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# Artificial Intelligence : understanding for apprehending

Xavier Vilasís

International Scientific Colloquium  
The Future of Catholic Universities in the AI Age



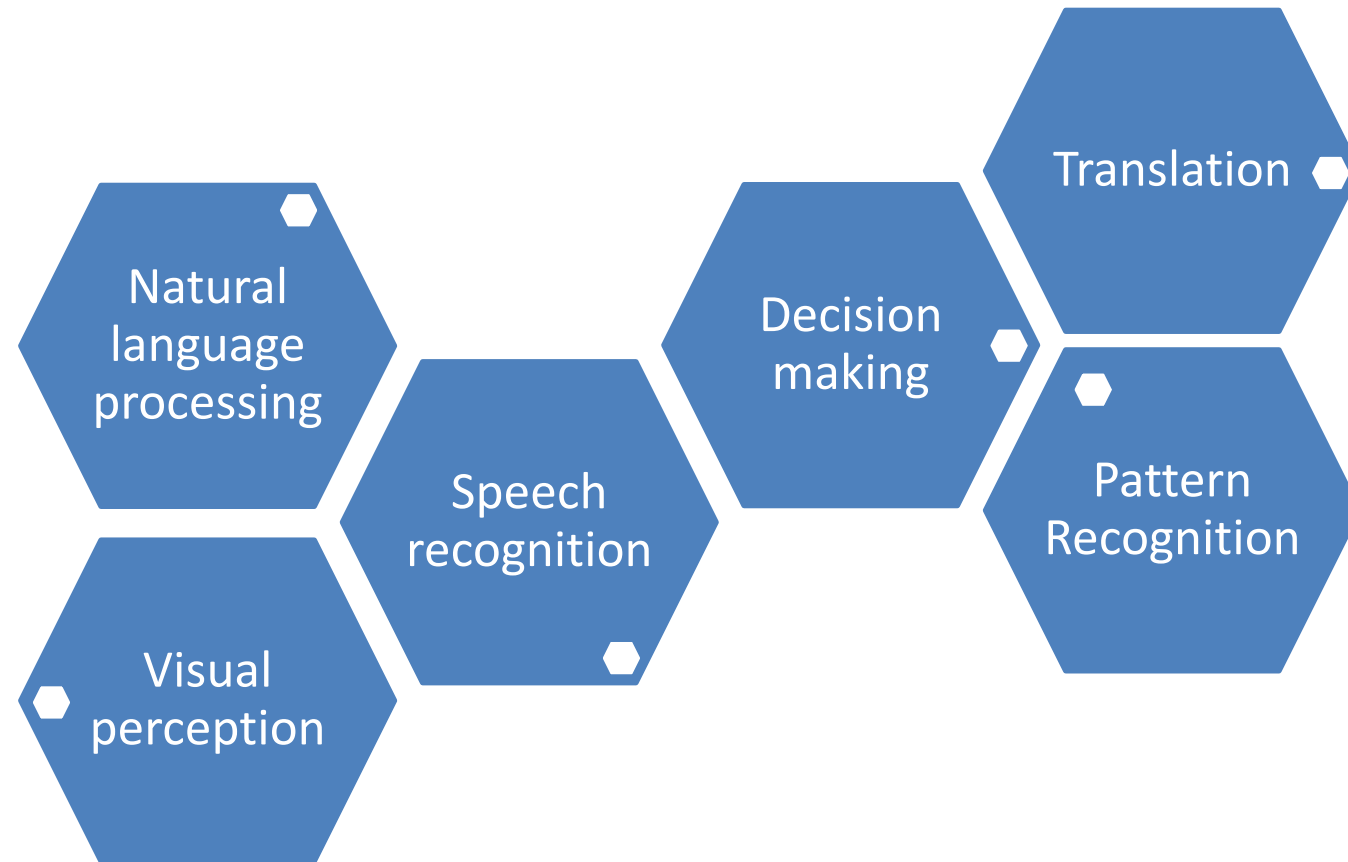
¿?

