve	Reve Image (Halfmoon)	1088	-4/+4	33,342	Mar 2025
 Black Forest Labs	FLUX1.1 [pro]	1085	-3/+3	85,816	Oct 2024
 HiDream	HiDream-I1-Dev	1081	-4/+4	31,789	Apr 2025

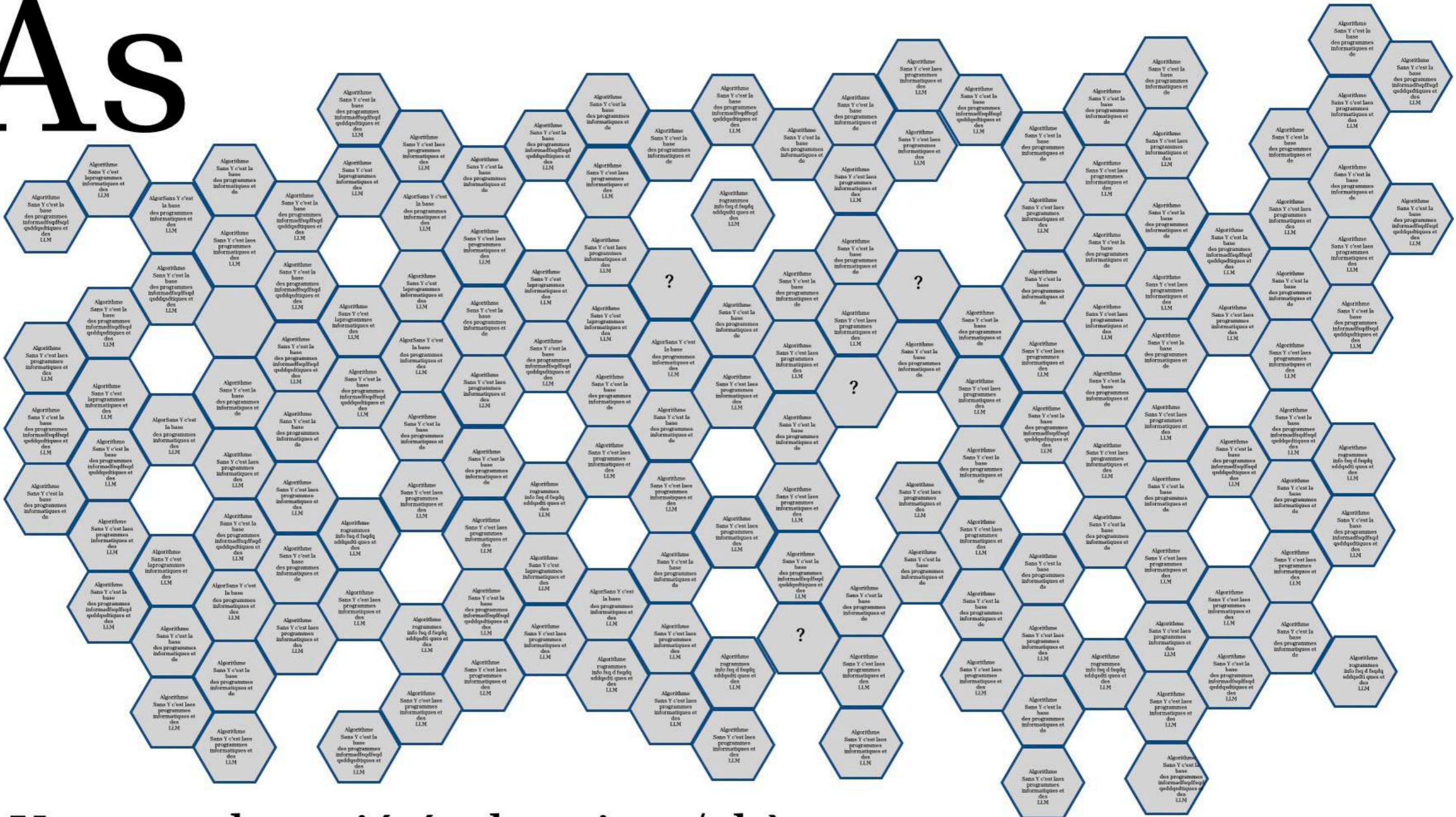
exit MidJourney

Intelligences Artificielles

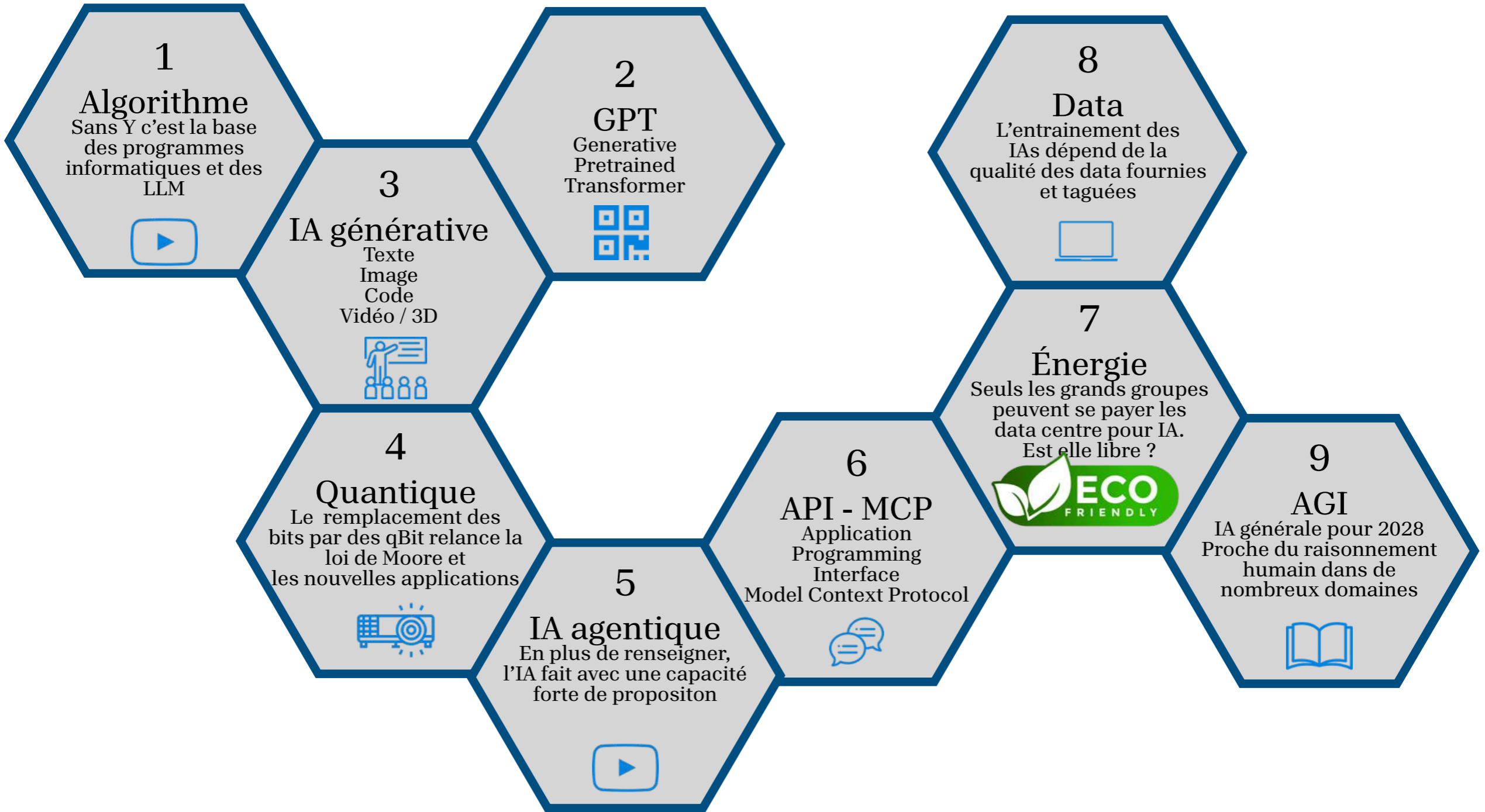
IA'S

IA S

Noimit



Une grande variété de sujets / thèmes





In February 2025, OpenAI co-founder Andrej Karpathy
VIBE CODING = mot de l'année 2025

VIBE CODING

IDE Editeurs de code

VSC (visual studio code), Cursor, Lovable, Trae, Github, copilot, Windsurf, Boltnew, Codex

