



DEPI Graduation project

TEXT2IMAGE



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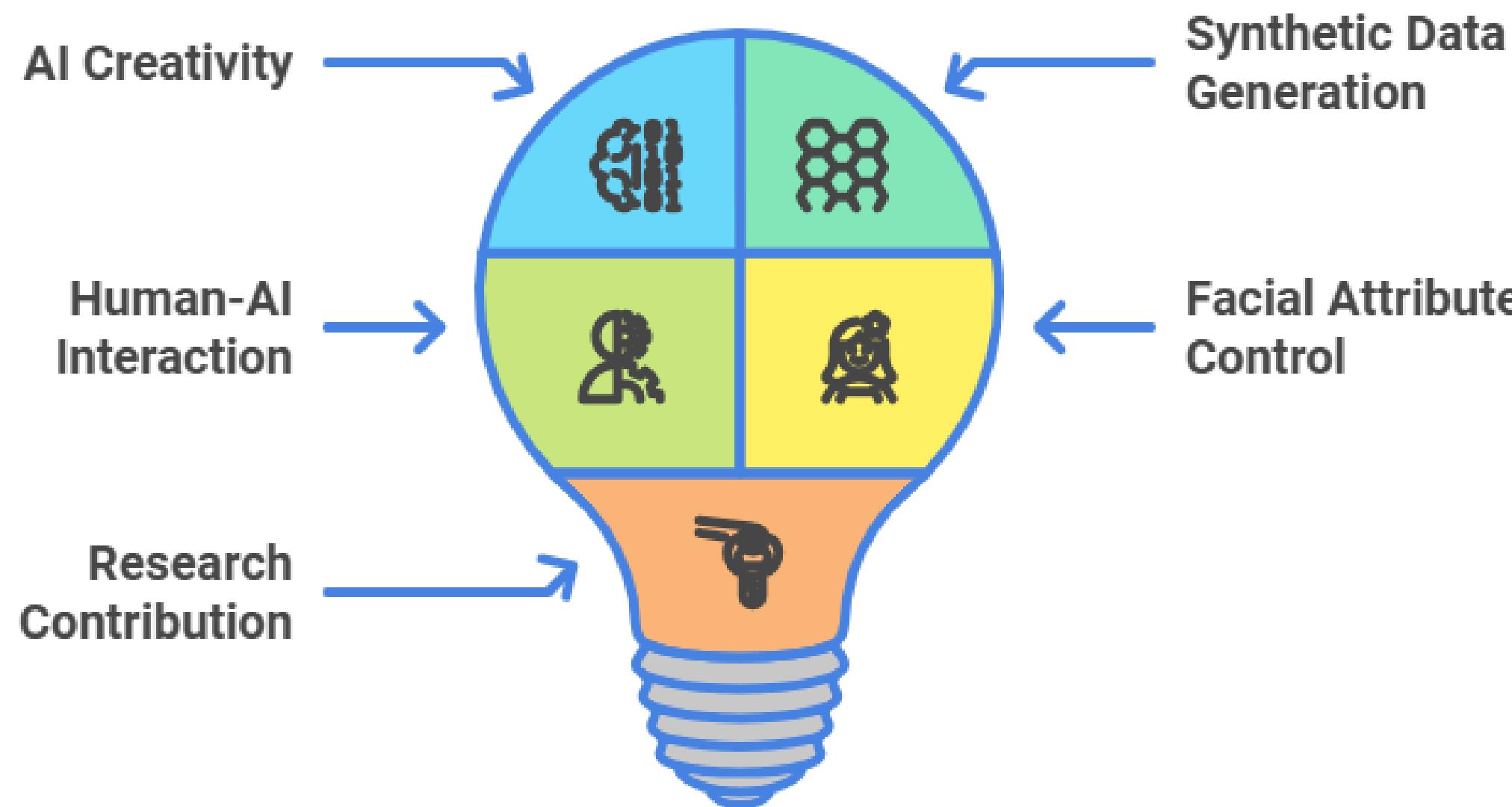


Problem definition

- **Objective:**
 - Develop a model that generates realistic facial images from textual descriptions.
- **Challenges:**
 - Ambiguity in Text Descriptions.
 - Understanding Natural Language
 - Complexity of Visual Representation
 - Generating High-Quality, Detailed Images
 - Balancing Diversity with Faithfulness to Text
 - resources limits

Motivation

Advancements in AI Image Generation



Motivation



prompt

This guy have Black Hair, No Beard, No smile.



prompt

This man have Black Hair, He is Attractive, No Beard, Straight Hair, Young.

