

TECH NIGHTS

Campinas

21/02/2024 - 19:00



Polo II de Alta Tecnologia, Condomínio
GlobalTech Campinas - Av. Giuseppina Vianelli
di Napoli, 1185 - Bosque das Palmeiras,
Campinas - SP, 13086-530



Lauzier Araújo

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Venturus



Alan Braz

Senior Software Developer
IBM Research



Victor Scarpa

Especialista de QA
Venturus



Allysson de Oliveira

Senior Software Engineer
IBM Research

Governança de IA Generativa no ciclo de Desenvolvimento de Software

Introdução à IA, watsonx e posicionamento da IBM



#technights12
21/2/2024

IA Generativa já é realidade?!



Write a poem about Xbox



Xbox, oh Xbox, you're my favorite toy
A source of endless fun, a faithful joy
From Halo to Gears, you have it all
A gaming paradise, stand

With your sleek design, a
controller
You're the envy of all, a t
soldier
Your online multiplayer, a
Xbox, you're the king, ne



GITHUB COPILOT: CHAT

monalisa
Write unit tests for this function

GitHub Copilot

```
import unittest
import datetime

class TestParseExpenses(unittest.TestCase):
    def test_parse_expenses_with_valid_input(self):
        expenses_string = '2023-01-02 -34.01 USD\n2023-01-03 2.59 DKK
        expected_output = [(datetime.datetime(2023, 1, 2),
                            -34.01, "USD"),
                            (datetime.datetime(2023, 1, 3),
                            2.59, "DKK")]
        self.assertEqual(parse_expenses(expenses_string),
                        expected_output)

    def test_parse_expenses_with_empty_input(self):
        expenses_string = ''
        expected_output = []
        self.assertEqual(parse_expenses(expenses_string),
                        expected_output)

if __name__ == '__main__':
    unittest.main()
```

The code assumes that the datetime module is imported. The test cases cover different scenarios such as valid input, empty input, input with comments, invalid date format, and invalid value format.

parse_expenses.py x addresses.rb x sentiments.ts x

```
1 import datetime
2
3 def parse_expenses(expenses_string):
4     """Parse the list of expenses and return the list of triples (date, amount, currency)
5     Ignore lines starting with #.
6     Parse the date using datetime.
7     Example expenses_string:
8         2023-01-02 -34.01 USD
9         2023-01-03 2.59 DKK
10        2023-01-03 -2.72 EUR
11
12     expenses = []
13
14     for line in expenses_string.splitlines():
15         if line.startswith("#"):
16             continue
17         date, value, currency = line.split(" ")
18         expenses.append(datetime.datetime.strptime(date, "%Y-%m-%d"),
19                         float(value),
20                         currency))
21
22     return expenses
23
24
25 expenses_data = '''2023-01-02 -34.01 USD
26 2023-01-03 2.59 DKK
27 2023-01-03 -2.72 EUR'''
```

Career

Client

Code

Content

TECHNICAL LEADERSHIP COMMUNITY

BRAZIL

An IBM Open Innovation Community Chapter

+ 3200
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145
members

Diversity
Inclusion

AI Automation Data
Quantum
Security Hybrid Cloud

TECH... NIGHTS



TLC abrindo as portas da IBM para a comunidade externa!



**800+
participantes
em 11 edições**



**PULL
RECAST**

NOVOS EPISÓDIOS SEGUNDAS ÀS 11H33



com Alan Braz
e Matheus Bitencourt

Pull reCast - Desenvolvendo sua Eminência Técnica

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pullreCast.dev and 4 more links

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canal.pullreCast.dev

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Bem-vindo ao nosso podcast! Aqui, Alan Braz e Matheus Bitencourt, dois líderes técnicos apaixonados por tecnologia, colaboração e inovação discutem as tendências mais quentes do...



KARINA TRONKOS
@nинаталк, UX Designer...

Pull reCast - Desenvolvendo sua ...
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Pachi Parra, de babá à gestora da maior...

Pull reCast - Desenvolvendo sua ...
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Sergio Gama, CTO da GFT Technology - A revolução da...

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Compacto Pachi Parra sobre DevRel no GitHub Brasil - P...

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Compacto Danne Aguiar sobre SRE - Pull reCast #17

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Compacto Laura Damaceno, A carreira de uma cientista...

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Compacto Sergio Gama, A revolução da IA generativa -...

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89 views • 1 month ago

1. Expertise
2. Aprendizado Contínuo
3. Liderança de Pensamento
4. Contribuição
5. Reputação





Inda existe carreira relevante na era da IA generativa?

**Mas afinal,
o que é IA generativa?**

O boom de popularidade começou com
OpenAI e ChatGPT!

NOVOS EPISÓDIOS SEGUNDAS ÀS 11:33 INSCREVA-SE NO CANAL PULLRECAST.DEV

12:48 / 1:13:46

Ainda existe carreira relevante na era da IA generativa? – Pull reCast

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Impactos do ChatGPT e IA GENERATIVA NOS NEGÓCIOS E NA VIDA

Impactos do ChatGPT e IA GENERATIVA NO RECRUTAMENTO E SELEÇÃO

Impactos do ChatGPT e IA GENERATIVA NA ARQUITETURA DE SOLUÇÕES

Impactos do ChatGPT e IA GENERATIVA EM PROJETOS OPEN-SOURCE

Impactos do ChatGPT e IA GENERATIVA NO DESIGN DE EXPERIÊNCIAS

Impactos do ChatGPT e IA GENERATIVA NA DOCUMENTAÇÃO TÉCNICA

Impactos do ChatGPT e IA GENERATIVA NA SEGURANÇA DA INFORMAÇÃO

Ainda existe carreira relevante na era da IA generativa?

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Impactos do ChatGPT e IA GENERATIVA NO DESIGN DE EXPERIÊNCIAS