IDE = EDI : Integrated Development Environment


***50% du code produit en 2026 = Vibe Coding
code SLOP / dette technique / vitesse≠solidité***



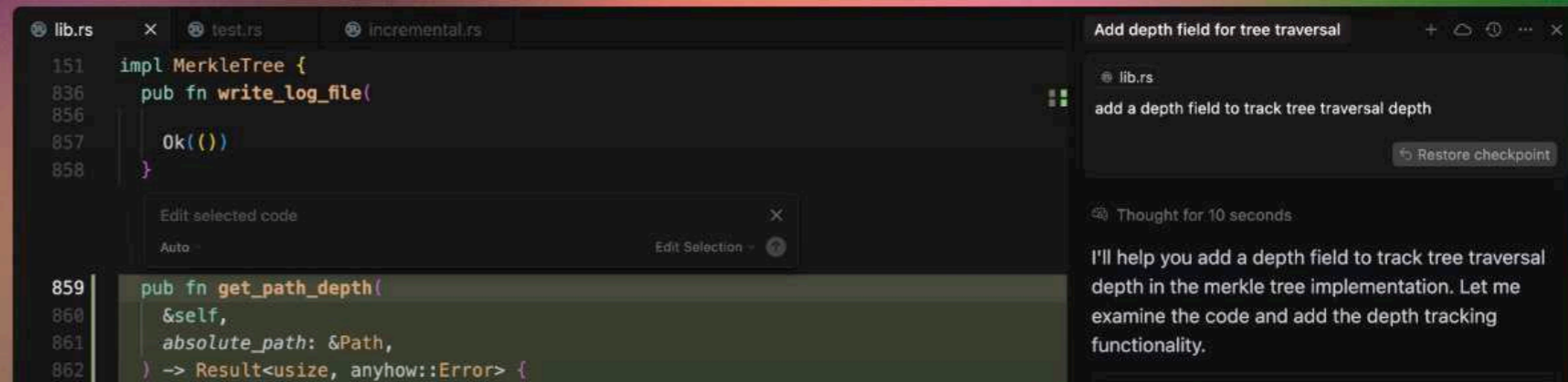
[Pricing](#) [Features](#) [Enterprise](#) [Blog](#) [Forum](#) [Careers](#)

The AI Code Editor

Built to make you extraordinarily productive, Cursor is the best way to code with AI.

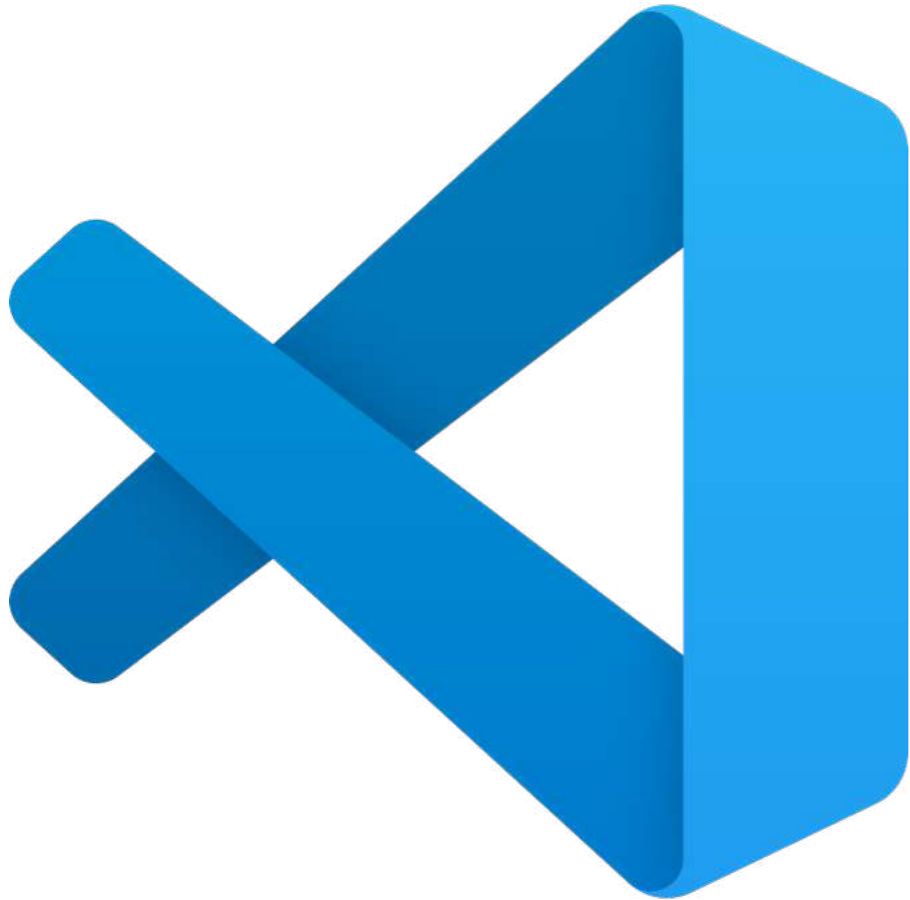
 Download for MacOS

All Downloads



VSCoDe fork
by Anysphere, Truell (cofounder)