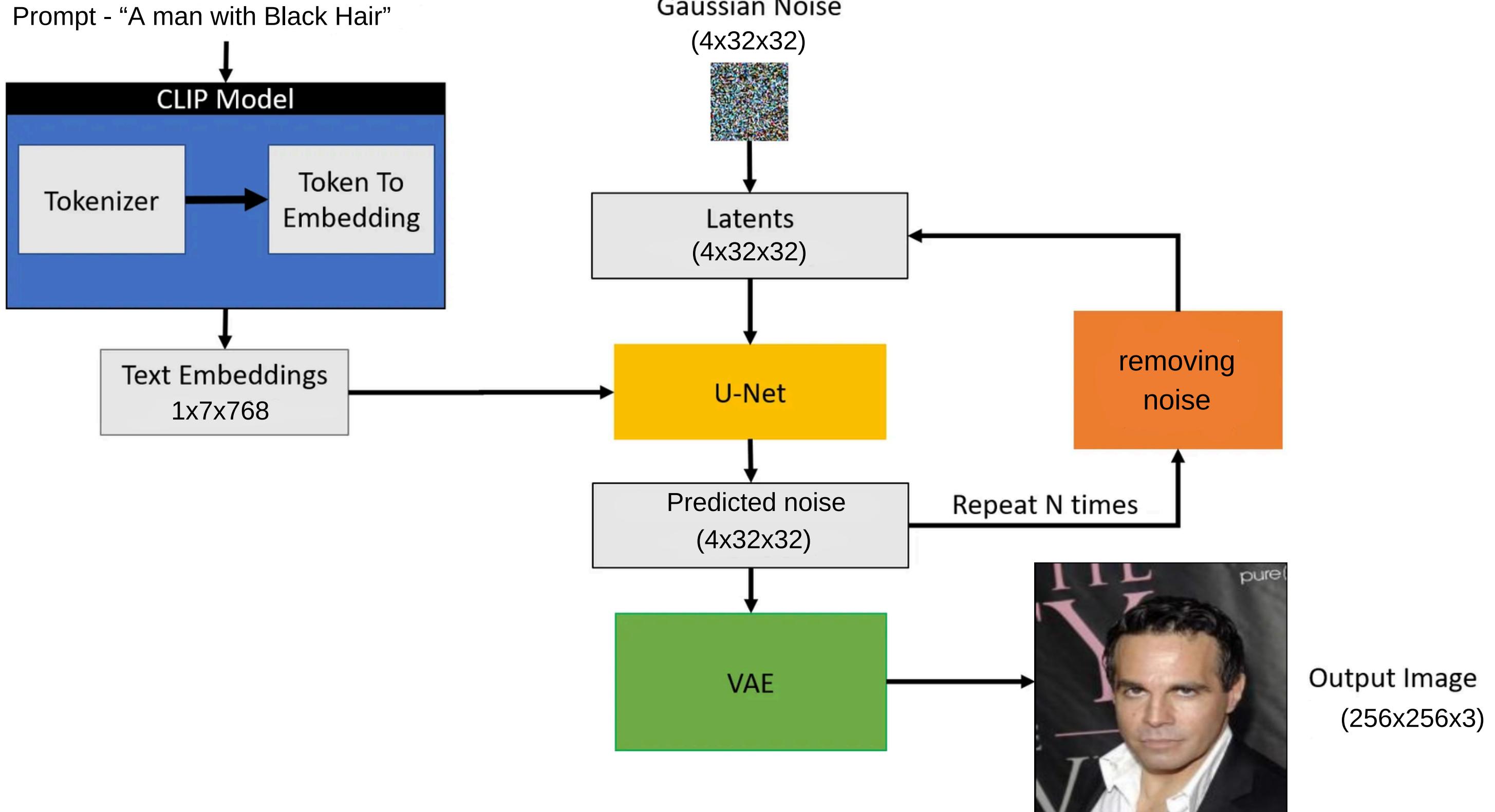


prompt

This female has Bangs, Blond Hair, Attractive, Heavy Makeup, Mouth Slightly Open, Smiling, Wavy Hair, Wearing Earrings, mid age.



Pipeline



Dataset



Dataset: CelebA (CelebFaces Attributes Dataset)

- The CelebA dataset is widely used for tasks like facial recognition, attribute prediction, and image generation. Here's an overview and the preprocessing steps done for your text-to-image project:

1. Dataset Overview:

- Number of Images: 202,599 celebrity face images.
- Image Resolution: Each image is 178x218 pixels.
- Attributes: 40 binary attribute labels per image (e.g., smiling, glasses, hair color, gender, age).

Dataset

	image_id	Bald	Bangs	Black_Hair	Blond_Hair	Attractive	Brown_Hair	Eyeglasses	Goatee	Gray_Hair
0	000001.jpg	-1	-1	-1	-1	1	1	-1	-1	-1
1	000002.jpg	-1	-1	-1	-1	-1	1	-1	-1	-1
2	000003.jpg	-1	-1	-1	-1	-1	-1	-1	-1	-1
3	000004.jpg	-1	-1	-1	-1	1	-1	-1	-1	-1
4	000005.jpg	-1	-1	-1	-1	1	-1	-1	-1	-1
...
8955	202167.jpg	-1	-1	1	-1	1	-1	1	1	-1
8956	202200.jpg	-1	-1	1	-1	1	-1	-1	-1	-1
8957	202230.jpg	-1	1	-1	1	-1	-1	1	-1	-1
8958	202384.jpg	1	-1	1	-1	-1	-1	-1	-1	-1
8959	202548.jpg	-1	-1	-1	1	-1	-1	-1	-1	1

Dataset

	image_id	Bald	Bangs	Black_Hair	Blond_Hair	Attractive	Brown_Hair	Eyeglasses	Goatee	Gray_Hair	...	Male	Mouth_Slightly_Open	Mustache	Narrow_Eyes	No_Beard	Smiling	Straight_Hair	Wavy_Hair	Wearing_Earrings	Young
0	000001.jpg	-1	-1	-1	-1	1	1	-1	-1	-1	...	-1	1	-1	-1	1	1	1	-1	1	



"This lady is Attractive, Brown Hair, Heavy Makeup, Mouth Slightly Open, No Beard, Smiling, Straight Hair, Wearing Earrings, Young."

Our Approaches

Our approach focuses on three state-of-the-art methods. Each model brings unique advantages and challenges, pushing the boundaries of AI's ability to generate creative and diverse content.

01

Generative Adversarial
Networks (GANs)



