

October, 2023

# APCC Summit - NextGen

## AI Revolution in Organized Retail Ecosystem

DEFINE).AI

**Dr. Daniela Braga,**  
Founder & CEO



# Agenda

1. About Defined.ai
2. AI is on the Rise
3. Generative AI
4. Conversational AI
5. Use Cases
6. AI Trends – how to surf the wave
7. Ethical AI

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Defined.ai is the Ethical Company  
trusted by the builders of  
Generative AI

# 1. About Defined.ai



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## Overview

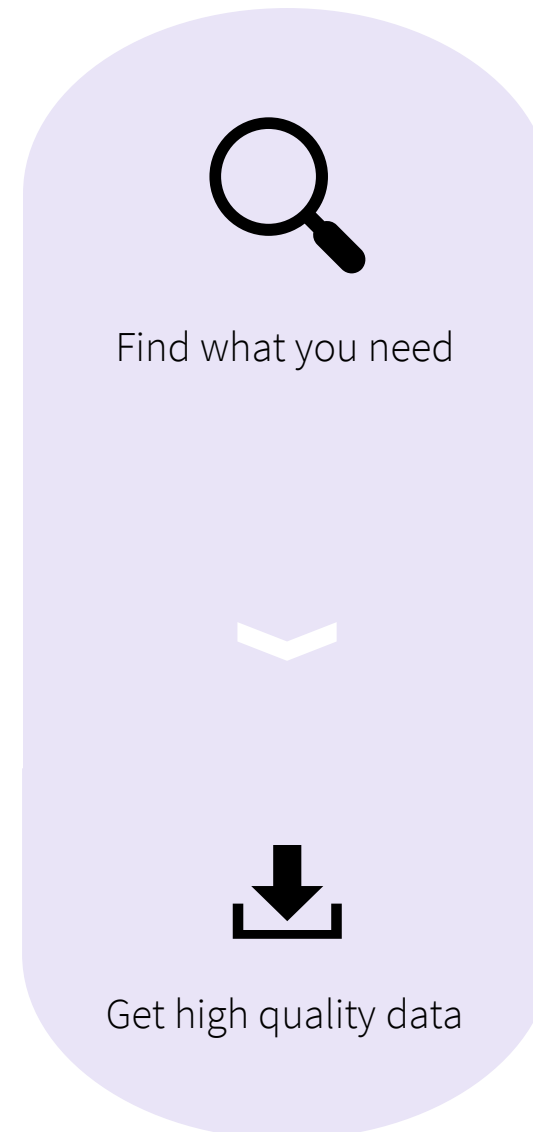
- Founded **in 2015**
- Funding: **\$81M**
- Latest stage women-founded AI company in the world
- Largest marketplace of training data for AI in the world
- In 2022, we got awarded the largest ever AI funding in Europe to develop Conversational AI: **Accelerat.ai €34.5M**
- **HQ:** Seattle  
**R&D + Ops:** Lisbon and Porto



# Our Product Offering

## Data Marketplace

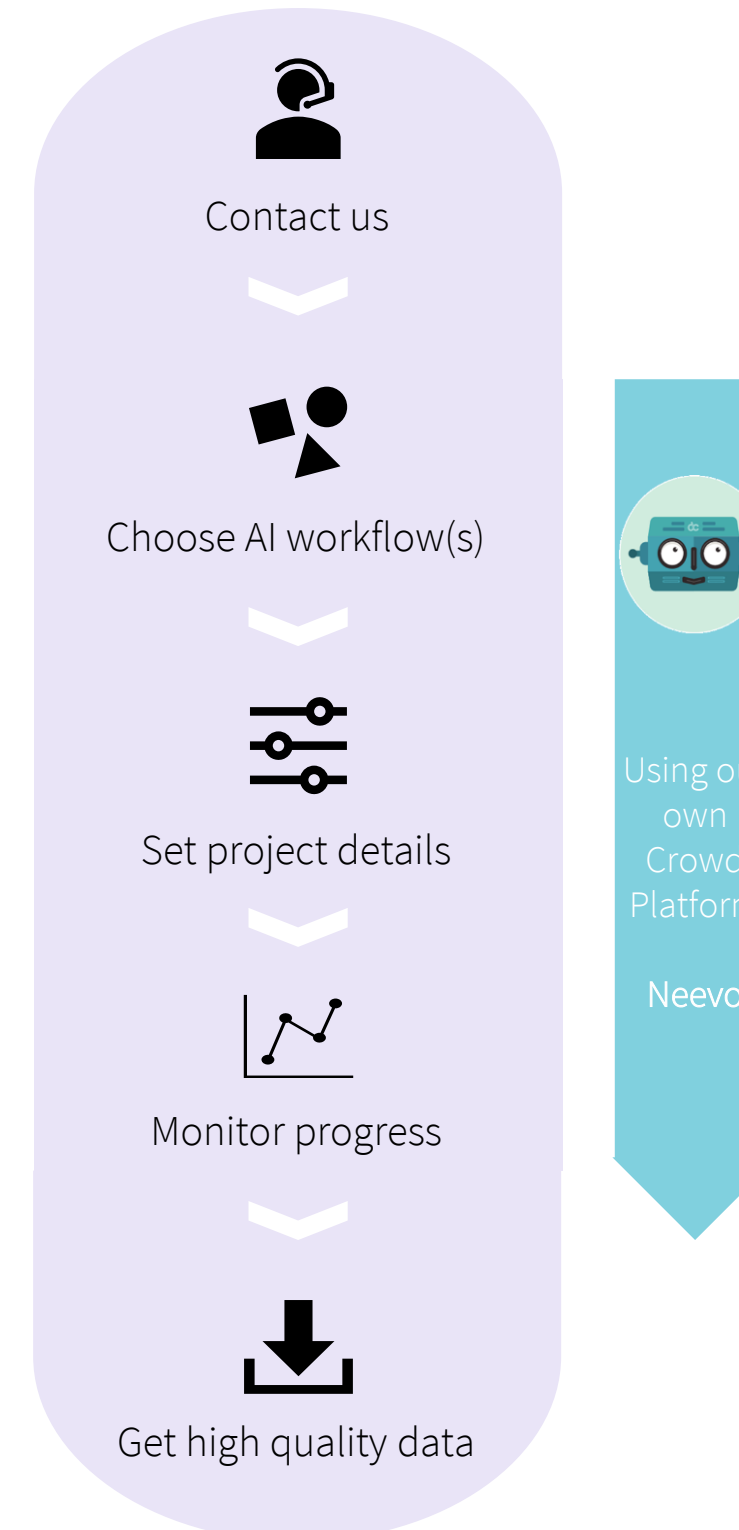
Off the Shelf machine learning ready datasets in speech, text, image and video, healthcare, manufacturing, Sustainability



Get more information

## Custom Data

End-to-end flexible data workflows to generate any custom data required



Get more information

## Conversational AI

Replacement of the IVR for a Voice Assistant specialized per industry



Get more information



# Our Clients





## 2. AI is on the Rise





# 2023 ML, AI and Data Landscape

Source: <https://mattturck.com/mad2023/>



Our Marketspace





# 2023 ML, AI and Data Landscape

- Exponential acceleration of Generative AI
- AI going mainstream
- Non-technical people worldwide now getting to experience AI firsthand
- Importance of AI getting deep into society, politics, cybersecurity, and ethics.
- By 2030, AI is estimated to increase **global GDP by \$15.7 trillion** – more than the current output of China and India combined.