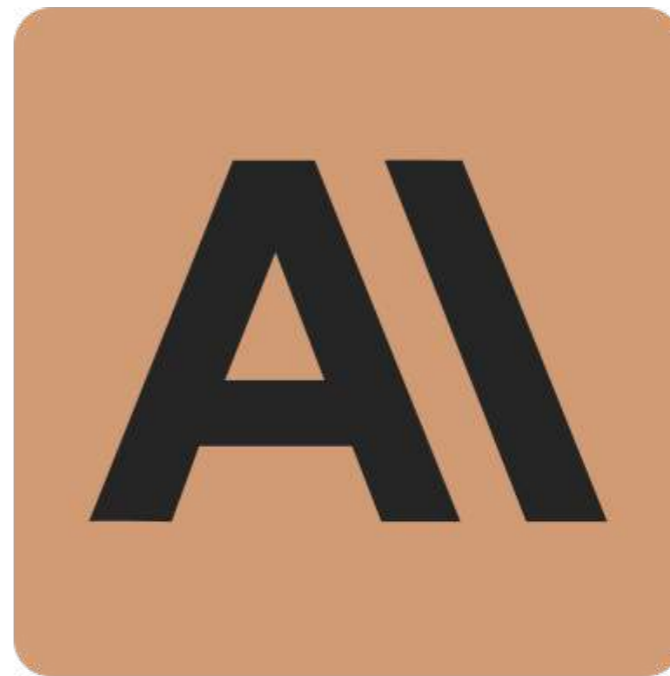
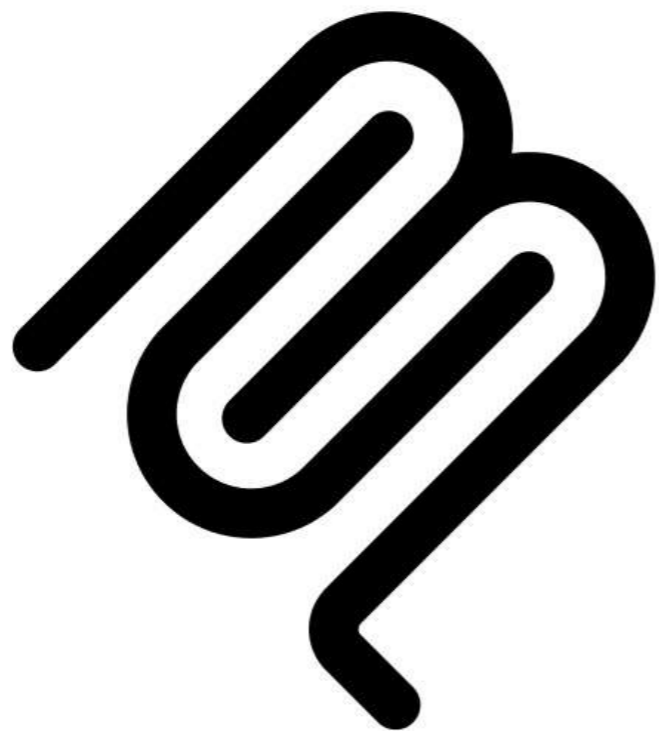
EDI = IDE = Environnement de développement



VS Code



A collage of logos for various AI IDEs on a dark background. At the top left is the 'CURSOR' logo with a white cube icon. To its right is a blue and green robot head wearing goggles. Below these is the 'Firebase Studio' logo with a colorful flame icon. In the middle right is the 'Windsurf' logo with a white 'W' icon. Below that is the 'Lovable' logo with a colorful heart icon. At the bottom left is the 'KIRO' logo with a white ghost icon. At the bottom center is the text 'The AI IDE for prototype to production' in white. At the bottom right is the 'bolt' logo in white lowercase letters on a dark blue background. At the very bottom, a small line of text reads: 'Kiro helps you do your best work by bringing structure to AI coding development.'



Model Context Protocol

<https://modelcontextprotocol.io>

AI OPS



MCP - agentique

API

interface

entre applications

programmées (auto)





2002

In 2002, according to tech legend, a mandate was issued by Amazon founder Jeff Bezos. This mandate – also known as the “Bezos API Mandate” or “Amazon API Mandate”- would serve to form the backbone of Amazon in the modern web space, informing both the API development paradigm in the corporate mindset and a general improved approach to externalizing API functions.

Below, we’ll talk about the mandate and discuss why it has become so legendary in the API space. We’ll dive into each point’s specifics and look at how the mandate formed much of the modern thought around APIs and microservices.

The Jeff Bezos API Mandate

The mandate in question was issued in 2002 to Amazon by founder Jeff Bezos. For many reasons, it’s become somewhat legendary in the API/microservices space, as it formed the basis for much of the modern API design paradigm within the corporate view. By legend, the mandate is as follows:

1. All teams will henceforth expose their data and functionality through service interfaces.
2. Teams must communicate with each other through these interfaces.
3. There will be no other form of interprocess communication allowed: no direct linking, no direct reads of another team’s data store, no shared-memory model, no back-doors whatsoever. The only communication allowed is via service interface calls over the network.
4. It doesn’t matter what technology they use. HTTP, Corba, Pubsub, custom protocols – doesn’t matter.
5. All service interfaces, without exception, must be designed from the ground up to be externalizable. That is to say, the team must plan and design to be able to expose the interface to developers in the outside world. No exceptions.
6. Anyone who doesn’t do this will be fired.
7. Thank you; have a nice day!

This mandate helped encourage a lot of Amazon’s thinking around AWS, externalized infrastructure, and business-to-business functionality. Let’s dig into each of these points (with the exception of 6 and 7, which are more cheeky than API-minded) and look at why they may be important, generally speaking.