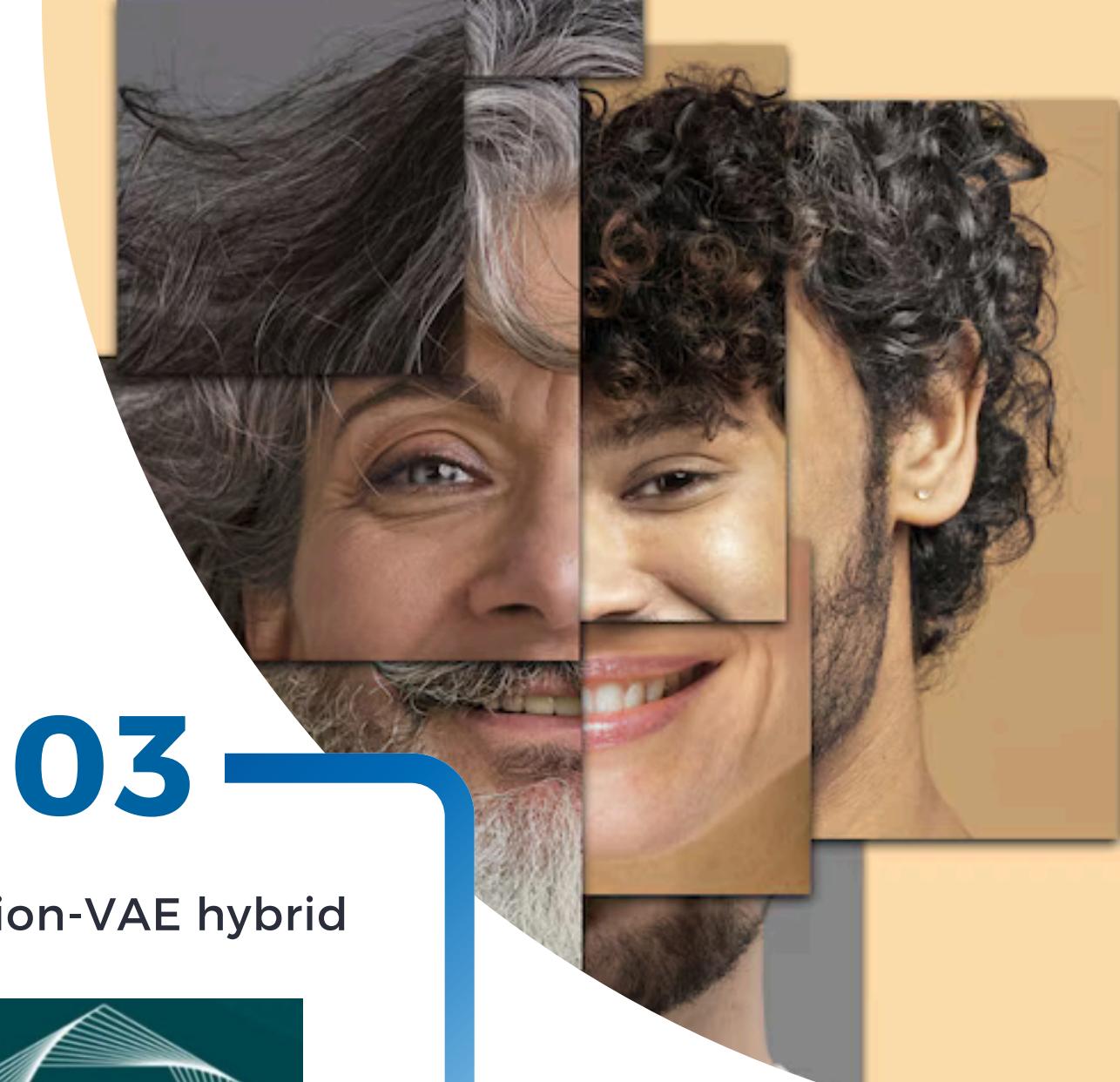
02

Diffusion Models



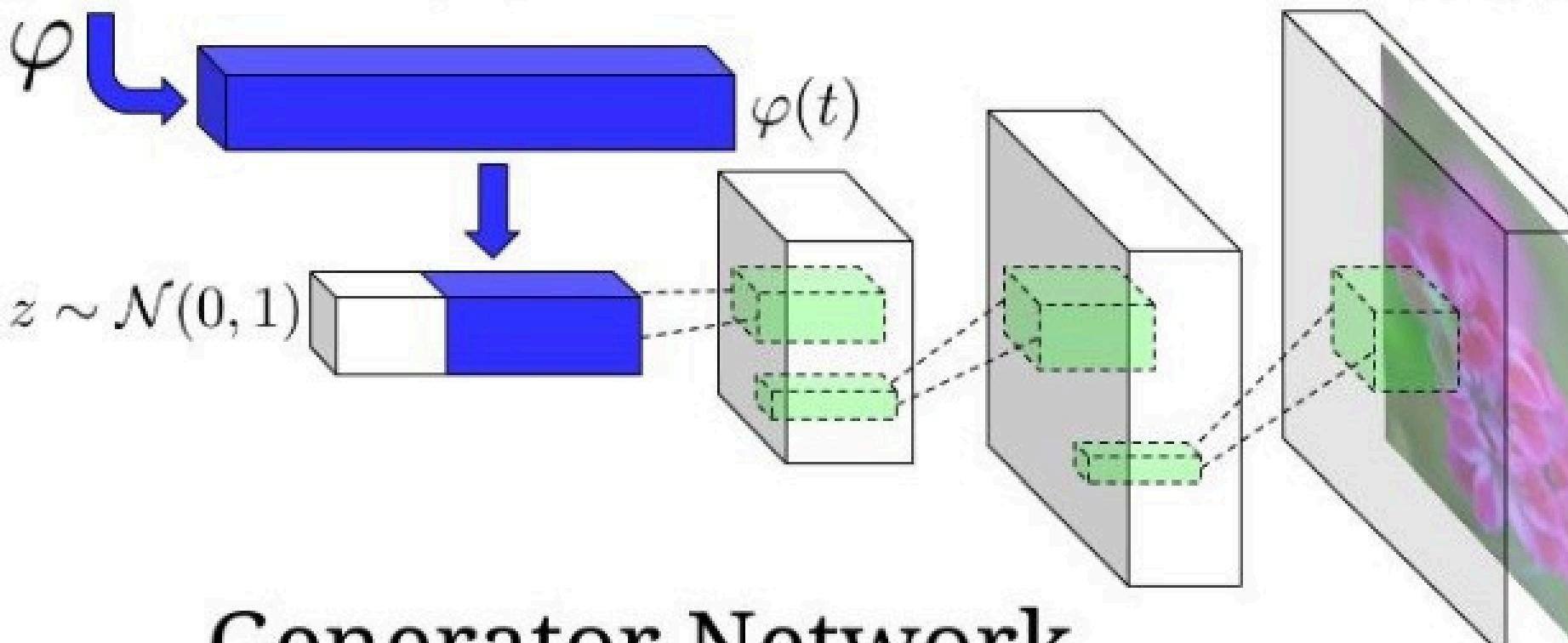
03

Diffusion-VAE hybrid



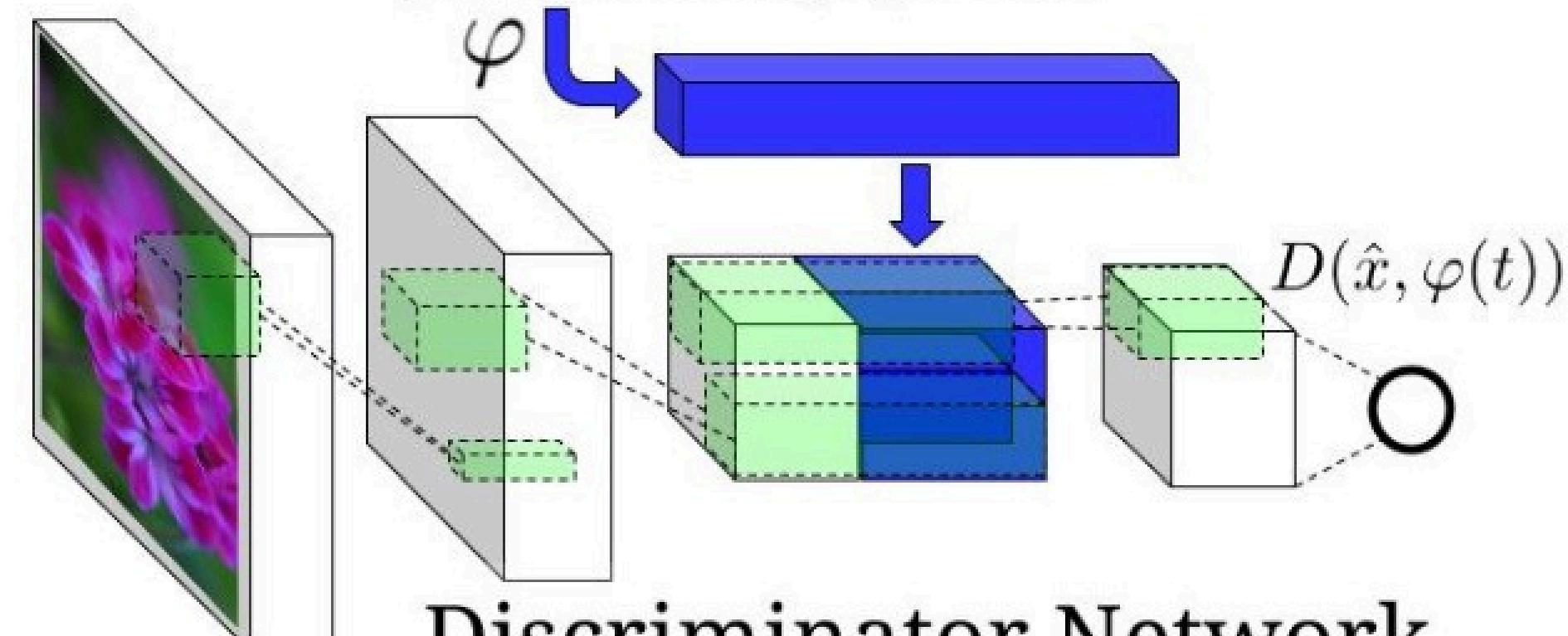
1/DC-GANS

This flower has small, round violet petals with a dark purple center



Generator Network

This flower has small, round violet petals with a dark purple center

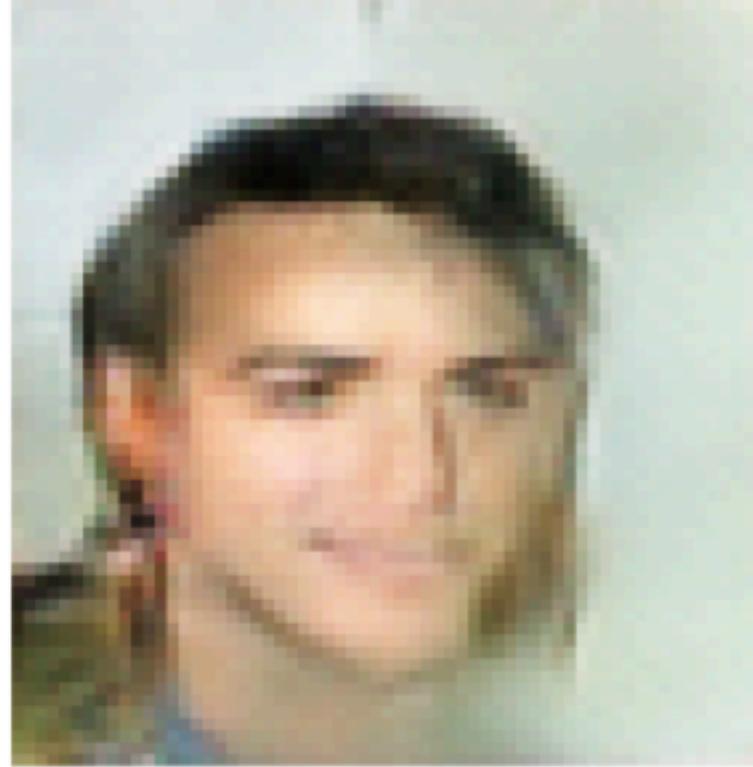


Discriminator Network

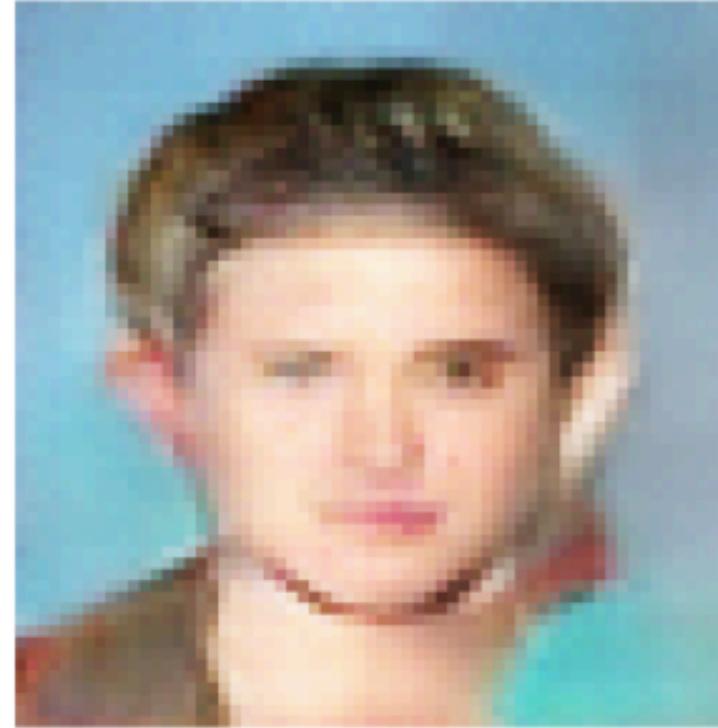


1/DC-GANS (Results)