# Artificial Intelligence

**Mathematical techniques**  
performing tasks we associate to  
**Humans**

With a too nice a name

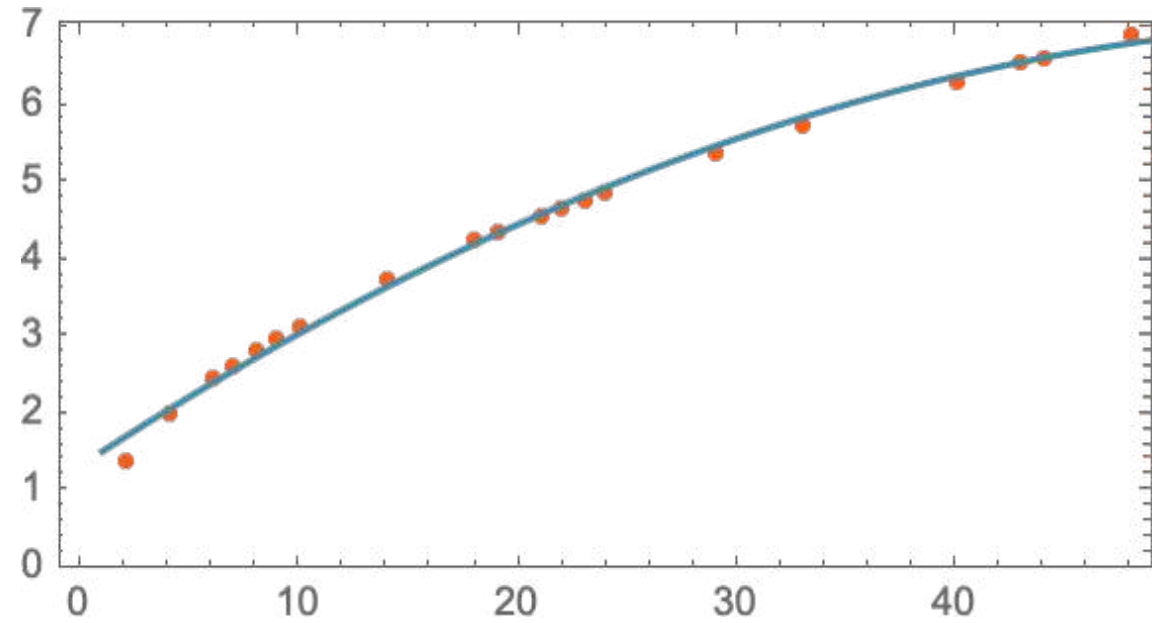
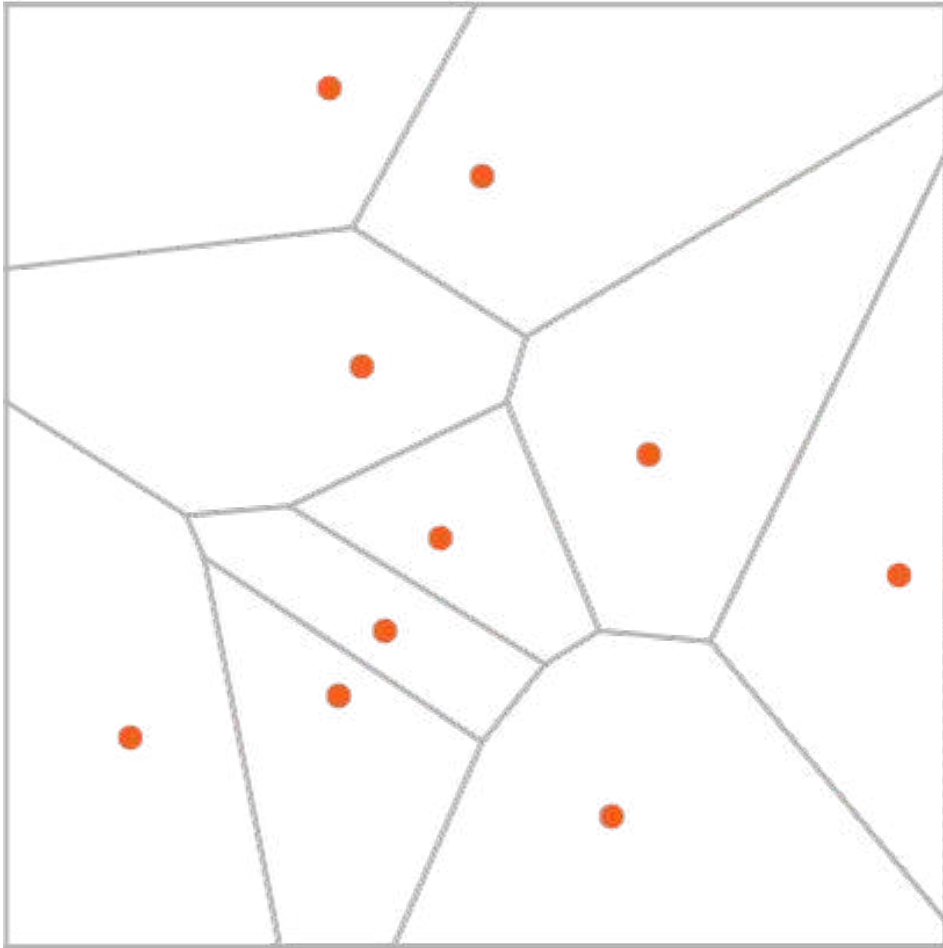
# Such as...