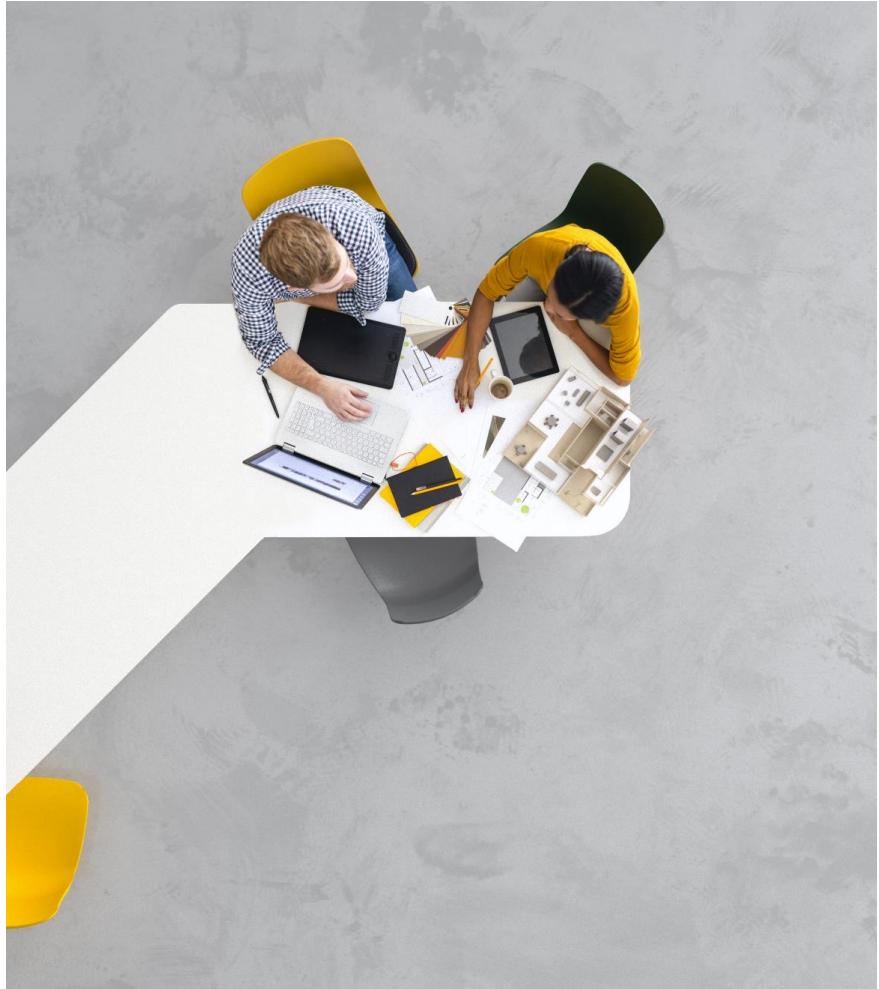
Impactos do ChatGPT e IA GENERATIVA NA DOCUMENTAÇÃO TÉCNICA

Impactos do ChatGPT e IA GENERATIVA NA SEGURANÇA DA INFORMAÇÃO

Ainda existe carreira relevante na era da IA generativa?

- 1 IMPACTOS DO CHATGPT E IA GENERATIVA NOS NEGÓCIOS E NA VIDA 6:50
- 2 IMPACTOS DO CHATGPT E IA GENERATIVA NO RECRUTAMENTO E SELEÇÃO 4:01
- 3 IMPACTOS DO CHATGPT E IA GENERATIVA NA ARQUITETURA DE SOLUÇÕES 4:37
- 4 IMPACTOS DO CHATGPT E IA GENERATIVA EM PROJETOS OPEN-SOURCE 1:42
- 5 IMPACTOS DO CHATGPT E IA GENERATIVA NO DESIGN DE EXPERIÊNCIAS 3:40
- 6 IMPACTOS DO CHATGPT E IA GENERATIVA NA DOCUMENTAÇÃO TÉCNICA 20:24
- 7 IMPACTOS DO CHATGPT E IA GENERATIVA NA DOCUMENTAÇÃO TÉCNICA 8:01
- 8 IMPACTOS DO CHATGPT E IA GENERATIVA NA SEGURANÇA DA INFORMAÇÃO 3:03
- 9 Ainda existe carreira relevante na era da IA generativa? 1:13:47

Introdução à IA



What is AI?

AI refers to the ability of computer systems to attempt to mimic the problem-solving and decision-making capabilities of the human mind.



Computer vision



Data science

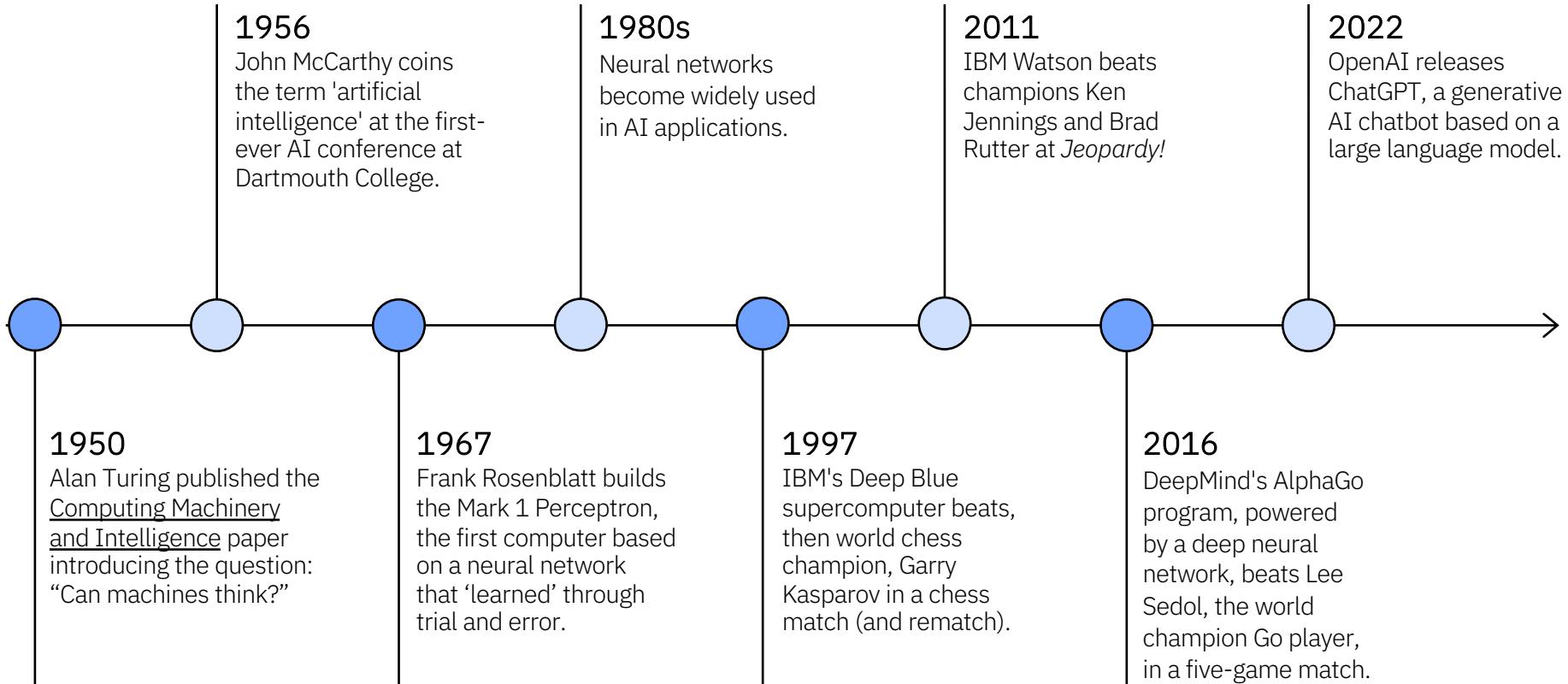


Natural
language
processing
(NLP)



