

**> W WOMENTECH**  
**MENTORING**  
**PROGRAM**  
10 MINUTE TALK

# Generative AI with LLMs: Getting started

**Pilar Madariaga Lasala**  
[linkedin.com/in/pilarmadariaga/](https://www.linkedin.com/in/pilarmadariaga/)

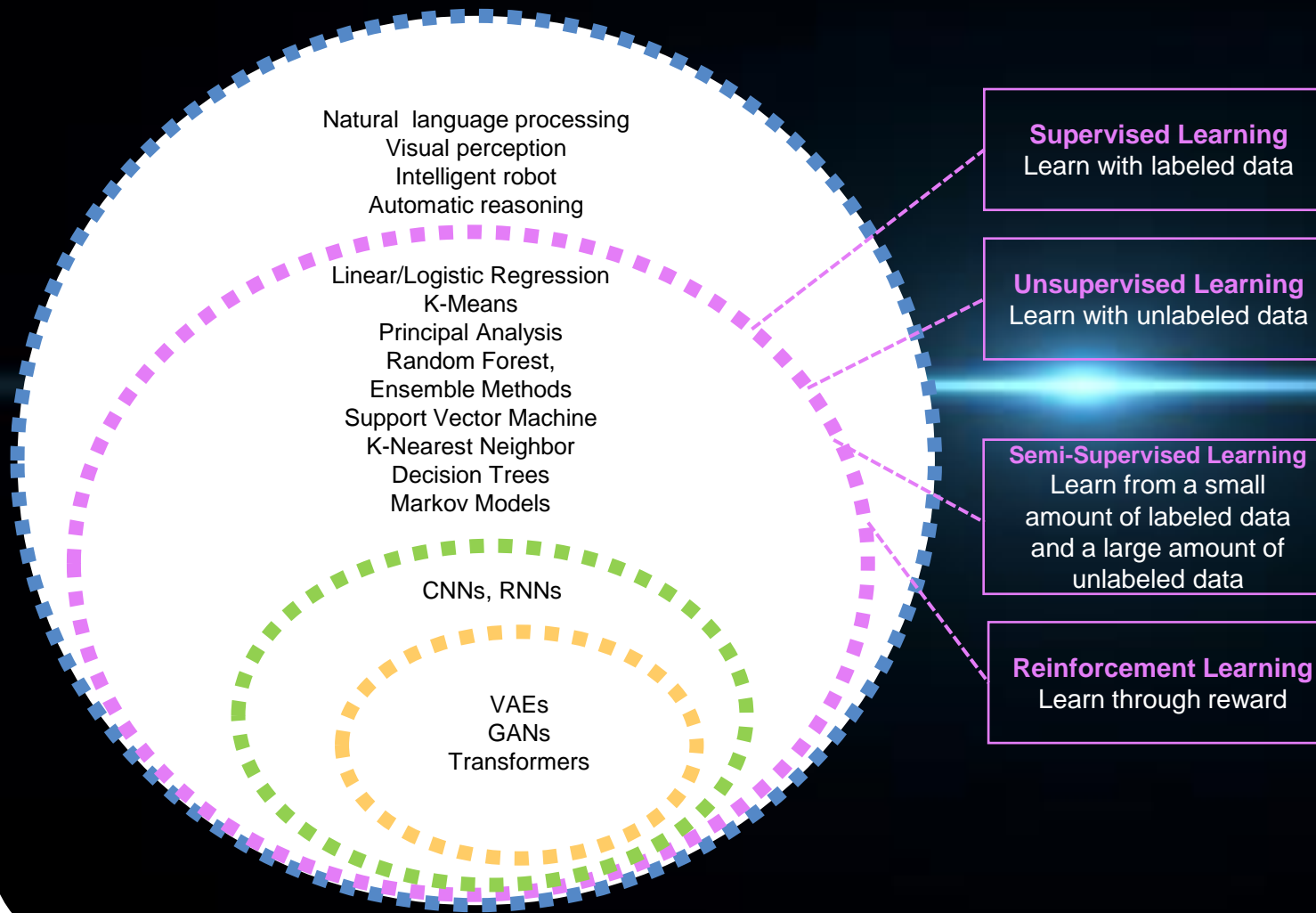
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- 6 **Getting started: A use case with an LLM (Llama2)**

## Agenda



Generative AI with LLMs: Getting started

# AI Landscape



## Artificial Intelligence

Field of study of any technique that enables computers to mimic human behaviour.