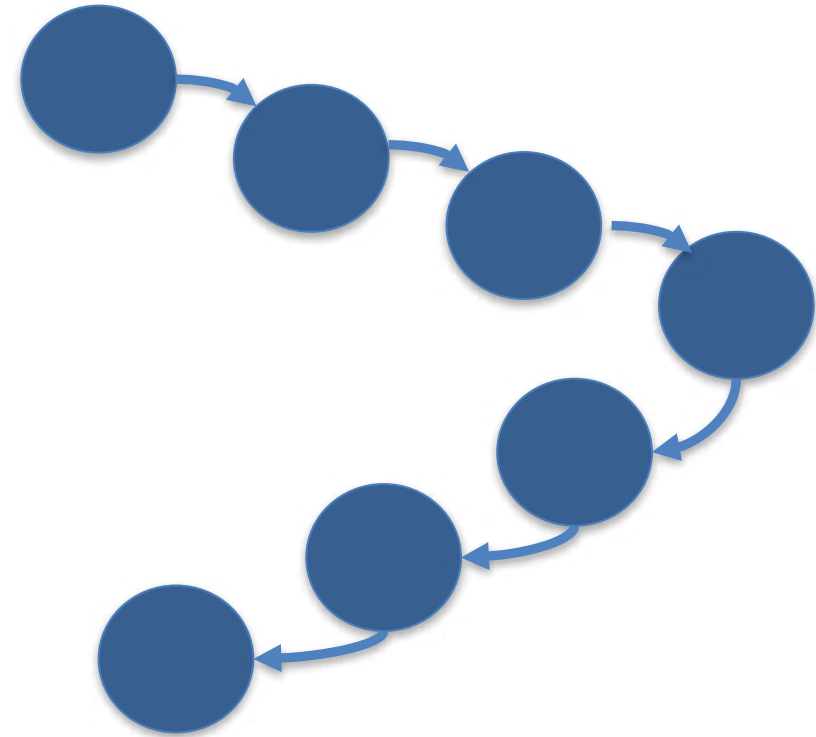
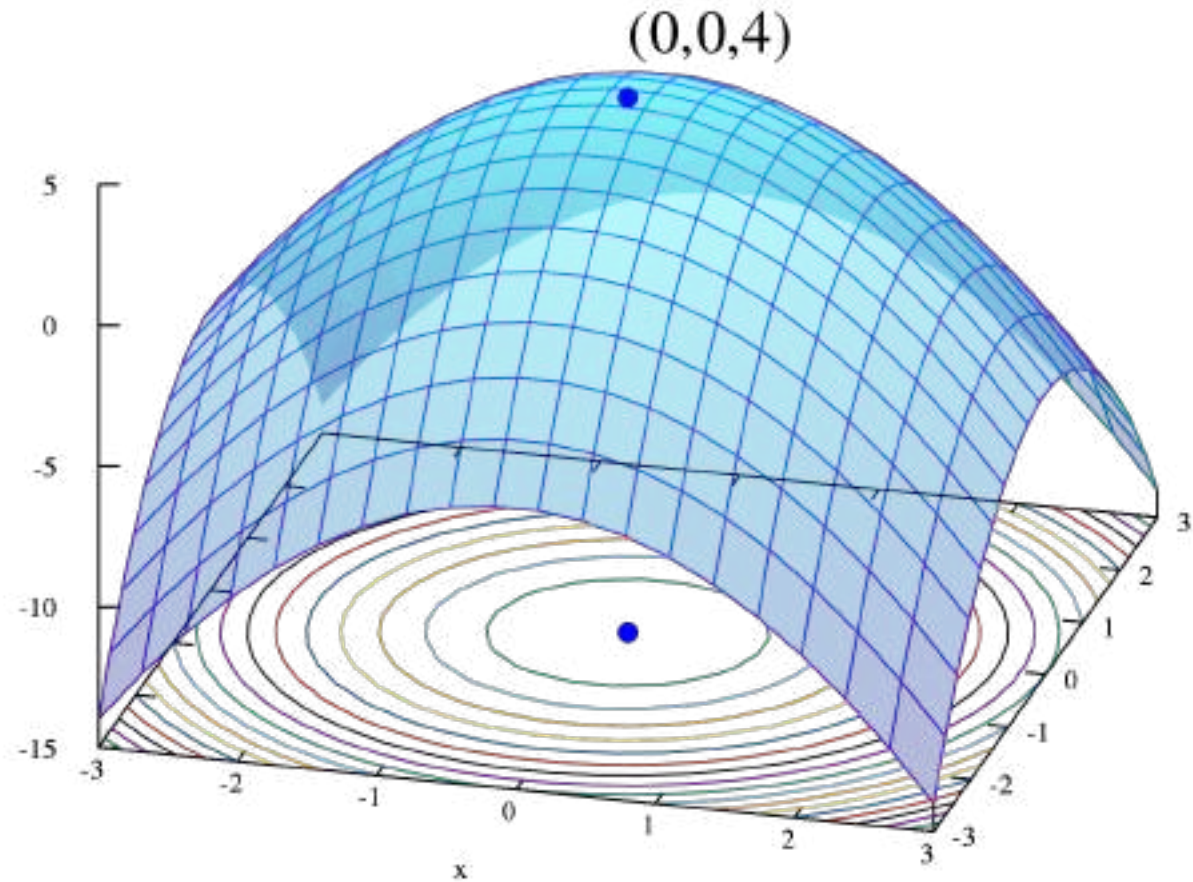
# A long story