Robotics

AI milestones



Deep Blue 1997



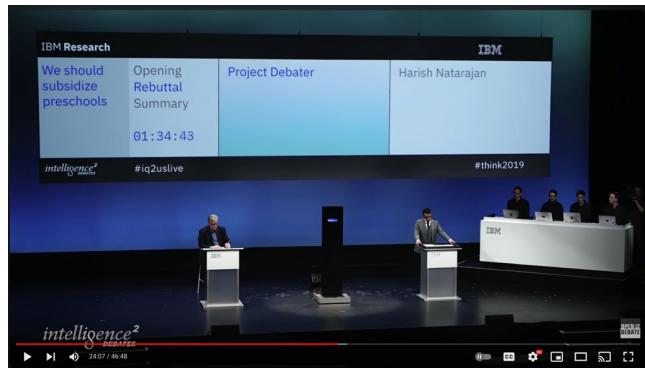
Ei! 2013/2014



Watson 2011



Project Debater 2019



<https://research.ibm.com/interactive/project-debater/film/>
https://youtube.com/watch?v=3_yy0dnIc58

Análise de sentimento durante a Copa usando Big Data

Apresentação gravada no TDC 2014

IBM lança o primeiro projeto de análise de sentimentos em português para grande volume de dados

Artificial Intelligence (AI)

Human intelligence exhibited by machines



AI can be defined as a technique that enables machines to mimic cognitive functions associated with human minds – cognitive functions include all aspects of learning, reasoning, perceiving, and problem solving.

Machine Learning (ML)

Systems that learn from historical data



ML-based systems are trained on historical data to uncover patterns. Users provide inputs to the ML system, which then applies these inputs to the discovered patterns and generates corresponding outputs.

Deep Learning (DL)

ML technique that mimics human brain function



DL is a subset of ML, using multiple layers of neural networks, which are interconnected nodes, which work together to process information. DL is well suited to complex applications, like image and speech recognition.

Foundation Model

Generative AI systems



AI model built using a specific kind of neural network architecture, called a transformer, which is designed to generate sequences of related data elements (for example, like a sentence).

1950's

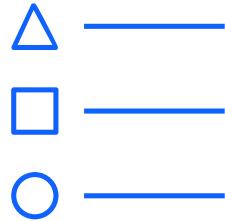
1980's

2010's

2020's



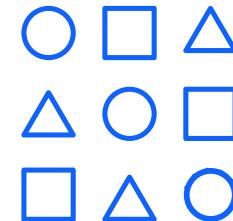
Rules-based systems



*programmed with a series
of [instructions](#) & logical rules*

for example: “a triangle has three sides”

Machine learning systems

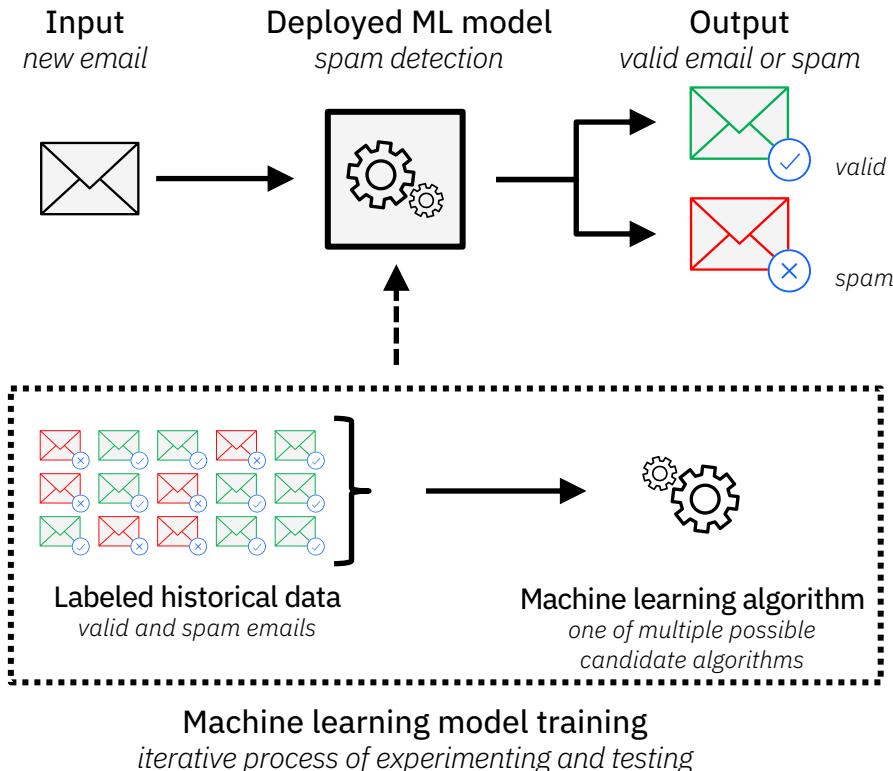


*trained with a
series of [examples](#)*

*for example: “here are
pictures of many triangles”*

What is a machine learning (ML) model?

Example: Spam detection for email



Machine learning (ML) types

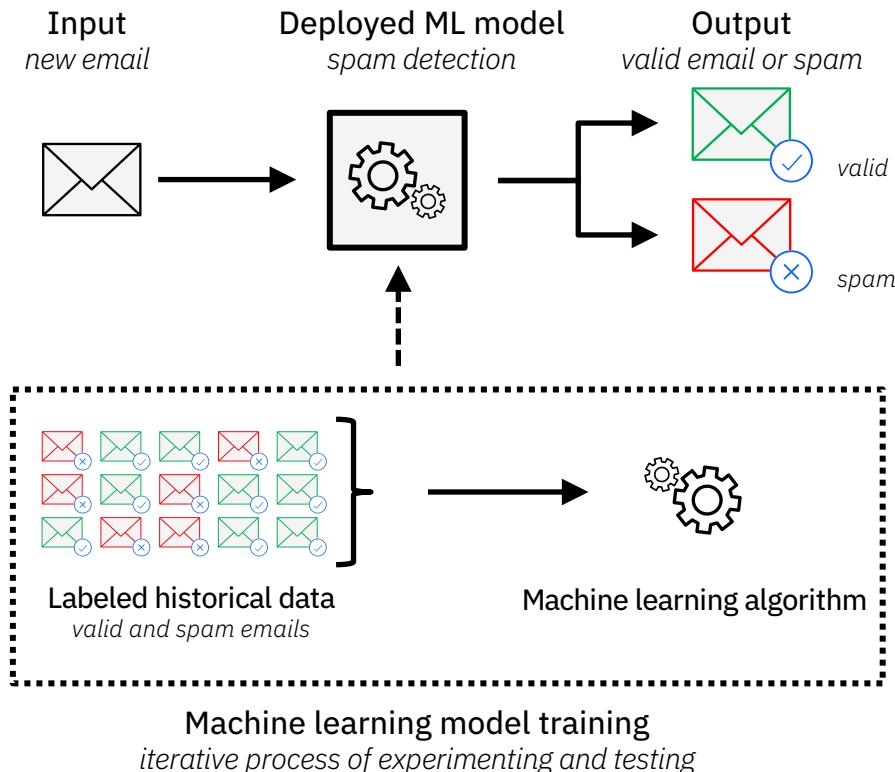
Classification models

Classification models assign labels to model inputs or assign them to specific categories.