Before we do so, it’s important to mention that this memo is often unattributed – the original source seems to have been lost to time due to the shutdown of Google+ (for an early reference, see this post by API Evangelist (<https://apievangelist.com/2012/01/12/the-secret-to-amazons-success-internal-apis/>)). Nonetheless, the lessons imparted are essential, and as such, we’re going to discuss them with the assumption that the memo did exist in the form commonly shared.

Data and Functionality Exposure

“1. All teams will henceforth expose their data and functionality through service interfaces.”





IA
intégrée
par API



ou natif



MANUEL

prompt txt
prompt vocal
transfert fichier
conversation

20%

AUTO

API
MCP
Agrégateur
Wrapper
Service interne
Edge
OpenSource

80%



API & MCP

A t o A

M t o M

... ou...

PROMPT

natif / direct / chat





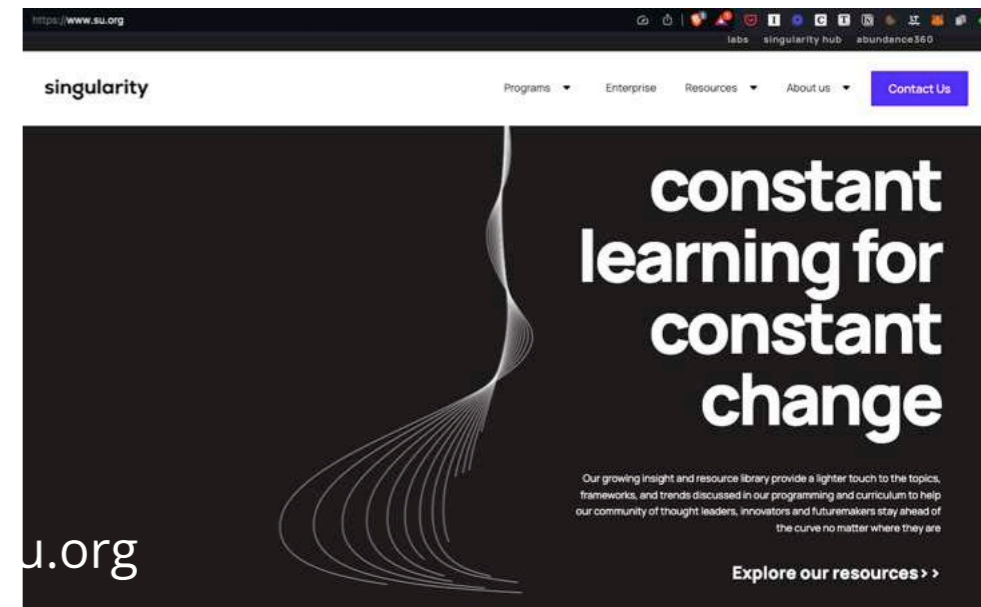
Singularity 2035

Singularity (system theory), in dynamical and social systems, a context in which a small change can cause a large effect

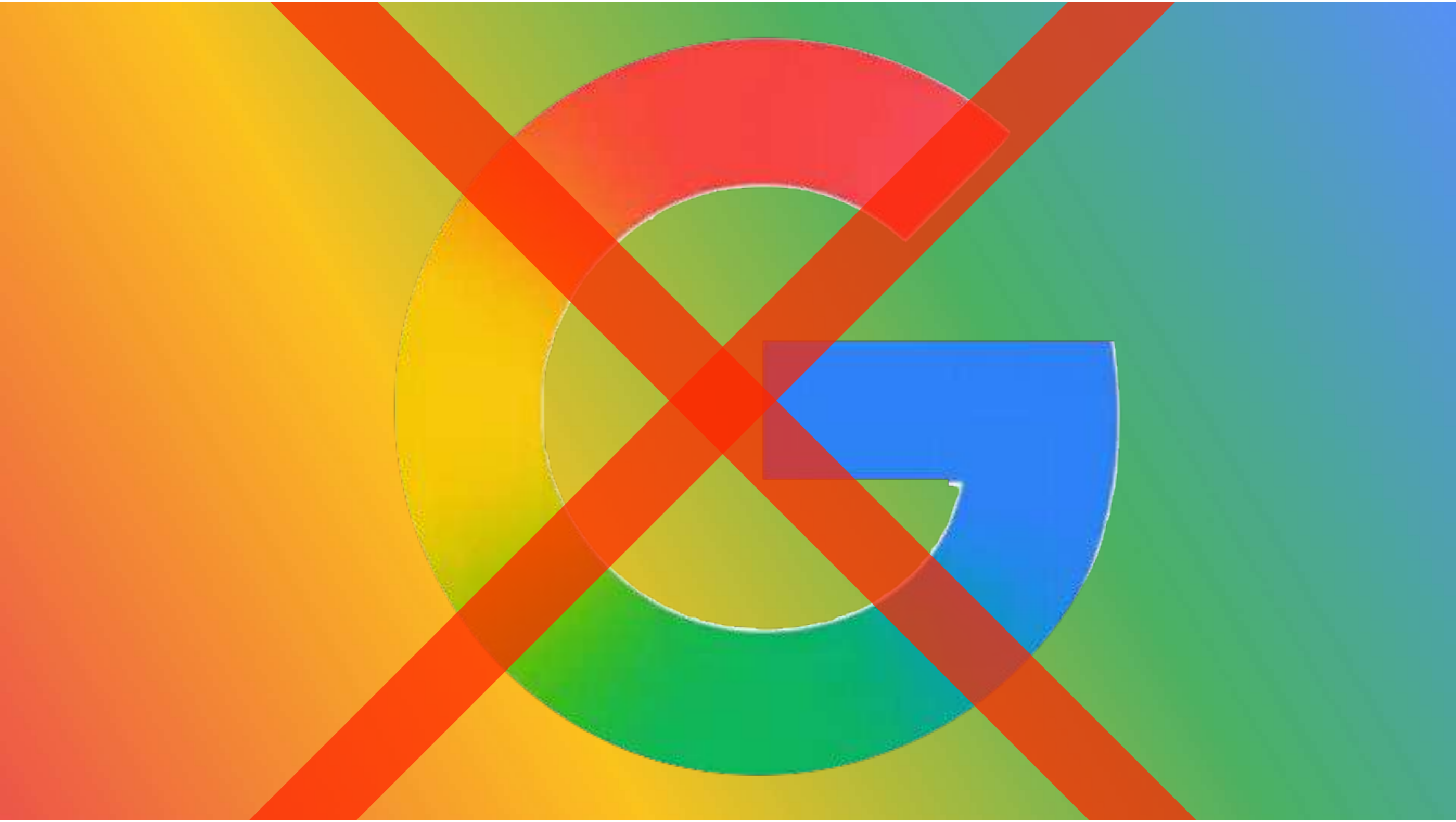
Gravitational singularity, in general relativity, a point in which gravity is so intense that spacetime itself becomes ill-defined