# Eagle's view of the main IA functions

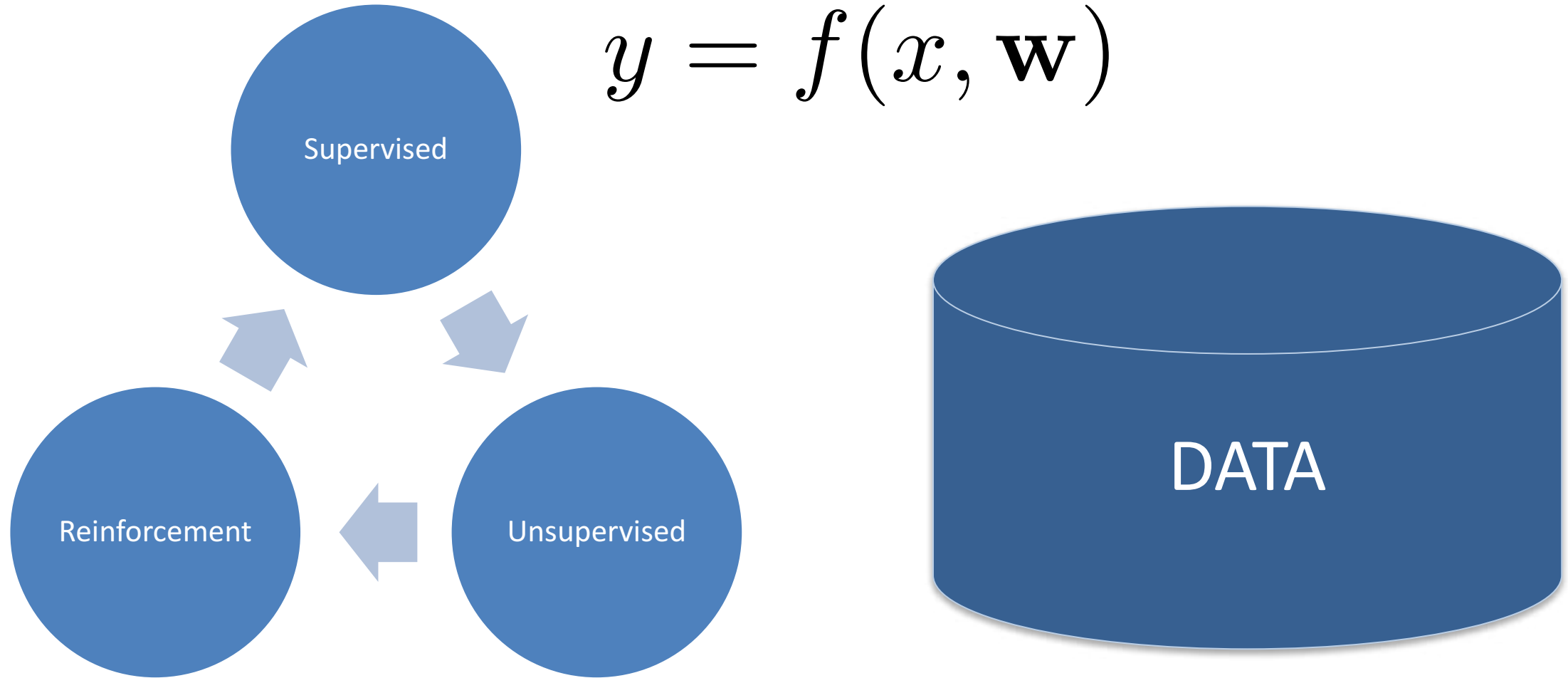


# Eagle's view of the main IA functions



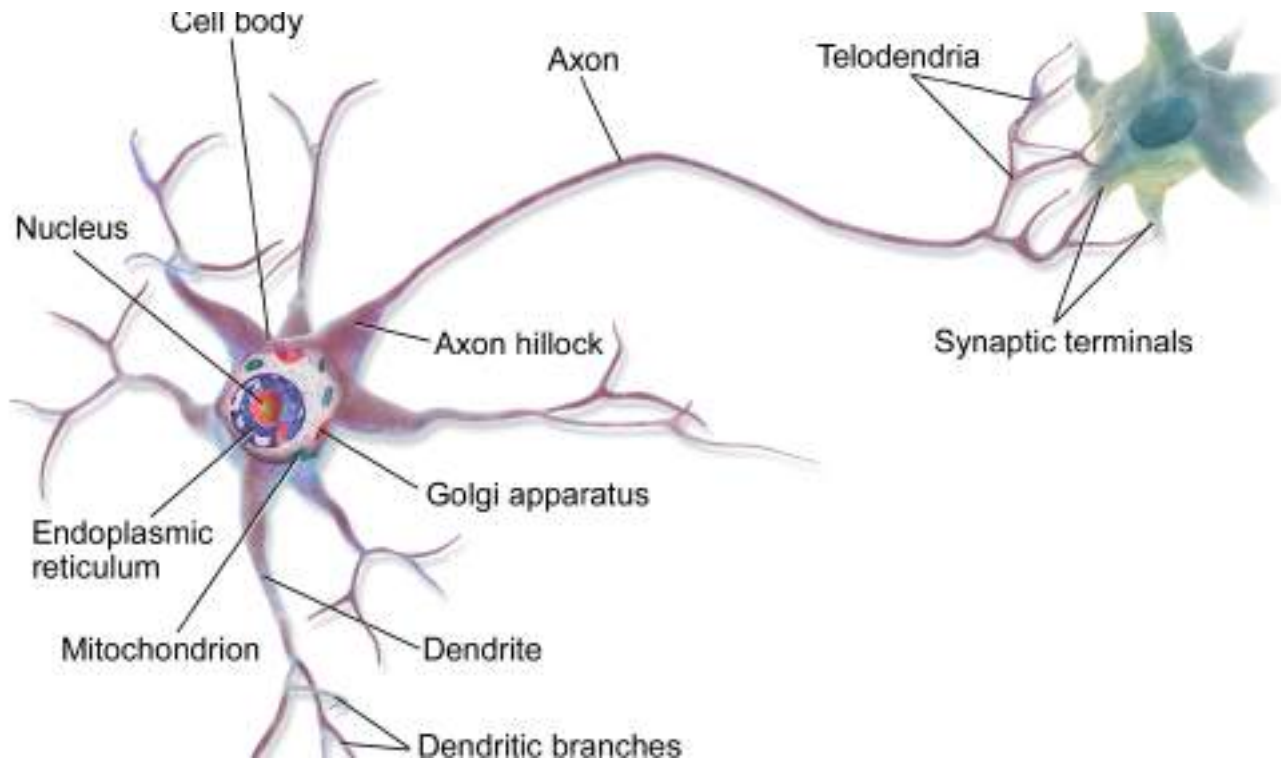
# “Learning” a.k.a parameter adjustment

$$y = f(x, \mathbf{w})$$