## Machine Learning

A subset of algorithms that learn from data without being explicitly programmed. Data could be data with labels or data without labels.

## Deep Learning

A subset of ML methods that use artificial neural networks and automatically builds a hierarchy of data representations.

## Generative AI

A subset of deep learning models that generate new content that didn't exist before and is similar to training data.



## Taxonomy: Types of generative AI



Anime Style



Photo Style



Illustration Style



Emoji Style



Text



Code



Image



Speech



Video



3D

Text to text

Text to image

Text to video

Text to code

Text to sql

Text to 3D

Text to speech

Speech to Text

Image to text

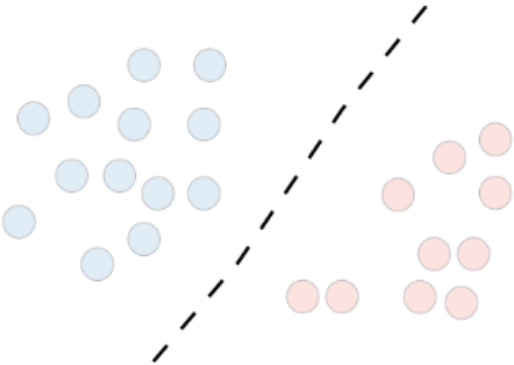
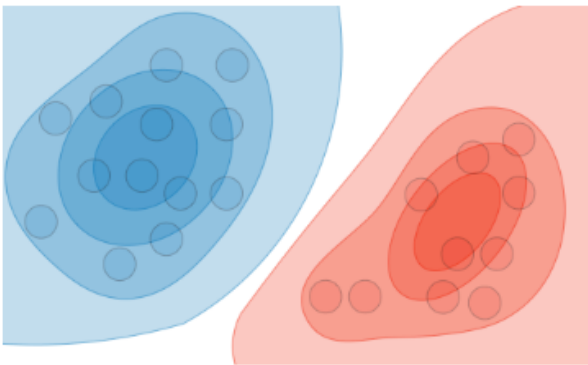
Image to Image

# Predictive IA vs. Generative AI

(Discriminative model vs. Generative model)

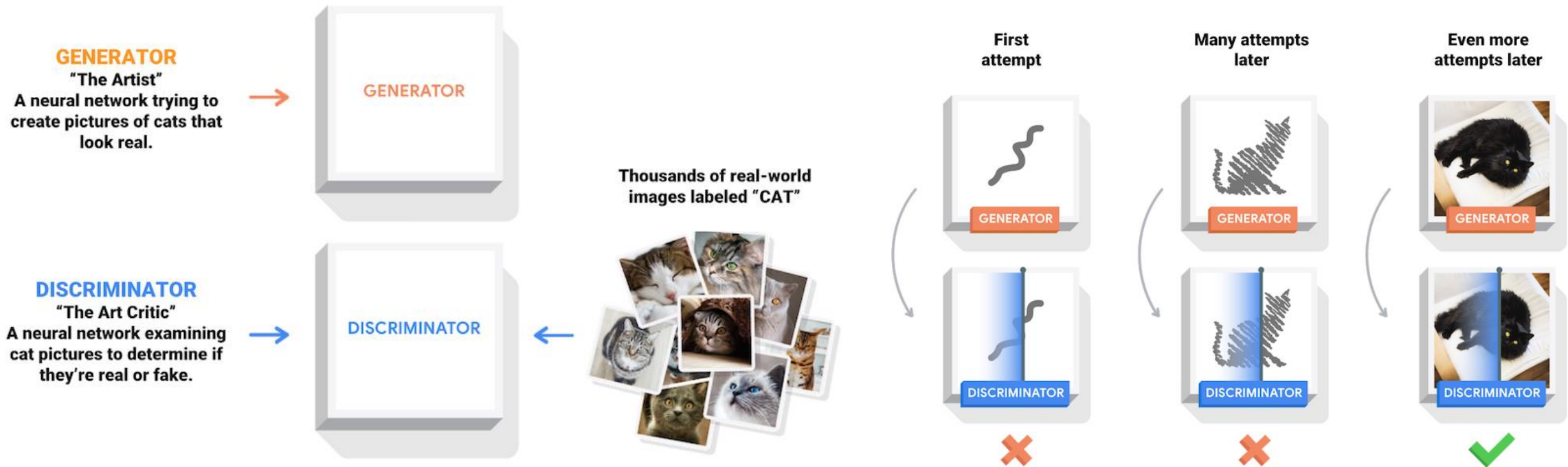
Assume that we have a set of  $x$  features and a set of labels  $Y$ :

- **Generative models** estimate the prior  $P(Y)$  and likelihood  $P(X|Y)$  from training data and use the Bayes rule to calculate the posterior  $P(Y|X)$ .
  - **Discriminative models** directly assume functional form for  $P(Y|X)$  and estimate parameters of  $P(Y|X)$  directly from training data.
- ✓ Both models learn  $P(y|x)$  but in a different way.