Common use cases include:

- Fraud detection: predict whether a transaction is fraudulent based on patterns in the data
- Sentiment analysis: classify text as positive, negative, or neutral
- Medical diagnosis: assign a disease label to a patient's case, based on symptoms and medical history
- Image recognition: recognize objects or identify people based on visible features and characteristics

Example: Spam detection for email



Machine learning (ML) types

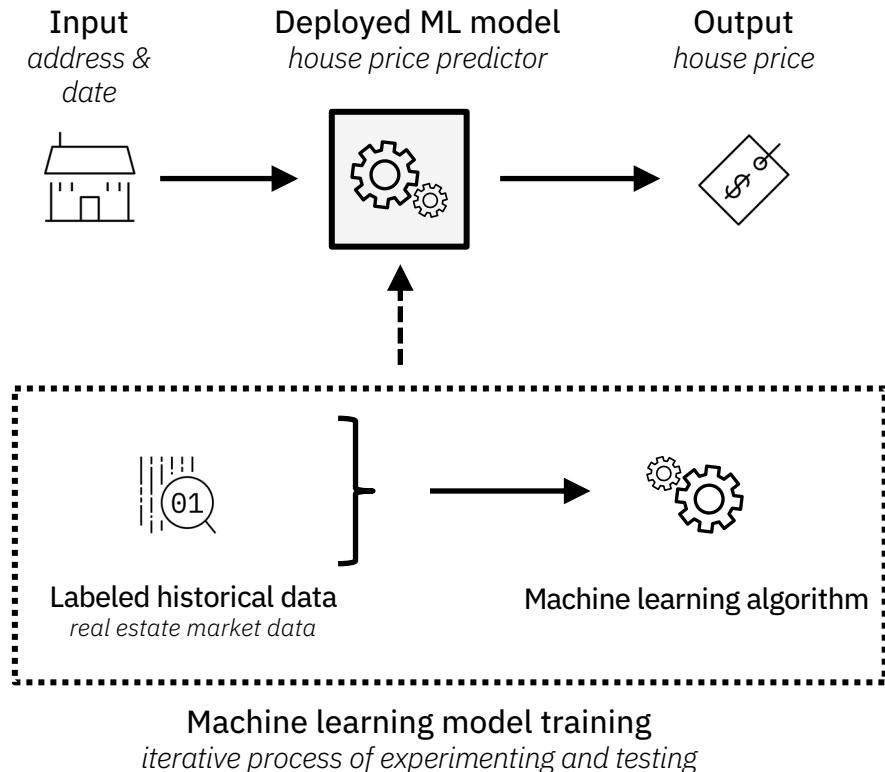
Regression models

Regression models make predictions based on the model input.

Common use cases include:

- Stock market analysis: securities price prediction based on historical data or news events
- Sales: forecasting based on historical data or market trends
- Healthcare: predict patient outcomes based on factors such as age, gender, medical history, or treatment plans
- Customer behavior analysis: predict future customer purchasing patterns based on demographic data, past purchase history, and advertising campaigns

Example: House price prediction



Machine learning (ML) types

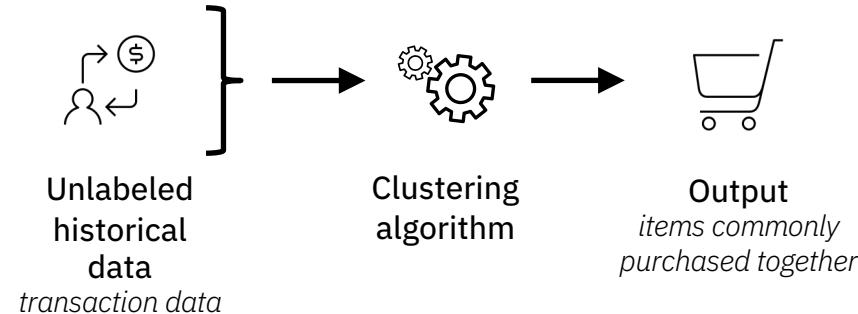
Clustering models

Clustering models identifies distinct groupings of individual data points that share common characteristics within a larger data set.

Common use cases include:

- Customer segmentation: group customers based on similar preference, behaviors, and demographics
- Genetic analysis: group genes with similar functions or processes
- Social network analysis: identify communities or groups within a social network
- Market basket analysis: identify items that are commonly purchased together

Example: Market basket analysis



Machine learning (ML) types

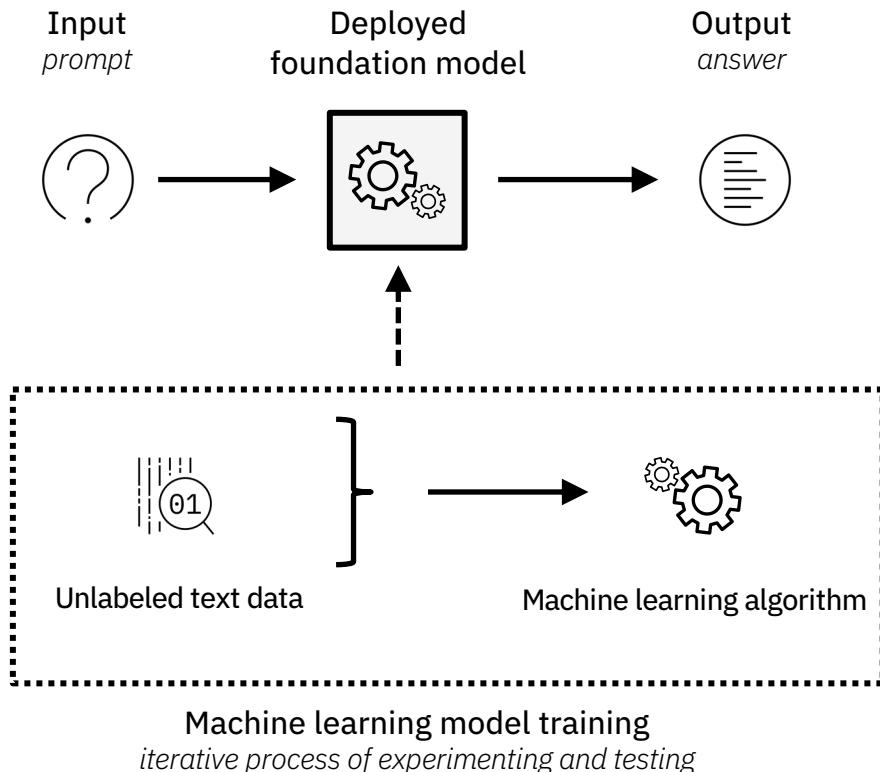
Generative models

Generative models create new data in response to input requests (prompts).