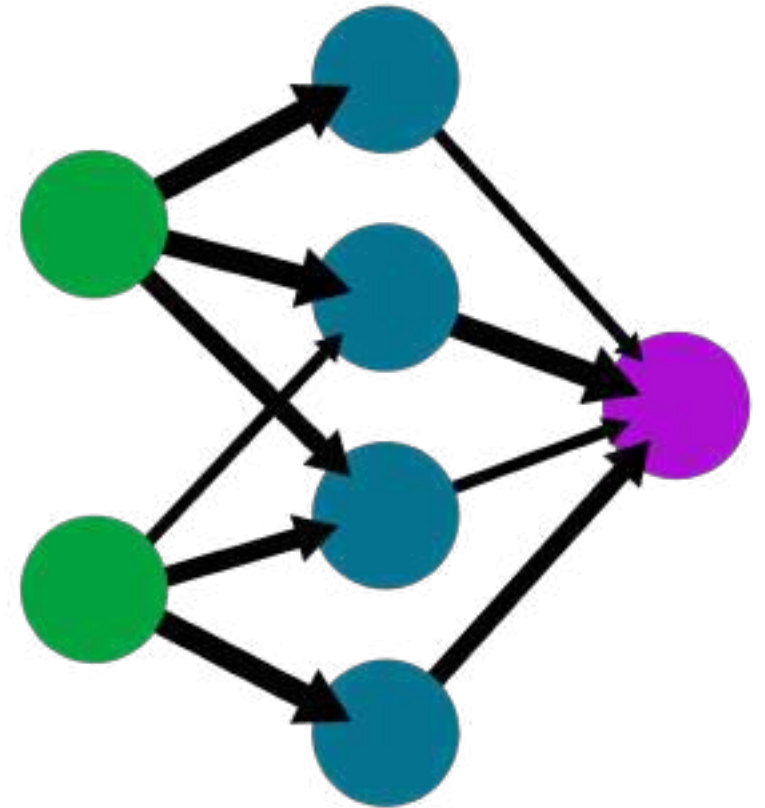


# Neural Networks

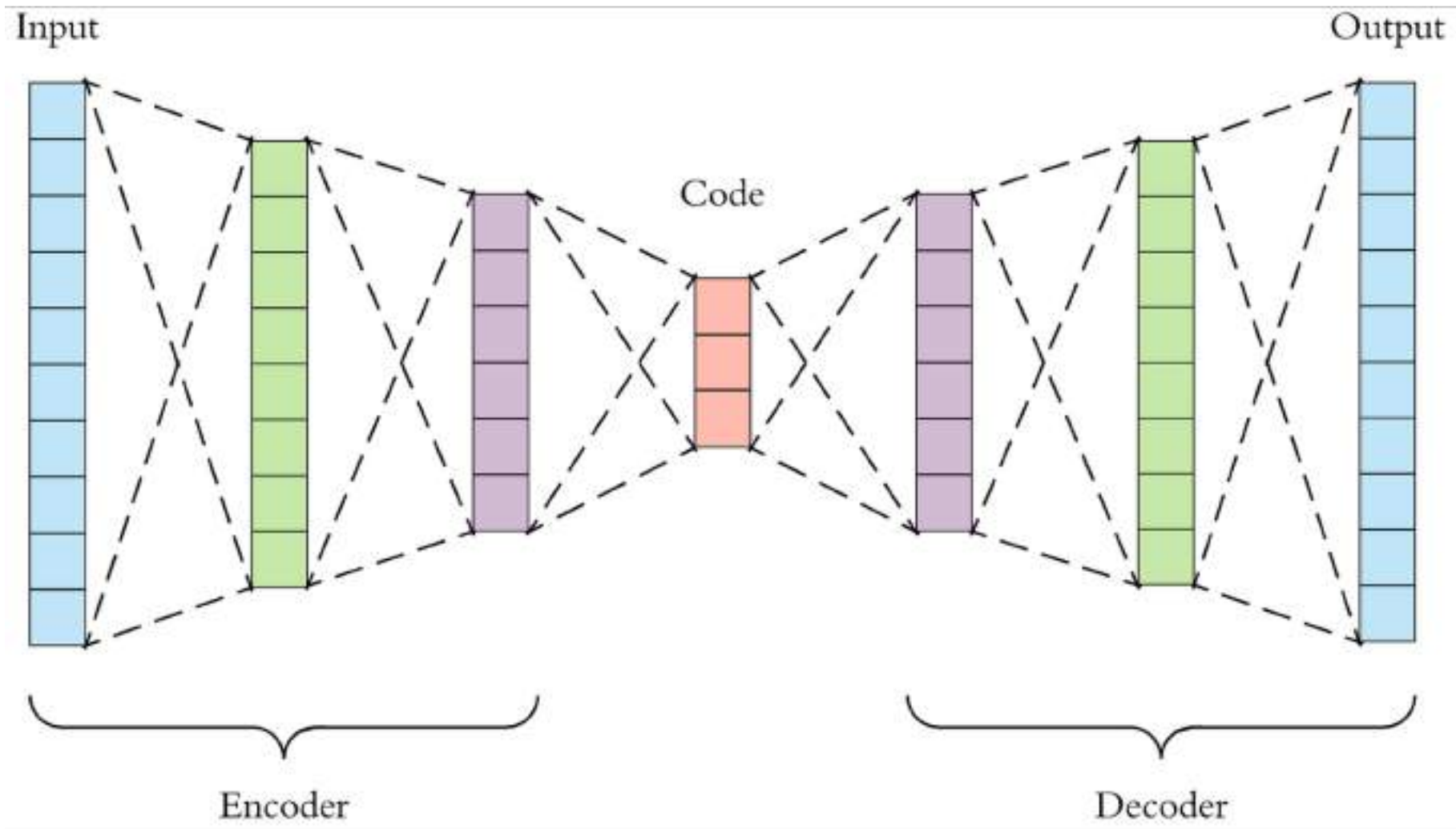


A simple neural network

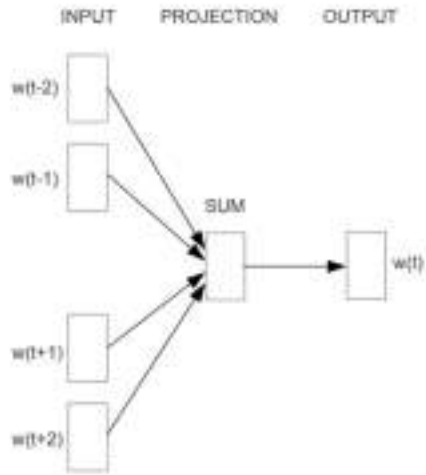
input layer      hidden layer      output layer