Initial singularity, a hypothesized singularity of infinite density before quantum fluctuations caused the Big Bang and subsequent inflation that created the Universe

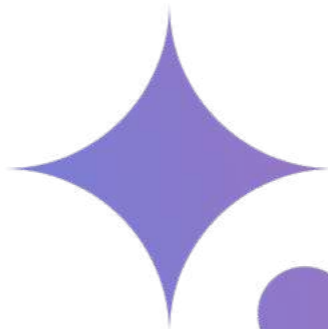
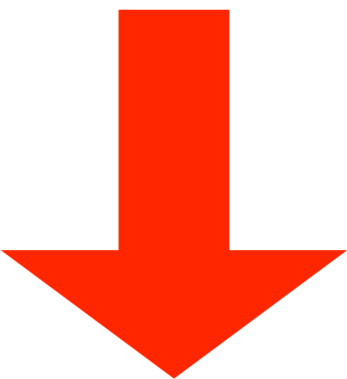
Ray Kurzweil 2029-2040



~~WWW. WEB.~~



G



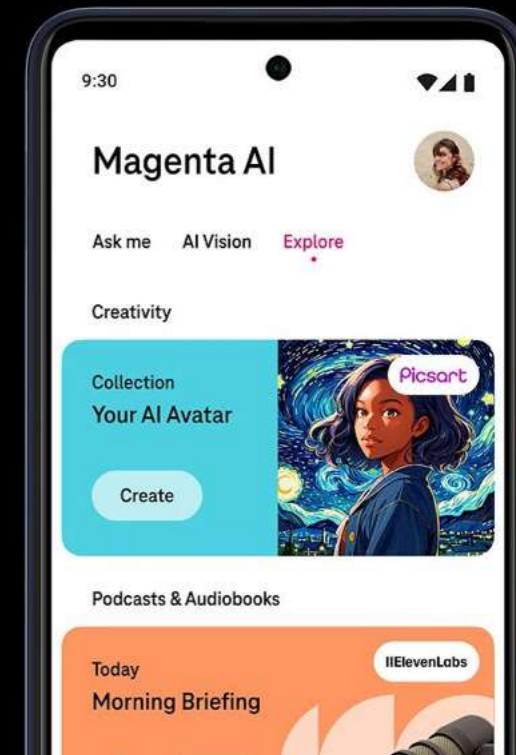
Gemini

~~APP~~



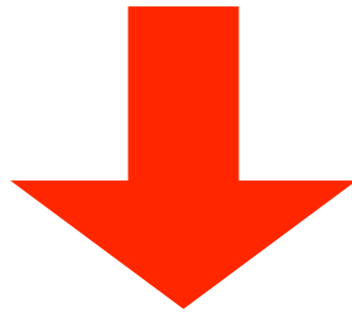
perplexity

Deutsche Telekom AI PHONE



IA Réponse directe Zéro clic **vs.** Visite 2 à 3 sites

IA Business Model Abonnement **vs.** Publicité



IA Baisse du trafic des sites (marque, news, info, eshop)

