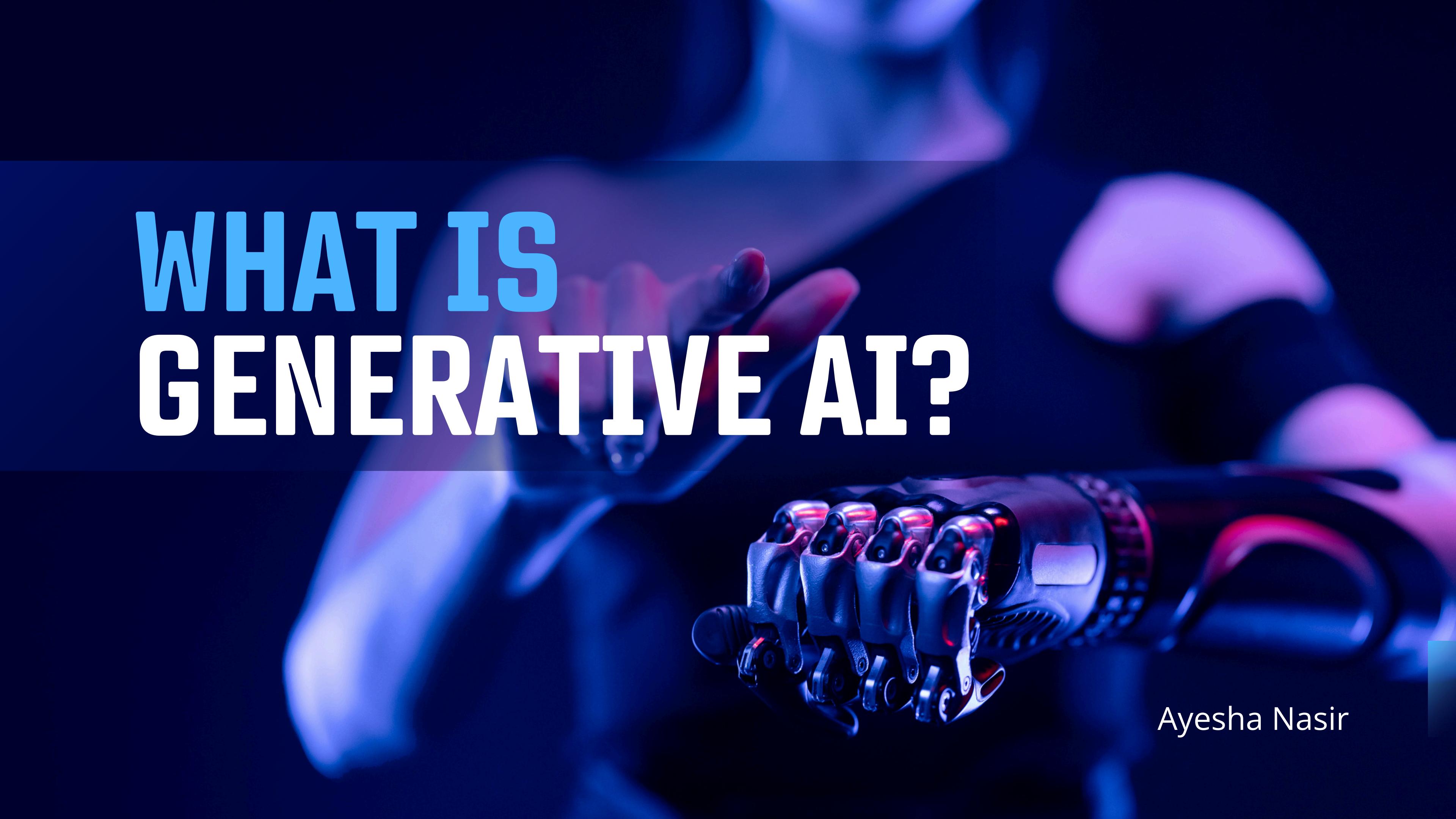


WHAT IS GENERATIVE AI?



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WHAT IS GENERATIVE AI?

Generative AI refers to artificial intelligence systems designed to create new content such as **text, images, audio, video, or code** that resembles **human-created data**.

The core idea is that the AI learns patterns from existing data and then uses that knowledge to generate similar outputs.

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HOW GENERATIVE AI WORKS?

Generative AI typically relies on machine learning models, especially deep learning and neural networks. Here's a simplified overview of the process:

01 Training on Large Datasets

02 Learning Through Models (

03 Generating New Content

04 Fine-Tuning & Reinforcement

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TRAINING ON LARGE DATASETS

01

The model is fed massive amounts of data (e.g., books, images, music).

02

It learns the statistical patterns, relationships, and structures in that data.

