

The background features a tropical scene with palm trees in shades of blue and yellow against a dark blue sky with a yellow sunset or sunrise. A semi-transparent black box is overlaid on the right side, containing the main title and a vertical white line.

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2024.10.31

TEACHING WITH AI  
WORKSHOP SERIES

HAWAII PACIFIC  
UNIVERSITY

# CREATING ILLUSTRATIONS & GRAPHS FOR PRESENTATIONS: GENERATIVE AI ART TOOLS

# WHAT ARE GEN AI ART TOOLS?

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- Generative AI art tools are advanced AI systems designed to create images from **text descriptions (prompts)**. It is partly based on large language models (LLMs) because prompt engineering requires natural language processing.
- **Customization:** Users can often adjust various parameters to fine-tune the output.
- **Deep Learning Models:** These tools use complex neural networks trained on vast datasets of images and text.

# WHAT ARE GEN AI ART TOOLS?

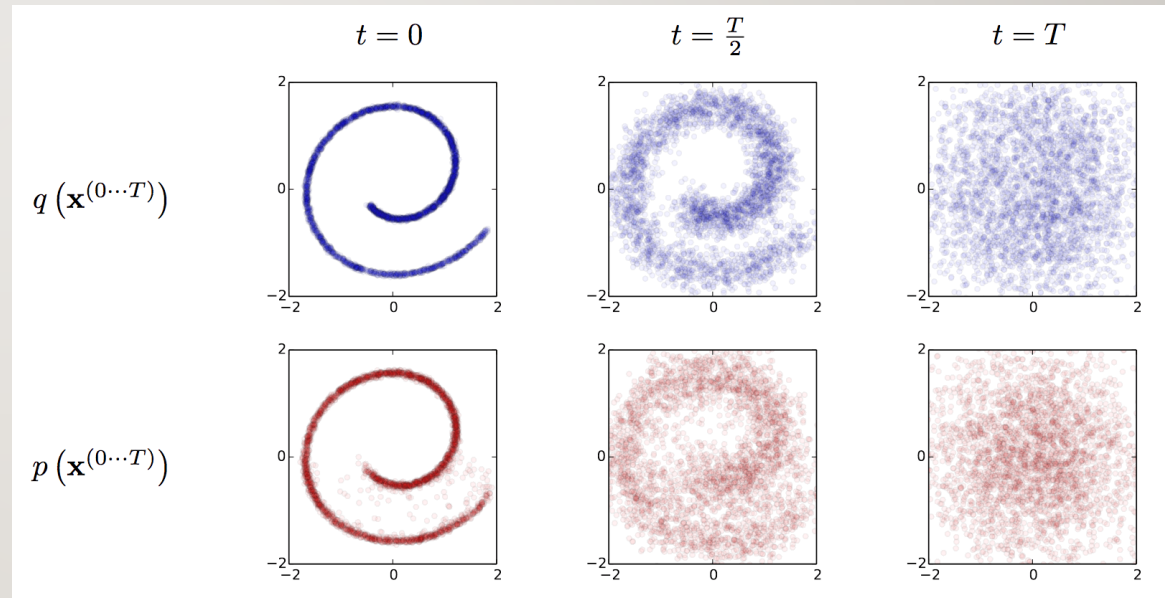
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- Some artists accuse that these AI companies "steal" their work.
- Generative AI art tools are not simply collage or copy-paste tools.
- Like many other AI models, it is about **pattern recognition**. These models learn to understand the patterns, styles, and features that make up different types of art and images.
- Rather than copying existing images, the AI generates new images pixel by pixel, based on its understanding of the prompt and its learned patterns.

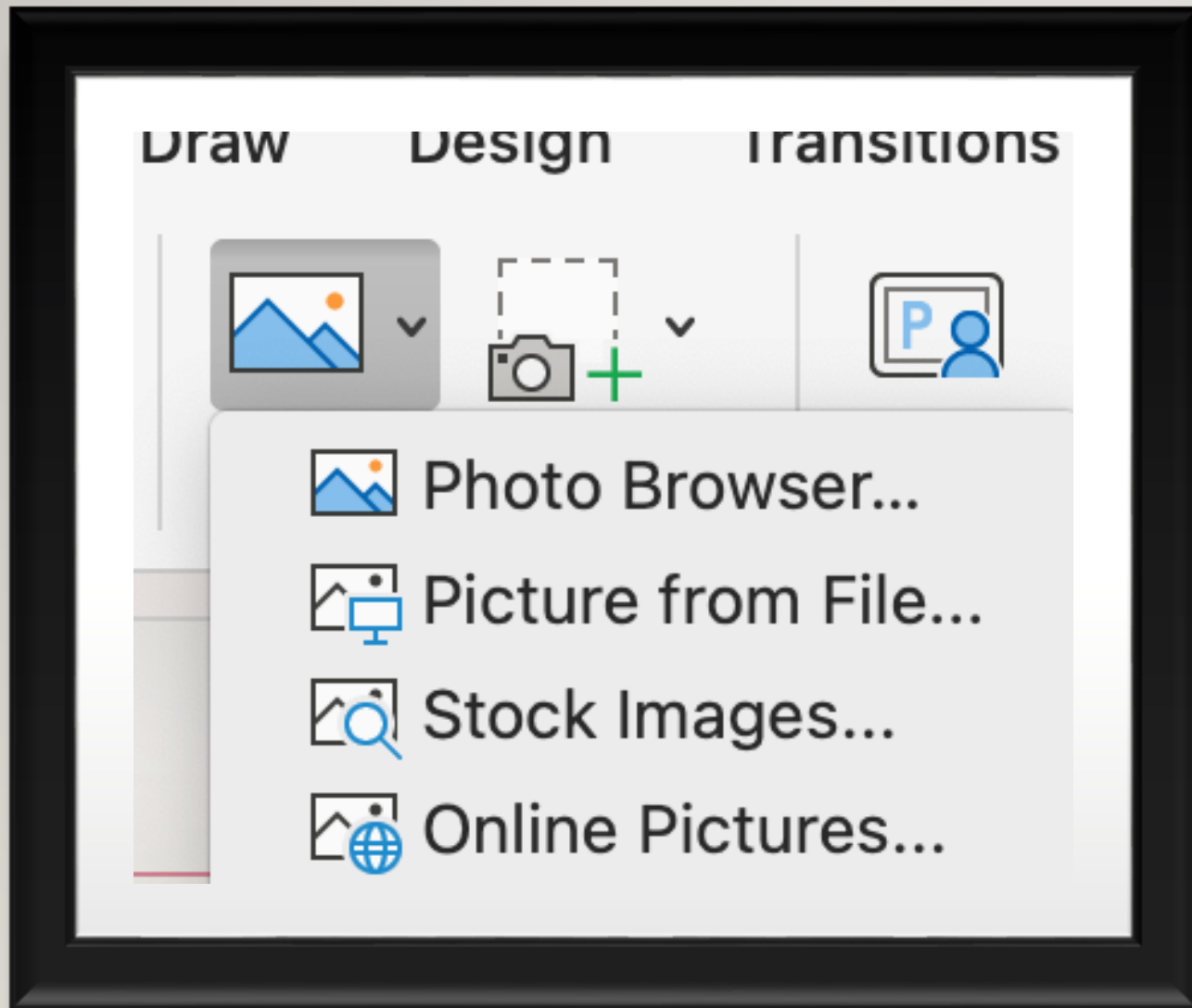


# WHAT ARE GEN AI ART TOOLS?

- **Diffusion Process:** Many models use a technique called **diffusion**, where they start with random noise and gradually refine it into a coherent image that matches the prompt.



