

What is Generative AI¹

Generative artificial intelligence (Gen AI) is artificial intelligence that can generate text, images, or other media, using predictive modelling. Here's how it works.

Gen AI models are initially trained on large datasets.

- Text generators are trained on large datasets of existing text, such as books, articles, or websites.
- Image generators are trained on extensive datasets of images. Each image consists of a grid of pixels, with each pixel having colour values and positions.
- Audio and video generators are trained on datasets containing audio clips or video frames, which are sequences of images displayed rapidly.

Gen AI models learn to recognize patterns in the training data and build predictive models based on this learning.

- Text generators learn the context in which words and phrases commonly appear and use linguistic and grammatical rules to predict the next word or phrase and generate sentences or paragraphs.
- Image generators learn patterns in images, identifying shapes, objects, colours, and textures, and use spatial relationships between elements and colours to predict and generate pixels.
- Audio/video generators, in addition to recognizing static image features, learn how sounds or images evolve in a sequence, and use these temporal and spatial relationships to generate video frames and/or audio segments.

Generative AI for Students

We know that many students/trainees want to use generative artificial intelligence. It is important to know how to use it safely and responsibly. The resources listed here offer an introduction to using these tools.

[Generative AI for Students](#)

Generative AI for Researchers

We recognize that some researchers may be new to generative artificial intelligence and are unfamiliar with some of the potential uses, possibilities, and limitations. The resources listed here offer an introduction to using these tools.

[Generative AI for Researchers](#)

Considerations / Risks

Generative AI systems are highly dependent on the datasets on which they have been trained and are specifically designed to generate content that may incorporate or replicate the training data. As a result, even though the outputs of generative AI large language models may mimic natural language very successfully, these tools do not have human understanding of the content they are creating and cannot assess the accuracy or usefulness of the outputs. For this reason, researchers should not rely on the outputs from generative AI tools to be factually correct and must always check the outputs for accuracy and completeness. From: [Guidance for researchers on the use of generative AI](#)

Generative AI in your daily work

This article from the Government of Canada provides guidance on how to use generative AI responsibly.

[Generative AI in your daily work](#)

¹ McMaster University. "What is Generative AI." *Office of the Provost, What is Generative AI? - Academic Excellence - Office of the Provost*. Accessed 19 December 2024.