Source: <https://mattturck.com/mad2023/>

## VIVA TECHNOLOGY

### DENMARK

DIXA  
LEAPWORK  
MIINTO  
PODIMO  
TEMPLAFY

### FINLAND

SUPERMETRICS

### FRANCE

AB TASTY  
AGICAP  
AKENEO  
CUBYN  
DASHLANE  
DEEPI  
DESCARTES  
HOMA GAMES  
IADVIZE  
INTERCLOUD  
LUKO  
LUMAPPS  
MALT  
OCTOBER  
PENNYLANE  
PIGMENT  
SENDINBLUE  
SHIPPEO  
SWEEP

### GERMANY

AMBOSS  
ANYDESK  
AUXMONEY  
AVI MEDICAL  
CAMUNDA  
COACHHUB  
DISTRIBUTION  
EGYM  
IDNOW  
LEANIX  
LOCALYZE  
MOONFARE  
OVIVA  
PRICEFX  
RESEARCHGATE  
SPRYKER SYSTEMS  
XENTRAL

### HUNGARY

BITRISE

### ISRAËL

ARTLIST  
LOGZ.IO  
MESH PAYMENTS  
OVERWOLF  
PIXELLOT  
RUN AI  
STREAMELEMENTS

### ITALY

BENDING SPOONS

### LATVIA

LOKALISE

### NETHERLANDS

CATAWIKI  
FRAMER  
SENDCLOUD  
STUDOCU  
TESTGORILLA  
TIQETS  
WETRANSFER  
ZIVVER

### NORWAY

TIBBER  
XENETA

### POLAND

BRAINLY  
G2A.COM

**PORTUGAL**  
DEFINED.AI

### SPAIN

PLAYTOMIC  
RAVENPACK  
TYPEFORM  
WALLAPOP

### SWEDEN

ANYFIN  
EINRIDE  
FUNNEL  
JUNI  
MATSMART  
MENTIMETER  
QUINIX  
RECORDED FUTURE  
ZIMPLER

### SWITZERLAND

COPPER

### UKRAINE

PREPLY

### UNITED KINGDOM

10X BANKING  
ATTEST  
CODAT  
COMPLYADVANTAGE  
CONNEX ONE  
CONTRACTPODAI  
FORM3  
GENESIS GLOBAL  
GLOBAL PROCESSING  
MUBI  
OMNIPRESENT  
PARTNERIZE  
PEAK AI  
PRIVITAR  
PROXYMITY  
QUANTEXA  
ROSSUM  
SALARYFINANCE  
SOLDO  
TESSIAN

**NEXT UNICORN AWARDS**  
**2023 TOP 100 SCALE-UPS**

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# AI is on the Rise

- Industry races ahead of academia:** Until 2014, most significant machine learning models were released by academia. Since then, industry has taken over. In 2022, there were 32 significant industry-produced machine learning models compared to just three produced by academia.
- The world's best new scientist ... AI?:** AI models are starting to rapidly accelerate scientific progress.
- AI-related professional skills:** the demand is increasing across virtually every US industrial sector. Across every sector, the number of AI-related job postings has increased on average from 1.7% in 2021 to 1.9% in 2022.

% of respondents who say given AI capability is embedded in products or business processes in at least one function or business unit

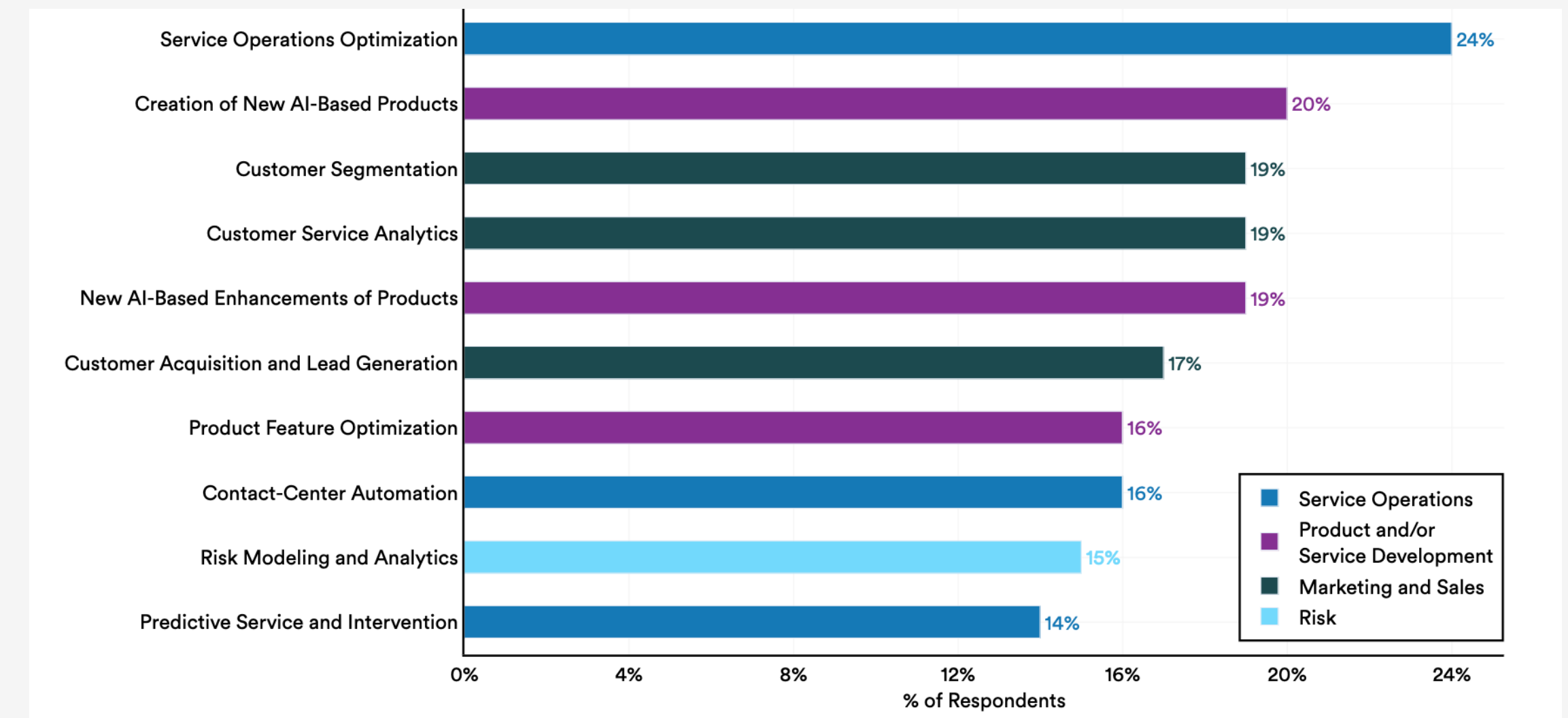
Industry	Computer Vision	Deep Learning	Digital Twins	Facial Recognition	GAN	Knowledge Graphs	NL Generation	NL Speech Understanding	NL Text Understanding	Physical Robotics	Recommender Systems	Reinforcement Systems	Robotic Process Learning	Transfer Learning	Transformers (e.g., GPT-3)	Virtual Agents
All Industries	34%	30%	24%	18%	11%	25%	18%	23%	33%	20%	25%	20%	39%	16%	11%	33%
Business, Legal, and Professional Services	32%	37%	31%	11%	8%	26%	12%	22%	34%	19%	23%	26%	46%	16%	11%	30%
Consumer Goods/Retail	33%	36%	25%	19%	13%	18%	20%	11%	22%	24%	32%	19%	25%	7%	11%	40%
Financial Services	24%	22%	18%	24%	13%	29%	20%	30%	42%	14%	30%	19%	47%	17%	12%	33%
Healthcare Systems/Pharma and Med. Products	32%	18%	16%	5%	5%	14%	5%	12%	29%	11%	16%	13%	16%	9%	6%	14%
High Tech/Telecom	37%	45%	24%	16%	15%	23%	24%	29%	40%	15%	34%	23%	48%	22%	15%	43%

% of Respondents (AI Capability)

# AI is on the Rise

- Policymaker interest in AI is on the rise:** Laws involving AI are being examined all over the world. For example, an AI Index analysis of the legislative records of 127 countries shows that the number of bills containing “artificial intelligence” that were passed into law grew from just 1 in 2016 to 37 in 2022.
- Companies that have adopted AI continue to pull ahead:** The proportion of companies adopting AI in 2022 has more than doubled since 2017. Organizations that have adopted AI report realizing meaningful cost decreases and revenue increases.
- The number of incidents concerning the misuse of AI is rapidly rising:** The number of AI incidents and controversies has increased 26 times since 2012. Ethical AI here is critical.

