

Module 1: How Generative AI is Changing the Game

Lesson 2: Understanding Generative AI

What Exactly Is Generative AI?

In this module, we'll explore Generative AI, the most commonly used AI tool reshaping our world.

You are probably already using **Generative AI**, even if you aren't aware that you are! ChatGPT (Generative Pretrained Transformer), Google Bard, and Claude are the most commonly used Generative AI tools, and text is their primary way of providing input to the AI tool.

We'll also discuss some real-world applications you may already be familiar with, from image and video generation to music and text creation, and explore the tools available to harness this power for your business.

Additionally, we'll show you our process for assessing the quality of the AI's output so you don't have sub-quality results in front of your customers, prospects, and internal teams.

So let's get started!

Gen AI is an exciting branch of AI that doesn't just analyze existing data. It goes a step further, creating new and original outputs. It **generates** "**synthetic content**," or content manufactured by AI, not a human.

This might be images, videos, and especially text - for example, a new brand design or image advertisement, a YouTube video for the company, or a well-crafted whitepaper or content piece about your product. Essentially, these models master the patterns within the input data and then use this knowledge to generate realistic, unique outputs.

So, let's dive into some of Generative AI's most commonly used techniques. Remember, you don't have to know HOW this works to apply it in business, but understanding the techniques will give you better context when searching for solutions to business use cases.

Generative Adversarial Networks

In a Generative Adversarial Network (GAN) system, we have two neural networks - a generator and a discriminator - playing a game of cat and mouse.

The generator aims to fabricate outputs that look as genuine as possible, while the discriminator tries to tell the real ones from the fakes. Through Deep Learning (DL), the generator gets better and better at its job, fooling the discriminator with increasingly convincing creations.

Variational Autoencoders

Variational Autoencoders, or VAEs, take a different approach. They use an encoder-decoder mechanism to understand the essence of the data.

Imagine trying to describe a painting to someone: you'd give them the key details (the encoder part), and they'd try to recreate the image from your description (the decoder part).

VAEs aim to learn a probabilistic representation of the data space that can generate diverse and believable outputs.

Pixel Recurrent Neural Networks

On the other hand, Pixel Neural Networks (PixelRNNs) are all about creating images pixel by pixel.

They predict the value of the next pixel based on the previous ones and the overall context, allowing them to capture the structure and spatial dependencies in images.

Generative AI Tools

There are a variety of platforms and tools available for generative AI.

1. **RunwayML** is a unique, user-friendly platform that caters to creators at all levels. It's designed to facilitate the use of machine learning models, specifically generative AI models, in creative and artistic projects. This platform allows users to choose from a broad array of models, each capable of producing a unique set of outputs—everything from generating novel images to transforming text into other forms of media. The interface of RunwayML is designed to be intuitive, which lowers the barrier for non-technical creators to leverage the power of AI.
2. **Kaiber.ai** allows users to harness the potential of AI in generating various outputs, enabling us to explore different outputs through its comprehensive AI models. These include language generation, image synthesis, and even more specialized applications like generating virtual environments. Its diverse capabilities make it ideal for creative individuals and businesses looking to push boundaries and experiment with AI capabilities.
3. **Genmo** is a natural language processing tool specifically designed to generate human-like text. Genmo can automate content creation, from writing blog posts and articles to developing product descriptions and other marketing content. As a Chief AI Officer, you can leverage Genmo to save time and resources on repetitive or formulaic writing tasks, thus freeing up your creative team for more innovative and strategic projects.
4. **Lumen5** takes text input and, using AI, creates engaging, dynamic videos. It has found extensive use in content marketing and social media engagement strategies. It allows for the quick creation of shareable video content that can significantly boost your company's online presence. As a CAIO, leveraging Lumen5 could aid your digital marketing efforts by quickly transforming written content into more engaging video formats.

5. **Leia** is a cutting-edge platform that uses generative AI to produce 3D holograms from any image. The outputs from Leia can be used in a variety of applications, from creating innovative marketing materials to building immersive user experiences. As the technology progresses, it's easy to imagine it being used for more advanced purposes, such as creating 3D visualizations for data analysis or product design.

