# Intro to Generative AI

LESSON 3

**Generative AI is not something new**

***-Why is it not something new?***
The concept has been around forever. Way before I was born. In fact, in 1966 (!) a computer scientist developed ELIZA, a program that was actually 'creating' a dialogue between people and a machine. The dialogue was very simple, but yet a massive step forward that marked the beginning of the massive potential of Generative AI. Eliza would take as an input a sentence and it would turn it into a question by adding '*why*' in front of it. It was used for therapy. And it worked! People were actually opening up to it. People forgot that they were interacting with a machine, just because of its convincing 'human'-ways of interactions.

## GPT is different than ChatGPT

- GPT-4 is the actual language model that provides the ability to generate text.
- ChatGPT is a chatbot app that actually uses GPT's language model. It was built for conversations.

## So what do these Generative AI Researches actually do?

They train Generative AI models (for training models 101 read more on my previous post).

- **Choosing the input/output**
  Generative AI can (for now) produce Images, text, video, audio. And it can do so by using images, text, audio as an input. So according to what their *experiment* is, the first thing researchers do is decide what the input and the output will be.
- **Collecting the data**
  Let's say we want to create a model that generates realistic images like DALL-E, but lets say you will do it using image as an input in order to get a similar image as an output. The first thing you need is data. A lot of data. There are many ways to obtain the data: collect it, synthesize it, acquire it and do on. In this example you would need millions of images (of the same size i.e. 200x200px).
- **Training a model by reducing the noise**
  The idea is that the model will take these images and randomly scramble their pixels into pure noise, and then train a model to *reduce the noise* by reshuffling the pixels in the 200x200px canvas size, until it goes back to the original images. This reshuffling is actually the generation part. The model then '*learns*' what kind of reshuffling produces a desirable outcome and biases towards reshuffling in specific ways.
- **Algorithms used**
  Generative AI can actually combine different algorithms. But the important idea here is that these models use unsupervised learning to process the huge datasets that they take as an input. For example, if you want your AI to be able to paint like a 5-year old child, you need to feed it as many drawings by 5-year olds as possible so that the model can learn the children's style of drawing and so that it can replicate it. Generative AI normally uses GANs or transformers to achieve results.

## Most companies had already been investing in Generative AI

Most companies already had research groups that focused on Generative AI. But now they are all moving full speed towards **productionizing this tech** (and surprise surprise, this is why you want to be an AI PM!)

- Microsoft is 'reinventing search' by using Generative AI to help answer more online searches on Bing
- Adobe is 'helping illustrators color their art' by introducing its Firefly collection of generative AI tools
- Google is 'helping people collaborate like never before' by introducing AI-powered writing features in Docs and Gmail
- Meta is 'pushing creative expression forward' by by giving people tools to quickly and easily create new content
- A **ton** of startups are actively productionizing Generative AI features in tools that will be life changing
- Investors are focusing more a more on Generative AI

## Some of the many Generative AI Use Cases

- In Finance, Generative AI can allow for better fraud detection systems.
- In Gaming, Generative AI can design content and levels
- In Law, Generative AI can create or even review contracts.
- In factories, Generative AI can prevent product recalls by flagging any potential defects early on during QA
- In Entertainment Generative AI can produce content quickly
- In Healthcare Generative AI can identify (and eventually create?) the right drugs
- In Architecture Generative AI can create designed of buildings!

**Interactive Demo:**