	Discriminative model	Generative model
Goal	Directly estimate $P(y x)$	Estimate $P(x y)$ to then deduce $P(y x)$
What's learned	Decision boundary	Probability distributions of the data
Illustration		
Examples	Regressions, SVMs	GDA, Naive Bayes

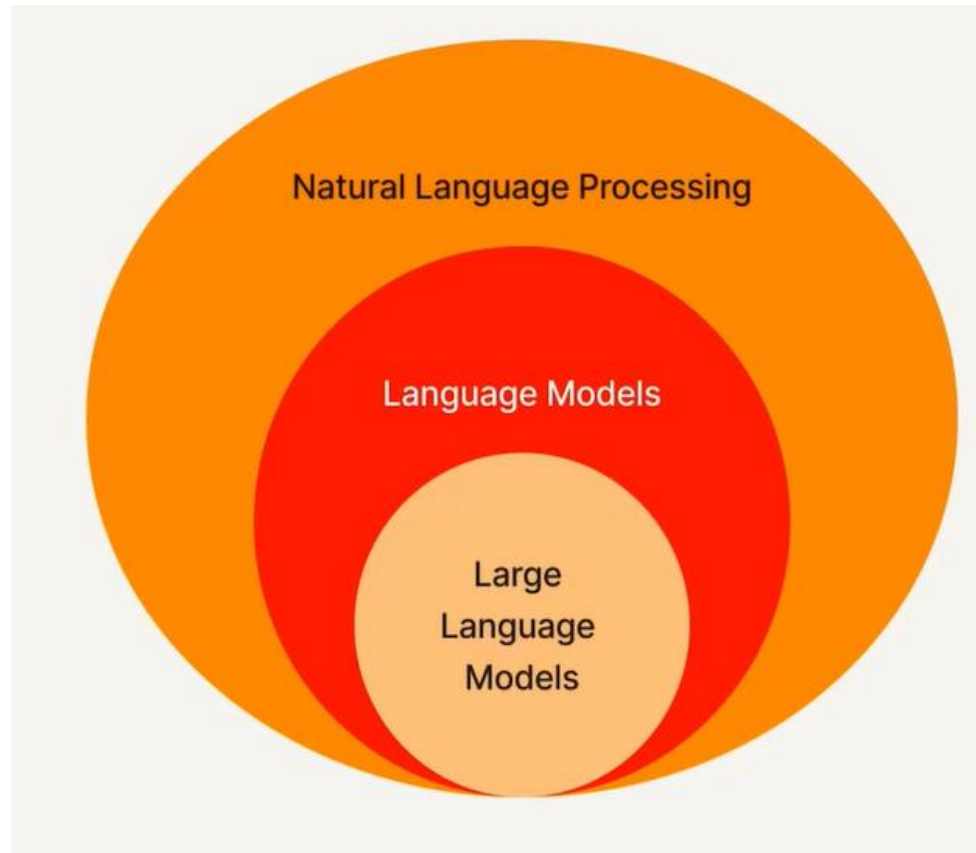
<https://stanford.edu/~shervine/teaching/cs-229/cheatsheet-supervised-learning#introduction>

