

# Image Generation with Gen AI

Instructor

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# Images are everywhere!



Advertisements



Graphs



Social media

# Images are everywhere!

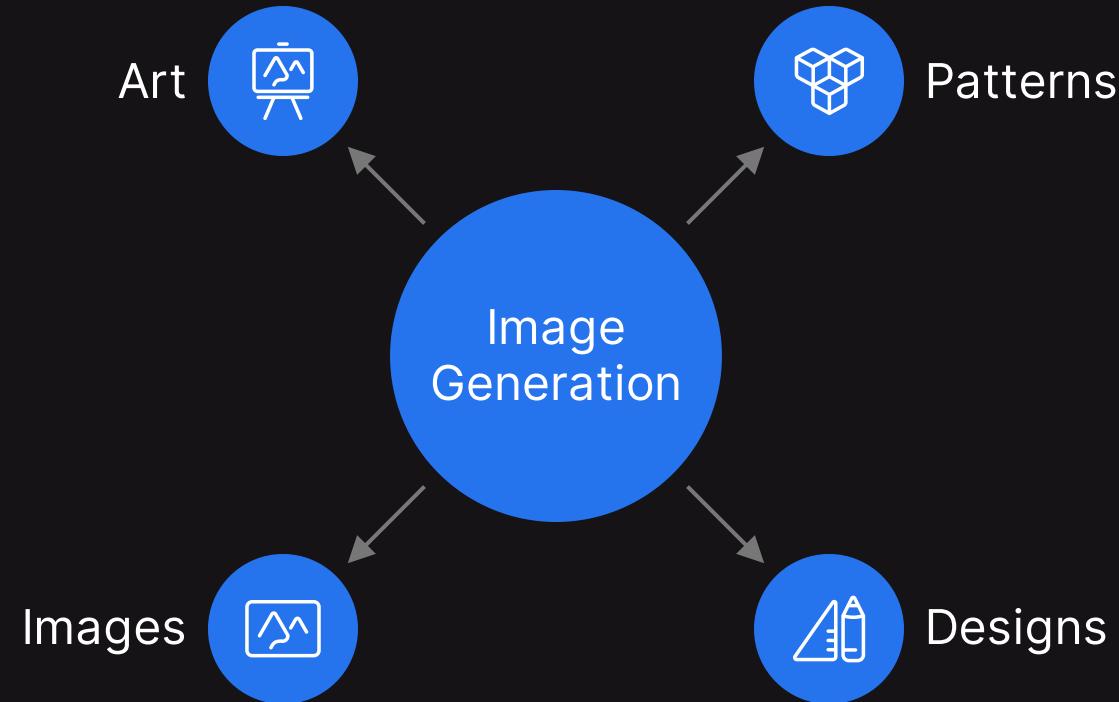


Prompt: a firefighter in a helmet in front of fire looking exhausted, in the style of vibrant, high-energy imagery, photographically detailed portraiture, explosive and chaotic, movie poster



Prompt: A man walking a dog in a park during sunset

# Image Generation



# Types of Image Generation Models

Model

Text-to-Image

Image-to-Image

Audio-to-Image

# Types of Image Generation Models

Model	Text-to-Image	Image-to-Image	Audio-to-Image
Input	Text		
Output	New images as per text		
Use cases	Creating brochures, ads, PPTs, etc.		