Source: Jascha Sohl-Dickstein, Eric A. Weiss, Niru Maheswaranathan, Surya Ganguli



## WHY DO WE NEED GEN AI ART TOOLS?

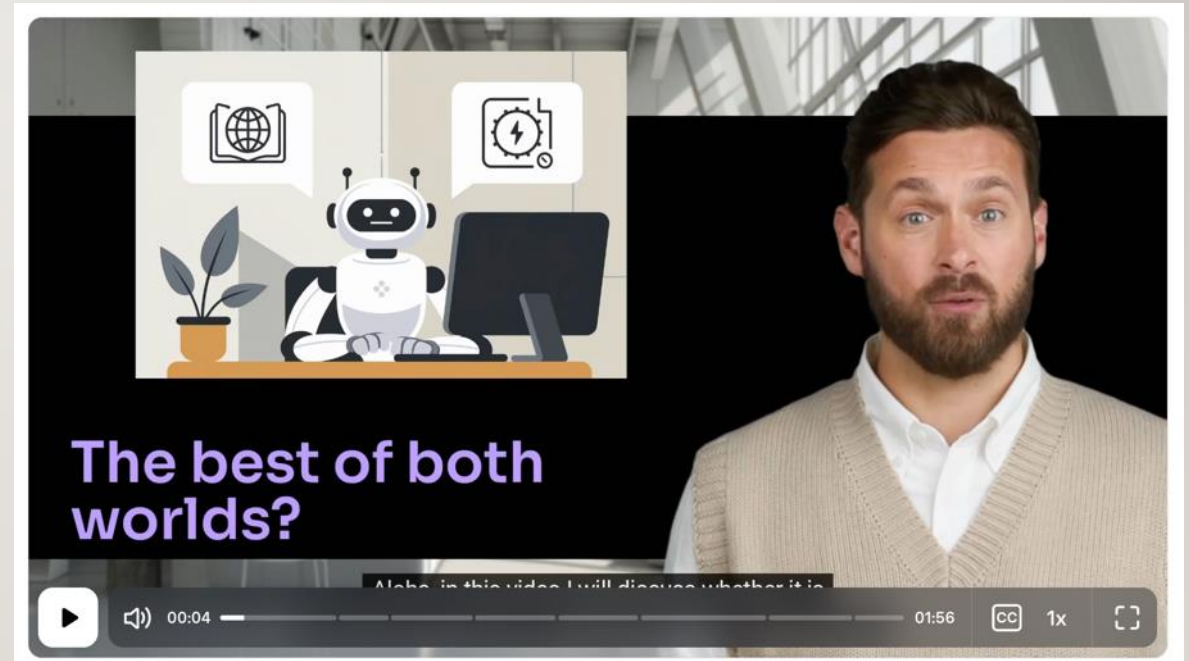
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- In the past it was expensive and time-consuming to create customized graphs for illustration.
- Although you can use online pictures, you take the risk of copyright infringement.
- The same stock image is used by others. No uniqueness.

# WHY DO WE NEED GEN AI ART TOOLS?

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- I use these tools for both my PowerPoint slides and video lectures.
- In gen AI video lectures, I can upload my own media to the video clip, including the images created in gen AI art tools.

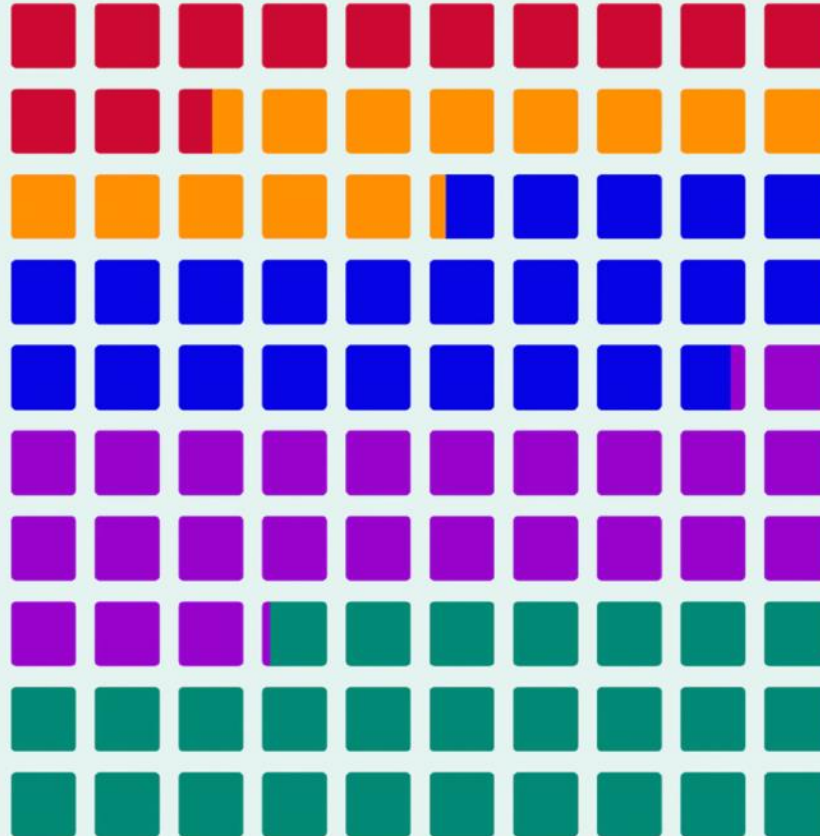




## A breakdown of the global market share of the biggest generative AI image tools in 2024

### AI art generator

<b>12.52%</b>	Stable Diffusion
<b>12.75%</b>	Starry AI
<b>23.52%</b>	Nightcafe
<b>24.35%</b>	Dall-E
<b>26.80%</b>	Midjourney



Market share (%)

