

Infinite-ID: Identity-preserved Personalization via ID-semantic Decoupling Paradigm

Yi Wu*, Ziqiang Li*, Heliang Zheng, Chaoyue Wang, Bin Li

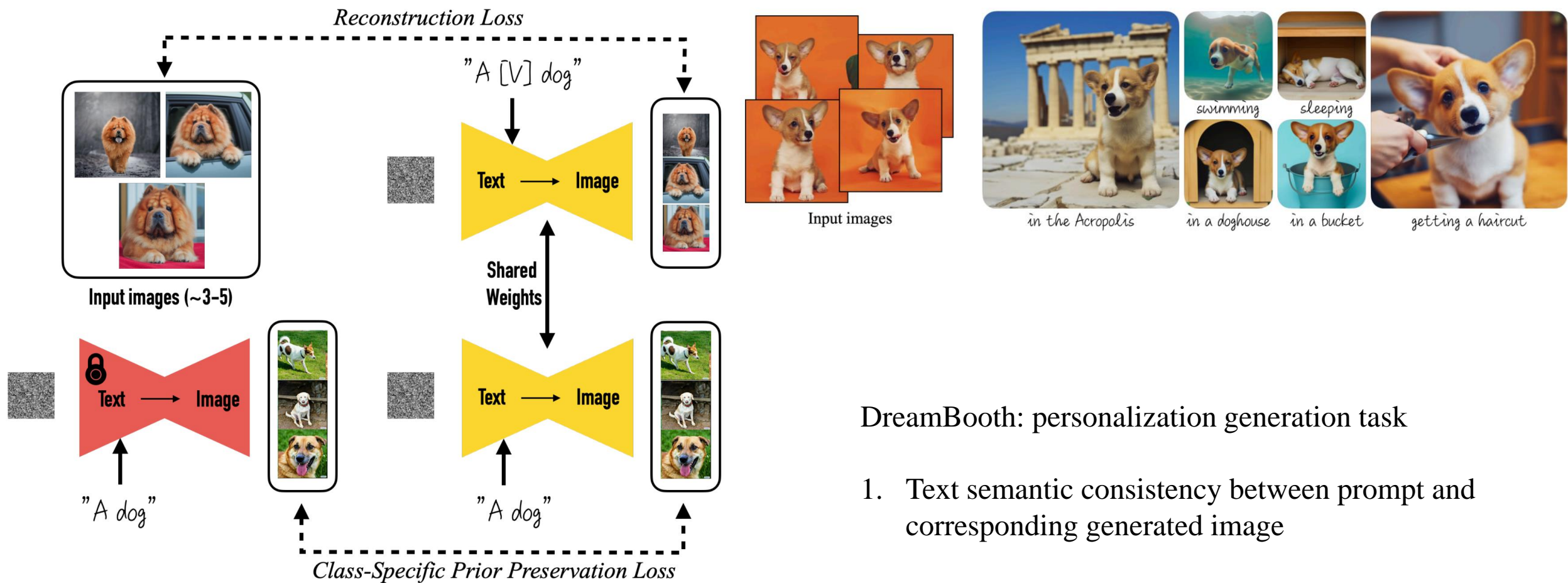
