Alberto Andrés Valdés González.
Degree: Mathematical Engineer.
Work position: Data Scientist.
Mail: anvaldes@uc.cl/alberto.valdes.gonzalez.96@gmail.com
Location: Santiago, Chile.

Generative AI

Generative AI (GenAI) is a type of Artificial Intelligence that can create a wide variety of data, such as **images, videos, audio, text, and 3D models**. It does this by learning patterns from existing data, then using this knowledge to generate new and unique outputs. GenAI is capable of producing **highly realistic and complex content** that mimics human creativity, making it a valuable tool for many industries such as gaming, entertainment, and product design. Recent breakthroughs in the field, such as **GPT** (Generative Pre-trained Transformer) and **Midjourney**, have significantly advanced the capabilities of GenAI. These advancements have opened up new possibilities for using GenAI to solve complex problems, create art, and even assist in scientific research.

Transformers

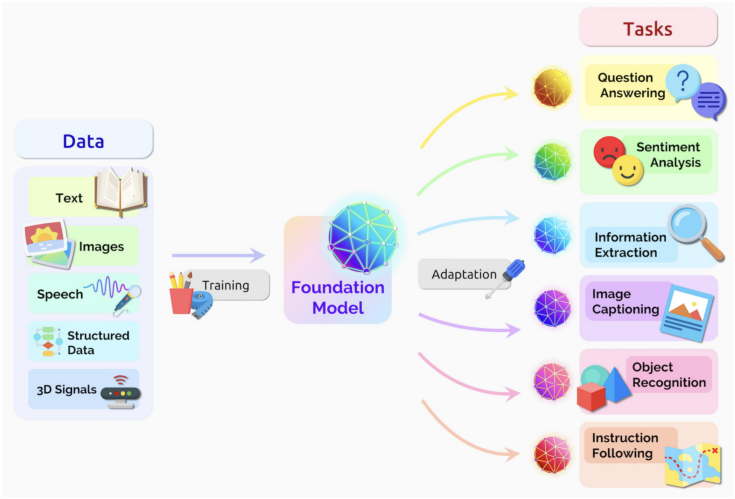
What is a Transformer Model?

A transformer model is a neural network that learns context and therefore meaning by tracking relationships in sequential data like the words in this sentence.

Transformer models apply an evolving set of mathematical techniques, called **attention or self-attention**, to detect subtle ways in which data elements in a series influence and depend on each other.

Transformers were first described in a 2017 Google document. These transformers are one of the newest and most powerful classes of models invented to date. They are driving a wave of advances in machine learning that some have dubbed "Transformer AI."

In August 2021, Stanford researchers called transformers the "base models" because they see them driving a paradigm shift in AI. "The sheer scale and scope of grassroots models in recent years has stretched our imagination of what is possible,"they wrote.



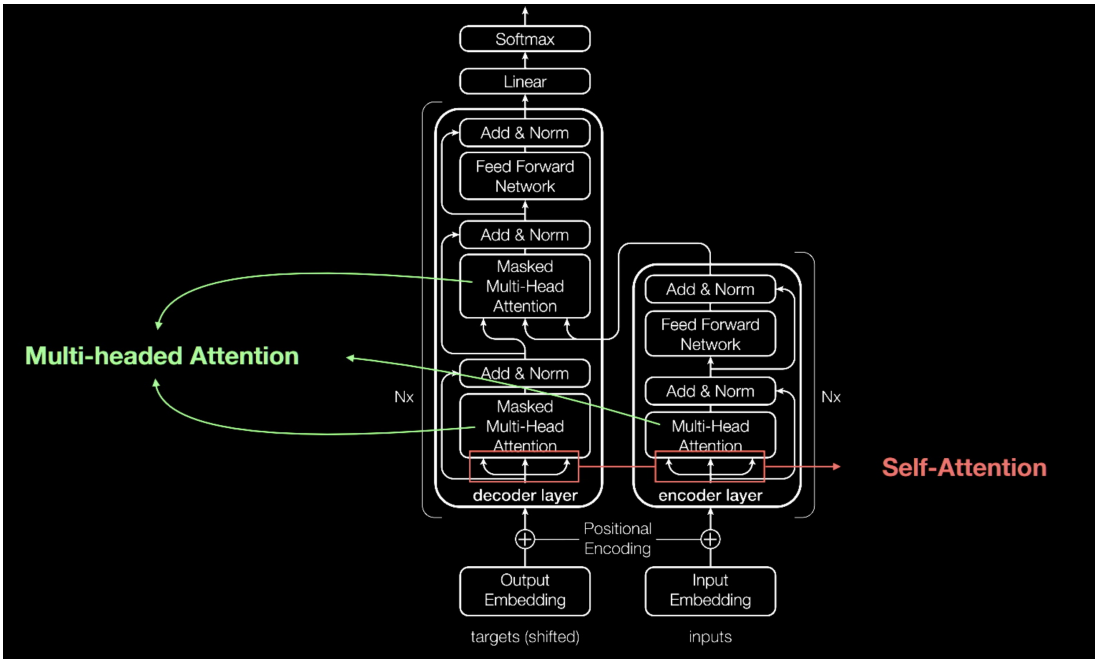
Transformers Replace CNNs and RNNs

Transformers are in many cases replacing convolutional and recurrent neural networks (CNN and RNN), the most popular types of deep learning models of just five years ago.

How Transformers Pay Attention

Like most neural networks, transformer models are basically large encoding/decoding blocks that process data.

Small but strategic additions to these blocks (shown in the diagram below) make transformers incredibly powerful.



Generative Adversarial Neural Networks (GANs)

Generative adversarial networks (RGAs), also known as GANs in English, are a class of artificial intelligence algorithms used in unsupervised learning, implemented by a system of two neural networks that compete mutually in a kind of sum game. zero. They were introduced by Ian Goodfellow in 2014.