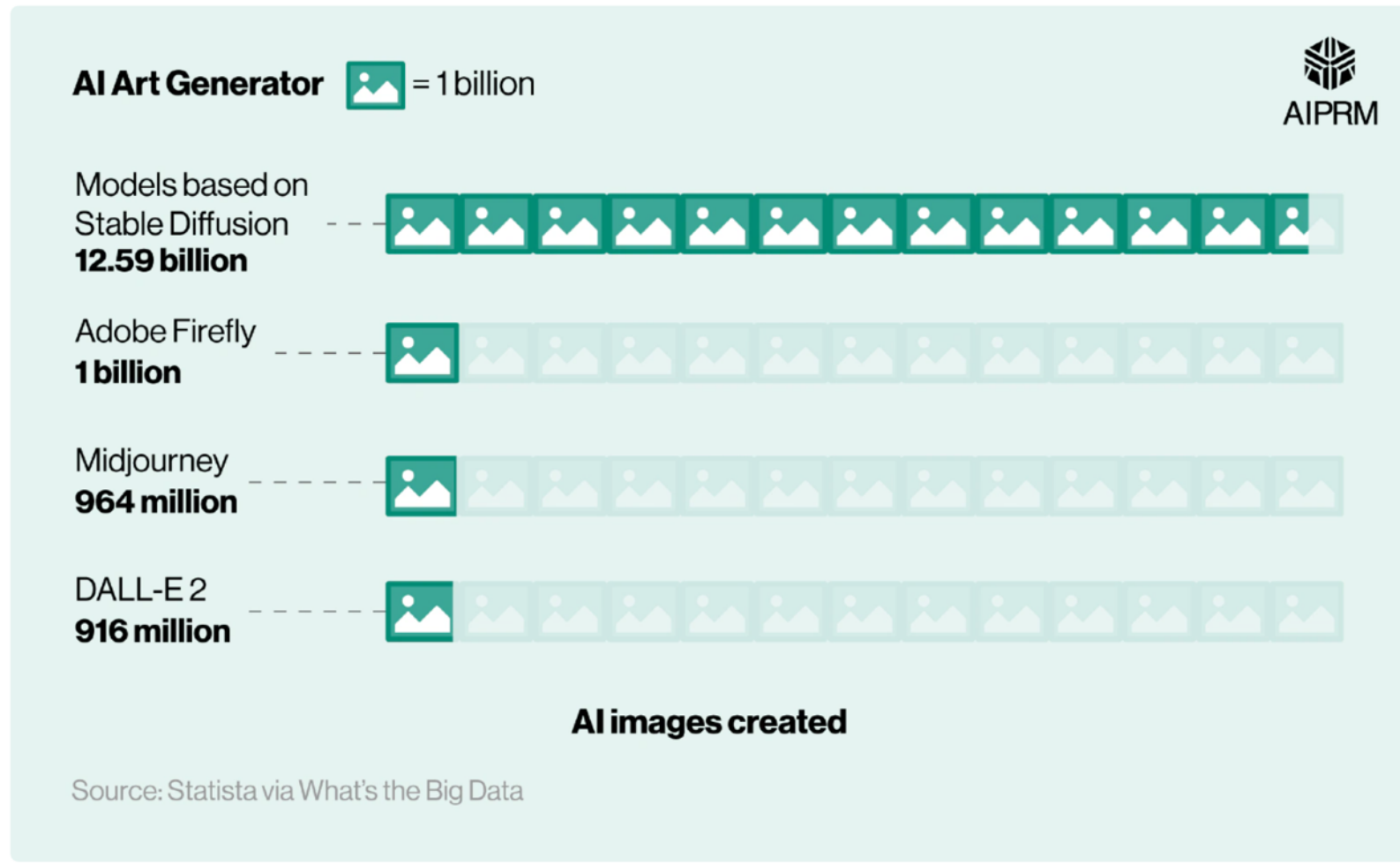
Source: Statista

## MOST POPULAR

### By Market Share

1. Midjourney
2. DALL.E
3. NightCafe

## A breakdown of the total AI images created by various AI art generators, as of 2024



## MOST POPULAR

By images created

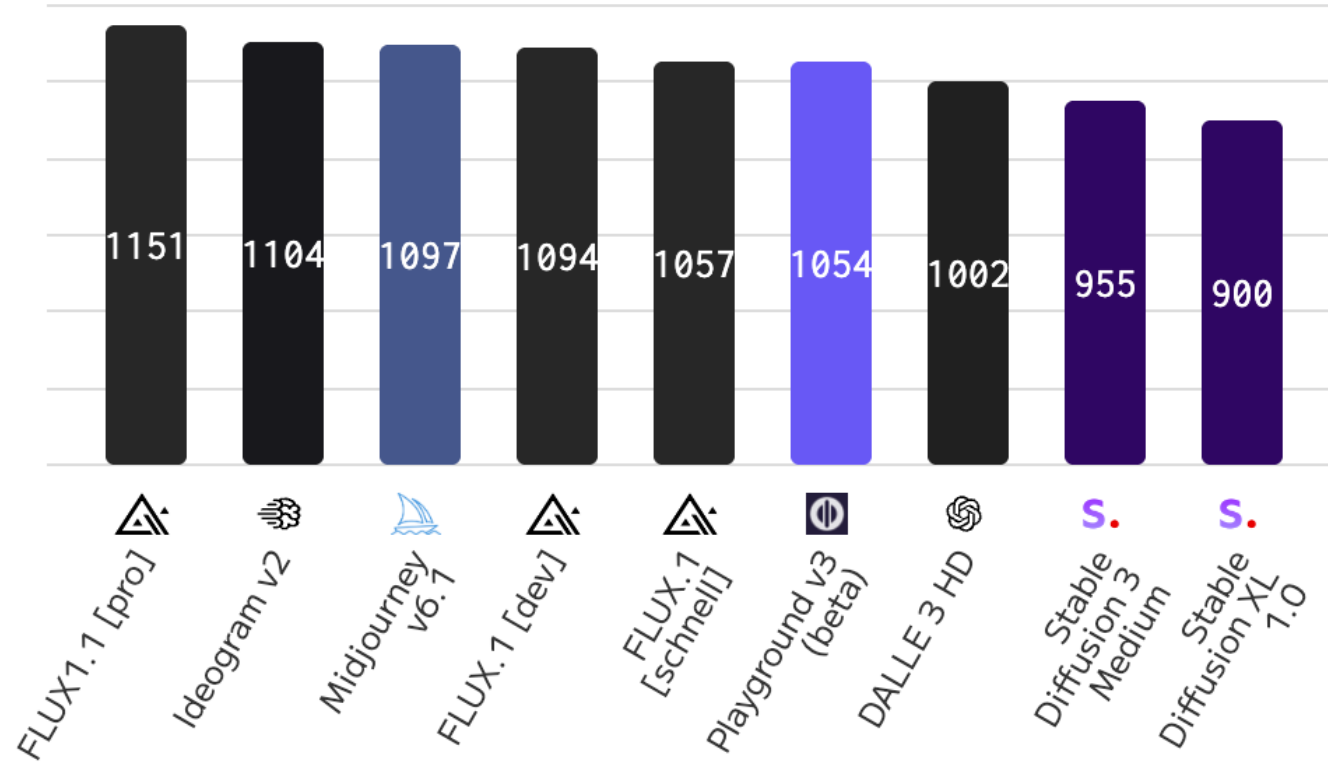
1. Stable Diffusion
2. Adobe Firefly
3. Midjourney
4. DALL.E