This person has no beard. He looks extremely old and has no bangs, no smile, and no glasses.

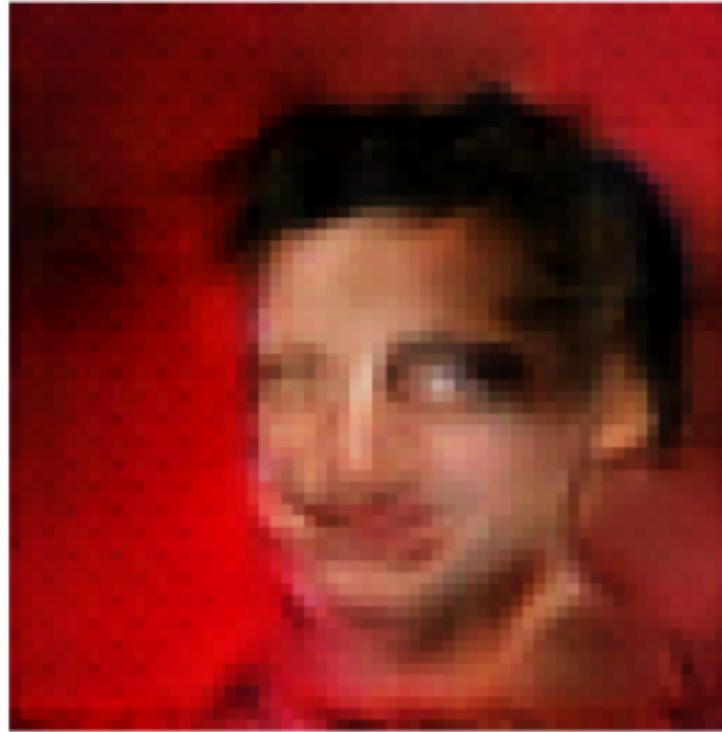


This person has no beard. He looks extremely old and has no bangs, no smile, and no glasses.

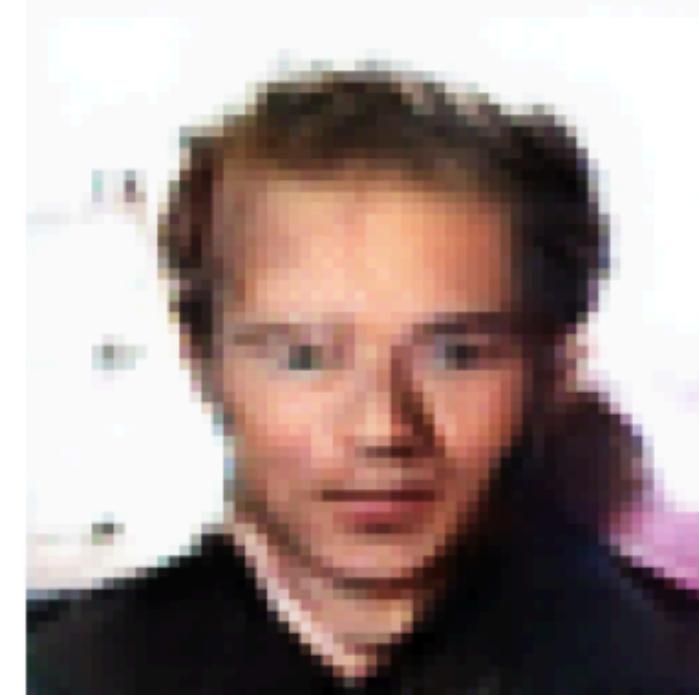


1/DC-GANS (Results)

This guy in his thirties has no beard at all, no glasses, and no smile. He doesn't have any fringe.



This person has no beard. He looks extremely old and has no bangs, no smile, and no glasses.