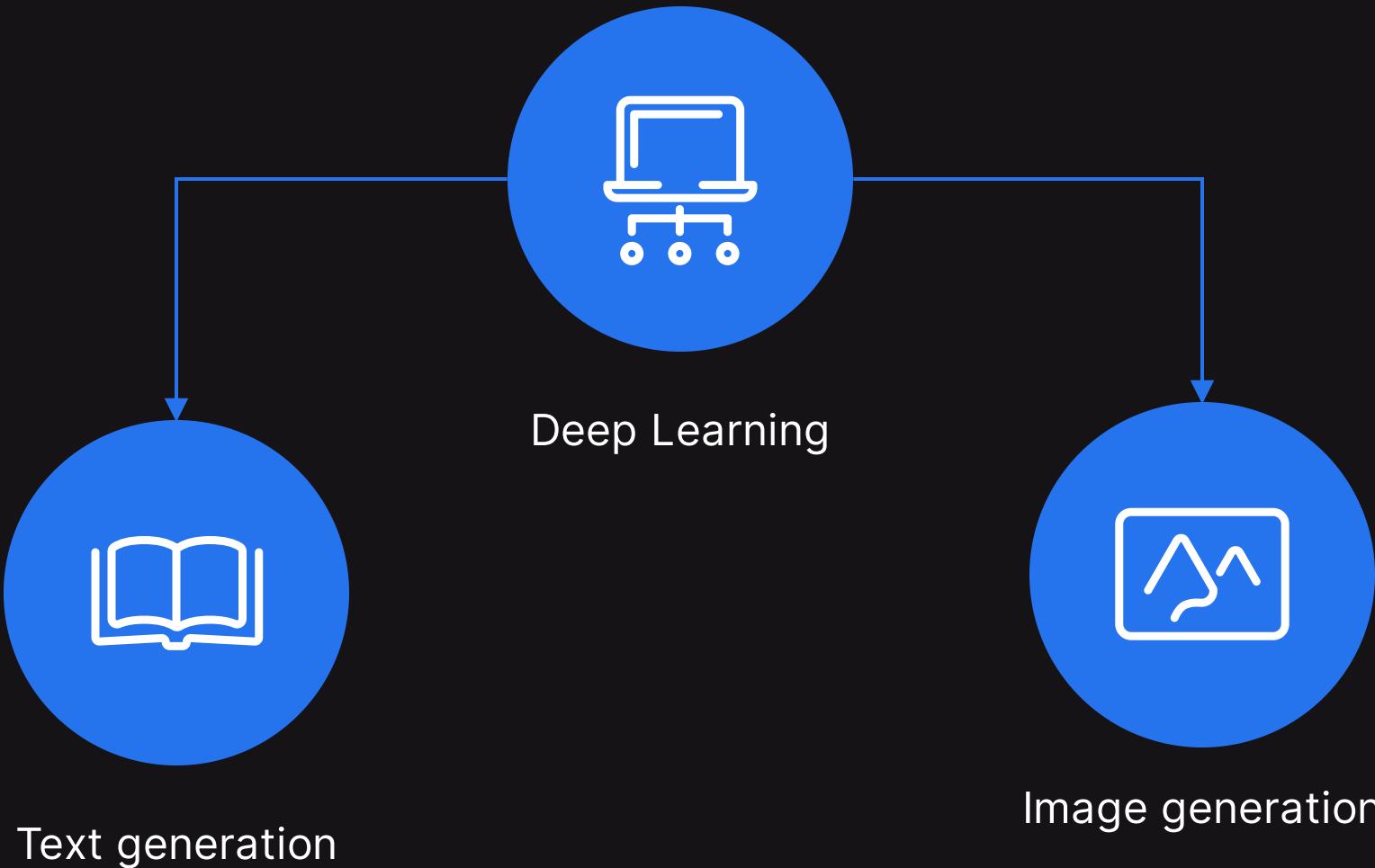
# Types of Image Generation Models

Model	Text-to-Image	Image-to-Image	Audio-to-Image
Input	Text	Text+Image	
Output	New images as per text	New images or edited version of an existing image	
Use cases	Creating brochures, ads, PPTs, etc.	Modifying images, Enhancing images, etc.	