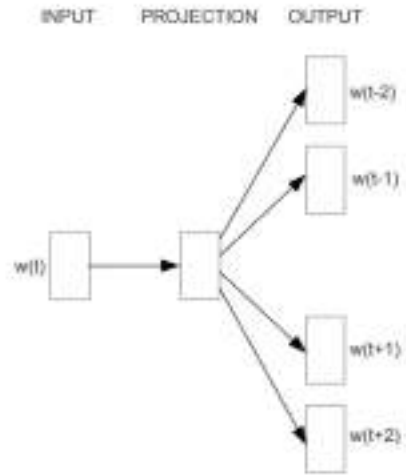
# Encoder Decoder



# Word Embeddings



CBOW



Skip-gram

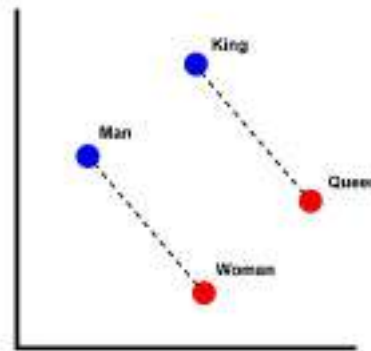
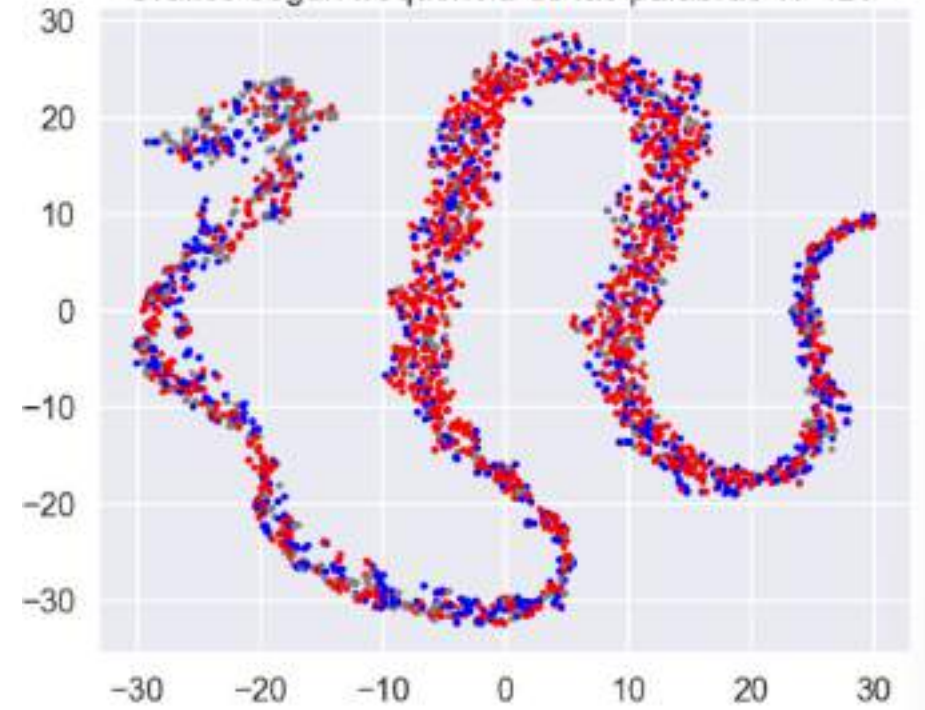
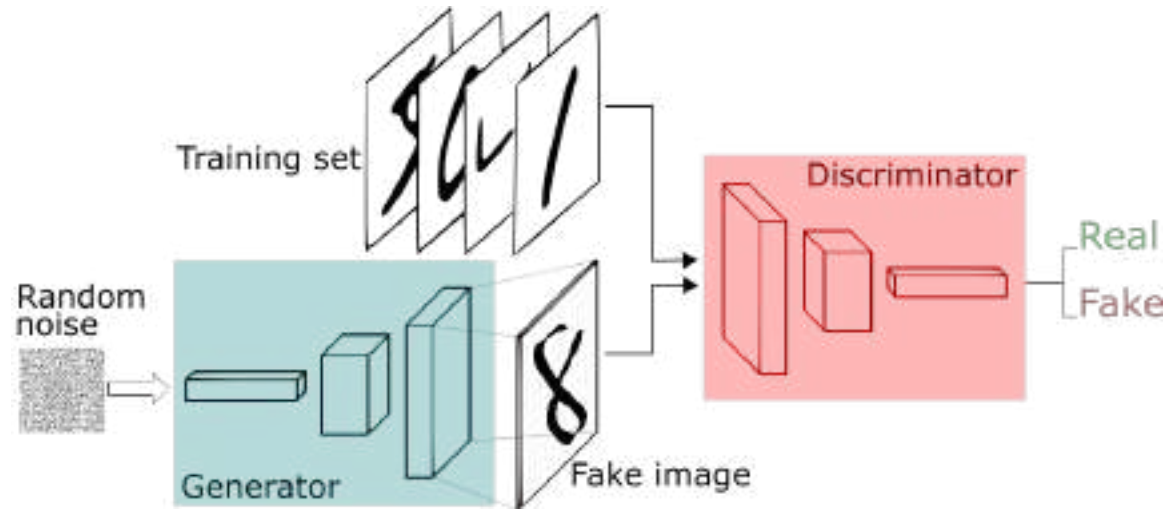