Source: <https://www.aiprm.com/ai-art-statistics/>



## QUALITY ELO

Quality ELO: ELO score of model in Image Arena, Higher is better



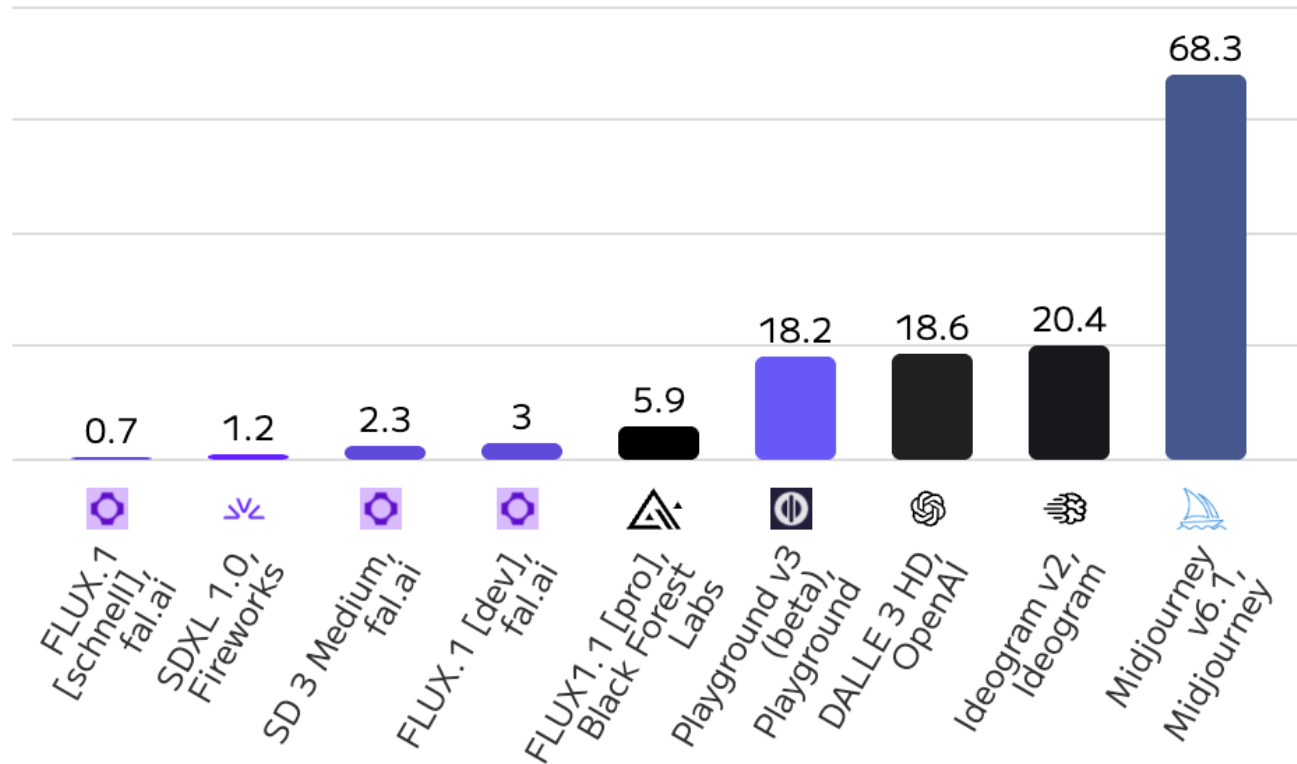
## QUALITY

- FLUX 1.1
- Ideogram V2
- Midjourney V6.1

# GENERATION TIME

## GENERATION TIME

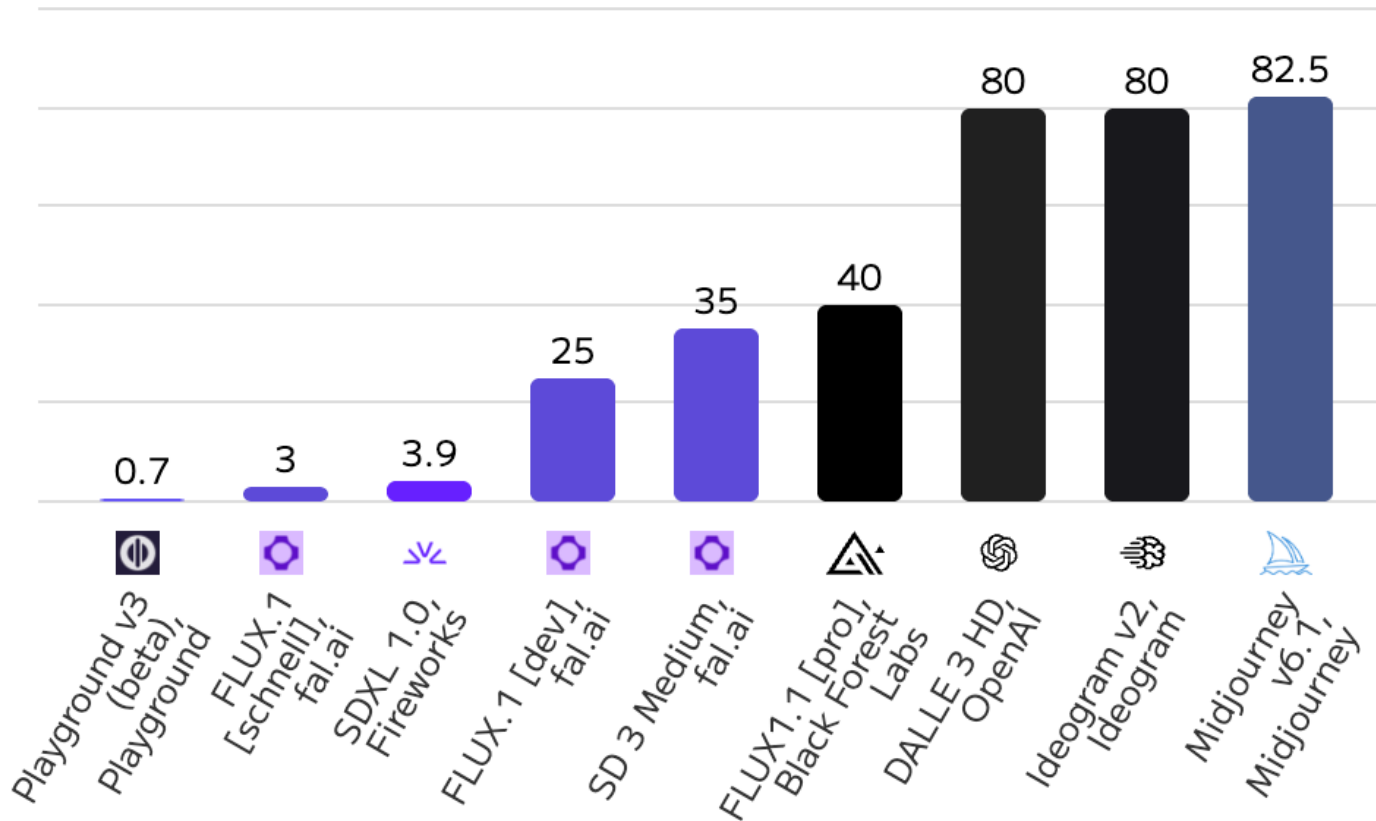
Generation time: Seconds to generate 1 image, Lower is better