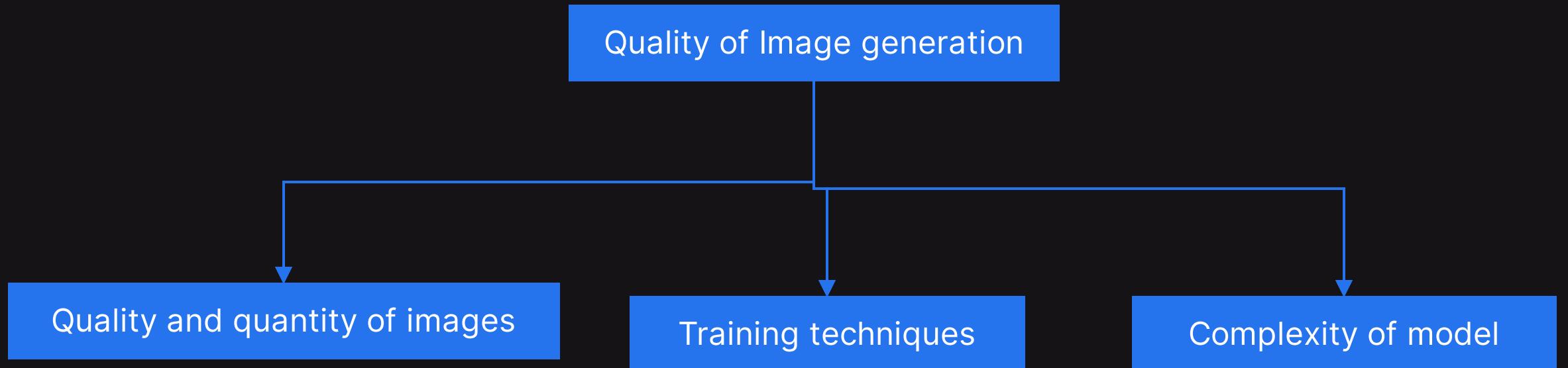
# Types of Image Generation Models

Model	Text-to-Image	Image-to-Image	Audio-to-Image
Input	Text	Text+Image	Audio
Output	New images as per text	New images or edited version of an existing image	Images as per the input audio
Use cases	Creating brochures, ads, PPTs, etc.	Modifying images, Enhancing images, etc.	Visualizing objects, scenes or places