## Most Commonly Adopted AI Use Cases by Function, 2022



Source: [McKinsey](#), Artificial Intelligence Index Report, 2023, Stanford University



# 3. Generative AI

## Generative AI in numbers

→ 10% of all data produced by 2025, generative AI will account for 10% of all data produced

→ ≈ \$126.5B market size for Generative AI by 2031 at a CAGR of 32%

→ Equity funding topping \$2.6B across 110 deals in 2022 for Generative AI startups

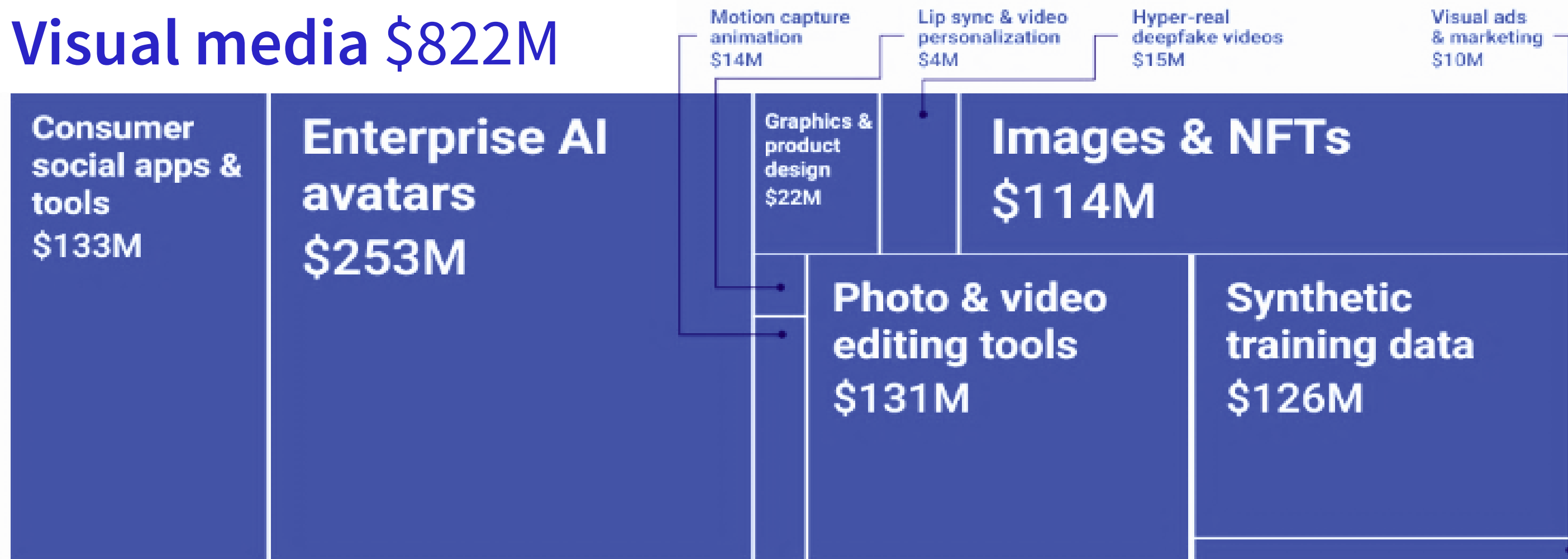
→ Most highly-valued Generative AI companies as of 2022:



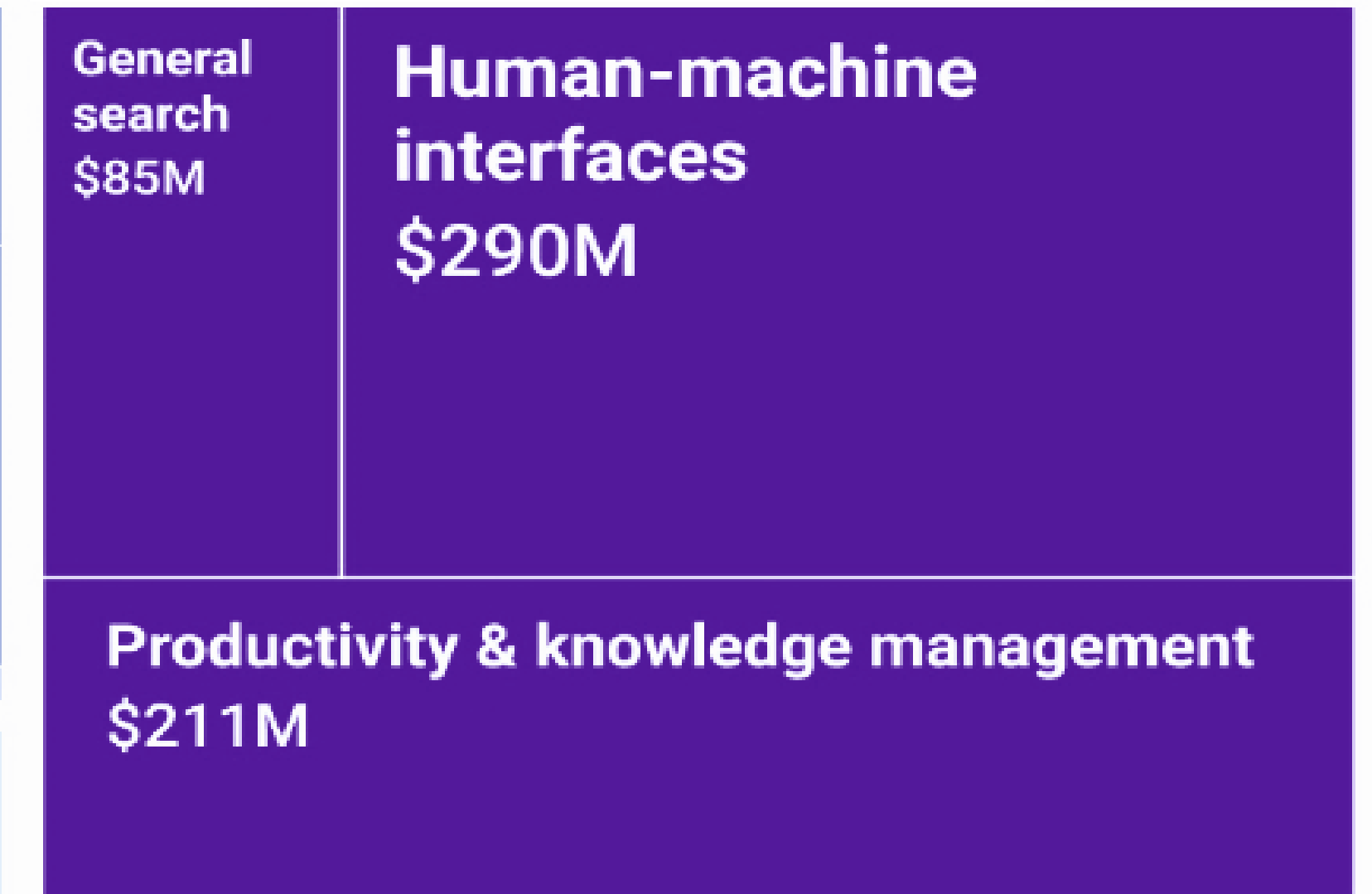


# Distribution of Generative AI funding in 2021-2022

## Visual media \$822M



## Generative interfaces \$586M



## Text \$852M

Personal writing & storytelling \$6M  
Sales email & outreach \$15M



## Speech \$212M

## Code \$140M

# 4. Conversational AI

# Open AI Whisper, Character AI and Vall-E



## Whisper

- **Automatic speech recognition (ASR)** system trained on 680K hours of multilingual and multitasking supervised data collected **from the web**.
- It supports **transcription** in multiple languages, as well as **translation** from those languages into English.
- OpenAI raised **\$13B in funding in 6 rounds**
- Valued at **\$29B USD**

## character.ai

- **Neural language model chatbot** web application that can generate **human-like text responses** and participate in contextual conversations.
- The company is witnessing **100M site visits per month**
- Raised **\$150M funding in 2 rounds** by A16z
- Valued at **\$1B USD**

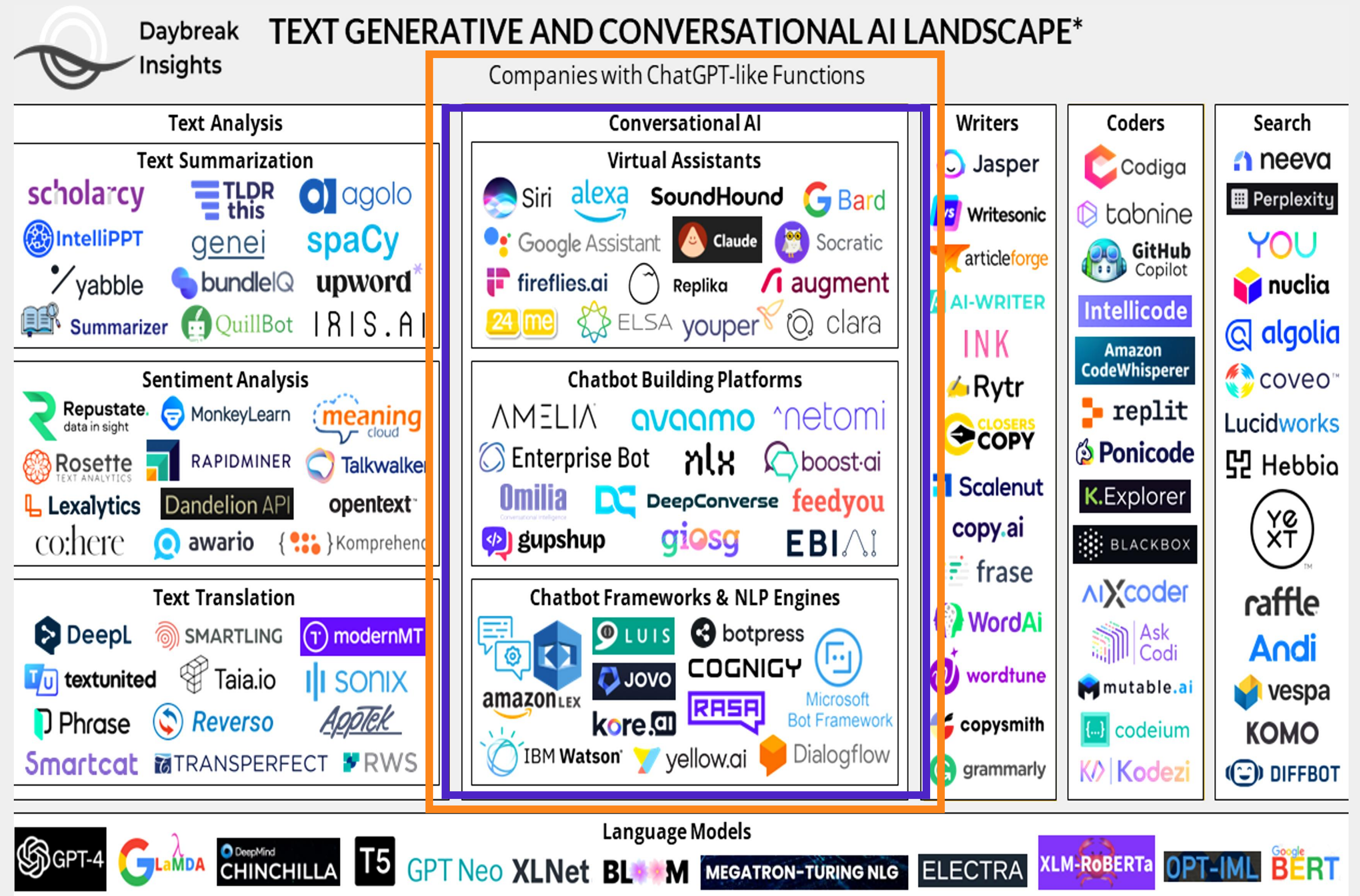


- **Text-to-speech synthesis** by training a neural codec language model (VALL-E).
- VALL-E emerges in-context learning capabilities and can be used to synthesize **high-quality personalized speech with only a 3-second enrolled recording of an unseen speaker as an acoustic prompt**.
- VALL-E X, can convert a person's **voice into another language** based on a **single utterance**



# Conversational AI Landscape

- **Language models are at the bottom of the landscape** because they form the fundamental building blocks of natural language processing (NLP) used for all the other functions.
- What you see on the left **is text summarization, sentiment analysis, and text translation** inside the category of Text Analysis, which refers to the process of using AI to analyze unstructured text data for patterns, insights, and intent.
- In the middle of the landscape, you see **virtual assistants, chatbot-building platforms, chatbot frameworks, and NLP engines** in the overarching category of Conversational AI.



Source: [Daybreak Insights](#)