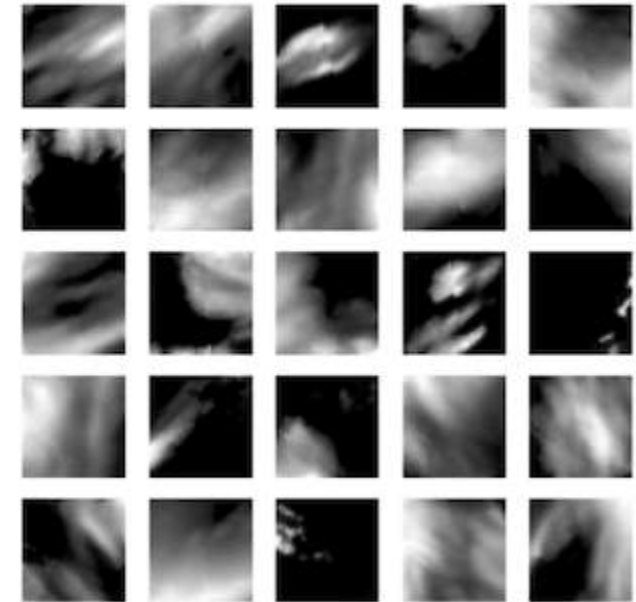
Gráfico según frecuencia de las palabras TF-IDF



# Generative Techniques

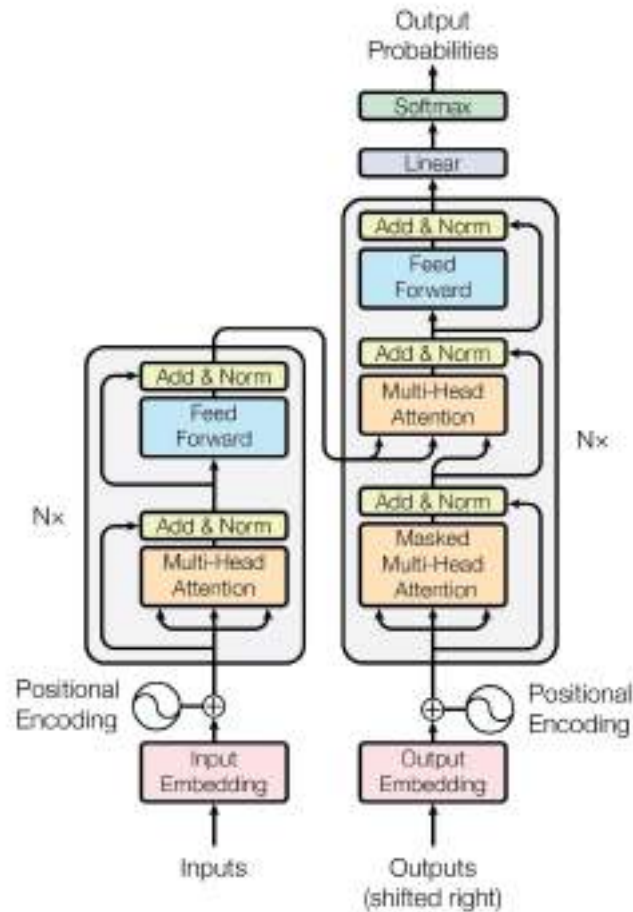


Generative Adversarial Networks



# Language Models

“Attention is all you need” – Vaswani et al. 2017



*The best thing about AI is its ability to*

learn	4.5%
predict	3.5%
make	3.2%
understand	3.1%
do	2.9%

$$P(w_1, \dots, w_m) = \prod_{i=1}^m P(w_i | w_1, \dots, w_{i-1}) \approx \prod_{i=2}^m P(w_i | w_{i-(n-1)}, \dots, w_{i-1})$$

<https://writings.stephenwolfram.com/2023/02/what-is-chatgpt-doing-and-why-does-it-work/>

# Complex Learning

Step 1

Collect demonstration data and train a supervised policy.

A prompt is sampled from our prompt dataset.



A labeler demonstrates the desired output behavior.



This data is used to fine-tune GPT-3.5 with supervised learning.



Step 2

Collect comparison data and train a reward model.

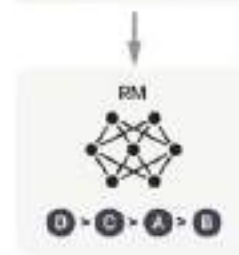
A prompt and several model outputs are sampled.



A labeler ranks the outputs from best to worst.



This data is used to train our reward model.



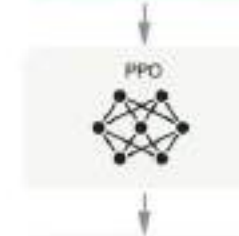
Step 3

Optimize a policy against the reward model using the PPO reinforcement learning algorithm.

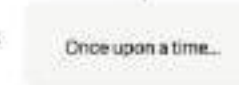
A new prompt is sampled from the dataset.



The PPO model is initialized from the supervised policy.



The policy generates an output.



The reward model calculates a reward for the output.



The reward is used to update the policy using PPO.



chat.openai.com

New chat

Previous 7 Days

At Power & Promi...