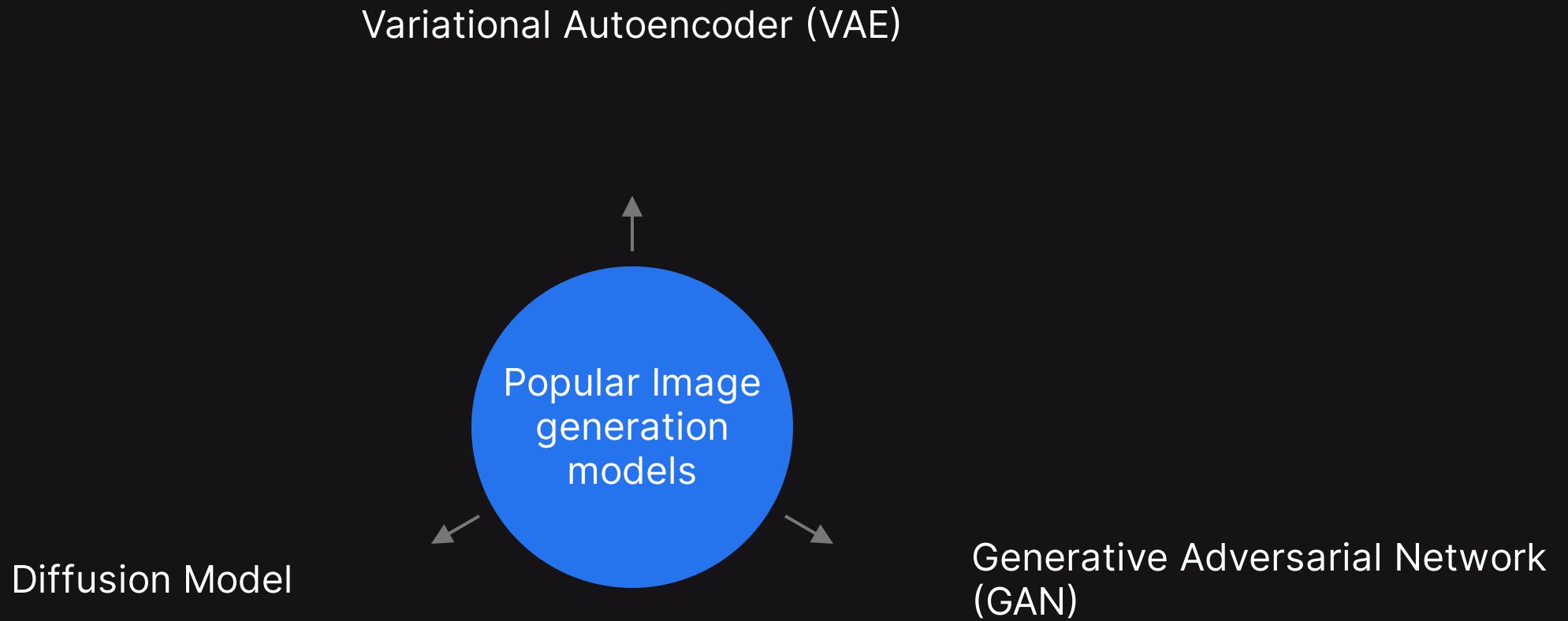
# Deep Learning



# Image Generation



# Image Generation Models



# Working of Diffusion Models

Removing noise

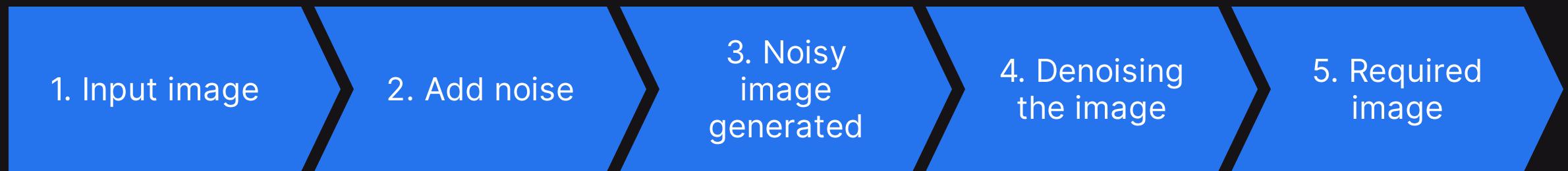
Reverse diffusion

Introducing noise

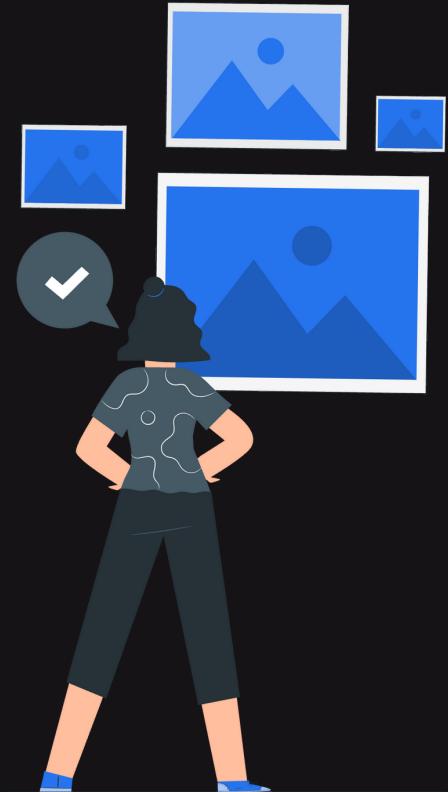
Forward diffusion