IA change de business model

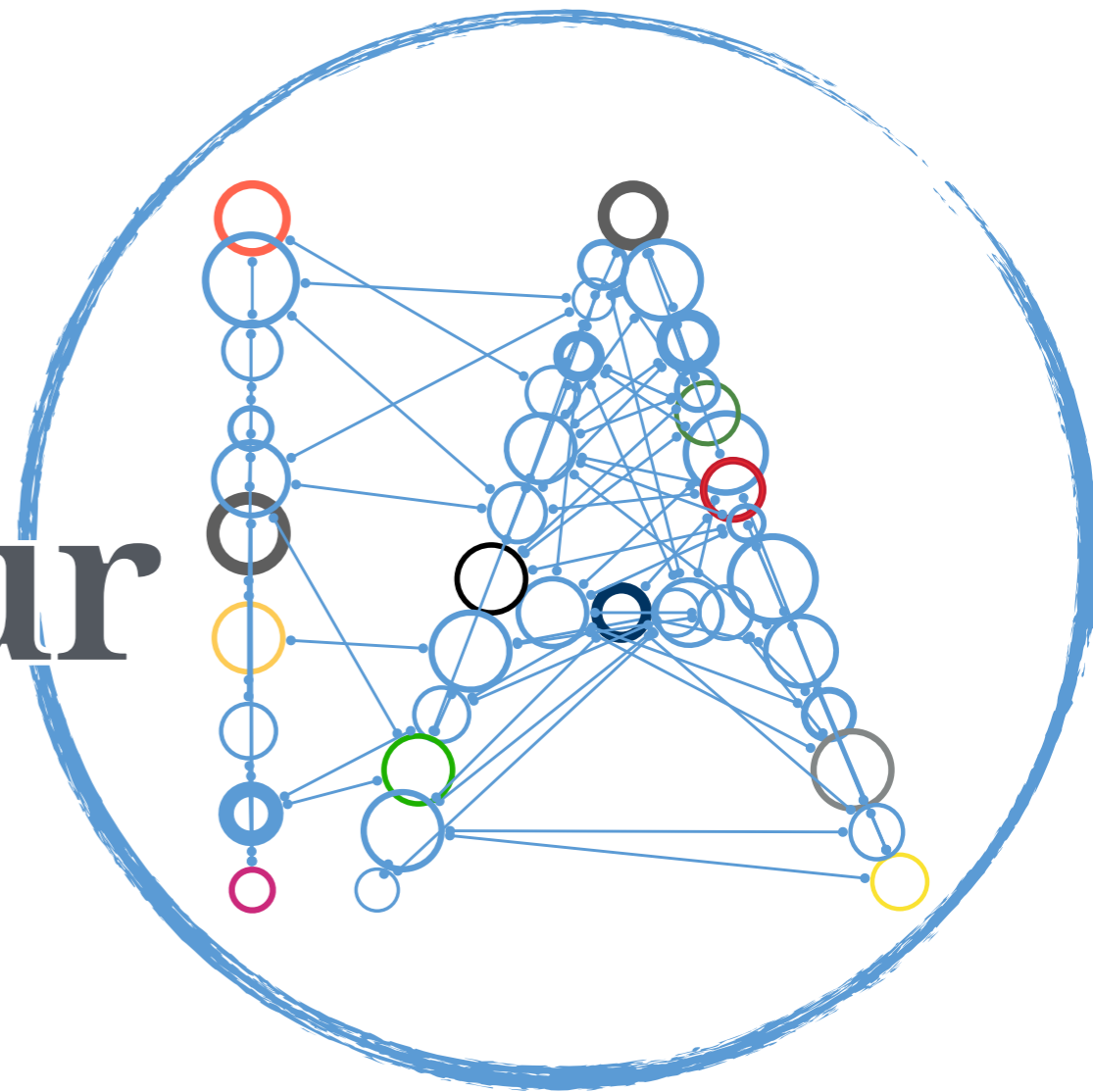
no AI

no business

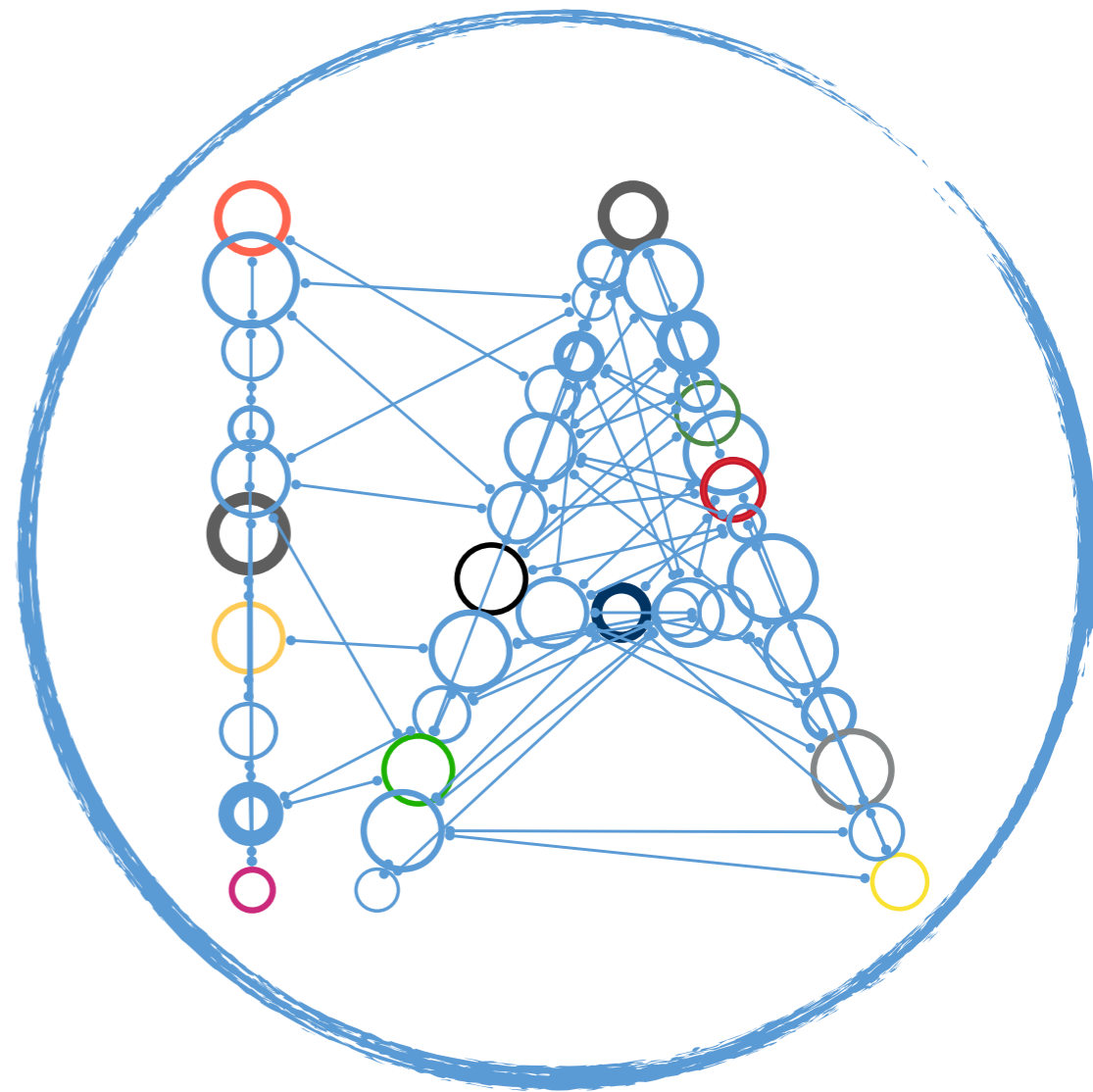
A2A : agent to agent - MtoM : machine to machine - API - MCP