Common use cases include:

- Text generation: generate new text in response to a prompt, summarizing text, or writing a lengthy essay
- Code generation: generate computer code based on a textual description of the proposed program
- Image generation: create images based on the prompt

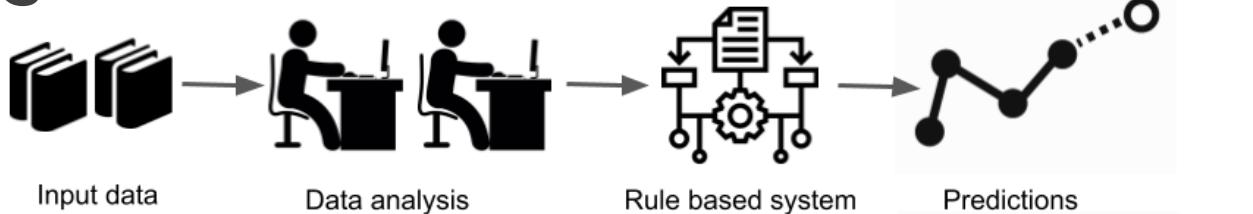
Example: Text generation



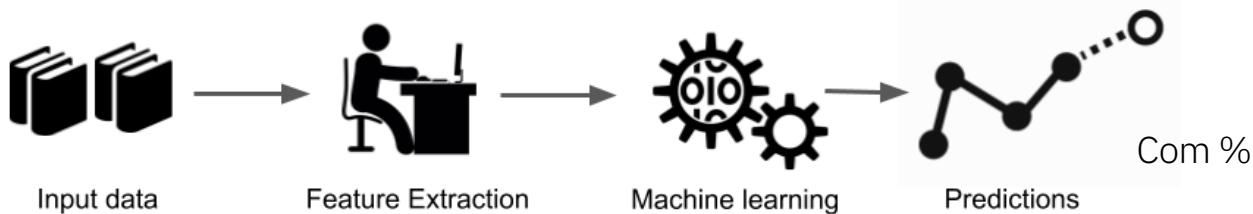


Paradigmas

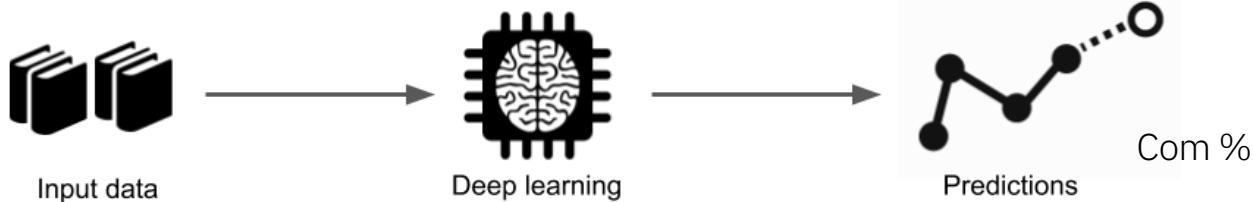
Poucos e
normalmente estruturados



Milhares,
Estruturados ou não
Anotados!



Milhões
Estruturados ou não
Não anotados!



Bilhões/Trilhões
Não Estruturados
Não anotados!



Large language models (LLMs)

LLMs are machine learning models that have been trained on large quantities of unlabeled text using self-supervised learning and can perform a variety of natural language processing tasks .

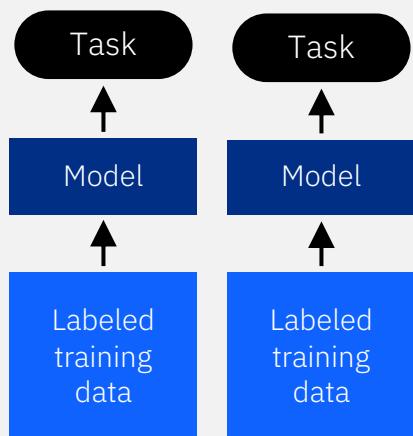
ChatGPT is an example of a generative AI chatbot developed using an LLM.



What's next with foundation models:

Conventional AI

1000s – 100000s labeled
data points / task



Zero-shot prompting

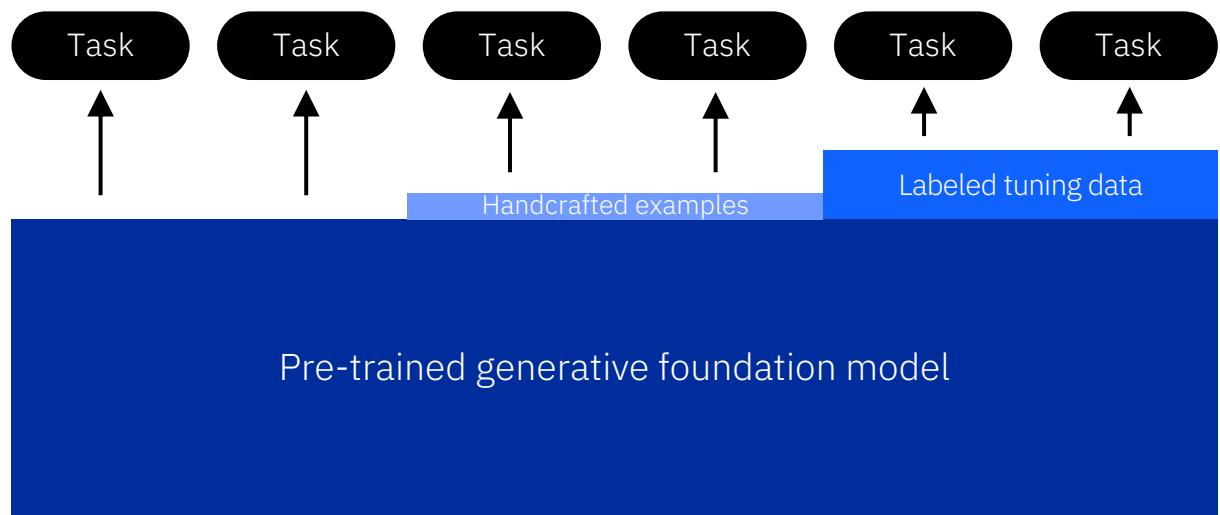
No labeled data needed

Few-shot prompting

1-10 labeled data points /
task

Data-driven tuning

100s – 1000s labeled
data points / task



Inteligência Artificial (IA)

Inteligência humana simulada por máquinas

IA pode ser definida como uma técnica que permite que as máquinas imitem as funções cognitivas associadas às mentes humanas - as funções cognitivas incluem todos os aspectos da aprendizagem, raciocínio, percepção e resolução de problemas.