- FLUX 1.1
- Stable Diffusion 1.0
- SD 3

## PRICE

Price: USD per 1000 image generations, Lower is better

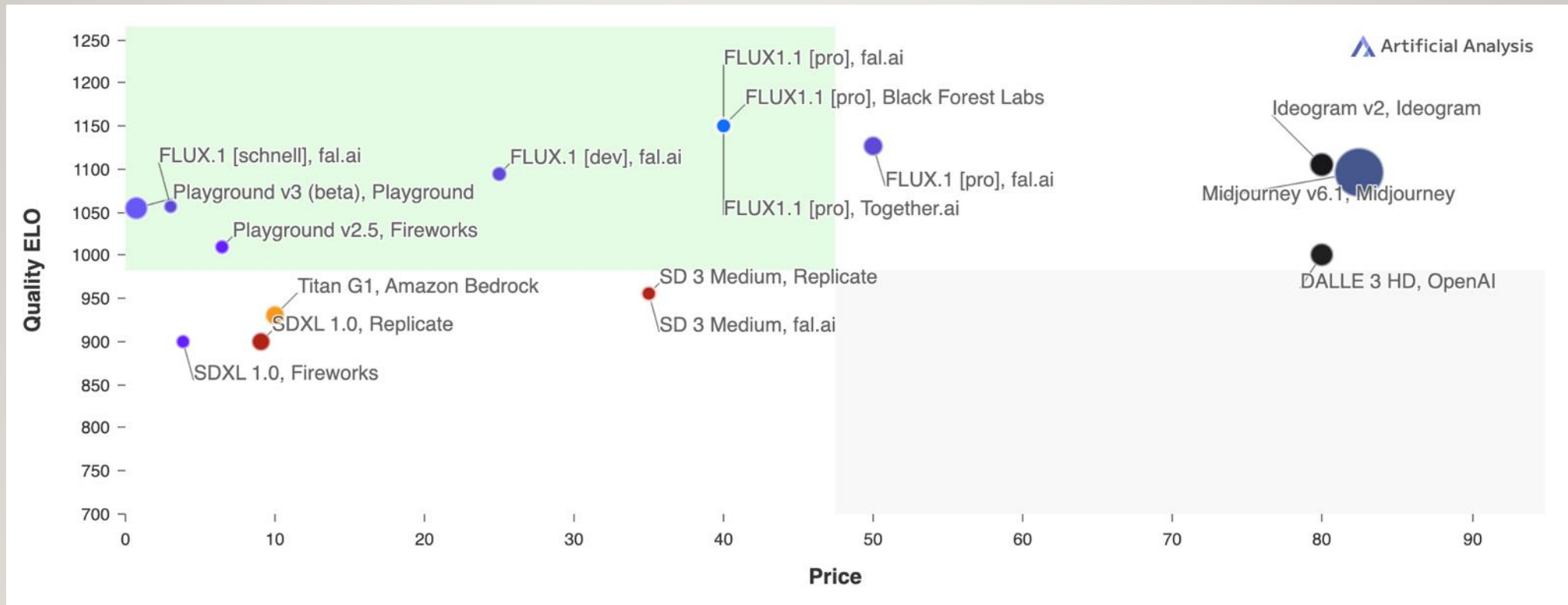


## PRICE-PERFORMANCE

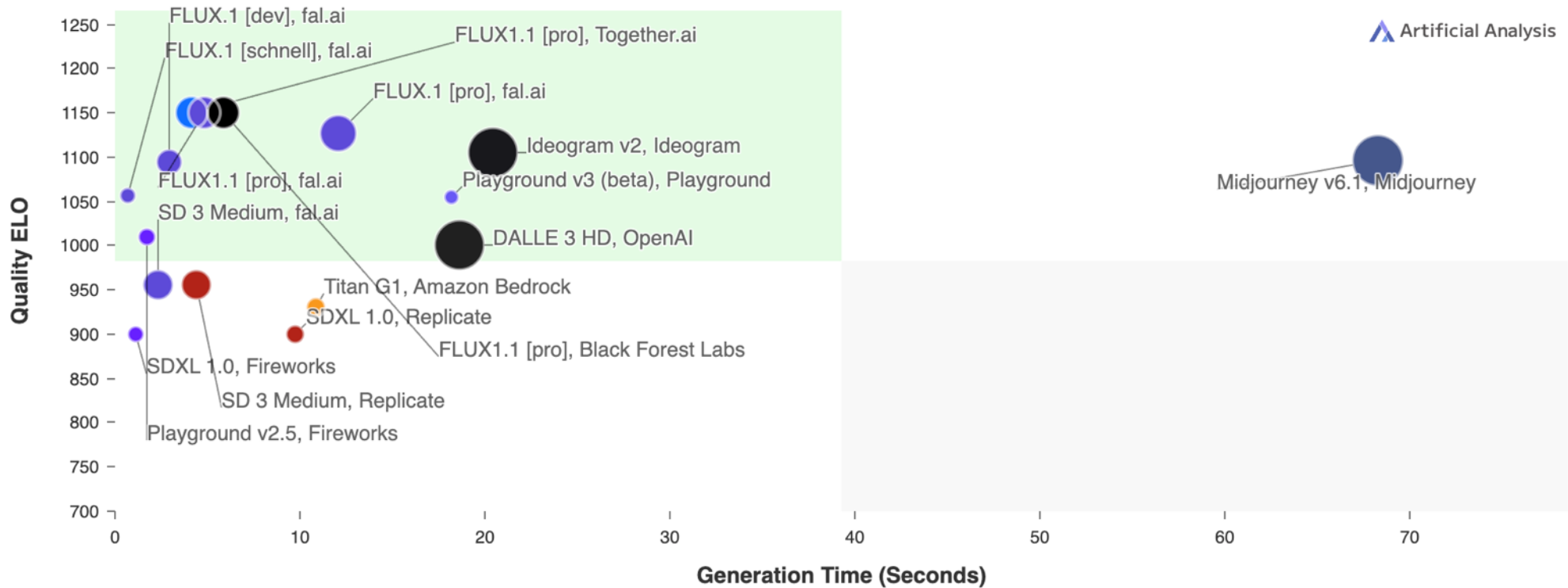
- Playground
- FLUX I
- Stable Diffusion I



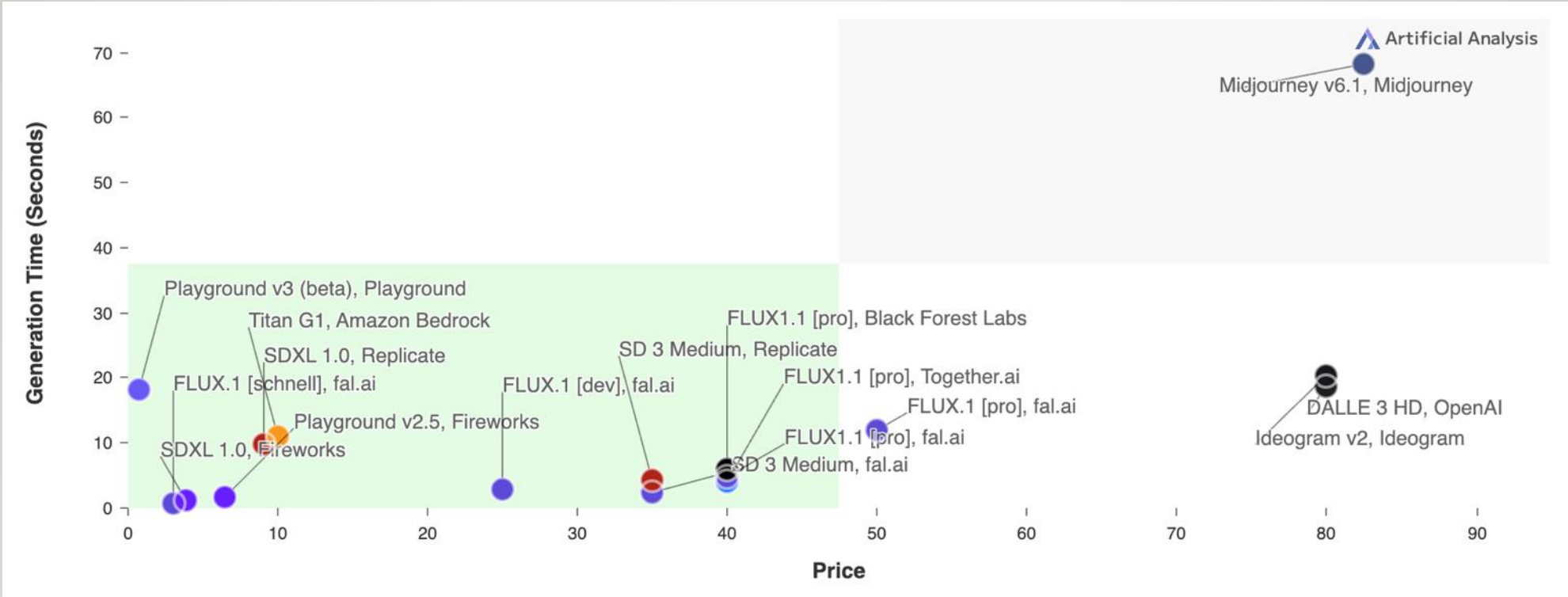
# QUALITY \* PRICE



# QUALITY \* GENERATION TIME



# GENERATION TIME \* PRICE





# TENSOR ART

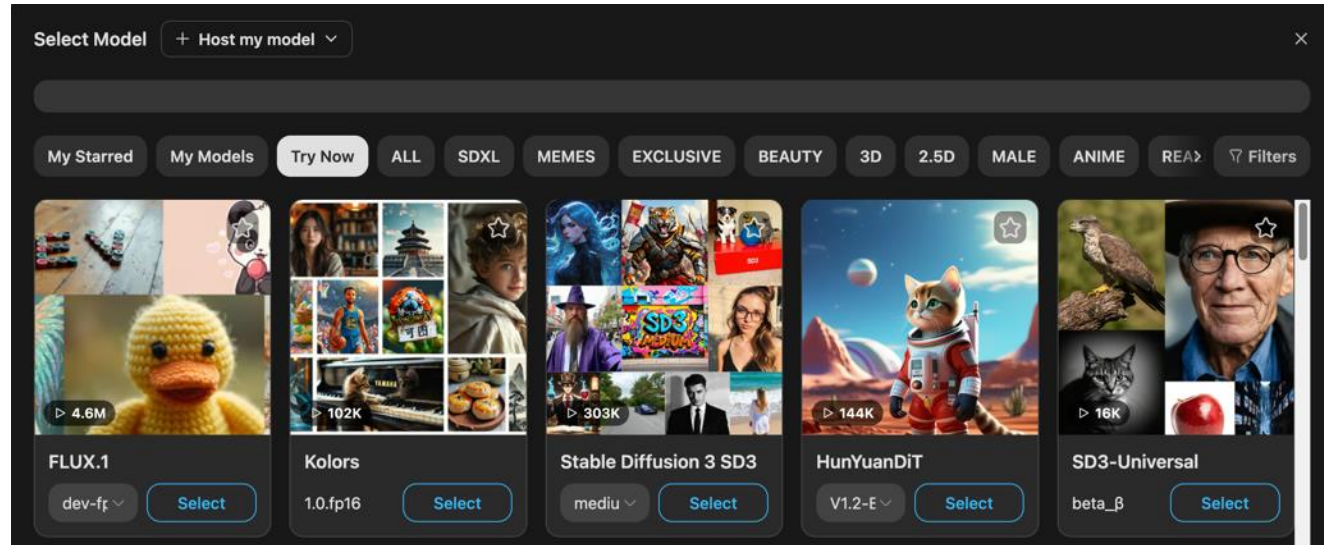


- Pros
  - Many gen AI art tools prohibit using certain inappropriate words. If you force it, they might cancel your membership.
  - Some tools generate it but block the output. For example, Ideogram warns that the image “may not be safe.”
  - Tensor Art has no restrictions. If you are a professor of biology or medical science teaching human anatomy, or a professor of psychology teaching human sexuality, you may need certain explicit illustrations.