# Synthetic video avatar



## Conversational AI in Numbers

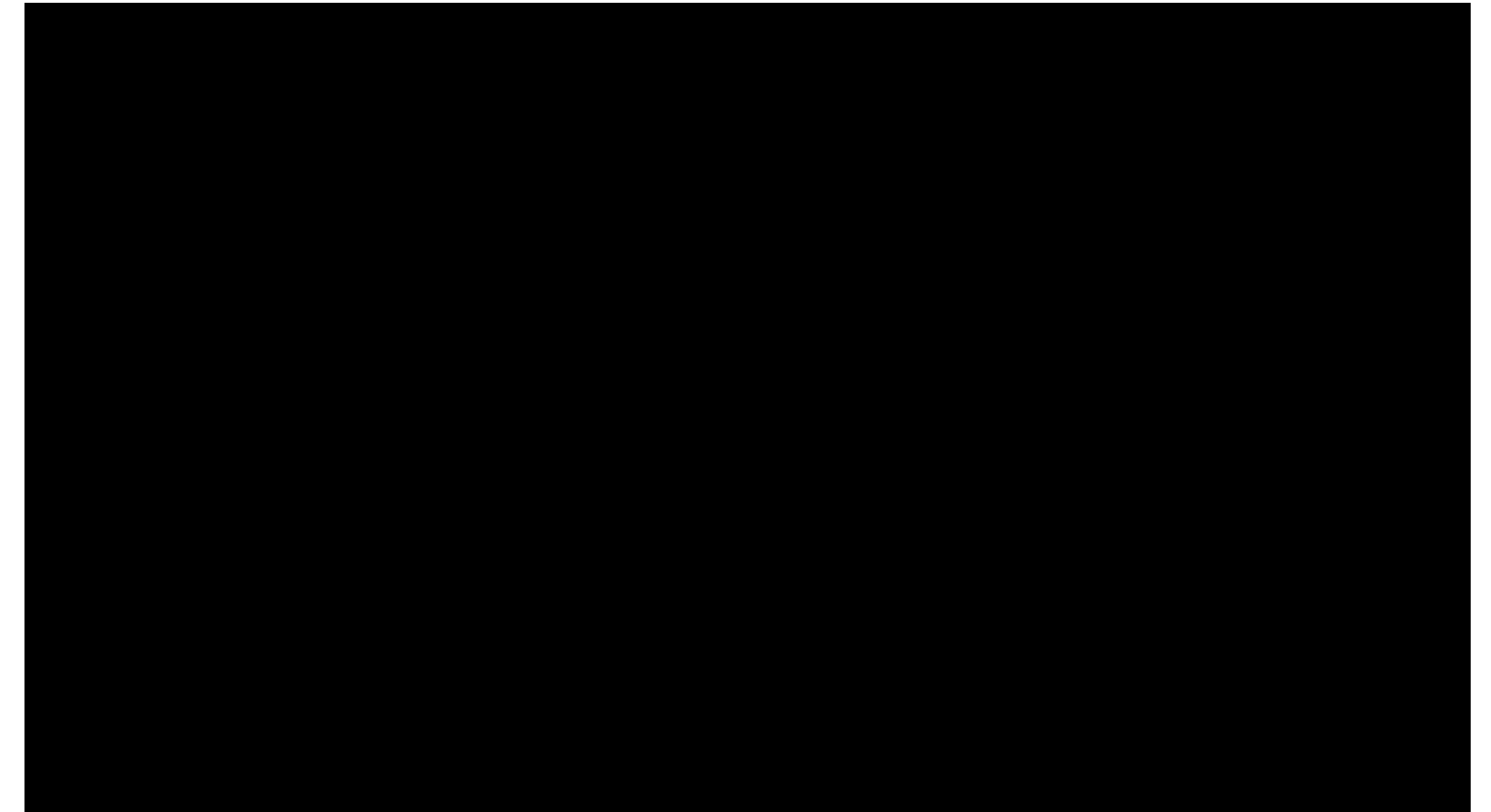
- \$11B savings in customer care costs by 2025, due to chatbot adoption
- 862 million hours saved by 2023 through chatbot interactions in the banking industry
- 300% growth in 5 years of the n° of businesses using AI
- Chatbot-enabled retail sales are up by 98%, annually, reaching \$112 million by 2023
- 86% of individuals would consider using a chatbot from a company they do business with
- Approximately 100M people are expected to work in the AI sector by 2025



# Multi-lingual Conversational AI for modern contact centers

ACCELERAT.AI  
Portugal

- Accelerat.ai is a **€34,5M** deal with the Gov of Portugal to accelerate digital transformation
- Defined.ai is the consortium leader and is awarded a **€14M Government grant**
- Goal: to develop conversational AI in a modular way for public and private sector in Portugal and in European Portuguese
- Language agnostic technology
- Customer pipeline in pilot phase with the largest private companies in Portugal, ministries, largest bank in Spain, Airline in the US





# Conversational AI in Portuguese Gov Public Services

The screenshot displays the ePortugal.gov.pt website interface. At the top, there is a search bar with the text "O que procura?" and a language selector set to "PT". A red banner below the search bar states: "Está a navegar numa versão do portal utilizada para testes e outras validações (ambiente de pré-produção). Caso pretenda utilizar o portal ePortugal siga esta ligação." Below this, the breadcrumb navigation reads "Início > Serviços > Ativar a Chave Móvel Digital". The main heading is "Assistente virtual para informações sobre a Chave Móvel Digital".

The text below the heading explains: "A assistente virtual para informações sobre a Chave Móvel Digital (CMD) está pronta para responder às suas questões de como ativar, desbloquear, alterar dados, cancelar ou usar a assinatura digital da CMD, entre outras." A warning note follows: "Atenção: Não revele dados pessoais ao usar esta aplicação. As conversas serão guardadas para análise e melhoria." On the right side, there is a "Ecrã inteiro" button.

The main content area is titled "A sua assistente virtual para a Chave Móvel Digital" with the instruction "Use as sugestões de perguntas, ou coloque a sua própria questão mais abaixo." Underneath, there are four suggested questions in input fields:
 

- O que é a Chave Móvel Digital?
- Como ativar a Chave Móvel Digital?
- Como ativar a Chave Móvel Digital na aplicação móvel Autenticação.gov?
- O que é a assinatura digital?

At the bottom, there is a "Limpar conversa" button and a text input field with the placeholder "Escreva ou clique no microfone e diga a sua questão". To the left of the input field is a green microphone icon. Below the input field, there is a green speaker icon and a toggle switch labeled "Avatar inativo".

Citizens' authentication and site navigation:  
[Assistente virtual para apoio à ativação da Chave Móvel Digital - ePortugal.gov.pt](https://preprod.eportugal.gov.pt/servicos/assistente-virtual-para-apoio-a-ativacao-da-chave-movel-digital)



# 5. Use Cases

# AI Use Cases



## Logistics

- Real-time product tracking
- Automatic Barcode Reading
- Label Fraud Prevention
- Store Inventory Management
- Tracking supply chain



## Retail

- Personalized Product Recommendations
- Dynamic Pricing
- Cashierless Checkout
- In-Store Shopping Assistance



## Healthcare

- Automation of administrative tasks
- Patient insights gathering
- Hospital logistics enhancement



## Banking

- Voice-based virtual assistants
- Fraud detection & reporting
- Smart digital agents for lead generation



## Contact Centers

- Claim status tracking
- Billing Support and Complaint Management
- Appointments & Reservations

*and more...*



# My favorite use case

## Digital Twins

←

Training **autonomous warehouse robots**

Optimizing **distribution center throughput**

→

Reinventing **home improvement retail**



IBM, Siemens, General Electric, and Microsoft are some of the companies that are using this application.



# What Gen AI can offer in Retail

## New ways to engage with customers

- **Starbucks** and other companies have been using AI algorithms to suggest personalized product recommendations for several years;
- Generative AI has the ability to crunch vast amounts of data and **provide insights in real time**. Like what? Suggest optimized store layouts and product placements;
- Using sources like historical sales data, market trends, weather conditions, and social media sentiment, retailers will be able to get a **much more accurate picture of upcoming demand**, enabling them to minimize stockouts, reduce excess inventory, and improve operational efficiency.



