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CURRENT AFFAIRS

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GENERATIVE AI

THIS ARTICLE COVERS 'DAILY CURRENT AFFAIRS' AND THE TOPIC DETAILS OF "GENERATIVE AI". THIS TOPIC IS RELEVANT IN THE "SCIENCE & TECHNOLOGY" SECTION OF THE UPSC CSE EXAM.

WHY IN THE NEWS?

Genie AI (Artificial Intelligence) is a new model from Google DeepMind that can create interactive video games just by prompting users with text or images.

A division of Google, Google DeepMind is a British-American AI research facility. With research facilities in the US, Canada, France, and Germany, DeepMind is a London-based company.

A DEEPER LOOK AT GENIE

Genie, the brainchild of Google DeepMind, isn't your average AI model. It transcends the realm of static image or video generation, ushering in a new era of interactive experiences. Think of it as a foundation world model capable of weaving intricate tapestries of playable virtual worlds based on your wildest dreams.

- **The Power of Unsupervised Learning:** Unlike most AI models that require meticulously labelled data, Genie thrives on the unstructured chaos of the internet. Its training ground is a vast ocean of unlabeled video data, allowing it to discern the subtle connections between frames and actions. This empowers it to not only generate but also control virtual environments in real time, frame by frame.
- **Beyond Static Content:** Say goodbye to passive video consumption. Genie throws open the doors to active engagement. Gone are the days of simply watching; now, you can step into the heart of the generated world, manipulating it with your actions. This opens up a plethora of possibilities, from crafting personalised gaming experiences to exploring interactive narratives tailored to your every whim.
- **Boundless Creativity and Unparalleled Adaptability:** Genie's potential extends far beyond its training grounds of platformer games and robotics. Its scalability and adaptability allow it to function across various domains, fueled by the diverse video data it ingests. This opens doors to countless applications, including:

1. **Revolutionising Education:** Imagine immersive simulations that bring complex concepts to life, making learning a truly engaging experience.
2. **Pushing the Boundaries of Entertainment:** Step into interactive stories that adapt to your choices, creating a personalised and captivating narrative experience.
3. **Redefining the Future of Gaming:** Craft your own customised game worlds on the fly, limited only by the depths of your imagination.

UNDERSTANDING GENERATIVE ARTIFICIAL INTELLIGENCE (GAI)

OVERVIEW:

- Generative Artificial Intelligence (GAI) stands as a rapidly evolving sector within AI, dedicated to producing novel content, including images, audio, and text, based on patterns and rules acquired from data. The surge in GAI's prominence is attributable to the advancements in generative models, exemplified by Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs), capable of creating outputs resembling the training data.
- While often associated with technologies like ChatGPT and deep fakes, GAI initially found application in automating repetitive tasks in digital image and audio correction. Notably, machine learning and deep learning, intrinsic to generative processes, can be viewed as forms of GAI.

APPLICATIONS:

- **Art and Creativity:** Empowers artists by generating unique and innovative artworks, and expanding creative boundaries.
- **Music:** Facilitates exploration of new sounds and styles, contributing to diverse and compelling music compositions.
- **Computer Graphics:** Generates 3D models, animations, and special effects, enhancing realism in movie and game development.
- **Healthcare:** Improves medical diagnoses and treatments by generating new medical images and simulations with enhanced accuracy.
- **Manufacturing and Robotics:** Optimises manufacturing processes, enhancing efficiency and quality.
- **Significance for India:** According to NASSCOM, India hosts approximately 416,000 AI professionals, with an estimated growth rate of 20-25%. AI is predicted to boost India's GDP by an additional USD 957 billion by 2035.

CONCERNS RELATED TO GAI:

- **Accuracy:** Ensuring high-quality and accurate outputs from GAI remains a major challenge, necessitating the development of sophisticated generative models.
- **Partisan GAI Models:** GAI models, trained on biased data, may produce biased outputs, potentially reinforcing societal biases and leading to discrimination.
- **Privacy:** The need for large datasets to train GAI models poses a risk to personal and sensitive information, raising concerns about potential misuse for unethical purposes.
- **Accountability for Misinformation:** GAI's capacity to generate content introduces the ethical dilemma of accountability, especially in cases where the technology is exploited to generate fake news or malicious content without clear attribution.

INDIA'S INITIATIVE FOR GENERATIVE AI

India is rapidly positioning itself as a leader in the development and adoption of Generative AI. Here are some of the key initiatives driving this growth:

- **INDIAai:** The National Artificial Intelligence Portal hosts in-depth studies on Generative AI's potential, risks, and opportunities. It also holds roundtable discussions with key voices in the field.
- **National Mission on Interdisciplinary Cyber-Physical Systems:** Technology Innovation Hubs (TIH) have been established with a focus on AI and machine learning, promoting next-generation research.
- **Global Partnership on Artificial Intelligence (GPAI):** India's membership in GPAI emphasises its commitment to international collaboration on AI development, including generative technologies.

PRELIMS PRACTISE QUESTION

Q1. With the present state of development, Artificial Intelligence can effectively do which of the following? (UPSC Prelims-2020)

1. Bring down electricity consumption in industrial units
2. Create meaningful short stories and songs
3. Disease diagnosis
4. Text-to-Speech Conversion
5. Wireless transmission of electrical energy

Select the correct answer using the code given below:

- (a) 1, 2, 3 and 5 only
- (b) 1, 3 and 4 only
- (c) 2, 4 and 5 only
- (d) 1, 2, 3, 4 and 5

Answer: (b)

MAINS PRACTISE QUESTION

Q1. In your opinion, what ethical considerations should be prioritised in the development and application of generative AI, particularly in fields like art, music, and content creation?

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