



KAMARAJ IAS ACADEMY
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Generative AI

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Why is in news?

The Generative AI revolution is upon us and will potentially unleash a wave of technical and social change.

Large Language Models (LLMs) alone are predicted to add \$2.6 trillion-\$4.4 trillion annually to the global economy.

As one example of their potential impact, consider the ongoing pilot of Jugalbandi Chatbot in rural India (powered by ChatGPT).

Jugalbandi promises to serve as a universal translator, accepting queries in local languages, retrieving answers from English-language sources, and presenting them back to users in their native language.

About Generative AI:

It is a cutting-edge technological advancement **type of artificial intelligence** that involves creating new, original content or data using machine learning algorithms.

It can be used **to generate text, images, music, or other types of media.**

Generative AI works by training a model on a large dataset and then using that model to generate new, previously unseen content that is similar to the training data.

This can be done through techniques such as: Neural machine translation, Image generation, and Music generation

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Generative AI Statistics:

- By 2025, generative AI will account for 10% of all data produced.
- The forecasted AI annual growth rate between 2020 and 2027 is 33.2%.
- By 2030, AI will lead to an estimated \$15.7 trillion, or a 26% increase in global GDP.



Example of Generative AI:

ChatGPT:

ChatGPT is an AI-powered chatbot application built on OpenAI's GPT-3.5.

OpenAI has provided a way to interact and fine-tune text responses via a chat interface with interactive feedback.

Dall-E:

Dall-E is an example of a multimodal AI application that identifies connections across multiple media, such as vision, text and audio.

Google Bard:

Google Bard is a new chatbot tool, designed to simulate conversations with a human and uses a combination of natural language processing and machine learning, to provide realistic, and helpful responses to questions you might ask it.

It uses LaMDA (Language Model for Dialogue Applications) technology.

It's built on top of Google's Transformer neural network architecture, which was also the basis for other AI generative tools, like ChatGPT's GPT-3 language model.

Uses of Generative AI:

Create realistic **images and animations** – eg, Text-to-image programs such as Midjourney, DALL-E and Stable Diffusion have the potential to change how art, animation, gaming, movies and architecture, among others, are being rendered

Generative AI can be used to **compose music and create art** – Eg, Create brand logo: E.g. many startups are exploring services like DALL.E2, Bing Image Create, Stable Diffusion, and Mid Journey to create their brand logo

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Generate **text messages**. Eg, ChatGPT to generate news articles, poetry, and even code.

AI-assisted **drug discovery**

Generative AI can be used to **design and control robotic systems**

Automate things e.g. Microsoft-owned GitHub Copilot, which is based on OpenAI's Codex model, suggests code and assists developers in autocompleting their programming tasks.

Concerns:

Ensuring that the outputs generated by GAI are of **high quality and accurate** is major concern.

There is a risk that this data could be **used for unethical purposes**, such as for targeted advertising or for political manipulation.

These systems can potentially access sensitive information, raising concerns about **data privacy and security**.

GAI can **promote the joblessness** as it has potential to replace the humans.

If **not designed and developed responsibly** with appropriate safeguards, Generative AI can create harm and adversely impact society through misuse, perpetuating biases, exclusion, and discrimination.

Generative AI systems can **create content for malicious purposes**, such as deepfakes, disinformation, and propaganda. It can also generate offensive or inappropriate content.

It can be challenging to determine who is responsible for the content generated by a generative AI system — the acquisition and consent model around the training data and intellectual property issues make it difficult to hold anyone accountable for any harm resulting from its use.

Way Forward:

More research and development is **needed to improve the accuracy and reliability of GAI models** and to **address ethical concerns** related to the technology.

Regulations and standards must be put in place to ensure that GAI is used in a responsible and ethical manner. This includes **establishing guidelines for data privacy, bias, and accountability, as well as ensuring that GAI** is used for the benefit of society and not to the detriment of individuals or groups.

Collaboration between stakeholders, including industry, government, academia, and civil society, is crucial to ensure that GAI is used in a responsible and ethical manner.

GAI models are **only as good as the data they are trained on**, so it is important to ensure that the data used for training GAI models is ethical and unbiased. This includes ensuring that the data used for training is collected and used in a way that respects the privacy of individuals and does not reinforce existing biases.