# TENSOR ART: CARRY MANY DIFFERENT GEN AI ART TOOLS

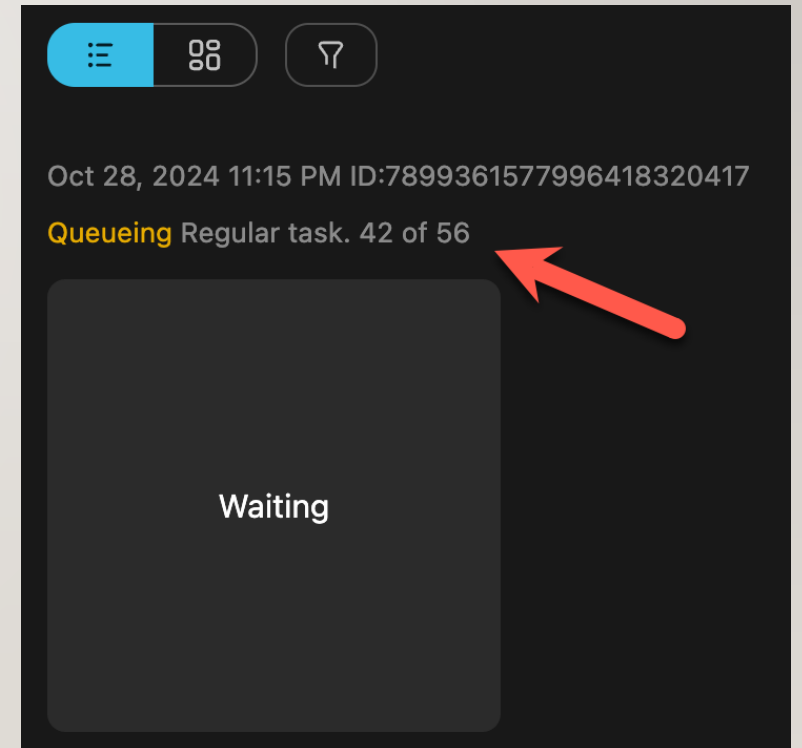
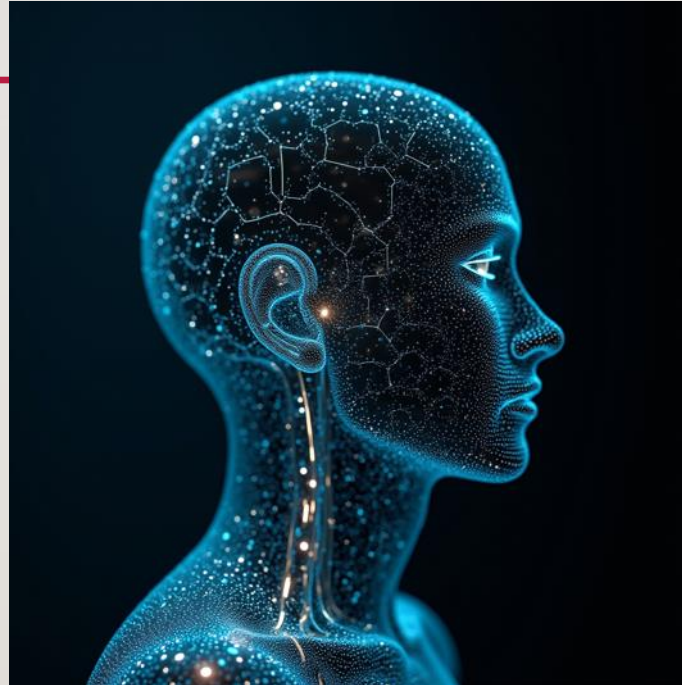
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PROS: INCLUDES  
FLUX AND STABLE  
DIFFUSION



# TENSOR ART: FLUX

- Pros: High quality output
- Cons: Very popular, a long wait time for the free account





# IDEOGRAM

- Pros
  - High quality output
  - Better than others in generating the exact words
- Cons
  - The free account allows 10 credits per day only
  - Version 2.0 uses 2 credits per picture.

The screenshot shows the Ideogram AI settings panel. At the top, there are icons for editing and sharing, and a close button. The settings are as follows:

- Magic Prompt**: Radio buttons for Auto, On (selected), and Off.
- Aspect ratio**: Dropdown menu with options 9:16, 1:1 (selected), and 16:9.
- Visibility**: Radio buttons for Public and Private.
- Model**: Dropdown menu with 2.0 (selected). A red arrow points to this dropdown.
- Color palette**: Radio button for Auto and a color palette selection (red, black, orange, pink).

At the bottom, there is a 'Uses 2 credits' label and a 'Generate' button. A red arrow points to the 'Uses 2 credits' label.

# EXACT WORDS: IDEOGRAM 2.0

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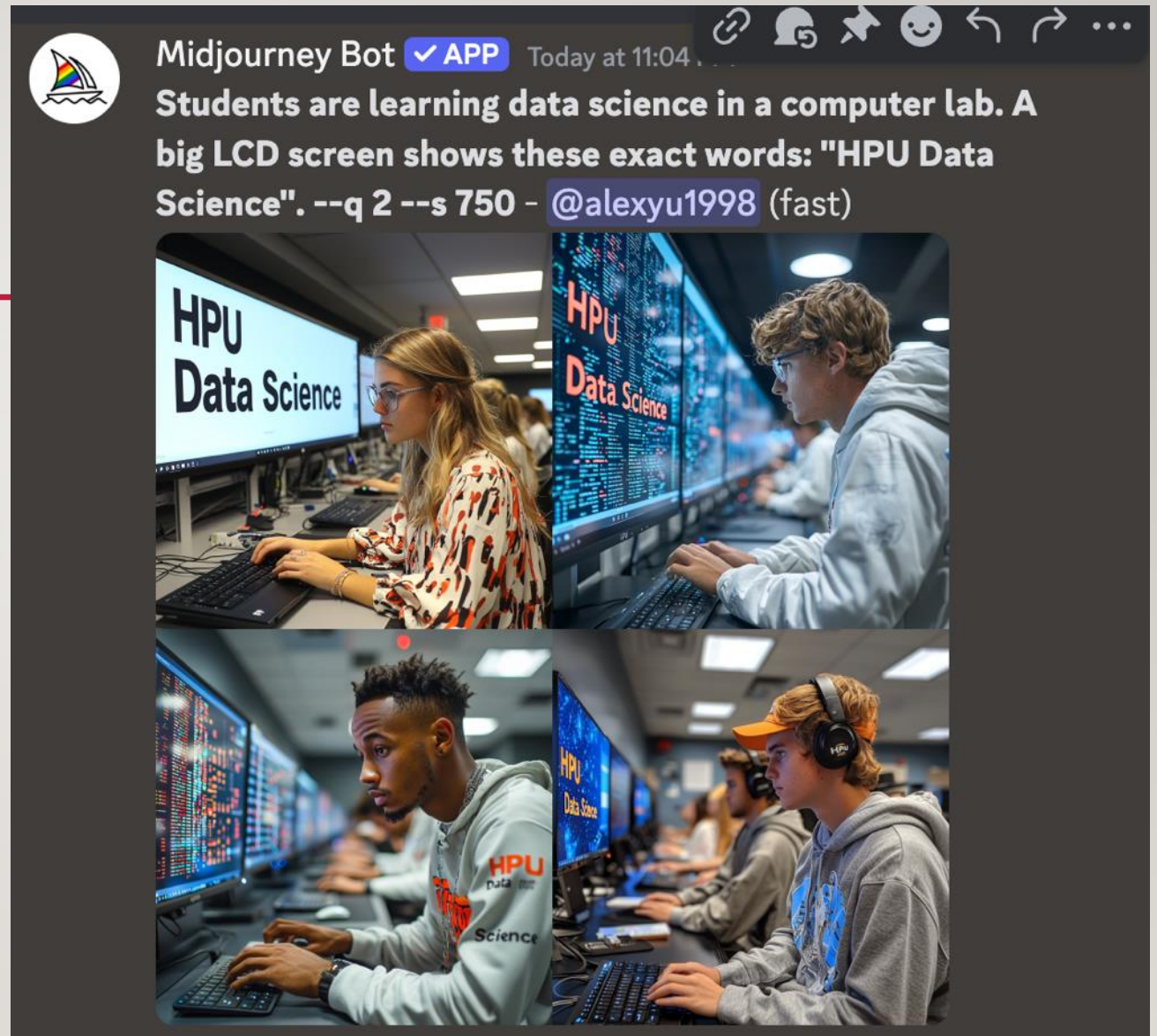
- Students are learning data science in a computer lab. A big LCD screen shows these exact words: "HPU Data Science".