1950

Alan Turing publicou o artigo Computing Machinery and Intelligence introduzindo a pergunta: "Máquinas podem pensar?"

1956

John McCarthy cunhou o termo 'inteligência artificial' na primeira conferência de IA no Dartmouth College.

Machine Learning (ML)

Sistemas que aprendem com dados históricos

Aprendizado supervisionado

1Ks a 1Ms de exemplos de dados rotulados

Cada tarefa um modelo

Classificação, Regressão, Árvores de decisão

"Aprendizado de Máquina": Os sistemas baseados em ML são treinados em dados históricos para descobrir padrões. Os usuários fornecem entradas para o sistema ML, que aplica essas entradas aos padrões descobertos e gera as saídas correspondentes.

Deep Learning (DL)

Técnica de ML que imita a função do cérebro humano

Aprendizado semi- ou não-supervisionado

1Ms de exemplos de dados rotulados e não rotulados

Imagens e sons

"Aprendizado Profundo": DL é um subconjunto de ML, usando várias camadas de redes neurais, que são nós interconectados, que trabalham juntos para processar informações. DL é adequado para aplicativos complexos, como reconhecimento de imagem e fala.

Foundation Model

Sistemas de IA generativos

Aprendizado não supervisionado
Bilhões de dados não rotulados
Grandes modelos de linguagem LLM
Modelo "base" pré-treinado de forma genérica
GPT-3: 1024 GPUs, 34 dias, \$4.6M

Modelo de IA construído usando um tipo específico de arquitetura de rede neural, chamado Transformer, projetado para gerar sequências de elementos de dados relacionados (por exemplo, como uma frase).

Fine-tuning:

Zero-shot prompting: No labeled data

Few-shot prompting: 1-10 labeled data

Data-driven tuning: 100s – 1000s labeled

1950's

1980's

2010's

2020's

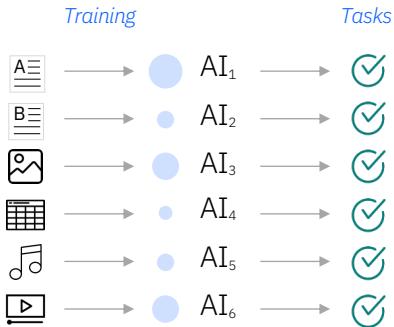
<https://pullrecast.dev/images/resumo-ia.png>

The impact of generative AI |

The opportunity

Foundation models establish a new paradigm for AI capabilities

Traditional AI models



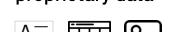
- Individual siloed models
- Require task specific training
- Lots of human supervised training

Foundation models

External data



+ Enterprise proprietary data



Massive foundation model

+ Enterprise proprietary data



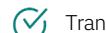
Fine-tuned model



Prompting



Prompting



- Massive multi-tasking model
- Adaptable with minimized training
- Pre-trained unsupervised learning

Enhanced capabilities

- Summarization
- Conversational knowledge
- Content creation
- Code co-creation

Key advantages

- Lower upfront costs through less labeling
- Faster deployment through fine tuning
- Equal or better accuracy for multiple use cases
- Incremental revenue through better performance

up to **70% reduction** in certain NLP tasks

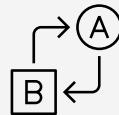
The impact of generative AI |

The opportunity

Building blocks of generative AI

ChatGPT
inspired interest...

LLM



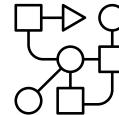
Great
at text

But there is
a bigger concept...

Foundation
model



Transformer



Unlabeled
data

Which will
change business

Generative AI

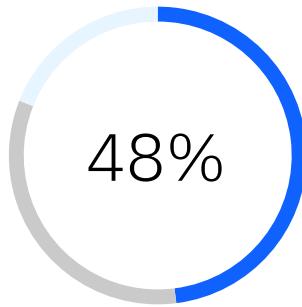


Anything
that creates
new content

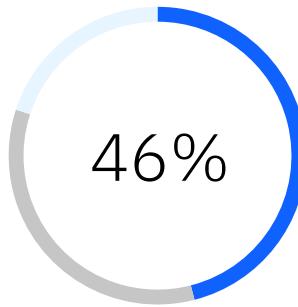
Generative AI adoption considerations, inhibitors and fears

80% of business leaders see at least one of these ethical issues as a major concern

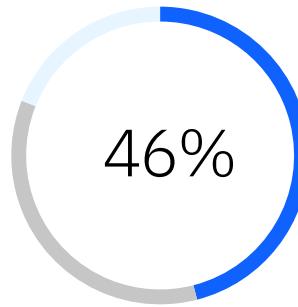
Explainability



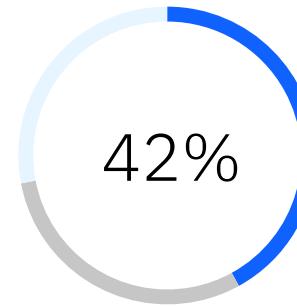
Ethics



Bias



Trust



Believe decisions made by generative AI are not sufficiently **explainable**.

Concerned about the safety and **ethical** aspects of generative AI.

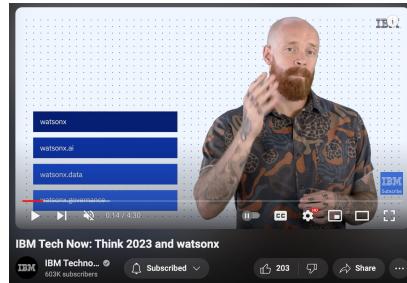
Believe that generative AI will propagate established **biases**.

Believe generative AI cannot be **trusted**.