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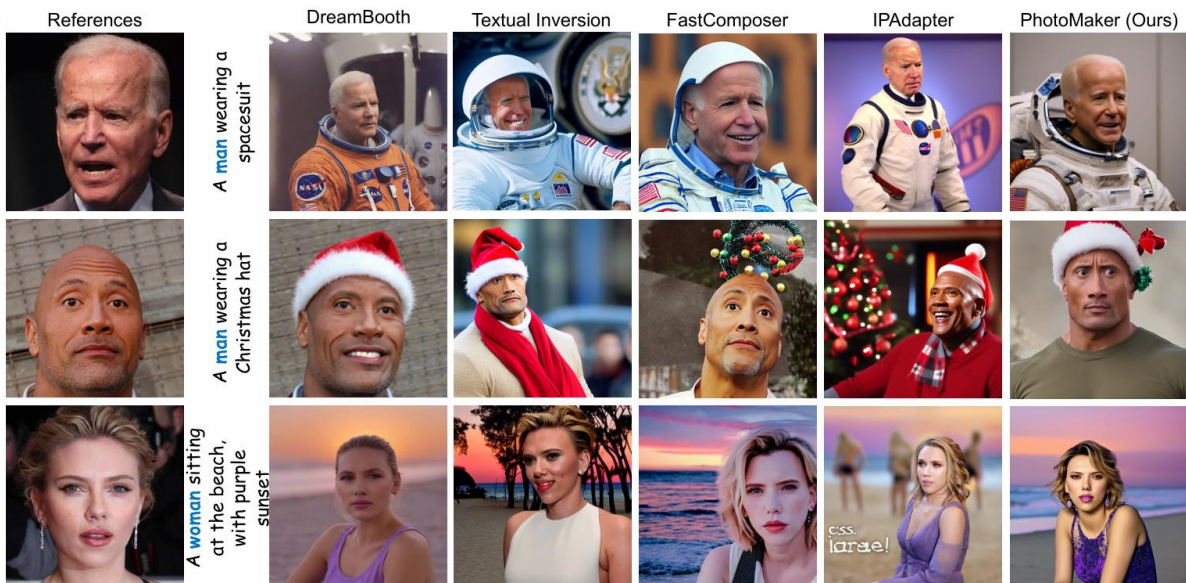
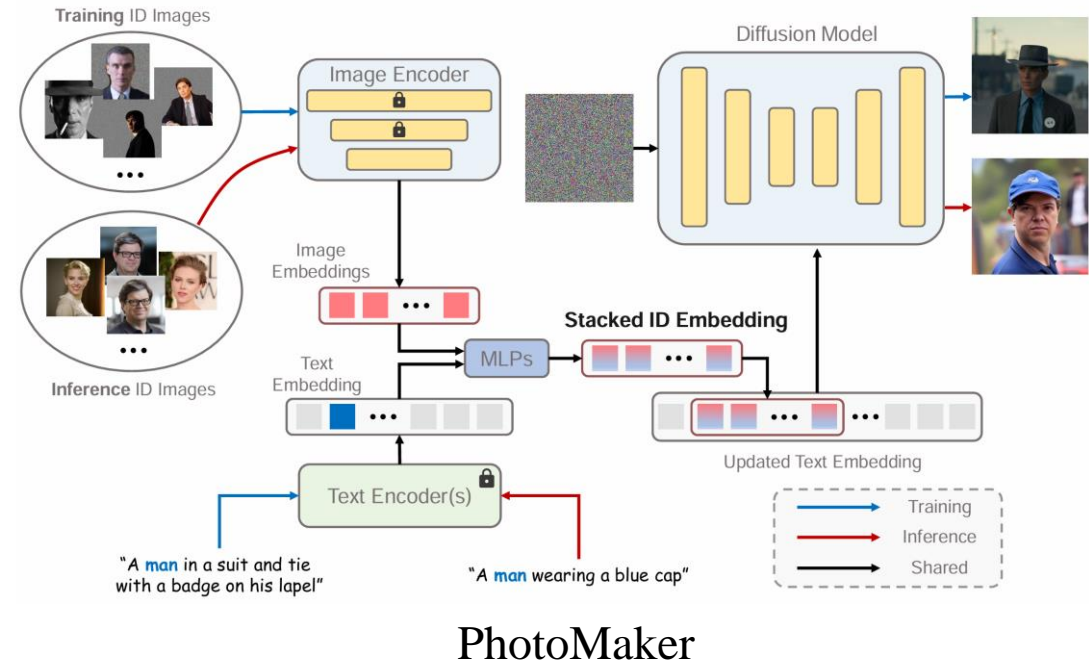
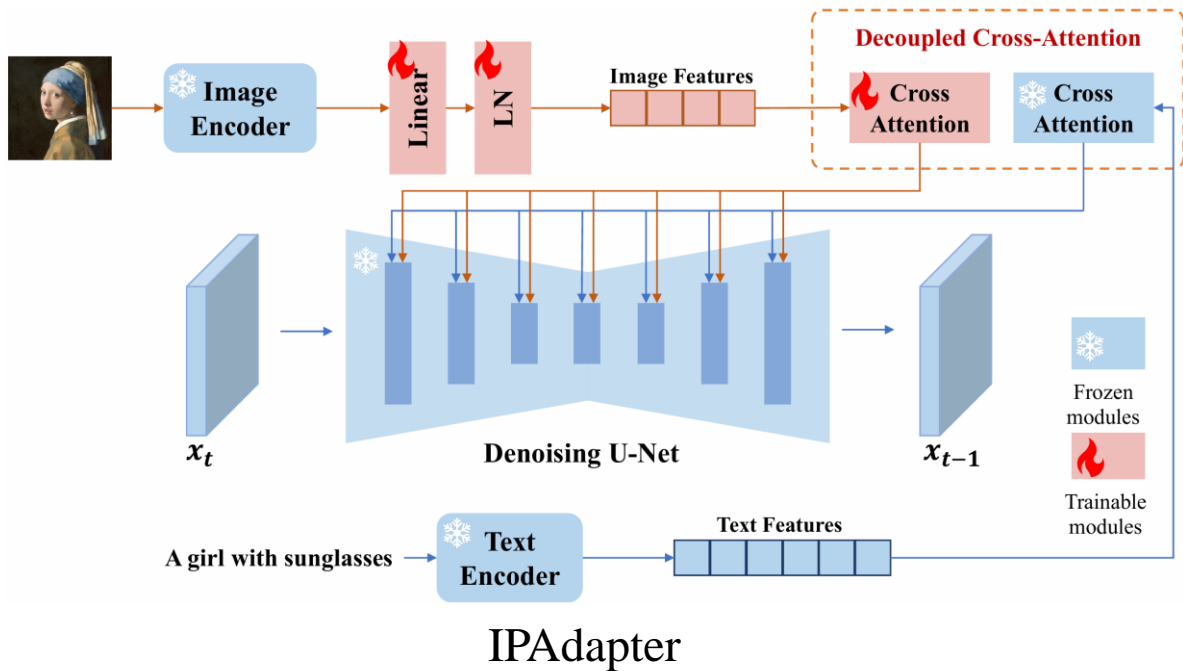
1. Motivation



