

Title: Imagen (text-to-image model)

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Categories: Category:2022 in artificial intelligence, Category:2022 software, Category:Artificial intelligence art, Category:Deep learning software applications, Category:Generative artificial intelligence, Category:Google DeepMind, Category:Text-to-image generation

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Imagen is a series of text-to-image models developed by Google DeepMind . They were developed by Google Brain until the company's merger with DeepMind in April 2023. [1] Imagen is primarily used to generate images from text prompts, similar to Stability AI 's Stable Diffusion , OpenAI 's DALL-E , or Midjourney .

The original version of the model was first discussed in a paper from May 2022. [2] The tool produces high-quality images and is available to all users with a Google account through services including Gemini , ImageFX, and Vertex AI. [3]

History

Imagen's original version was first presented in a paper published in May 2022. It featured the ability to generate high-fidelity images from natural language. [2] The second version, Imagen 2 was released in December 2023. [4] The standout feature was text and logo generation. [5] Imagen 3 was released in August 2024. [6] Google claims that the newest version provides better detail and lighting on generated images. [7] On 20 May 2025 at Google I/O 2025 the company released an improved model, Imagen 4. [8]

Technology

Imagen uses two key technologies. The first is the use of transformer -based large language models , notably T5 , to understand text and subsequently encode text for image synthesis. The second is the use of cascaded diffusion models providing high-fidelity image generation. It generates image in three stages, starting from a base of 64x64, then upsampled to 256x256 and 1024x1024. [2]

Capabilities

Imagen can generate photorealistic images from text prompts. [3] It can also create various styles, such as cinematic, 35mm film, illustration, and surreal. Like most text-to-image generative AI models, Imagen has difficulty rendering human fingers, text, ambigrams and other forms of typography.

The model can generate images in five aspect ratios, namely 9:16, 3:4, 1:1, 4:3, and 16:9. Imagen can also refine already generated images by editing existing text prompts. [7]

See also

Artificial intelligence art

Computer art

Generative art

DALL-E

Midjourney

Stable Diffusion

References

External links

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Google

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Fan Hui (2015)

Lee Sedol (2016)

Ke Jie (2017)

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Eric Schmidt

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Dream Machine

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Ashish Vaswani
Noam Shazeer
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Neural Turing machine
Differentiable neural computer
Transformer Vision transformer (ViT)

Vision transformer (ViT)
Recurrent neural network (RNN)
Long short-term memory (LSTM)
Gated recurrent unit (GRU)
Echo state network
Multilayer perceptron (MLP)
Convolutional neural network (CNN)
Residual neural network (RNN)
Highway network
Mamba
Autoencoder
Variational autoencoder (VAE)
Generative adversarial network (GAN)
Graph neural network (GNN)
Category