# How are generative models built? i.e: GANs



**DALL-E** –It is an AI tool that uses GANs to convert text prompts into images

## Generative AI has revolutionized Natural Processing Language (NLP)

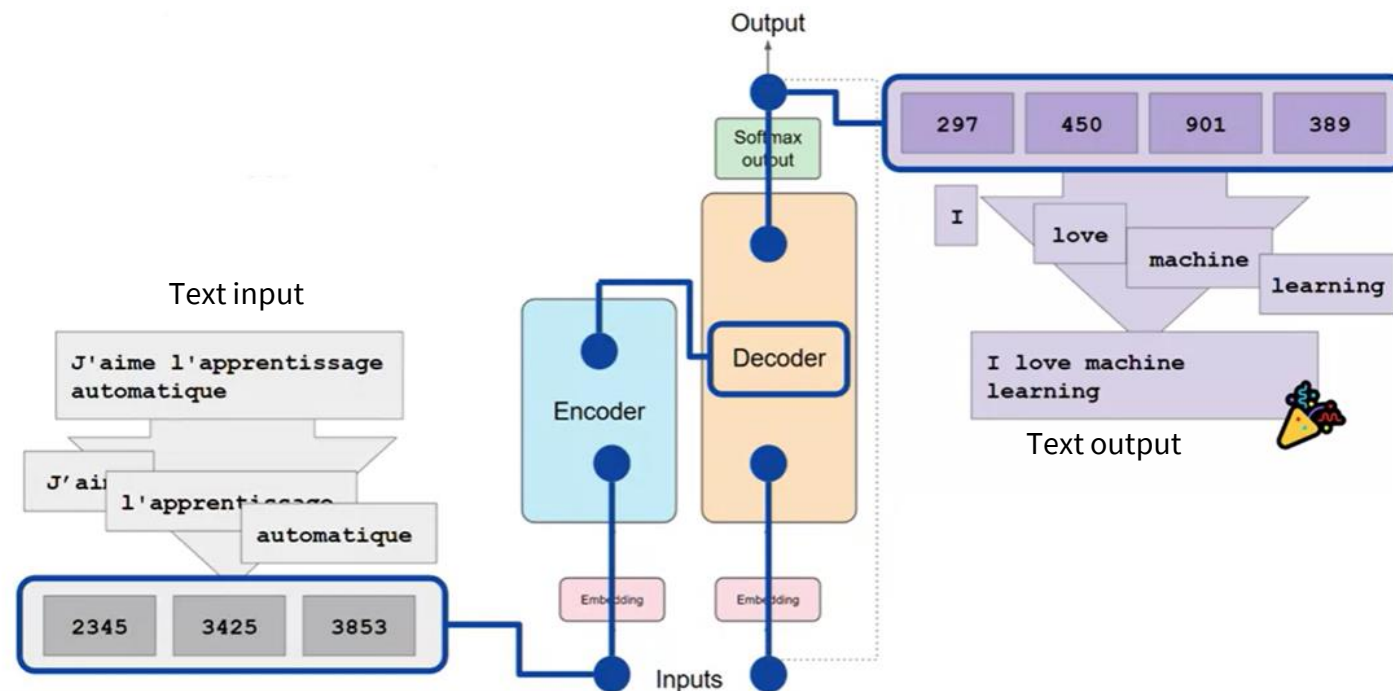


The Natural Processing Language (NLP) goal is to build systems that can process natural language.

NLP combines the field of computational linguistics with machine learning to create intelligent machines capable of identifying the context and understanding the intent of natural language

# What are Large Language Models (LLMs)?

A type of artificial intelligence **algorithm trained on a massive text corpus** and capable of **completing any natural language task** (*Foundational Models*).



The transformer model (2017) uses a mechanism called “self-attention” to identify the relevance of each word in a prompt and how they relate to each other in the context of the input sequence.



<https://www.deeplearning.ai/courses/generative-ai-with-llms/>

<https://arxiv.org/abs/1706.03762>



## Evolution of Language Large Models

### Large Language Models 1.0.

What this first generation of transformers has in common is that they were all pretrained on large unlabeled text corpora