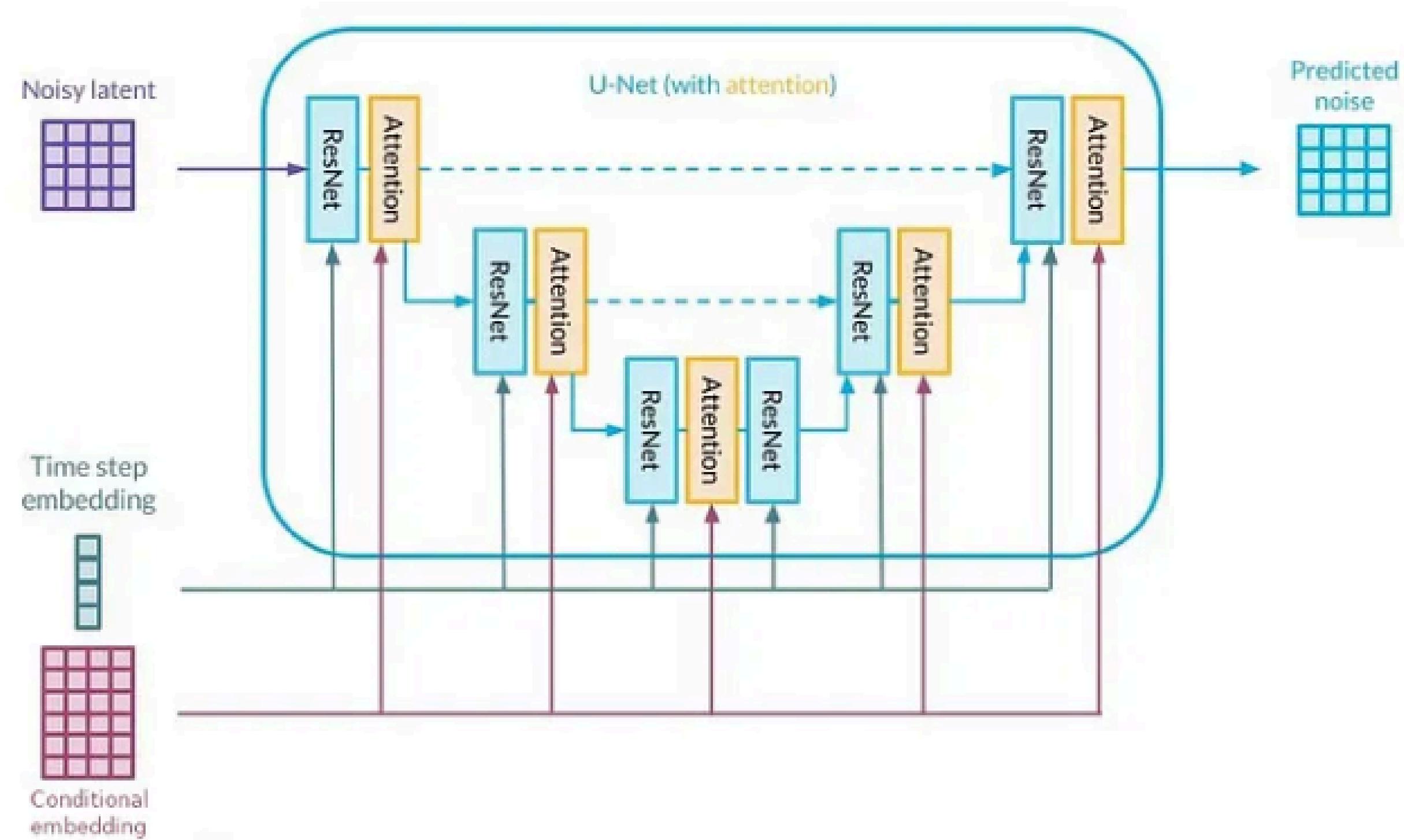
2/ Diffusion Models

Linear

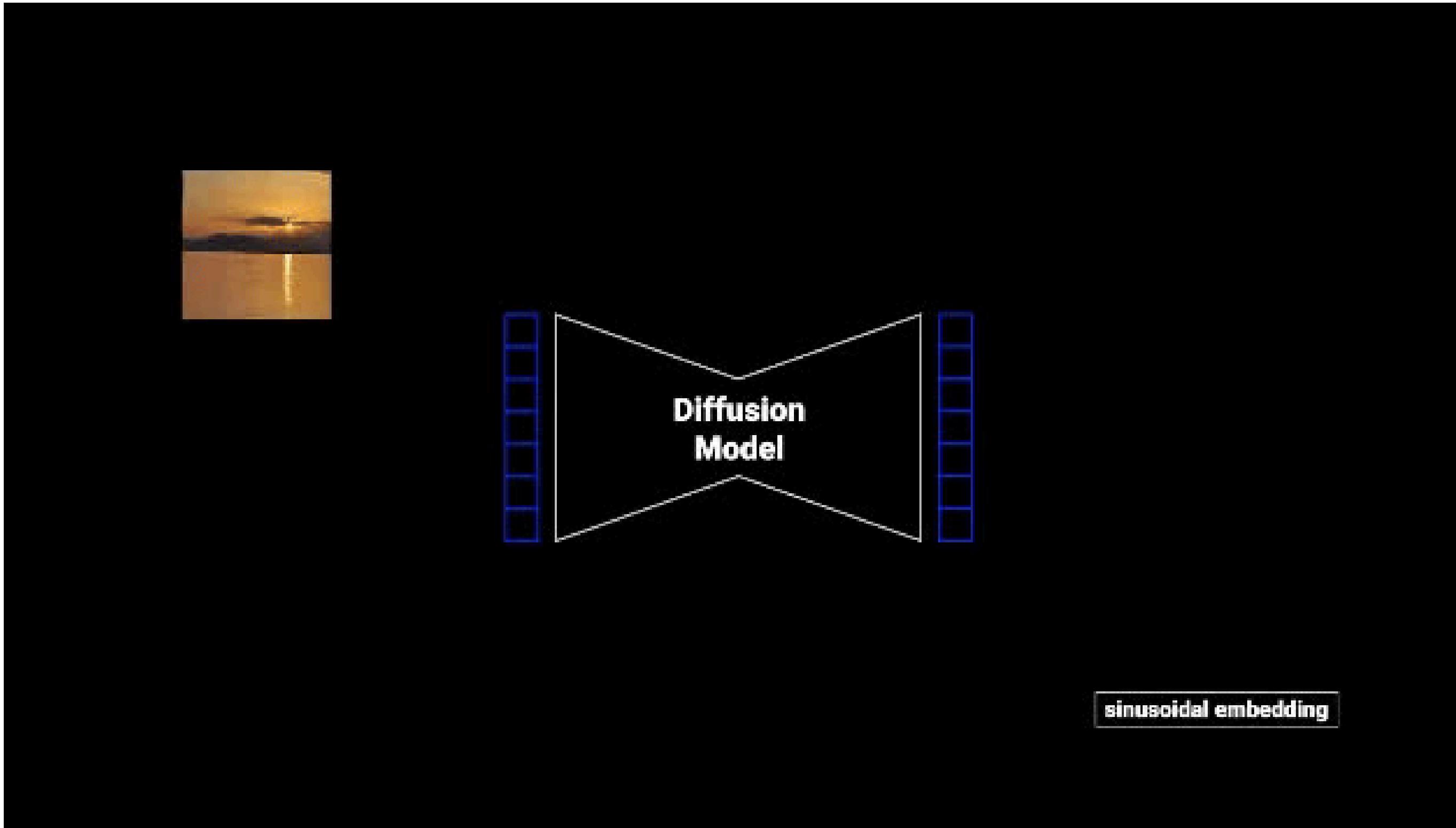


Cosine

2/ Diffusion Models

