

# Emerging AI Technologies

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# What Does Emerging Technologies Mean?

- Emerging technologies is a word that is typically utilized to represent fresh technologies, and it may even refer to the ongoing advancement of current technology. It is normally designated for technologies that are presently developing, or that are projected to be accessible in the next five to ten years, and it is typically intended for technologies that are causing or are expected to produce substantial societal or economic implications.[1]

# Why Generative AI? (The rationale for my choice)

- The term "generative AI" refers to algorithms that can produce new believable material from existing information such as text, audio data, or pictures.[2]
- Generative AI, according to the MIT Technology Review, is amongst the most promising advancements in AI in the last decade.[2]
- Generative AI allows machines to understand the core pattern associated with an input and then produce analogous material based on that pattern.[2]

# What Does Generative AI Mean?

- Generative AI is a technique that uses current text, audio clips, or photos to produce new material. Machines that use generative AI recognize the fundamental pattern in the input and make identical material.[3]

## How Does Generative AI Works?

- Some of the techniques are follows:

### 1. **Generative adversarial networks (GANs):**

- a. GANs are made up of two neural nets: a generator and a discriminator that compete to reach an equilibrium between them:
  - a. A generator network is in charge of creating new information or output that is similar to the original information.
  - b. A discriminator network distinguishes between both the source and produced information in order to determine which is closest to the original data.[3]

# How Does Generative AI Works?

➤ Some of the techniques are follows:

## 2. Transformers:

- a. Transformers like GPT-3, LaMDA, and Wu-Dao mimic mental attention by measuring the relevance of input data pieces in different ways.
- b. They are taught to recognize the language or picture, do certain classification tasks, and create text or images from large information.[3]

## 3. Variational auto-encoders[3]

# Applications of Generative AI

➤ There're multiple applications of generative AI include:[3]

- |  |                                      |
|--|--------------------------------------|
| ❖ Generating photographs of human faces, objects and scenes. | ❖ Photos to emojis                   |
| ❖ Image-to-image conversion.                                 | ❖ Face aging                         |
| ❖ Text to image translation                                  | ❖ Media and entertainment: Deep fake |
| ❖ Film Restoration   |                                      |
| ❖ Semantic-Image-to-Photo Translation                        |                                      |

# Advantages of Generative AI

- **Identity Protection**
- **Robotics control**
- **Healthcare[3]**

# Challenges of Generative AI

- **Data privacy**
- **Security**
- **Overestimation of capabilities**
- **Unexpected outcomes[3]**

# The Future implications of generative AI technology

- More sectors than we can anticipate will be disrupted by Generative AI. It is being used in critical industries including health and defensive security. As technology advances, more advanced applications will emerge.[4]
- Enterprises should consider AI models since they make picture generation, movie restoration, and putting up 3D settings faster and less expensive. Authorities, on the other hand, should concentrate on tightening regulations and enforcing fines. The system will work on spotting fraudulent and repeated data as it develops.[4]

# References

- 1) <https://www.winston.com/en/legal-glossary/emerging-technology.html>
- 2) <https://developer.ibm.com/blogs/what-is-generative-ai-and-how-much-power-does-it-have/>
- 3) <https://research.aimultiple.com/generative-ai/>
- 4) <https://coe-dsai.nasscom.in/generative-ai-exploring-the-world-of-possibilities/>