AI
or
DIE

C'est le
premier
consommateur
de vos offres



L'IA est le
premier
client de
vos offres





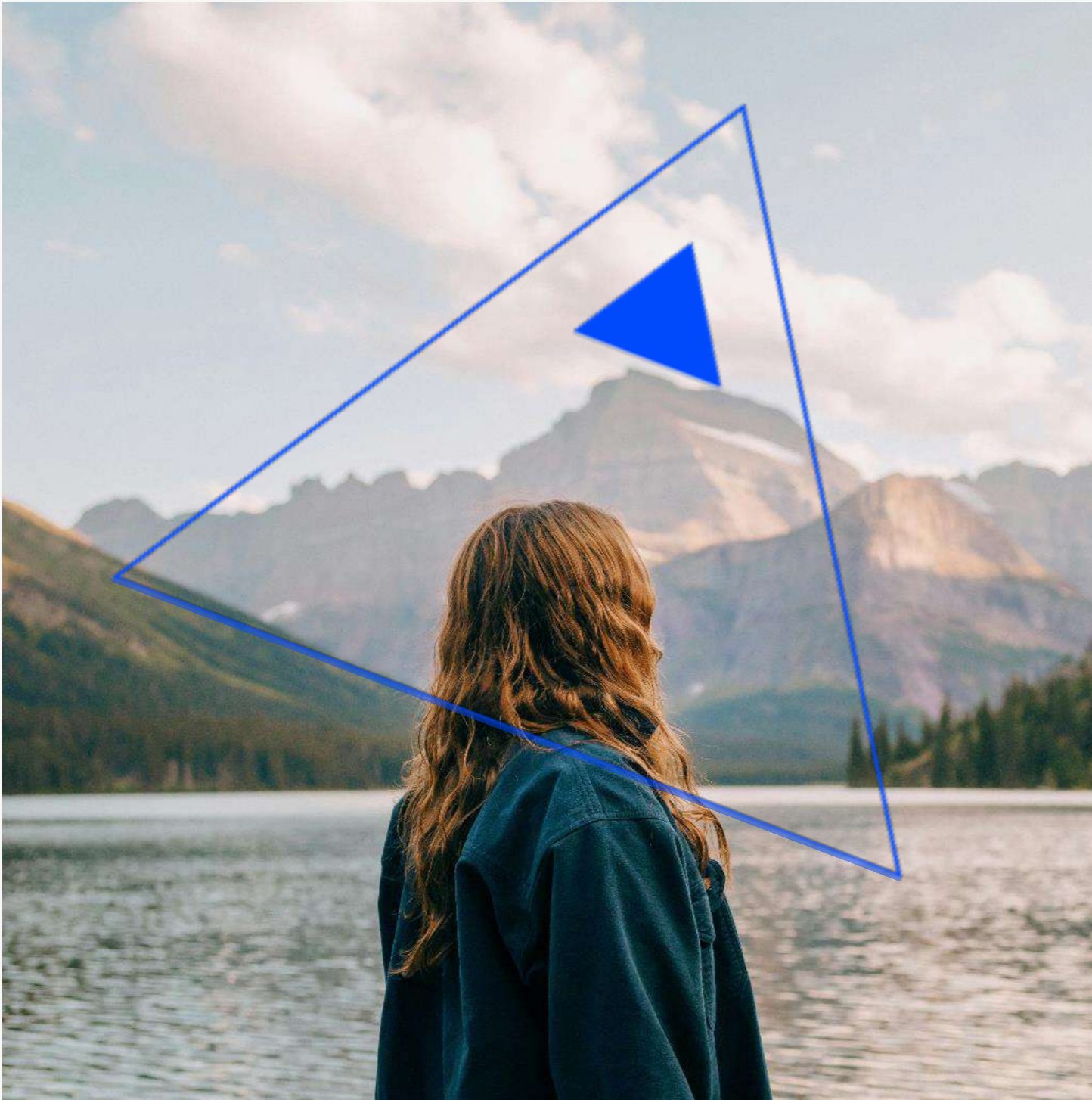
04

Critiques Risques



...

ELI5



Consommation
énergétique et data
center

Cybercriminalité et fake
news

Modèle social sans travail
et revenu universel

Perte cognitive

AI SLOP



Souveraineté

Concentration
capitalistique

Risque systémique de
toute puissance des IA
(ASI AGI)

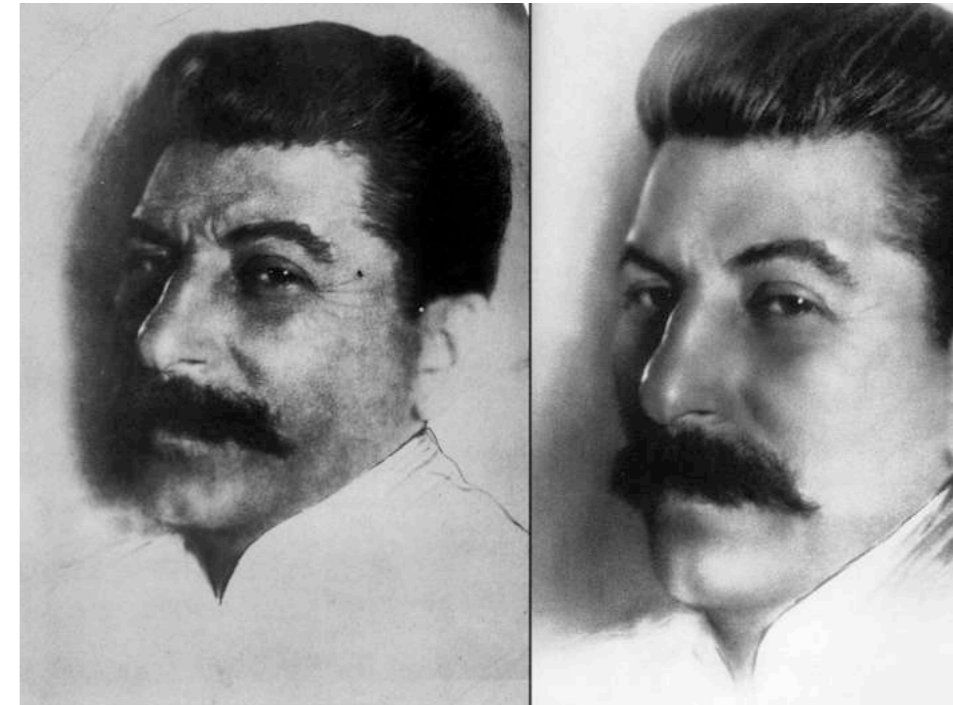
Model collapse



À droite de Staline sur la première photographie, Nikolai Lejov n'apparaît plus sur la seconde photo.



Cette image historique montrait de jeunes socialistes en 1897 avant que certains d'entre eux n'arrivent au pouvoir. Vous reconnaîtrez un jeune Vladimir Lénine (au milieu) – bien sûr, il a gardé sa place. Alexander Malchenko (debout, à gauche) n'a pas eu cette chance : en 1930, il a été accusé d'être un espion, exécuté et remplacé par une tache blanche.



L'image originale de 1924 ne fait pas un très bon travail pour dissimuler la peau grêlée de Staline d'avoir souffert de la variole dans son enfance. Il n'est pas surprenant qu'une version imprimée de la photo, publiée en 1939, lorsque Staline était un dirigeant tout-puissant, ait été sérieusement retouchée. Comme vous pouvez le voir, sa peau est lisse, ses cheveux et sa moustache soyeux.

Retouche Photographique : l'Expertise de Staline



ALJAZEERA

THE LISTENING POST

THE AI SLOP TSUNAMI

IS THE INTERNET NOW A JUNKYARD?

 FULL REPORT



Merriam-Webster Names
Word of the Year

“SLOP”

noun. Colloquial.

