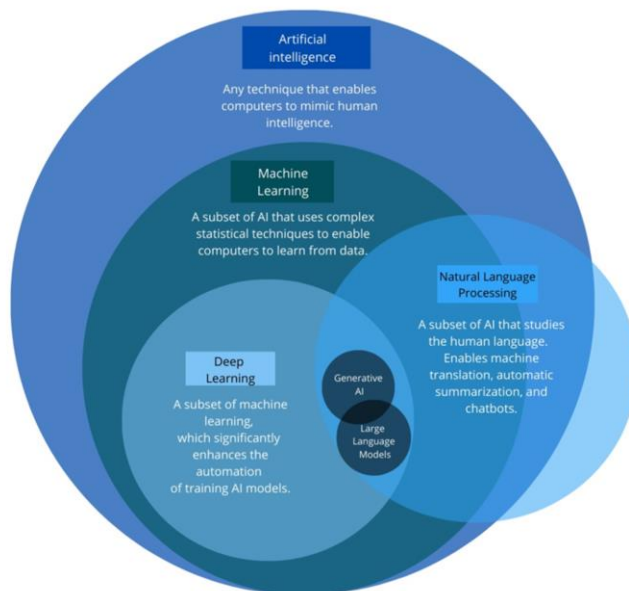# Course introduction
GenAI and LLMs

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Before starting the course, we will discuss some key concepts for understanding what GeneXus Enterprise AI is and how to work with it.

Generative Artificial Intelligence (GenAI)

An important concept we must learn about is Generative Artificial Intelligence (GenAI), which is a subfield of Artificial Intelligence that focuses on the autonomous generation of text, images, audio, and video.

The models used for this have been pre-trained with large volumes of data so that they can adapt to many tasks with the "knowledge" they acquired in their training stage.

Generative Artificial Intelligence (GenAI)

Generation of content using models that learn probabilities from data or training.

Algorithms

Techniques

Allow the production of data, text, images, sounds or other types of information

To do so, they use algorithms and techniques that allow them to produce data, text, images, sounds or other types of information that resemble what a human being could create, but without direct human intervention.

Generative Artificial Intelligence (GenAI)

➢ Generative neural networks (GAN)

➢ Advances in Natural Language Processing (NLP)

➢ Generative language models (LLM).

Some of the advanced algorithms and techniques most commonly used by this approach are the following:

- Generative Neural Networks (GAN): These networks are critical in the generation of simulated images, sounds and other types of data, where two neural networks compete and collaborate with each other to improve the quality and realism of the results.
- Advances in Natural Language Processing (NLP): This field has experienced remarkable growth, significantly driving the development of Large Language Models (LLM). These models are able to understand, interpret, and generate human language in an increasingly accurate and natural way.
- Generative Language Models (GLM): This is a specific subcategory within Natural Language Processing specialized in the creation of coherent and contextual text. These models not only understand and process language, but also are capable of generating new and creative content based on a wide range of training data.

Large Language Model (LLM)

Artificial Intelligence models previously trained and designed to understand and generate human language in an advanced way.

Size

Processing power

Automatic translation

Text generation

Question answering

Text summary
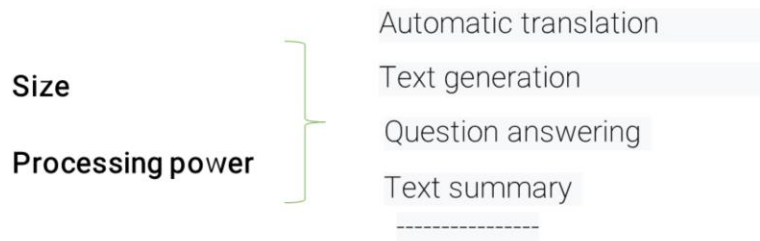
The distinguishing feature of these models is their size and processing power. They use deep neural networks and are trained with huge amounts of textual data, which enables them to learn complex patterns in human language.

Once trained, these models can be adjusted for specific tasks, such as machine translation, text generation, question answering, and text summarization, among others. Thanks to their ability to understand and generate language, these models have enabled important advances in natural language processing applications.

One of the most prominent examples of an LLM is GPT-4 (Generative Pre-trained Transformer 4), developed by OpenAI.
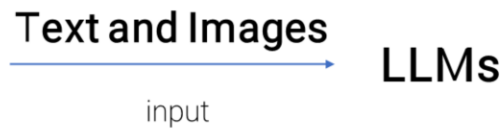
Large Language Model (LLM)

Text → LLMs

input

An exciting aspect of these models is their rapid response capability, which means that users can specify what the generated response should look like.

This flexibility allows LLMs to tailor text generation according to the user's needs, providing more appropriate and customized responses.

As this ability to give instructions advances, it opens the door to a deeper and more contextual understanding of information.

Large Language Model (LLM)

Text and Images → LLMs
input

Multimodal

We are moving beyond LLMs that use only text as input towards more advanced models such as GPT4-V, which is a multimodal model that accepts text and images as input.

Large Language Model (LLM)

Text, Images, video, audio

input

LLMs

Text, Images, video, audio

output

Multimodal

In the future, models will be multimodal, accepting text, images, videos, and audio as input and returning images, text, videos, and audio as output.

More advanced models show different levels of reasoning capabilities, leading to Autonomous Agents.

GeneXus

➢ GeneXusNext

➢ GeneXus Enterprise AI

GeneXus has embraced these technological advances by introducing two platforms:

- GeneXus Next
- GeneXus Enterprise AI

In this course, we will focus on GeneXus Enterprise AI.

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