# EXACT WORDS: MIDJOURNEY

- Students are learning data science in a computer lab. A big LCD screen shows these exact words: "HPU Data Science".
- Only two out of four can clearly display the text.





# EXACT WORDS: META AI

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- Students are learning data science in a computer lab. A big LCD screen shows these exact words: "HPU Data Science".
- The letter "H" is distorted





# EXACT WORDS: DALL.E3

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- Students are learning data science in a computer lab. A big LCD screen shows these exact words: "HPU Data Science".
- **HHUPU**



## EXACT WORDS: TENSOR ART (STABLE DIFFUSION)

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- Students are learning data science in a computer lab. A big LCD screen shows these exact words: "HPU Data Science".
- Did not show the words at all

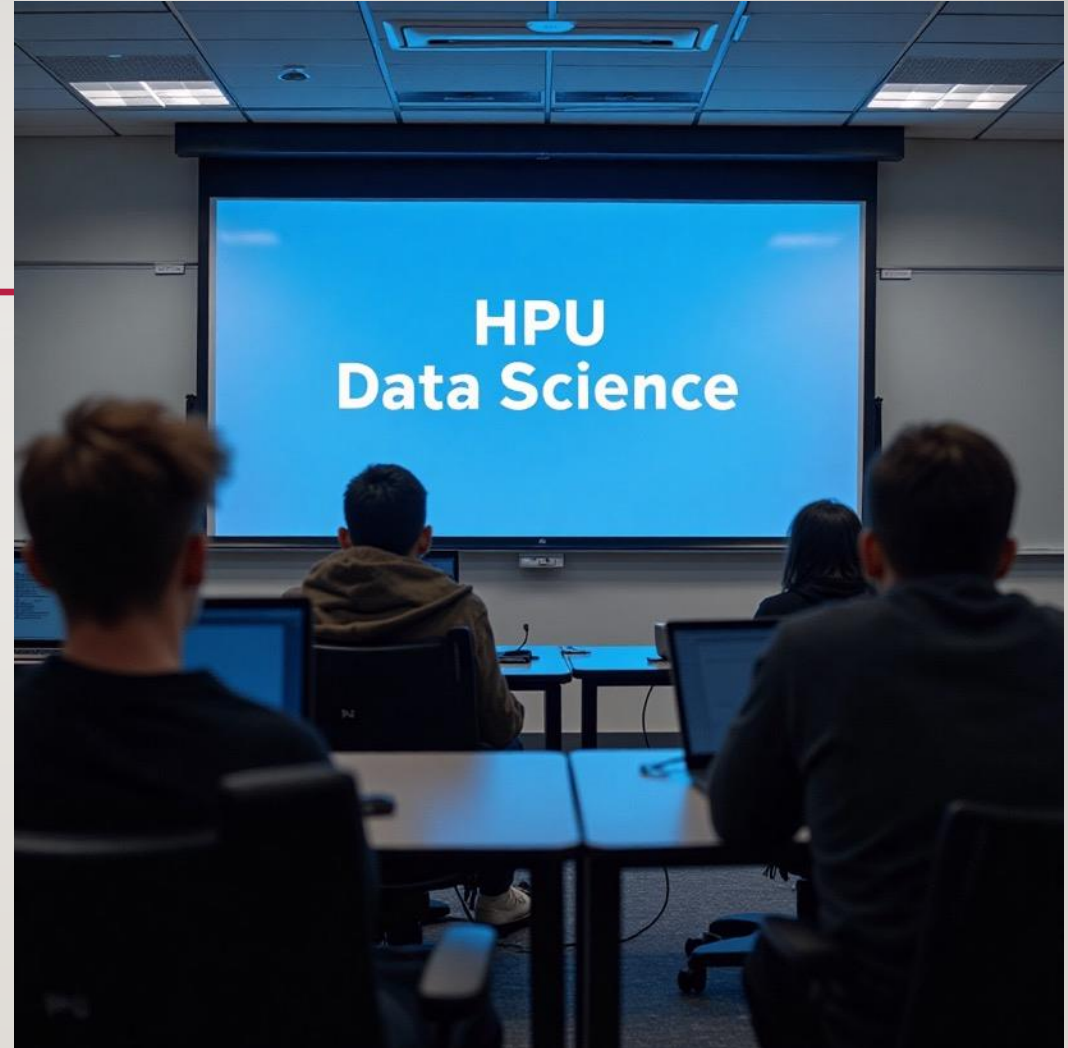




# EXACT WORDS: TENSOR ART (FLUX)

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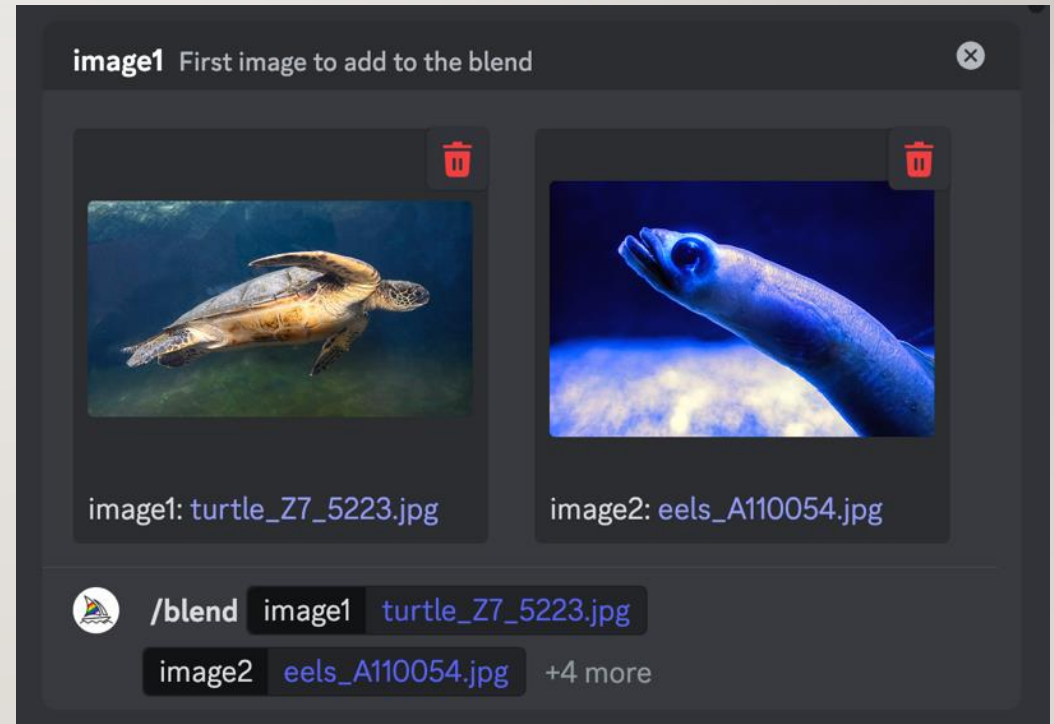
- Students are learning data science in a computer lab. A big LCD screen shows these exact words: "HPU Data Science".
- **OK, but flat and boring**