**1** All marketing becomes more targeted



**2** Any screen becomes a personal screen

# What Gen AI can offer in Retail

**Carrefour France:** new solutions based on OpenAI – GPT-4,

- **Launched in June 2023:** really new!;
- Carrefour has launched *Hopla*, a chatbot based on ChatGPT which will be integrated into the [Carrefour.fr](https://www.carrefour.fr).
- Customers will be able to use this natural-language AI to help them with their daily shopping: they will be able to ask it for help in choosing products for their basket, based on their budget, food constraints they may have or menu ideas. **The robot can also suggest anti-waste solutions;**
- The company is also using OpenAI for **enrich description sheets** for Carrefour brand products on its website (2.000 products)





# Portuguese Use Case

Continente Labs (100% Portuguese Tech)

- Launched in 2021, in Lisbon (Saldanha).
- Computer Vision + Machine Learning Experience: **integrated systems of cameras, sensors, and AI algorithms.**
- AI-powered end-to-end solution to capture a wealth of store insights and provide a smooth, frictionless checkout shopping experience.





# 6. AI Trends – how to surf the wave



# Image Generation

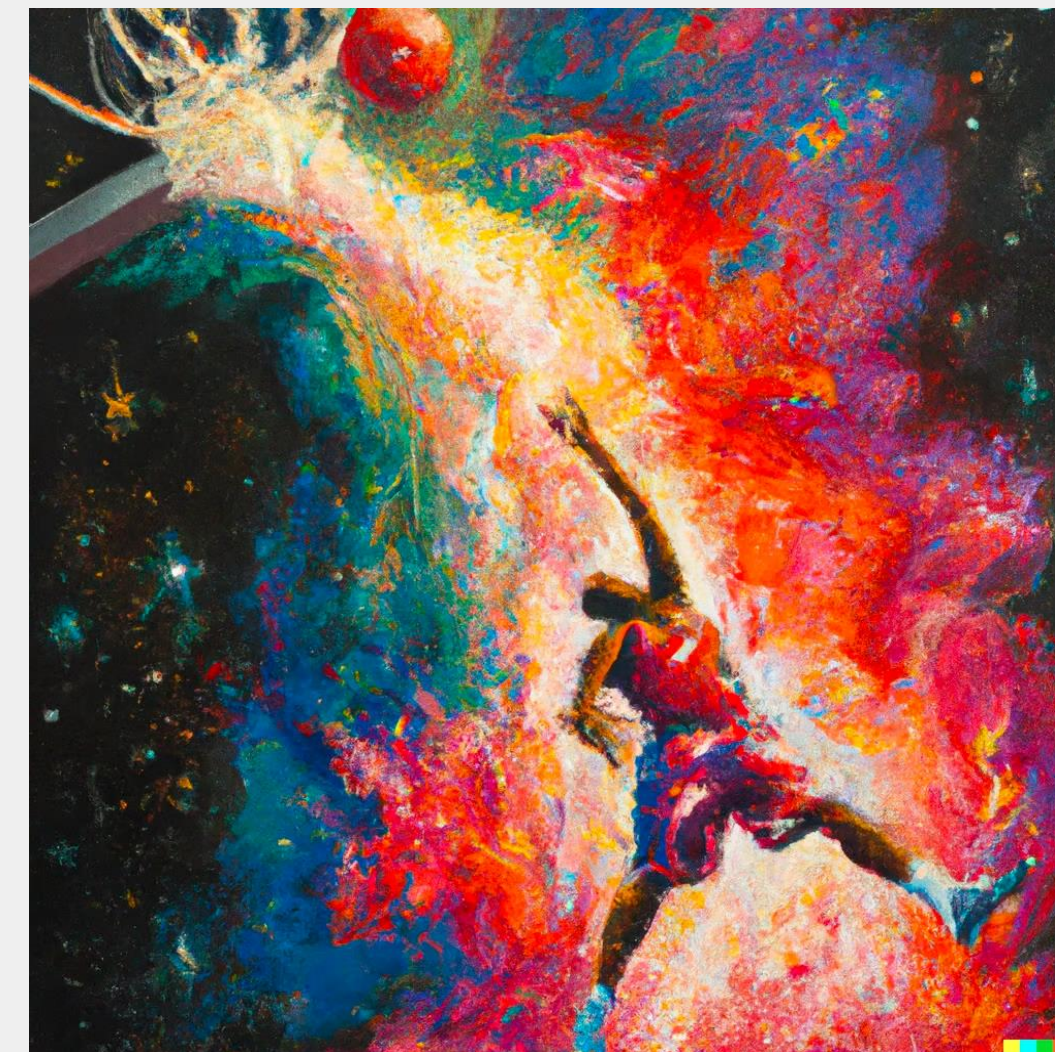


- OpenAI's text-to-Image AI generator software
- Understands significantly more nuance and detail than previous systems, allowing you to easily translate your ideas into exceptionally accurate images
- Even with the same prompt, **DALL·E 3 delivers significant improvements over DALL·E 2**
- **Uses ChatGPT to help fill in prompts.** You can type in a request for an image and hone it through conversations with the chatbot — receiving the results directly within the chat app



## Use Case

Generate *"an expressive oil painting of a basketball player dunking, depicted as an explosion of a nebula"*



DALL·E 2



DALL·E 3

Note: Images generated within seconds



# Text Generation



- **Text-to-Text** NLP AI software
- Built on top of OpenAI's GPT-3.5 and GPT-4 families of large language models
- Can perform a **wide range of language tasks**: answer questions, generate text, summarize information, and translate between languages
- OpenAI raised **\$13B in funding** in 6 rounds
- Valued at **\$29B USD**



## Use Case

Generate a *'thank you for watching message'* to the APCC Summit.



Dear APCC Summit Attendees,

On behalf of Daniela Braga, the Founder of Defined.AI, I want to express our sincere appreciation for your presence at the APCC Summit. We trust you found her presentation both enlightening and engaging.

At Defined.AI, we firmly believe that knowledge is most impactful when shared among forward-thinking individuals like yourselves. We are genuinely thrilled to have had the opportunity to impart our insights with you during this summit.

Should Daniela's talk have sparked your curiosity, we cordially invite you to explore the innovative solutions that Defined.AI offers. Our team is steadfastly committed to pushing the boundaries of AI and data science to generate meaningful outcomes for businesses.

We extend our gratitude once more for your invaluable time and attention. We eagerly anticipate the prospect of collaborating with you and further advancing the realm of AI and data analytics.

**Note:** Text generated within seconds



# Video Generation



- **Text-to-Video** AI generator software
- Streamlines your video creation process
- You get **1 free query**, after that, you need to sign up for a paid membership (costing between \$24–\$72 a month depending on the plan you choose)
- HeyGen raised **\$9M in funding** in 1 round



## Use Case

Generate '*Retail Ad*'



**Note:** Video generated within seconds

# 7. Ethical AI





# Recent headlines of Ethical AI

## The Washington Post

Partly sunny 88/64 • Tomorrow: Sunny 91/62 86 Democracy Dies in Darkness WEDNESDAY, AUGUST 30, 2023 • 83

### Concerns grow with teacher vacancies

Study finds a worsening shortage that leaves schools scrambling

BY MORIAN BALINGIT

Jackson Green, the principal of Charles M. Sumner Education Campus in rural Maine, said he will start the year with just one vacancy. But that achievement was possible only because about 80 percent of open teaching positions this year were filled with long-term substitute teachers after he was unable to find qualified educators. Long-term subs don't need teacher training or a college degree. Many of his new hires lack both.

Last year, desperate for a math teacher, he recruited a waitress from a local restaurant, even though she did not have a college degree. She still works in the district while she earns her college degree.

Research published last week shows that teacher shortages are worsening in several states, and it was not a pandemic aberration. Instead, it seems to be part of a worrisome trend: Teachers are leaving the classroom at higher rates, and the pool of candidates is not big enough to replace them.