# Training of Diffusion Models



# Randomness in Diffusion Models



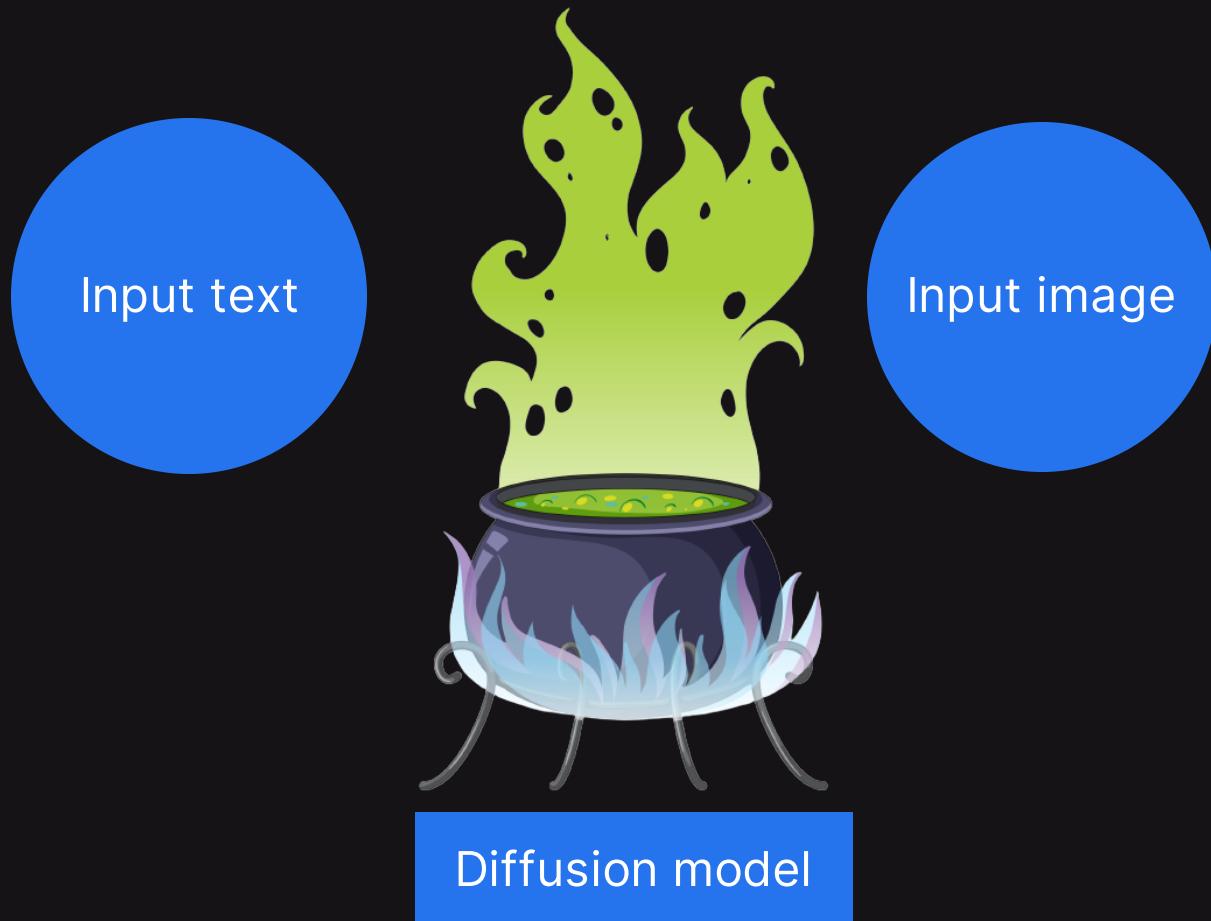
1

But the generated  
images will be random

2

We get meaningful  
images

# What is Conditioning?



# Conditioning

- Requires deep learning models
- Determines the quality of generated images
- Gives us the control of the output