

A decorative graphic on the left side of the slide consisting of two overlapping parallelograms. The front one is blue and the back one is a light mint green. They are positioned diagonally, with the blue one partially covering the green one.

AI Image Generation

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Introduction to AI Image Generation



- What is AI image generation
 - Machine learning algorithms to create images from text prompts, existing images, or other data inputs.
- What are the key technologies
 - Generative Adversarial Networks (GANs)
 - Neural Networks
- What are the applications
 - AI art
 - Video remastering
- What ethical concerns arise from this new tech
 - Ownership disputes
 - Deepfake concerns

How AI Image Generation Works

- Specialized type of machine learning model - “neural network”
- Attempts to create an accurate image by calculating mathematical probability to fulfill given requests
 - “Gambling” - New content based on reference content
- Reference Images are key
- Generative Adversarial Networks (GAN) - A generator creates new “fake data” and a discriminator attempts to discern between real and fake data.
- Specificity of prompt
 - Also extremely important, as with all types of generative AI



Using Midjourney AI, Prompt: “Polaroid style photo of 30 year old Blonde woman in an alley at night from the 90s, she is smoking a cigarette, wearing grunge fashion, flash photography, color film, analog style, imperfect, slight double exposure” (generated 5/18/25).

Applications

- There are lots of different ways to use AI image generation
 - Creating backgrounds for presentations
 - Other visual aids during presentations
 - Taking older video and “upscaling” it to 4K
 - Photo editing

Original: https://www.youtube.com/watch?v=SGIPnA_iCk

Remaster: <https://www.youtube.com/watch?v=fEbFfoBPfw4>



Ethical Considerations & Important Questions



Main concerns: “Ownership, privacy, bias, environmental impact, and the question of whether or no AI can could replace a human”

-Owner of the image - AI **company** or the **user**?

-Creator of the creator vs unique prompt

-Enhancements in Deepfake technology - increasing concern

-Medium for artists or human experience depth lacking shortcut?

-Too easy to copy existing style?

-Bias to social norms - generating women “skinny and conventionally attractive”

-Sources provided to the AI contribute largely to bias



Demo

Chat GPT image generation demo: <https://youtube.com/shorts/v7itnoITWfU?feature=share>



Citations

Cloudflare. "What Is AI Image Generation?" *Cloudflare*, <https://www.cloudflare.com/learning/ai/ai-image-generation/>. Accessed 2 June 2025.

Lummi. "All Creatives Should Know about the Ethics of AI-Generated Images." *Lummi*, <https://www.lummi.ai/blog/ethics-of-ai-generated-images>. Accessed 5 May 2025.

Perry, C. "How Does AI Image Generation Work? AI Art Explained." *Undetectable AI*, 2025, <https://undetectable.ai/blog/how-does-ai-image-generation-work/>. Accessed 2 June 2025.

darthkoffee. *Midjourney*, 2025, <https://www.midjourney.com/home>. Accessed 1 June 2025.

Thomas, Michael. "Snow Miser/Heat Miser Song." *YouTube*, 10 Dec. 2013, https://www.youtube.com/watch?v=_SGIPnA_iCk.

Julian Lachinet. (2022). *I'm Mr. White Christmas (Snow Miser Song) - 4K Remastered*. Retrieved June 1, 2025, from <https://www.youtube.com/watch?v=fEbFfoBPfw4>.

OpenAI. (2025, March 25). *OpenAI 4o Image Generation*. YouTube. <https://www.youtube.com/watch?v=E9RN8jX--uc>