Tuan Nguyen, a Kansas State University education professor, last year set out with two colleagues to collect statewide data on teacher shortages. They counted more than 26,500 vacancies in 37 states and D.C. for the 2021-2022 school year. On Aug. 23, they published updated

SEE TEACHERS ON A7



Internet cafes in the Philippines are now frequented by workers who sort and label data for artificial intelligence models. More than 2 million people in the Philippines perform this type of "crowdwork," according to informal government estimates.

### The AI boom's army works overseas in 'digital sweatshops'

BY REBECCA TAN AND REGINE CABATO

GAGAYAN DE ORO, PHILIPPINES — In a coastal city in the southern Philippines, thousands of young workers log online every day to support the booming business of artificial intelligence. In dingy internet cafes, jam-packed office spaces or at home, they annotate the masses of data that American companies need to train their artificial intelligence models. The workers differentiate pedestrians from palm trees in videos used to develop the algorithms for autonomous driving. They label images so AI can generate representations of politicians and celebrities; they edit chunks of text to ensure language models like ChatGPT don't churn out gibberish.

What is seen as human-free learning relies on plenty of labor

"crowdwork," according to informal government estimates, as part of AI's vast underbelly. While AI is often thought of as human-free machine learning, the technology actually relies on the labor-intensive efforts of a workforce spread across much of the global South and often subject to exploitation. The mathematical models underpinning AI tools get smarter by analyzing large data sets, which need to be accurate, precise and legible to be useful. Low-quality data yields low-quality AI. So click by click, a largely unregulated army of humans is transforming the raw data into AI

feedstock. In the Philippines, one of the world's biggest destinations for outsourced digital work, former employees say that at least 10,000 of these workers do this labor on a platform called Remotasks, which is owned by the \$7 billion San Francisco start-up Scale AI. Scale AI has paid workers at extremely low rates, routinely delayed or withheld payments and provided few channels for workers to seek recourse, according to interviews with workers, internal company messages and payment records, and financial statements. Rights groups and labor researchers say Scale AI is among a number of American AI companies that have not abided by basic labor standards for their workers abroad.

OF 36 current and former freelance SEE AI ON A10

### Drug pricing targets named

U.S. TO NEGOTIATE PRESCRIPTION COSTS 10 medications on list are used by millions

BY AMY GOLDSTEIN AND DANIEL GILBERT

The Biden administration Tuesday identified 10 expensive prescription drugs it has chosen for price negotiations with pharmaceutical manufacturers as the government seeks to ease the financial burden on older and disabled Americans. The announcement marks an unprecedented step in a long political war over the nation's exorbitant drug costs even as the pharmaceutical industry is still trying to block the plan.

More than half the drugs selected for an initial round of price negotiations are medications to prevent blood clots and treat diabetes, and were taken by millions of people on Medicare in the past year, according to a list released by federal health officials who oversee Medicare, the vast public health insurance system. Others are used to treat heart trouble, autoimmune diseases and cancer. Consumers will not see benefits swiftly — the lower, negotiated prices are due

SEE MEDICARE ON A8

### Deep racial subtext on Trump's route to jail

Drugmakers react: They decry the caps, but their stocks rise. A15

## Rolling Stone



TRUTH IN TECH

### These Women Tried to Warn Us About AI



"Judgments come with responsibilities. And responsibility lies with humans at the end of the day."

joy buolamwini

### In Show of Force, Silicon Valley Titans Pledge 'Getting This Right' With A.I.

Elon Musk, Sam Altman, Mark Zuckerberg, Sundar Pichai and others discussed artificial intelligence with lawmakers, as tech companies strive to influence potential regulations.





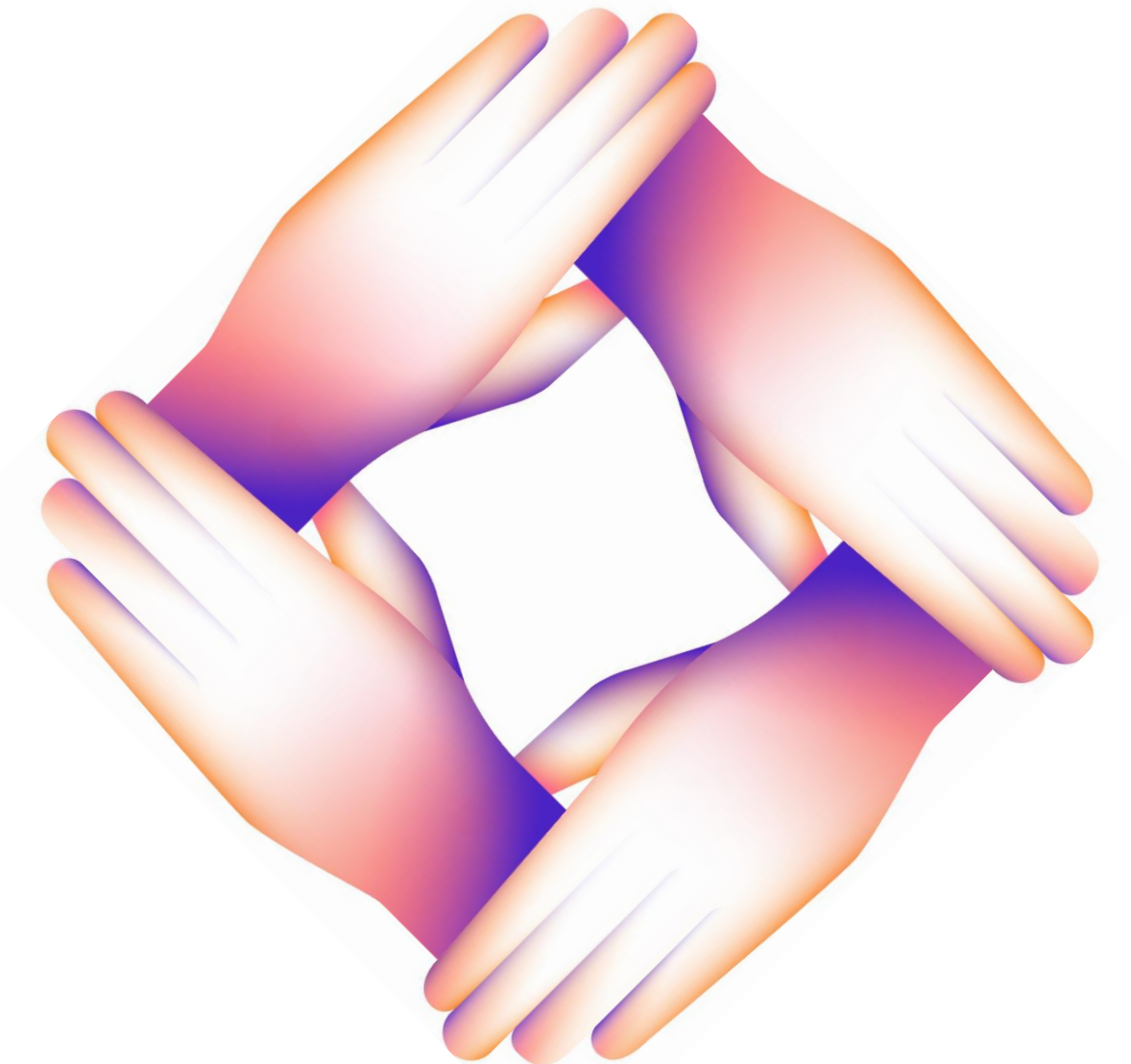
# The importance of Ethical AI

## Ensuring Fairness and Unbiased AI Systems

### AI systems should :

- Be developed and deployed in line with ethical and social values, **prioritizing human well-being and societal benefit.**
- Be **fair and unbiased**, to avoid discrimination against individuals or groups.
- Be used in a way that **promotes social good and human well-being.**
- Be based on AI training data that is **ethically sourced and bias-aware** to produce accurate results.
- Consider the **data** (to train), **algorithms** (to make decisions), and **outcomes** (value) as pillars for decision-making models.