Low-quality content created by generative AI which often contains errors and is not requested by the user



LE CADRE DE SOUVERAINETÉ CLOUD DE LA COMMISSION EUROPÉENNE



Comprenant les niveaux SEAL et les 8 objectifs stratégiques

LES 8 NIVEAUX DE SOUVERAINETÉ CLOUD (NIVEAUX SEAL)



LES 8 OBJECTIFS DE SOUVERAINETÉ ET LEUR PONDÉRATION



LA FORMULE DU SCORE DE SOUVERAINETÉ

$$\text{Sovereignty Score} = \sum \left(\frac{\text{Score}(\text{SOV}_n)}{\text{Max. Score}(\text{SOV}_n)} \right) \times \text{Weight}(\text{SOV}_n) \% \quad (\text{pour } n = 1 \text{ à } 8)$$

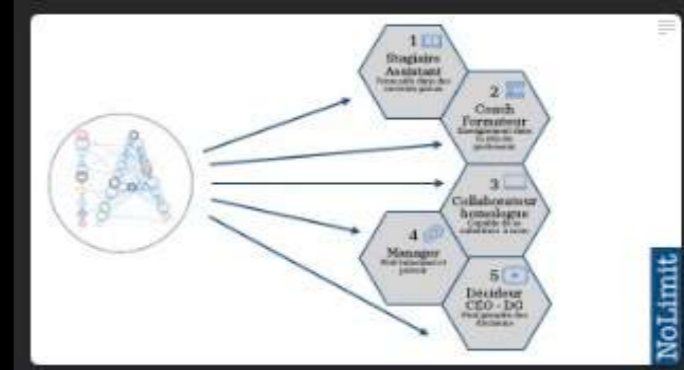
les AI's

Licorne 1 employé



avec IAs en 2026

forces en présence



Singularité

TAXINOMIE

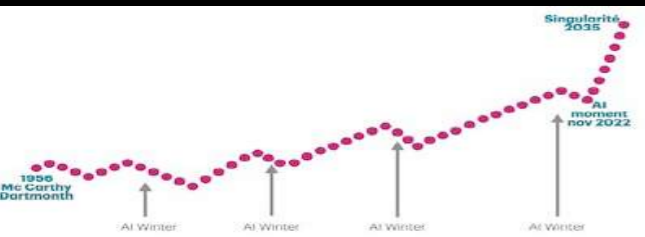
AI or DIE



API MCP

DÉFINITION

AI +
«Software is eating the world»
a16z
Mark Andreessen



LLM + GPT : Transformeur

audit GEO



Formation / Certification

AGI ASI

Faible / Forte
On prem / Cloud
Training / Inference

Curation
Veille

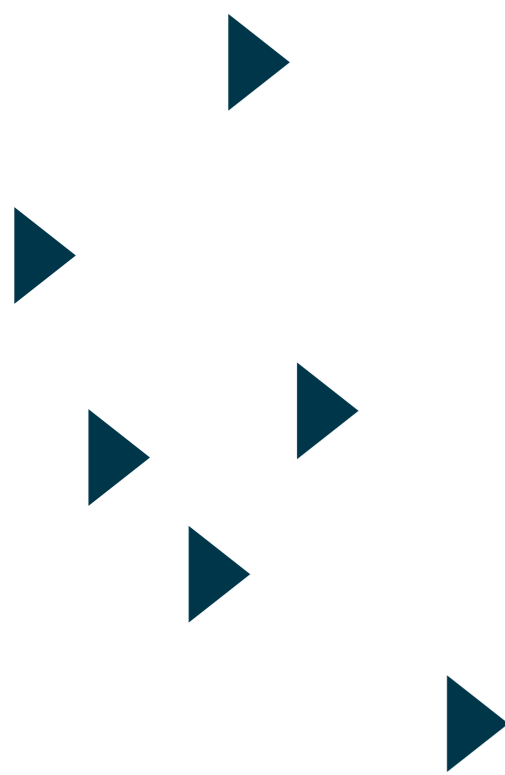
Glossaire
Classement

SEO
GEO

no AI
no business

A2A : agent to agent - MtoM : machine to machine

NoLimit



EXPLORE

BEYOND

HORIZONS

GEM, l'excellence académique pour agir dans un monde en transition

7 200

étudiants

120

nationalités

50

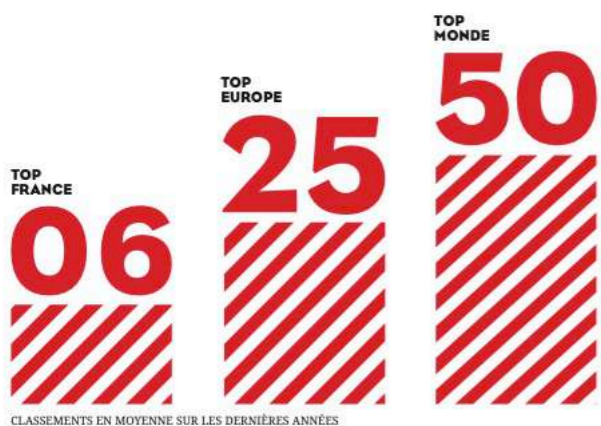
programmes

49 000

diplômés

Une école pour comprendre le monde et agir avec discernement

GEM est une grande école de management internationale, triplement accréditée et Société à Mission. Elle combine excellence académique, recherche à impact et pédagogie immersive pour former des professionnels capables d'agir avec lucidité face aux grandes transitions économiques, environnementales et sociétales. Présente en France et connectée à un large réseau international, GEM accompagne des trajectoires exigeantes. Rejoignez une communauté engagée.



80000



ÉTUDIANTS DONT 3300 INTERNATIONAUX ET 150 SPORTIFS DE HAUT NIVEAU

330000



DIPLÔMÉS

143

NATIONALITÉS REPRÉSENTÉES AU SEIN DE L'ÉCOLE

125

UNIVERSITÉS INTERNATIONALES PARTENAIRES

4000

PARTICIPANTS EN FORMATION CONTINUE

46%

DE PROFESSEURS INTERNATIONAUX

500

COLLABORATEURS

50

PROGRAMMES DE FORMATION



7000

PROFESSIONNELS D'ENTREPRISE QUI PARTICIPENT À LA VIE DE L'ÉCOLE

250

ENTREPRISES PRÉSENTES SUR LES FORUMS DE RECRUTEMENT DE L'ÉCOLE

1000

CADRES PRÉSENTS LORS DES JURYS D'ENTRÉE ET DE SORTIE



GEM

Alpine
Business
School

12 rue Pierre Sémard, 38000 Grenoble
183 Avenue Jean Lolive, 93500 Pantin
France
+33 4 76 70 60 60

info@grenoble-em.com

grenoble-em.com



EXPLORE
BEYOND
HORIZONS