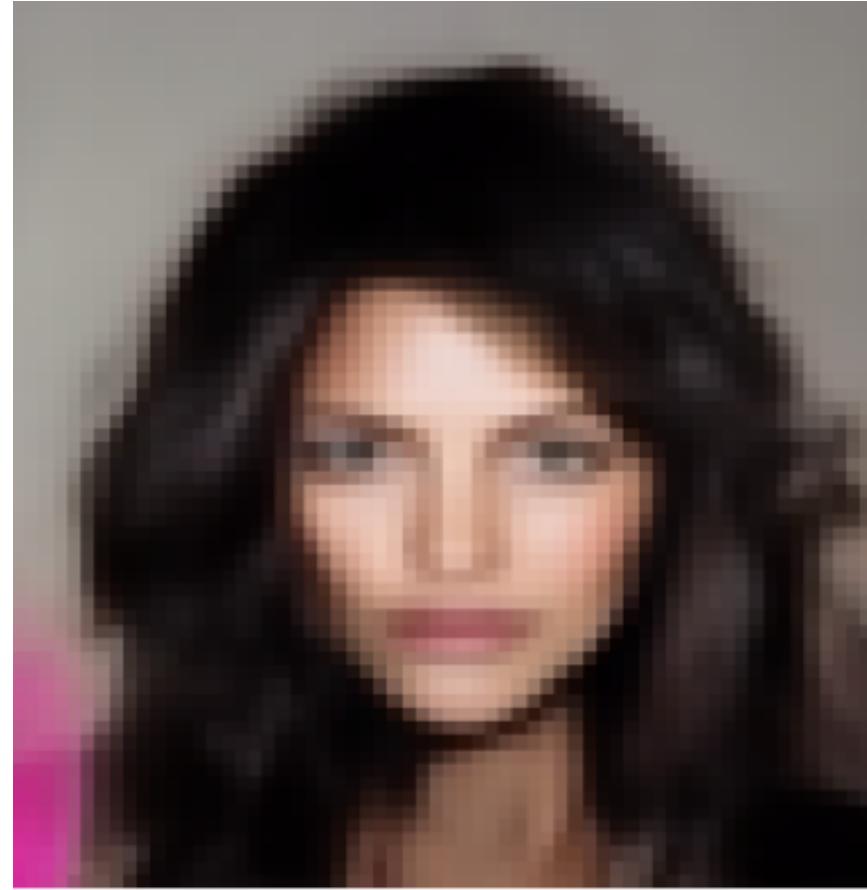


2/ Diffusion Models

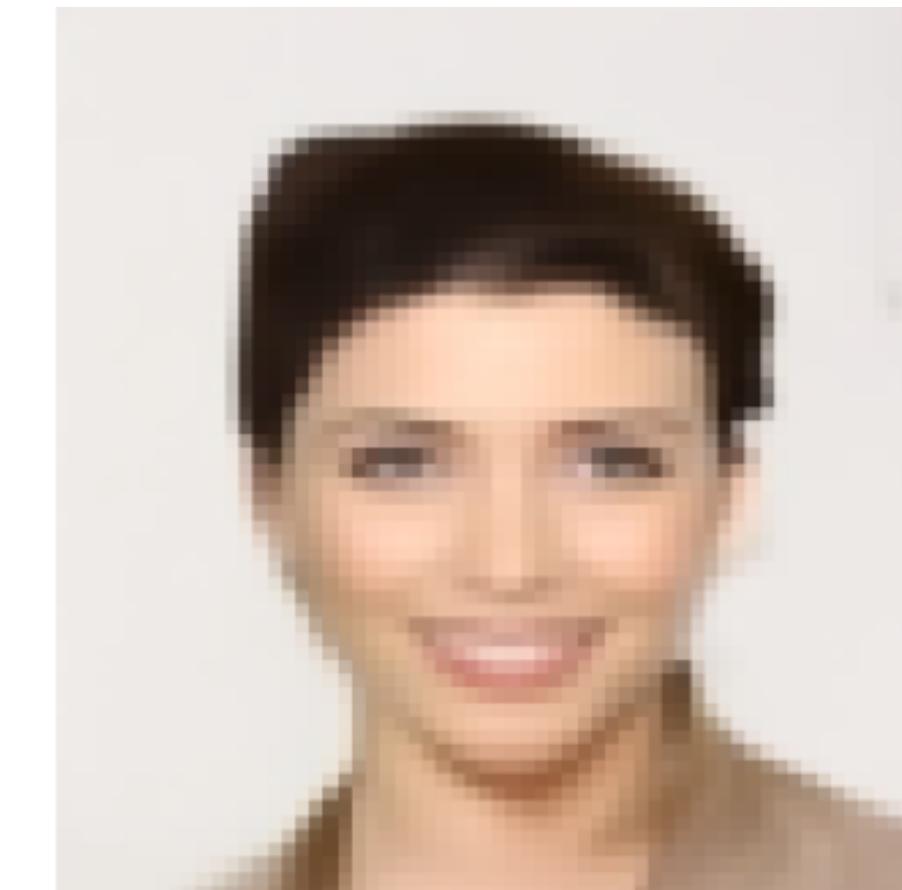


2/ Diffusion Models(results)