By being ethical in AI, we can create AI systems that are **trustworthy, responsible, and beneficial to society.**



# The importance of Ethical AI

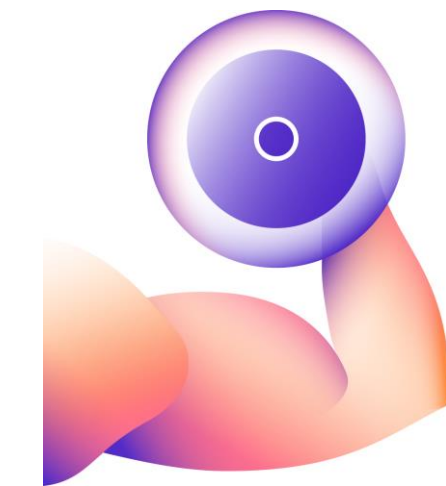
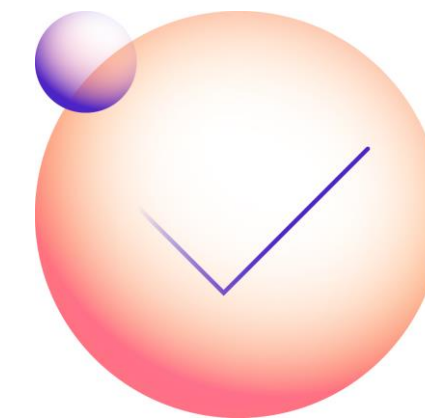
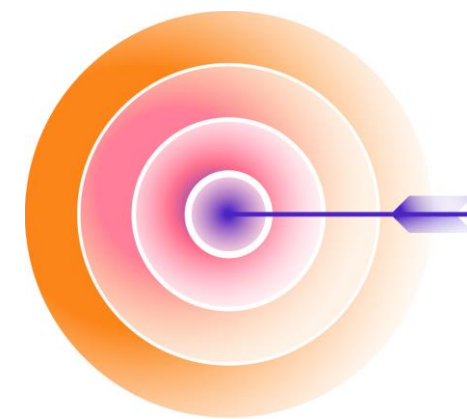
## Ethical standards for AI Data, Developers and Businesses

- **Establish ethical guidelines:** Establish ethical guidelines for their AI data collection practices. Focus on data privacy, data protection, and data use.
- **Conduct regular audits:** Perform regular audits (by independent third-party) on AI data collection practices to ensure compliance with the ethical guidelines.
- **Obtain informed consent:** Customers should be fully informed about what data is being collected, how it will be used, and to whom it will be shared with.
- **Limit data collection:** Collect data that is necessary for business purposes. This data should be relevant and accurate.
- **Encrypt data:** Protect the data collected from unauthorized access (both during rest and in motion).
- **Effective employee training:** Train your employees on data collection practices including data privacy, data protection, and data use.



# Four principles of Explainable AI

Building Transparent, Accountable, and Trustworthy AI Systems



## Explanation

AI systems need to provide clear and understandable explanations for their decisions and actions

## Accuracy

AI systems have to produce accurate and reliable results that clearly align with their intended purpose

## Consistency

AI systems are required to produce consistent results over time, even when applied to different datasets or scenarios

## Robustness

AI systems should be designed to perform well in different environments and under different conditions



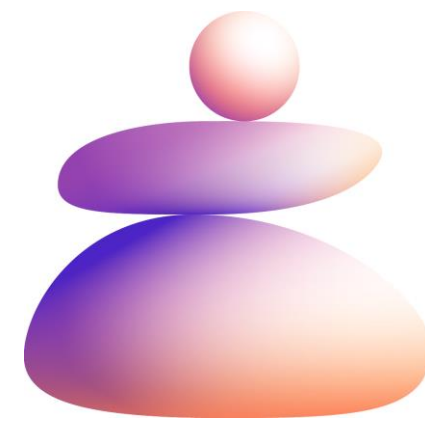
# Ethical AI framework at Defined.ai

**Explainability** of the models is reached via a “nutrition label” like of the data. All data is **legally licensed**.



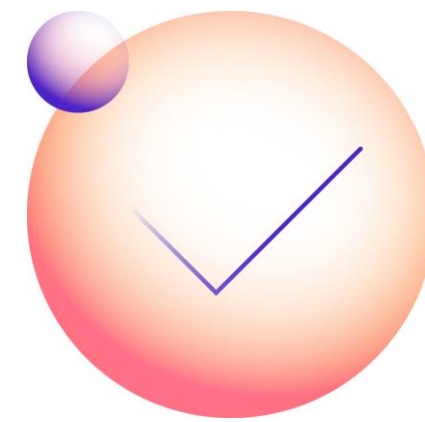
## Privacy

Privacy and global data protection ensuring collection limitation, data quality, purpose specification, use limitation, accountability and individual participation.



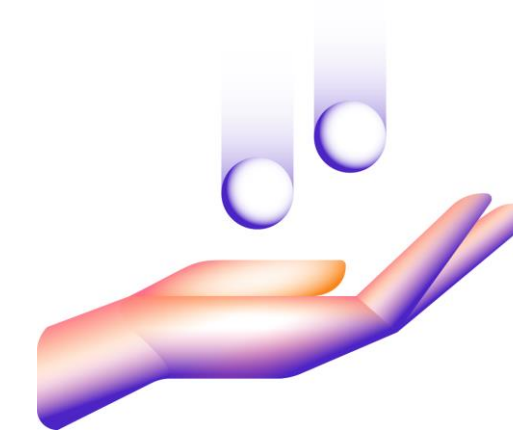
## Unbiased representation

Careful selection of training data, conscious data governance, and a diverse workforce that covers a whole range of inputs and offers a fair representation of our social structures.



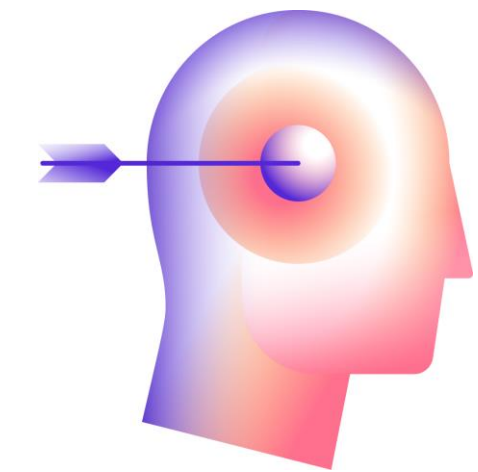
## Consent

Data contributors must be given informed consent for their participation towards data gathering, their willingness and understand how the data gathered is used.



## Paid for

Contributors are fairly paid for their time in each region and services and the whole process is legally transparent.



## Data quality and Transparency for the Client

Avoid any possible misrepresentation and misinformation.

# Thank You

And stay tuned... in the next weeks, we will be launching our **Ethical AI Manifesto**.

**Scan the QR Code** to be the first to get it.

## Get in Touch

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Commission a dataset, learn more about our AI marketplace, or become a vendor by selling your data or models. Whatever it is, we'd love to hear from you.

[contact@defined.ai](mailto:contact@defined.ai)



[Or click here!](#)

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