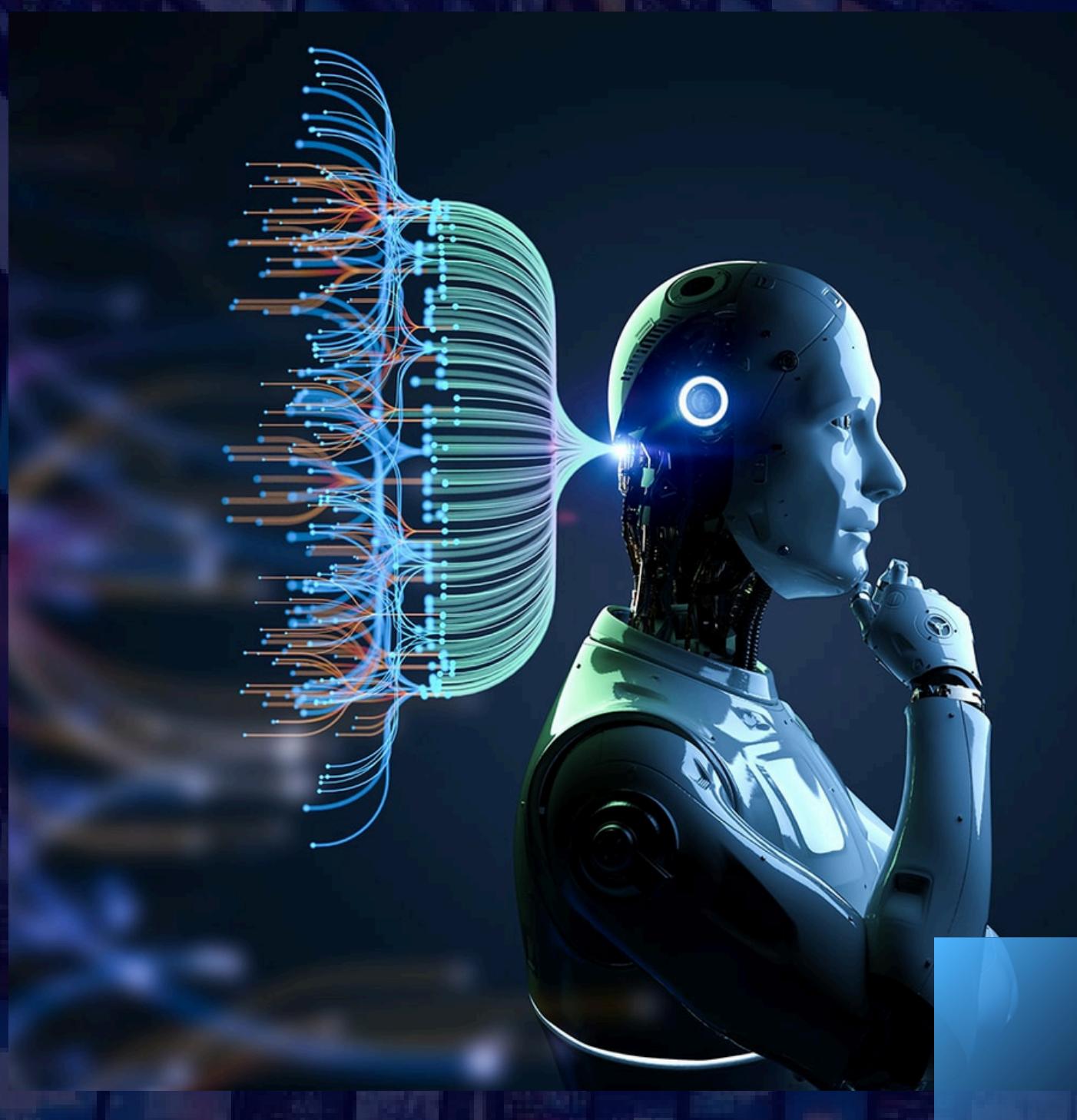
03

In text, for example, it learns grammar, meaning, and context.



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LEARNING THROUGH MODELS



01

Modern generative AI often uses transformers, like OpenAI's GPT (for text) or DALL·E (for images).

02

These models use mechanisms like self-attention to understand context better, enabling more coherent and relevant outputs.

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GENERATING NEW CONTENT

After training, you give the model a prompt (input), and it generates a plausible response based on what it has learned.

Example: You type, “Write a poem about the ocean,” and it creates a new, unique poem that sounds human-made.



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FINE-TUNING & REINFORCEMENT

01

Models can be fine-tuned for specific tasks or industries (e.g., legal writing, medical imaging).

02

They're also sometimes refined using reinforcement learning to improve helpfulness and reduce harmful or incorrect responses.