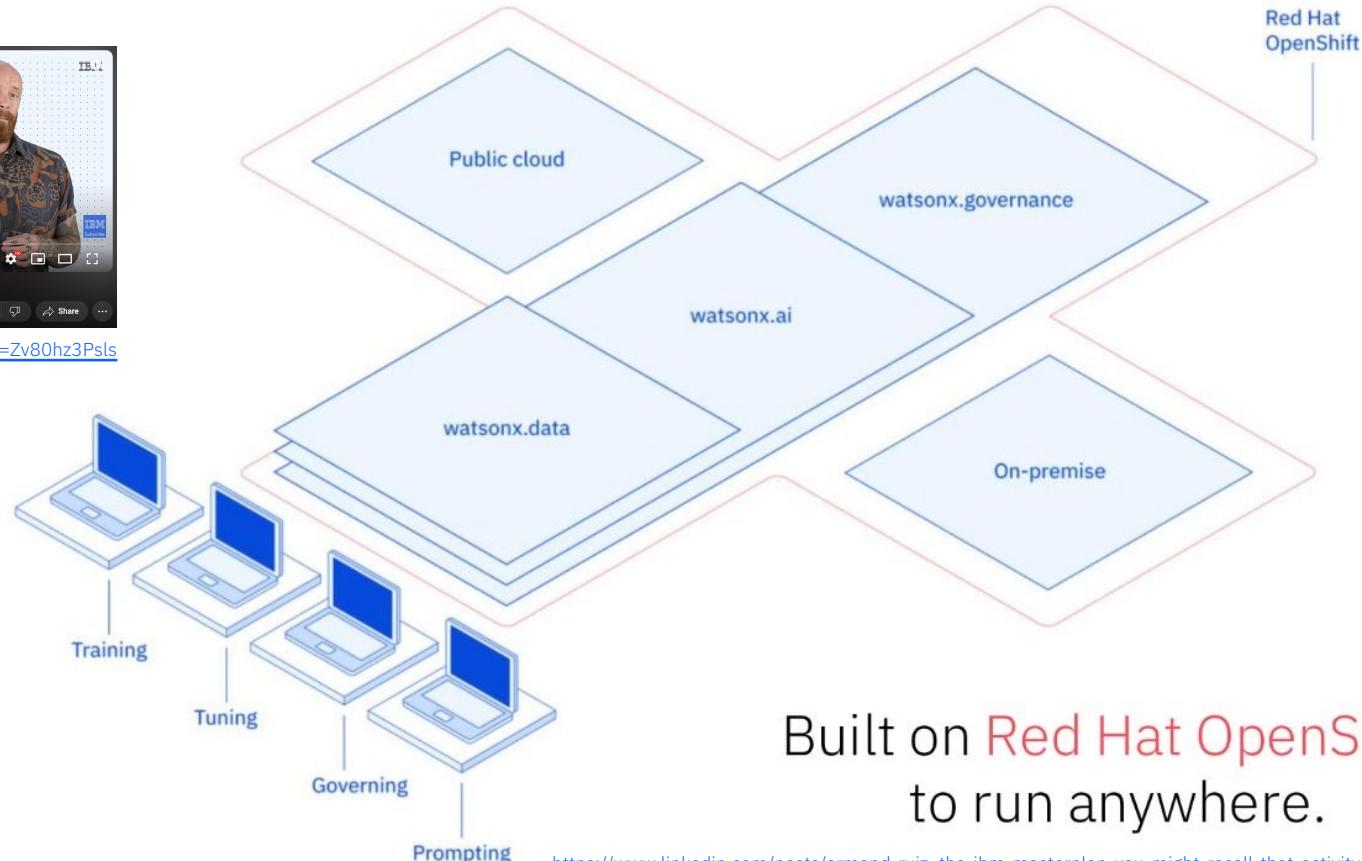
■ Agree ■ Neutral ■ Disagree

Enterprises need more than an AI solution - they need a comprehensive and sound strategy for generative AI.

Putting AI to work on Hybrid Cloud



<https://www.youtube.com/watch?v=Zv80hz3PsIs>



watsonx.ai: Prompt Lab

Experiment with foundation models and build prompts

Interactive prompt builder

Includes prompt examples for various use cases and tasks

Experiment with different prompts, save and reuse older prompts, use different models and vary different parameters

Experiment with zero-shot, one-shot, or few-shot prompting to get the best results

Experiment with prompt engineering

Choice of foundation models to use based on task requirements

Prevent the model from generating repeating phrases

Number of min and max new tokens in the response

Stop sequences – specifies sequences whose appearances should stop the model

The screenshot shows the IBM WatsonX Prompt Lab interface. At the top, there's a navigation bar with 'IBM watsonx', a search bar, and various account and location options. The main area is titled 'Prompt Lab' and shows a workspace named 'New (unsaved)'. On the left, a sidebar titled 'Sample prompts' lists several options: 'Summarization', 'Earnings call summary' (selected), 'Meeting transcript summary' (highlighted in blue), 'Scenario classification', 'Sentiment classification', 'Marketing email generation', 'Thank you note generation', 'Named entity extraction', 'Fact extraction', and 'Question answering'. The right side has tabs for 'Structured' and 'Freeform', with 'Structured' selected. Below this, the 'Set up' section includes an 'Instruction (optional)' field containing 'Write a short summary for the meeting transcripts.' and an 'Examples (optional)' table. The table has two columns: 'Transcript' and 'Summary'. It contains two rows of data: one for 'Meeting transcript summary' and another for 'Fact extraction'. At the bottom, there's a 'Try' section with a 'Test your prompt' input field containing '1' and a summary table. A large blue 'Generate' button is at the bottom right.

IBM POV: Four core principles to tailor generative AI for enterprise

Open

- Based on the best AI and cloud technologies available
- Giving access to the innovation of the open community and multiple models

Targeted

- Designed for targeted business use cases, that unlock new value
- Including curated models that can be tuned to proprietary data and company guidelines

Trusted

- Built with AI and data governance, transparency, and ethics that support increasing regulatory compliance demands
- Providing guidance on appropriate models to leverage to create real business value with trust

Empowering

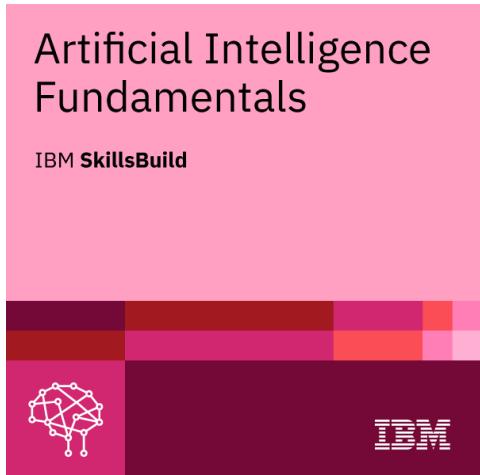
- On a platform to bring your own data and AI models that you tune, train, deploy, and govern
- Running anywhere, designed for scale and widespread adoption to truly create enterprise value

What IBM offers

IBM's generative AI technology and expertise

AI assistants 	Empower individuals to do work without expert knowledge across a variety of business processes and applications.	watsonx Code Assistant watsonx Assistant watsonx Orchestrate watsonx Orders	Consulting Generative AI strategy, experience, technology, operations
SDKs & APIs 	Embed watsonx platform in third party assistants and applications using programmatic interfaces.	Ecosystem integrations	
AI & data platform 	Leverage generative AI and machine learning — tuned with your data — with responsibility, transparency and explainability.	watsonx watsonx.ai watsonx.governance watsonx.data Foundation models Granite IBM Open Source Hugging Face Llama 2 Meta Geospatial IBM + NASA ...	
Data services 	Define, organize, manage, and deliver trusted data to train and tune AI models with data fabric services.	Cloud Pak for Data watsonx Discovery	Ecosystem System Integrators, Software and SaaS partners, Public Cloud providers
Hybrid cloud AI tools 	Build on a consistent, scalable, foundation based on open-source technology.	Red Hat OpenShift AI (e.g., Ray, Pytorch)	

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Plano de aprendizagem

Fundamentos da inteligência artificial (Ganhe uma credencial!)