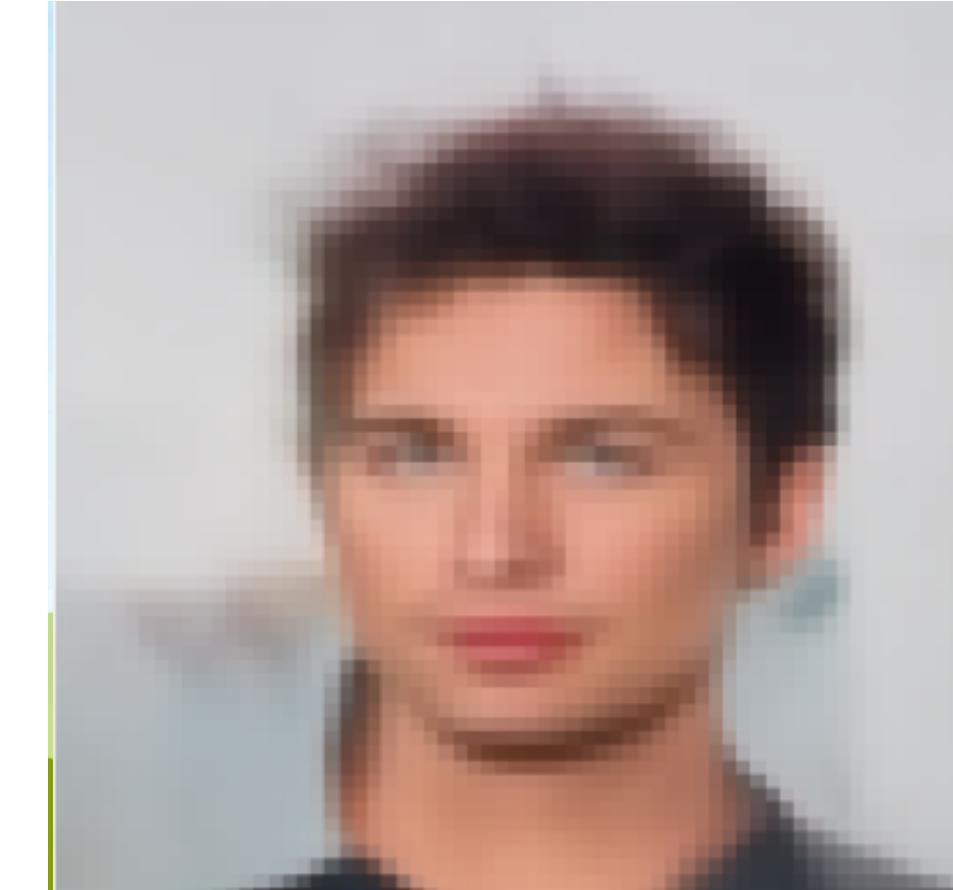
There is not any glasses on the face and has no smile, and no bangs. This female is in the thirties.



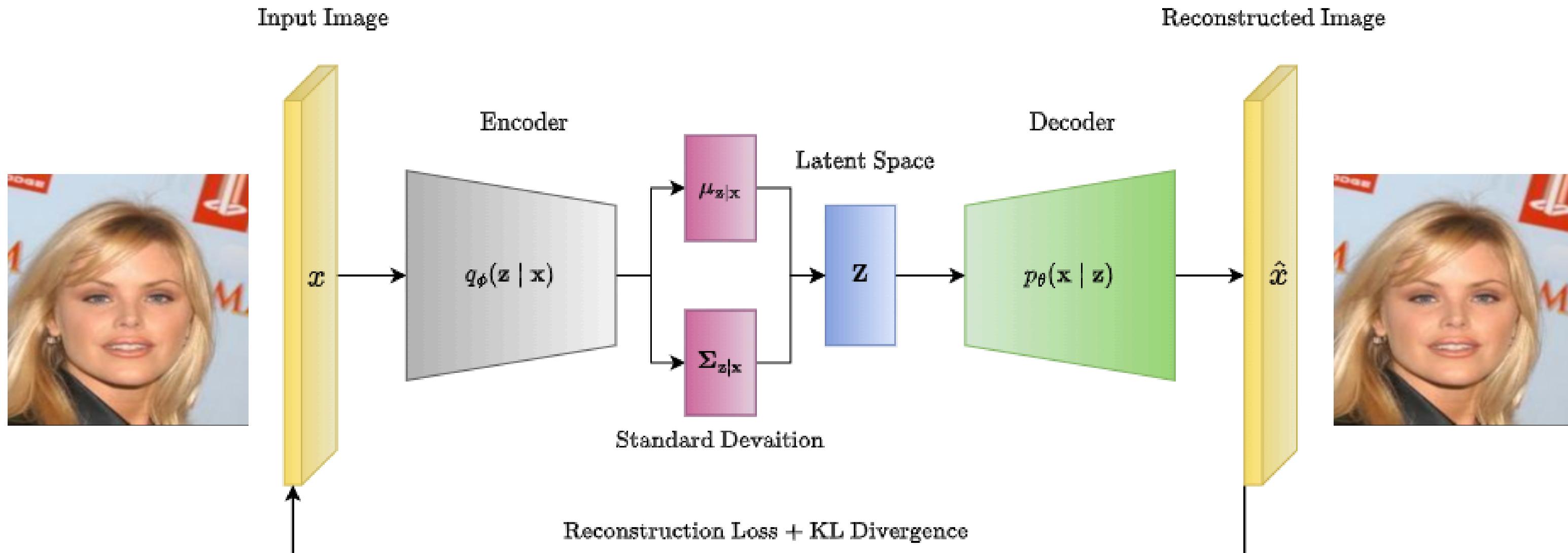
This person is smiling with the mouth only a little open and has no bangs, and no eyeglasses.
This lady is a teen.



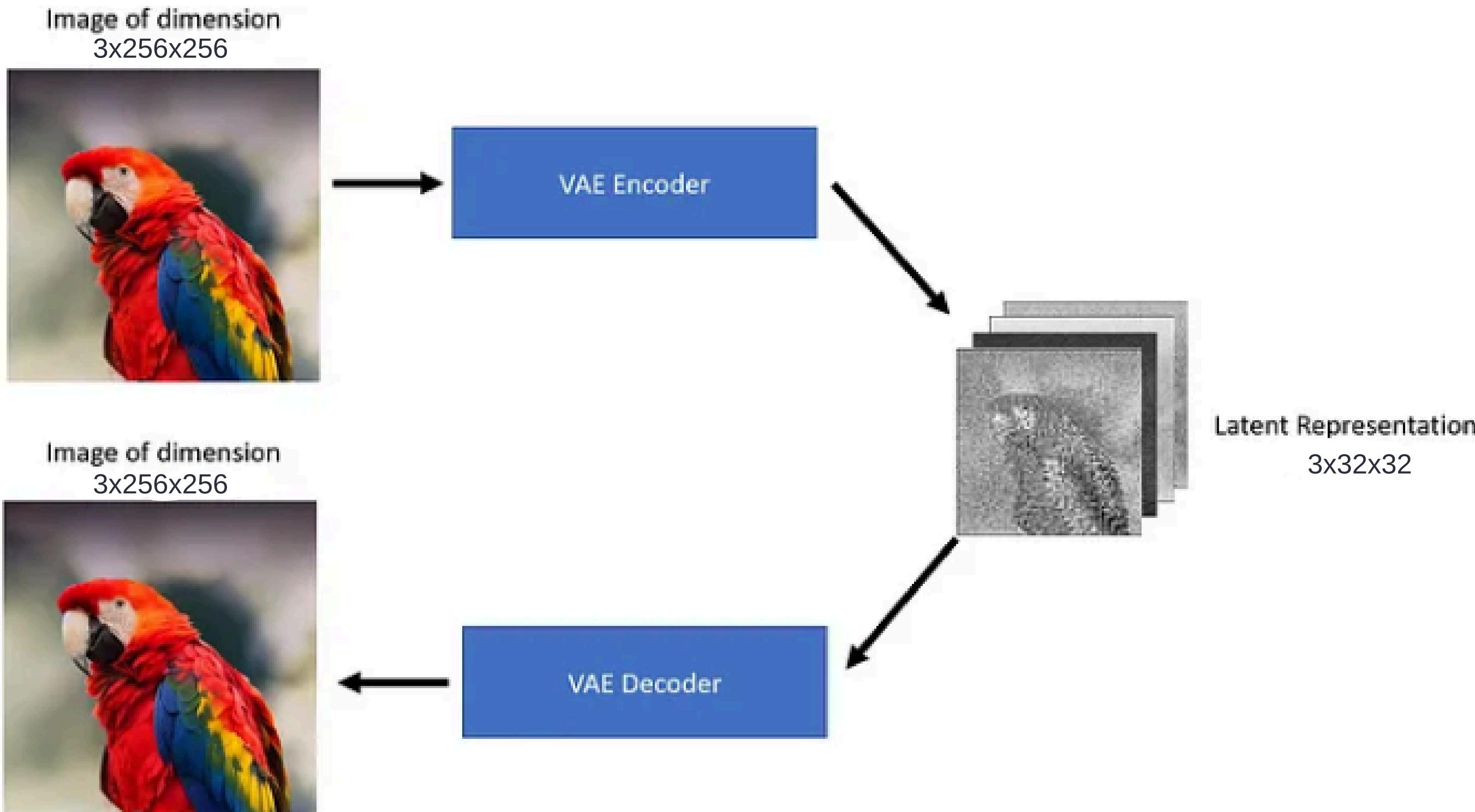
This teen has short fringe, no mustache at all, no smile, and no eyeglasses.