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TYPES OF GENERATIVE AI

Generative AI comes in several types, based on the kind of content it generates. Each type uses different models and datasets tailored to specific outputs. Here's a breakdown of the main types of Generative AI:

01

Text Generation AI

02

Image Generation AI

03

Audio Generation AI

04

Video Generation AI

05

Code Generation AI

06

3D Model Generation AI

07

Multimodal AI

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TEXT GENERATION AI

➤ What It Does:

Text generation AI creates human-like written content by predicting the next word in a sentence based on a given input (prompt).

➤ How It Works:

These models are trained on vast datasets of books, articles, conversations, and code. Using transformer-based architectures (like GPT), the model learns grammar, context, tone, and even facts. It then generates coherent and contextually relevant text when given a prompt.

➤ Applications:

- Writing articles, blogs, and reports
- Answering questions in chatbots
- Email drafting and summarization
- Generating code or explanations for developers

➤ Examples:

- ChatGPT – Conversational AI by OpenAI
- Jasper AI – AI for marketing and copywriting
- Copy.ai – Sales copy and product descriptions
- GitHub Copilot – AI for coding assistance

IMAGE GENERATION AI

► What It Does:

Generates unique, high-quality images from text prompts or reference images.

► How It Works:

Image generators use models like Diffusion Models, GANs (Generative Adversarial Networks), or Transformers. These models learn the relationships between text descriptions and visual features by training on millions of captioned images.

► Applications:

- Digital art and design
- Social media content
- Storyboarding for films
- E-commerce product visualization

► Examples:

- DALL·E 2 – OpenAI's text-to-image model
- Midjourney – Artistic image generator
- Stable Diffusion – Open-source image generation
- Runway ML – Creative video and image tools

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AUDIO GENERATION AI

► What It Does:

Creates human-like speech, music, or sound effects from text or notes.

► How It Works:

These systems use deep learning to replicate human voice tones, accents, and inflections. Music generators are trained on audio clips and compositions to generate new melodies or mimic specific styles.

► Applications:

- Voiceovers for videos and games
- Music composition for films or ads
- Creating realistic AI characters in games
- Audio books and podcasts

► Examples:

- ElevenLabs – AI voice cloning and synthesis
- AIVA – Music composition by AI
- Voicemod – Real-time voice modulation
- Descript – AI-generated audio editing

VIDEO GENERATION AI

► What It Does:

Generates entire videos or animates avatars from text, audio, or still images.

► How It Works:

Video generation AI combines elements from audio, text, and image models to animate visuals or create entirely new scenes. Some tools use facial mapping and voice input to generate realistic speaking avatars.

► Applications:

- Educational content (AI avatars)
- Explainer or product videos
- Personalized marketing
- Virtual spokesperson for brands

► Examples:

- Synthesia – Text-to-video AI avatar creation
- Runway ML Gen-2 – Text-to-video generation
- Pictory – Converts articles or scripts into videos
- D-ID – Speaking portraits using AI

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CODE GENERATION AI

► What It Does:

Assists developers by writing, completing, or suggesting code snippets.

► How It Works:

Trained on massive code repositories like GitHub, these AIs understand programming syntax, logic, and context. They help auto-complete functions, detect errors, and suggest improvements.

► Applications:

- Faster software development
- Learning and debugging code
- Writing boilerplate or repetitive code
- Creating plugins and automation tools

► Examples:

- GitHub Copilot – AI coding assistant from OpenAI and GitHub
- Replit Ghostwriter – Code prediction in the browser
- Amazon CodeWhisperer – AI coding aid for AWS developers

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3D MODEL GENERATION AI

➤ What It Does:

Creates 3D shapes or environments from textual descriptions or 2D images.

➤ How It Works:

Uses generative models trained on 3D datasets to understand spatial structure, volume, and perspective. Models like GET3D or Point-E produce mesh structures or voxel-based outputs.

➤ Applications:

- Gaming and animation
- AR/VR development
- Product design and prototyping
- Architecture and simulations

➤ Examples:

- NVIDIA GET3D – Realistic 3D asset generation
- Point-E – OpenAI's 3D model generator
- Luma AI – AI-powered 3D scanning and generation

MULTIMODAL GENERATIVE AI

► What It Does:

Processes and generates across multiple data types — like combining text, images, and audio in a single output.

► How It Works:

Trained on datasets that include image-caption pairs, text-video interactions, etc., these models can understand both visual and textual input simultaneously.

► Applications:

- Visual Q&A systems
- Smart assistants with visual capabilities
- Automatic captioning and video description
- AI-powered education tools

► Examples:

- GPT-4 with Vision – Can process and respond to images
- Gemini (by Google) – Multimodal reasoning
- CLIP (OpenAI) – Understands relationships between text and image

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THANK YOU



Generative AI isn't just a trend — it's a transformation. Discover how your business can innovate faster, smarter, and more creatively with AI-powered solutions.

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