These are just a few of the tools that highlight the astounding potential and versatility of generative AI, offering unlimited options for innovation and improvement in businesses across all departments and industries.

It's also worth noting that these tools continue to evolve and improve rapidly, so our CAIO community will stay abreast of the latest developments and share them in the CAIO Slack workspace.

How Good Is Your AI Content Really? 4 Ways To Judge Quality

As a CAIO, you need to know if the content being generated by AI is any good. Outside of your own opinion, judging the quality of Generative AI output can be a significant challenge due to the lack of universally agreed-upon metrics or standards. As a CAIO, understanding how to evaluate these outputs is essential in getting the most out of the tools.

Here are four simple ways we gauge the quality of generative AI output:

1. **Realism (believability)**

Does the content sound or look real? Could your customers tell it wasn't human-written? If your AI is churning out results that look like the ["Pepperoni Hug Spot"](#) commercial (using early versions of ChatGPT and RunwayML), it shouldn't ever be seen by your customers!

2. **Diversity (variety)**

Is your AI just repeating itself, or is it generating a diverse range of content? This is important if you are marketing to several different customer profiles since diverse content resonates differently with different customers. Use your judgment, but metrics can help, too.

3. **Novelty (originality)**

We don't want our AI systems to simply reproduce existing patterns; we want them to create new ones. Is the content fresh, or just rehashing old ideas? Novelty keeps things interesting!

4. **Coherence (consistency)**

Does the content make logical sense from start to finish? Rambling content that contradicts itself or is off-brand for your company will make your company look sloppy and potentially cause reputational damage. Coherent output is especially important in business applications where the outputs of the AI model could impact decision-making.

Understanding these ways of evaluating the AI output allows you, as a CAIO, to drive the development of more realistic, diverse, novel, and coherent AI output. If you judge quality subjectively and use objective metrics, where applicable, you will follow best practices. And, of course, the ideal AI content should sound human, be varied, think originally, and make coherent sense! That's how you know your AI is business-ready.

Now, let's talk about the practical steps you can take to accurately gauge the effectiveness of your generative AI systems.

Crafting Your Generative AI Quality Game Plan

To craft an **evaluation strategy** that's in line with the unique applications of your AI and in accordance with the company's AI Use Policy (more on that in **Module 12: AI Governance: Creating Trust, Compliance, and Data Privacy**), you should first get clear on what "good" looks like for your specific use case. If it's generating social media posts, quality means fun, educational, and engaging content. If it's for legal contract review, you want razor-sharp accuracy.

Next, pick 2-3 **objective metrics** to track, like originality, accuracy, or coherence. These metrics will contribute to the next step in evaluation, the human review.

The **human review** should consist of having at least two people, ideally from different teams, evaluate the AI output using your quality criteria. Have them compare their notes and confirm they're confident showing this to a customer. One of the main things you will want to have them check for is “**hallucinations**,” or when the AI confidently gives you inaccurate, untrue, or outright absurd output. In the training on prompting later in the course, we will share best practices to mitigate hallucination through more accurate prompting.

Finally, create an **approval workflow** before generated content goes live. It may be as simple as approval by human review or may be more thorough and involve review by Subject Matter Experts to catch errors.

Following a clear, consistent process to assess quality, with both subjective and objective measures, ensures your Generative AI output is of the highest level and contributes to the company's ideal outcome from the application of AI. Customize your strategy based on how your AI is used, and tweak it over time as needed.

Remember that successfully applying AI, including generative AI, is a journey. Use the outcomes of your evaluations to fine-tune and enhance your models and prompts.

And, of course, never lose sight of your **business objectives**. The ultimate benchmark of applying Generative AI into your workflows is its ability to fulfill its purpose and deliver value to your business and its customers.

Be sure to check out the Demo section for this lesson to learn how to start using the tools and see some of the magic we can do with Generative AI.

Now that we understand Generative AI and how to apply and measure it in business, let's move to the next module, **Module 3: Developing Prompt Intelligence: Introduction to Prompt Engineering**.