Aproximadamente 10 horas 8,222 4.5 348

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Sobre este plano de aprendizagem

A inteligência artificial (IA) desperta seu interesse? Aqui está sua chance de se imaginar em uma carreira de IA! Você vai explorar o histórico da IA e descobrir como ela pode mudar o mundo. Ao longo do percurso, você vai descobrir de que maneiras a IA faz previsões, entende linguagem e imagens e aprende usando circuitos inspirados no cérebro humano. Após uma simulação prática na qual você constrói e testa um modelo de aprendizado de máquina, é possível receber dicas de como buscar sua própria carreira na área de inteligência artificial.

Conclua os cursos obrigatórios a seguir para obter uma credencial digital do IBM SkillsBuild reconhecida pelo setor chamada **Fundamentos da inteligência artificial**:

1. Introdução à inteligência artificial
2. Processamento de linguagem natural e Visão por computador
3. Aprendizado de máquina e Deep learning
4. Execute modelos de IA com o IBM Watson Studio
5. Ética da IA
6. Seu futuro na IA: o panorama de trabalho

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Ações

Prompt Engineering with watsonx.ai

Welcome! The goals of this workshop are the following:

- Gain a comprehensive understanding of prompt engineering
- Learn techniques to achieve the best results with Large Language Models
- Apply learnings through completion of a diverse set of prompt engineering exercises

<https://ibm.biz/watsonx-prompt>
Code: watsonxlab

About this workshop

Part art, part science, prompt engineering is the process of crafting input text to fine-tune a given large language model for best effect.

Foundation models have billions of parameters and are trained on terabytes of data to perform a variety of tasks, including text-, code-, or image generation, classification, conversation, and more. A subset known as large language models are used for text- and code-related tasks.

When it comes to prompting these models, there isn't just one right answer. There are multiple ways to prompt them for a successful result.

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Prompt Engineering for Everyone

Prompt Engineering, Generative AI, LLM, +1 more

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5 Hours  (1.03k+)

Beginner Course

Introducing AI

Artificial Intelligence

6.34k+ Enrolled

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Beginner Course

AI Ethics

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AI Concepts

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Intermediate Guided Project

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Build a Chatbot in less than an hour with watsonx!

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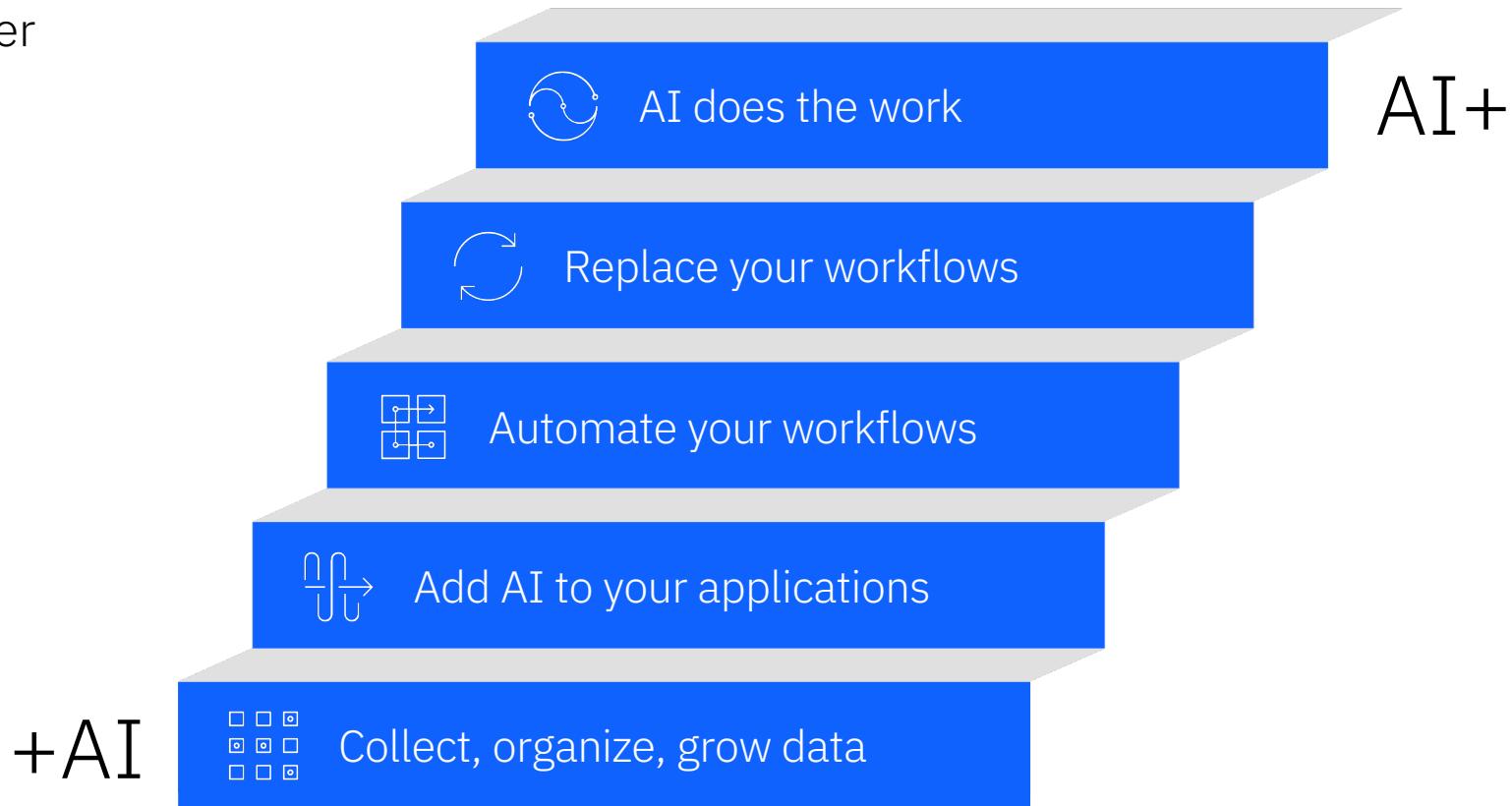
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+AI to AI+

The modern-day AI ladder



Saiba mais...

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Alan Braz
TDC Future 8/12/2023

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