# MIDJOURNEY

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- Pros
  - High quality
  - Many features, such as blending multiple images, alter parts of the image
- Cons
  - Slow
  - Primary command prompt, not much GUI





# MIDJOURNEY

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- Turtle-eels

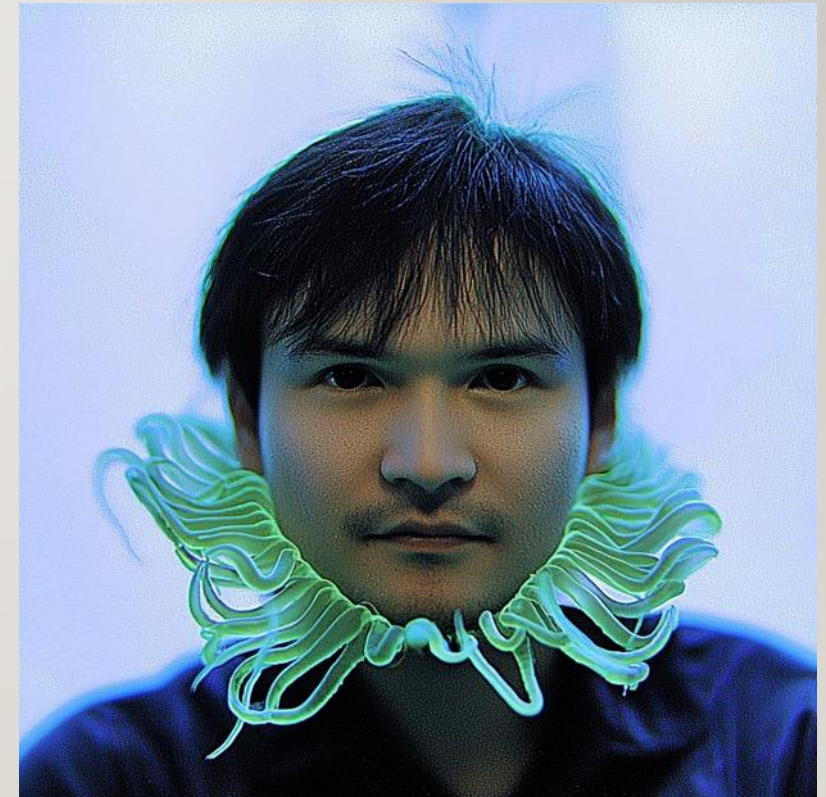
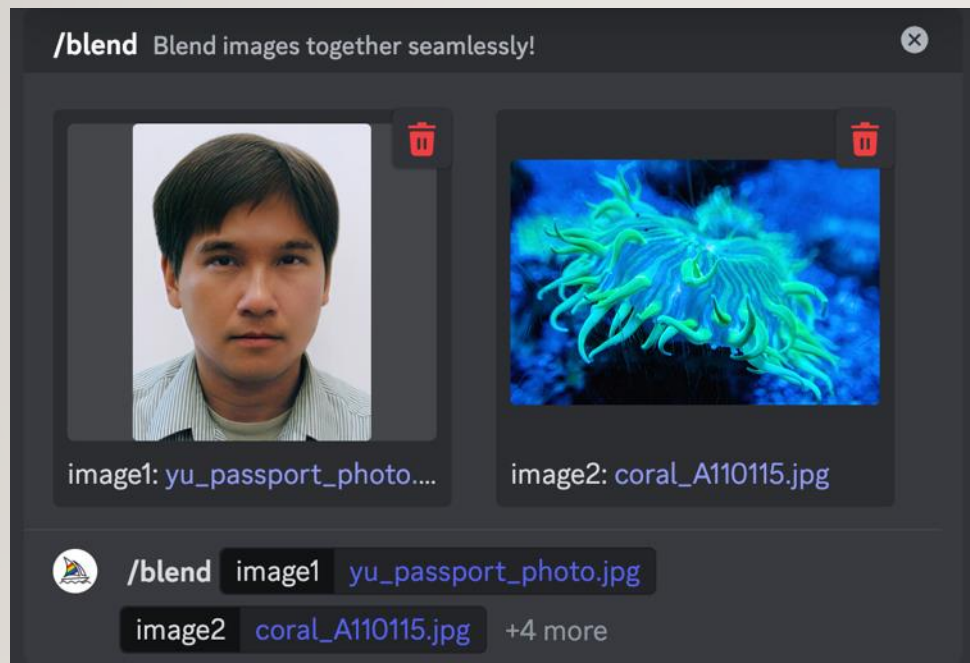




# MIDJOURNEY

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- Another blending example: Coral man



# ADOBE FIREFLY

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- Pros:
  - Embedded in Adobe Photoshop, fully integrated
- Cons
  - No free account, need subscription
  - Lower quality comparing with others (The model is a real person whereas the background is generated in Firefly)





# RECOMMENDATIONS

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- Use it! Your PowerPoint presentations and video lectures will be enhanced by customized images that fit into your content.
- If you don't want to pay, open a free account in each of the preceding gen AI art services. If you use up your credit in one service, go to another one.
- If you would like to produce all images from a single platform for consistency, subscribe to Ideogram because it is the best for generating exact words.



# RECOMMENDATIONS

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- The tool is not perfect. For example, in this picture the head and the body of the woman are not proportional.
- The Internet is flooded with poorly made AI images. It would drive your audience away!
- Sometimes it takes several trials and errors to get it right.



# ADVANTAGES

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- **Cost Efficiency:** Generative AI art tools can drastically reduce the cost of creating visual content, as they allow users to produce images or illustrations without hiring professional designers or illustrators. This is especially valuable for people who might have limited budgets for customized art.
- **Speed:** AI can produce illustrations almost instantaneously, which accelerates project timelines. Traditional design work can take days or weeks, especially when involving complex requirements or revisions. AI-generated art is often ready within seconds or minutes, allowing for rapid experimentation and immediate feedback.

# ADVANTAGES

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- **Accessibility and Consistency:** AI makes high-quality visuals more accessible to people without formal design skills, enabling anyone to create polished, professional-looking graphics. This opens up design possibilities for non-designers, making it easier for individuals and organizations to maintain consistent branding and style across multiple projects. In this sense, it is a great equalizer that levels the playing field.
- **Customization and Creativity:** Traditionally, faculty use existing images for presentations. As a result, the images may not exactly fit the content, and it takes the risk of copyright infringement. Generative AI can quickly adapt images to specific needs (changing styles, colors, themes) without requiring full redesigns.



# DISADVANTAGES

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- **Job Displacement:** As AI tools become more capable, some roles traditionally held by graphic designers, illustrators, and stock photo photographers may decline in demand. Companies that once hired designers for basic illustrations may now rely on AI tools to handle these tasks, potentially leading to reduced job opportunities.
- **Impact on the Stock Image Industry:** The demand for stock images and illustrations could decrease as companies and individuals turn to AI tools to generate unique visuals instead of purchasing stock assets. Companies selling stock images may need to adapt by offering niche, high-quality content or transitioning to offer unique design services to stay competitive.

# DISADVANTAGES

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- **Quality and Authenticity Concerns:** While AI-generated art can look professional, it may lack the originality, authenticity, and nuanced creativity that human designers bring to custom projects.
- **Intellectual Property and Ethical Concerns:** Generative AI often learns from existing images, raising questions about intellectual property rights, originality, and ethical use. Designers and artists might feel their work is being co-opted or devalued if AI tools generate images based on large datasets that include their original creations without credit or compensation.

# THANK YOU!

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