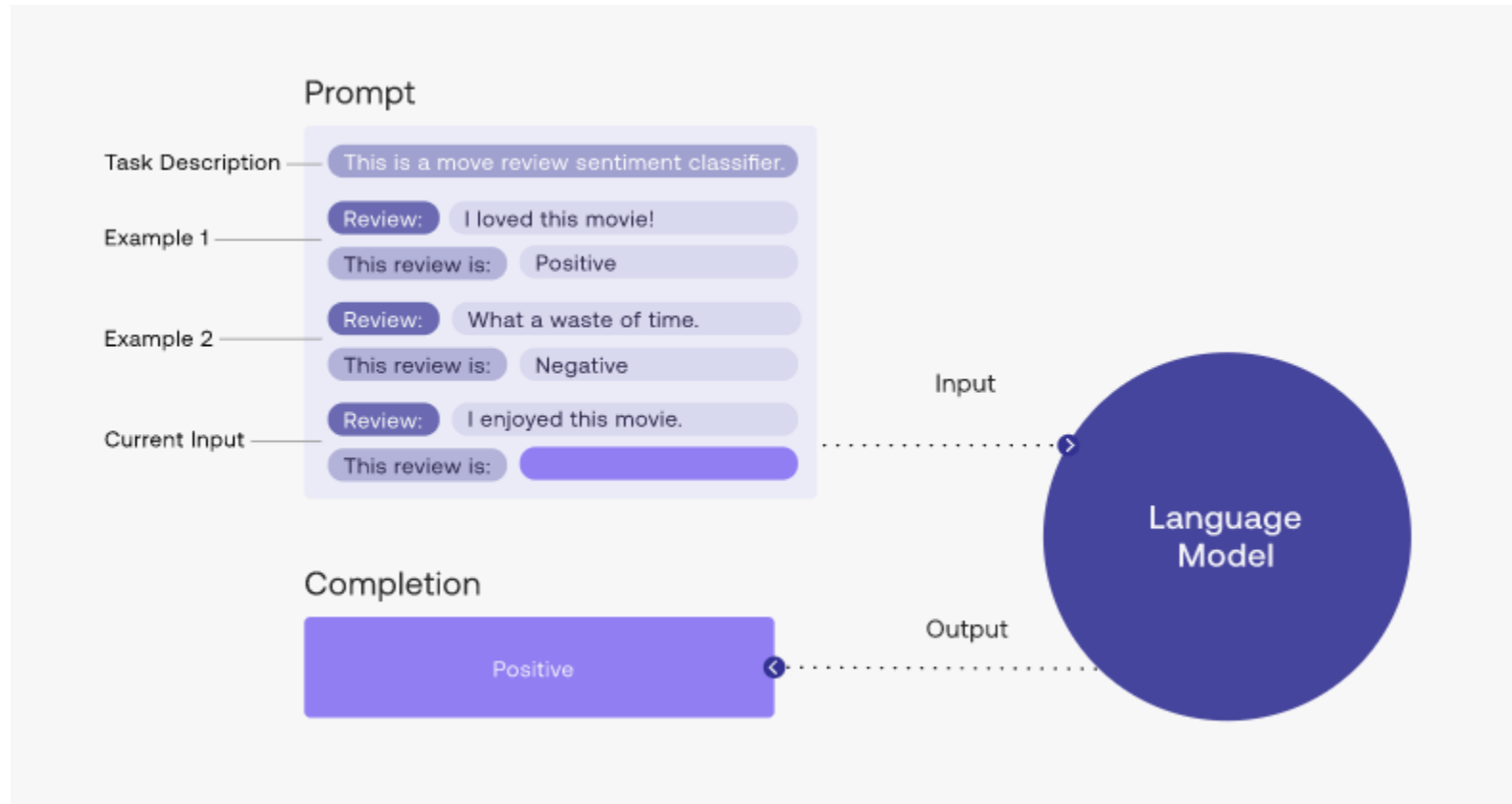
### Large Language Models 2.0.

Pretrained LLMs are being finetuned on labeled target data, either using reinforcement learning with human feedback or more classic supervised learning objectives.

### Large Language Models 3.0.

LLMs centred around multimodal and multitask learning, bringing new capabilities to large language models.

# How do you fine-tuning LLMs?



## Zero-shot prompting



Providing a single  
command to the LLM  
without any example

## One-shot prompting



Providing a single  
Example of the task to  
the LLM

## Few-shot prompting



Providing a few  
Examples of the task to  
the LLM



A full-page background image featuring an astronaut in a white spacesuit with a large backpack, kneeling on the reddish, rocky surface of Mars. The astronaut's helmet has a glowing orange visor. In the background, the curved horizon of Earth is visible against a starry space filled with the Milky Way galaxy. The scene is lit with a warm, orange glow, suggesting a sunset or sunrise on the planet.

## Getting started: A use case with an LLM

# Build a chatbot with LLama2

Chatbot

¿Qué es un Large Language Model?


¡Hola! ¡Claro que sí! Un Large Language Model (LLM) es una clase de modelo de lenguaje artificial que utiliza un gran conjunto de datos para aprender a comprender y generar texto. Estos modelos son capaces de procesar grandes cantidades de información y generar respuestas precisas y coherentes. Los L


¿Cuántos tipos de LLM hay?


There are several types of large language models (LLMs) available, including transformer-based models like BERT, RoBERTa, and XLNet, as well as recurrent neural network (RNN) based models like LSTM and GRU. Each type of LLM has its own strengths and weaknesses, and the choice of which one to use will

Type a message...

Submit

 Retry

 Undo

 Clear



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**Thank you!  
Gràcies!  
Gracias!**

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