3/Diffusion with vae

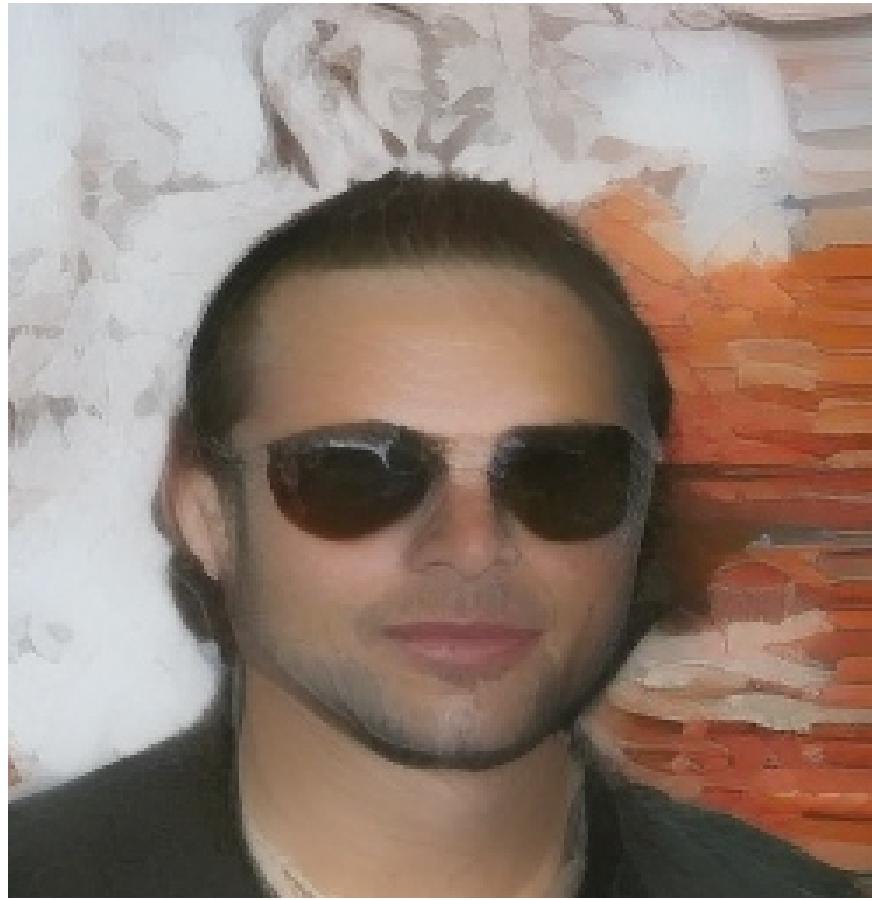


3/Diffusion with vae



3/Diffusion with vae(results)

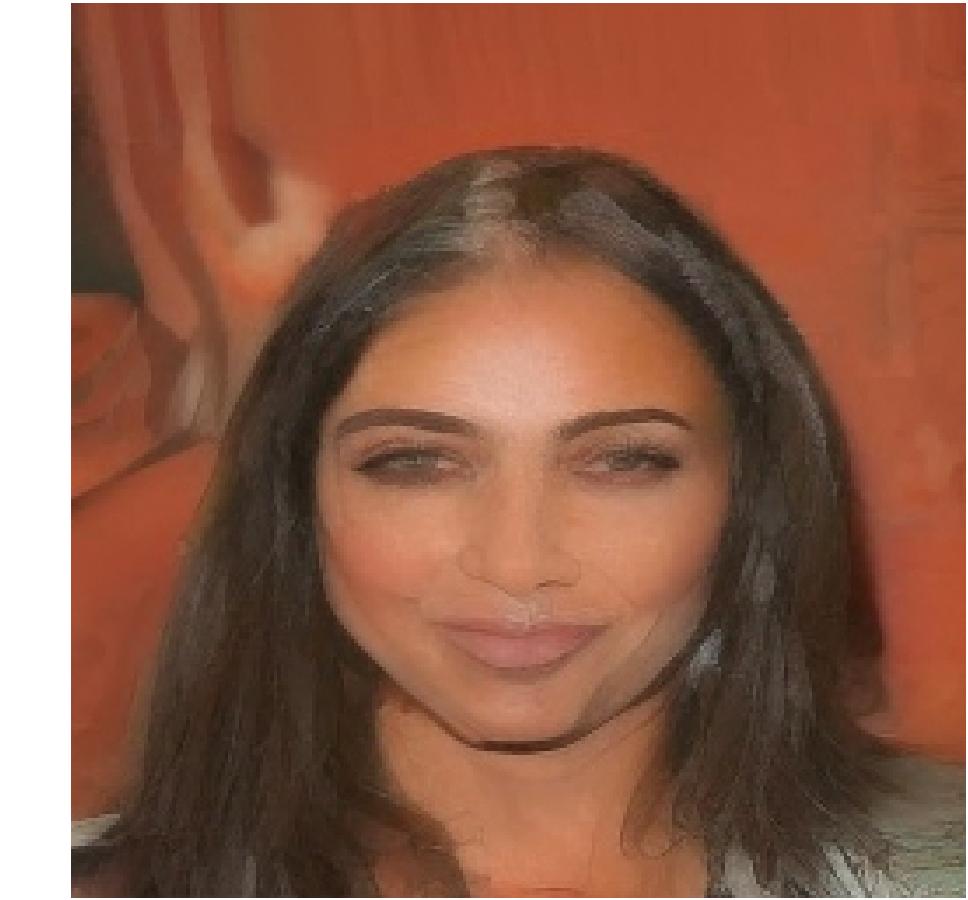
This man no Smiling, Straight Hair, Young.sunglasses



This man is Smiling, Straight Hair, Young.



This female is Black Hair, Heavy Makeup, No Beard, Smiling, Young.





Deployment

Text-to-Image Generator

example usage: This female is blond Hair, Heavy Makeup, No Beard, Smiling, Young.

Enter your text prompt

This female is blond Hair, Heavy Makeup, No Beard, Smiling, Young.

Number of Inference Steps

11

Clear

Submit

Generated Image

Flag

Use via API · Built with Gradio



Thank You!