May

Text Labeling Methods

Field: parallel NN inference

Data Analysis Book

March

Proves Diana

ChatGPT per l'entom universi...

Proves

January

ChatGPT Implicacions Univers...

Que es Transformer?

Upgrade to Plus **NEW**

Xavier Vilasis Cardona

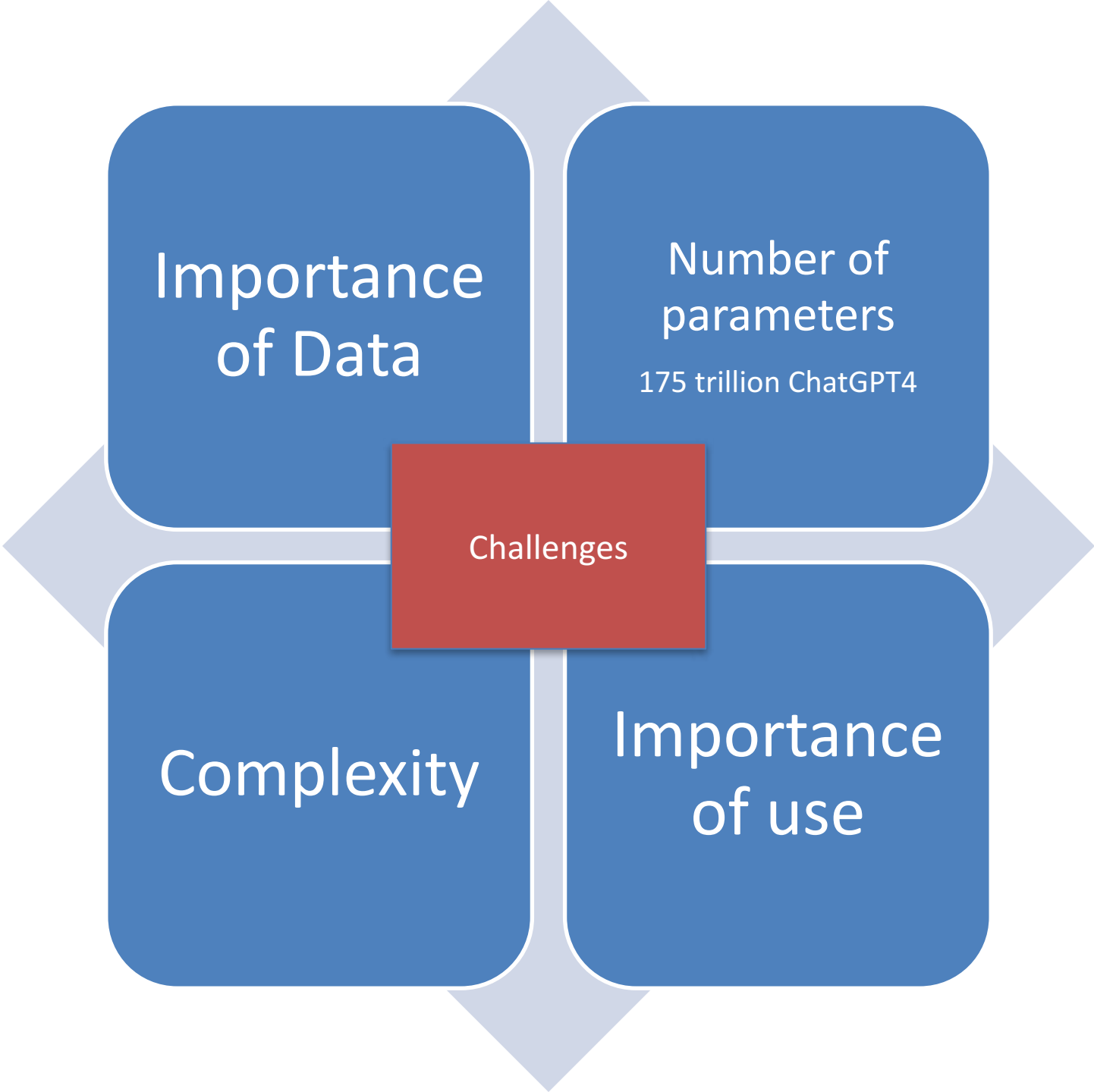
Can you give me some examples of use of AI in corporations ?

Certainly! Here are some examples of how artificial intelligence is being used in corporations across various industries:

1. Customer Service and Support:
  - Chatbots and virtual assistants are employed to provide instant and personalized customer support, answering common queries and resolving issues.
  - AI algorithms analyze customer interactions and sentiment to improve service quality and identify areas for enhancement.
2. Sales and Marketing:
  - AI-powered recommendation systems suggest personalized product recommendations based on customer preferences and historical data.
  - Natural language processing enables sentiment analysis to gauge customer opinions and sentiment towards products and brands.
  - Predictive analytics helps optimize marketing campaigns, targeting the right audience and optimizing ad spend.
3. Supply Chain and Logistics:
  - AI algorithms optimize inventory management, demand forecasting, and supply chain planning to reduce costs and minimize stockouts.
  - Autonomous robots and drone automation, inventory tracking, and last-mile delivery.

Send a message

Free Research Preview. ChatGPT may produce inaccurate information about people, places, or facts. [ChatGPT May 24 Version](#)





# Artificial Intelligence

**Mathematical techniques**  
performing tasks we associate to  
**Humans**  
**Serve as TOOLS**

**Principle of Delegation**

With a too nice a name

In front of Artificial Intelligence, we have to be ethical, responsible and keep critical thinking



Generated with Leonardo.AI



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