DreamBooth: personalization generation task

1. Text semantic consistency between prompt and corresponding generated image
2. Subject fidelity

1. Motivation



Identity-preserved personalization generation task

1. Text semantic consistency between prompt and corresponding generated image
2. identity fidelity

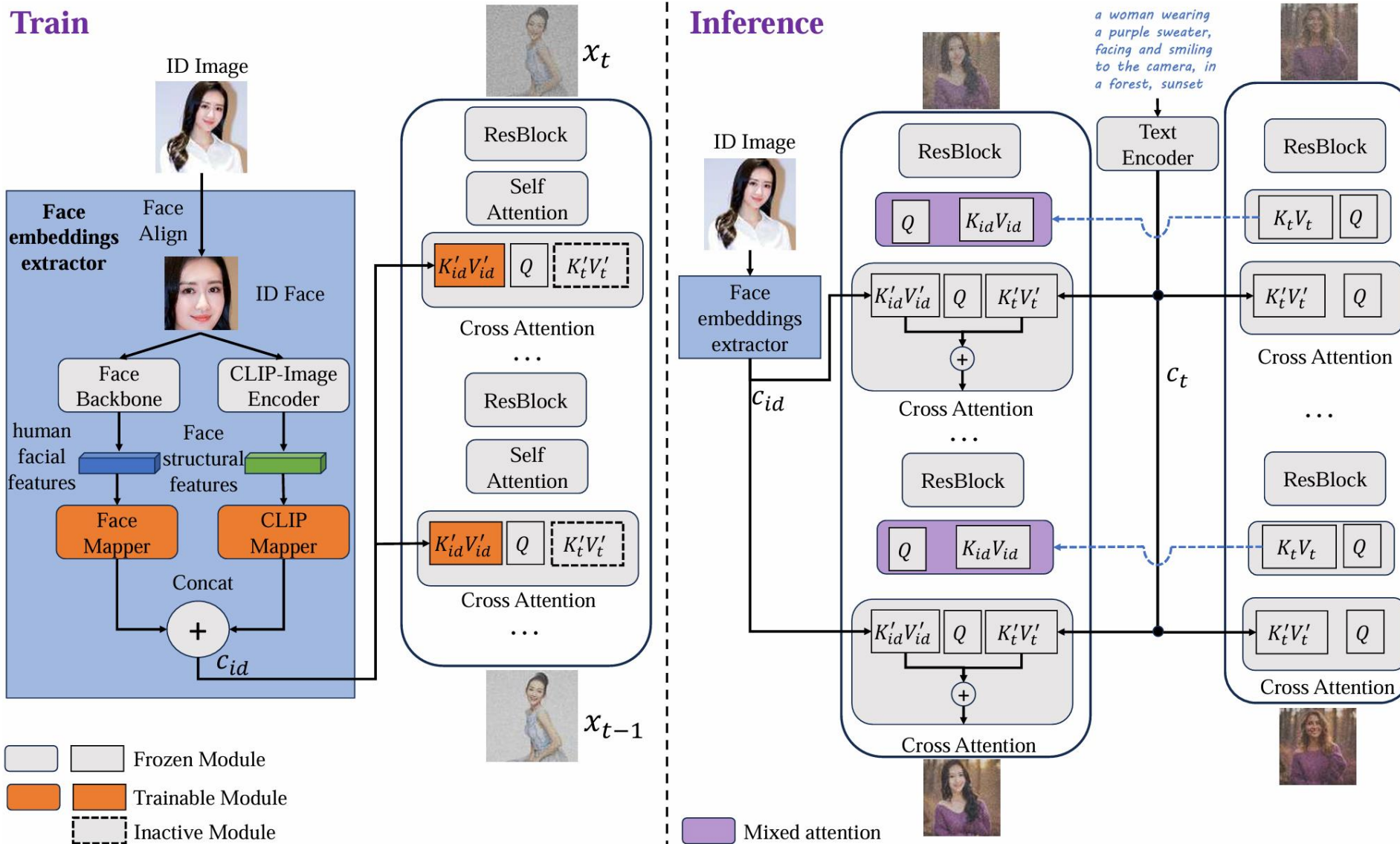
1. Motivation



Contributions:

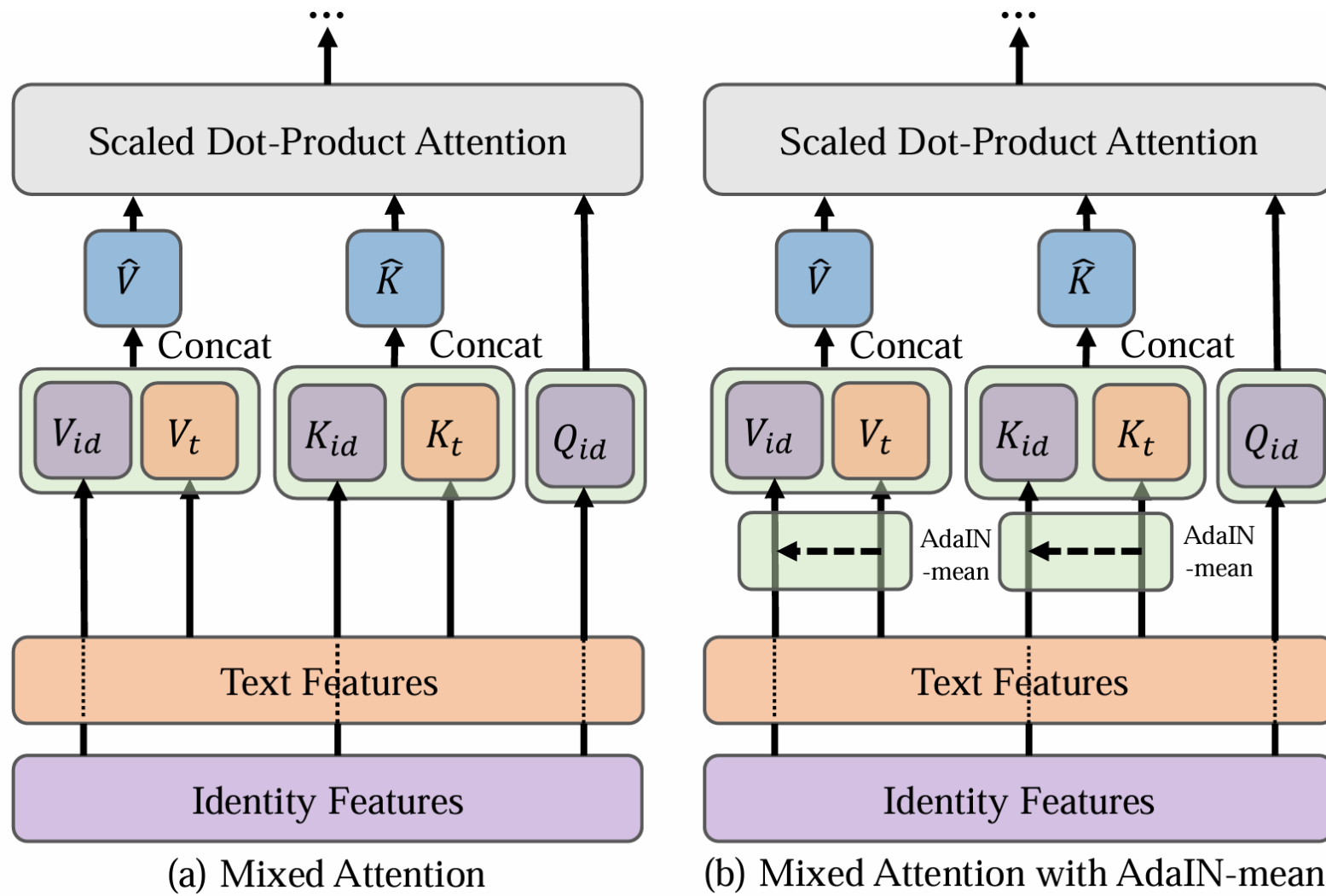
1. We propose a **novel ID-semantics decoupling paradigm** to resolve the entanglement between image and text **information**, acquiring a remarkable balance between ID fidelity and semantic consistency in Identity-preserved personalization.
2. We propose a **novel feature interaction mechanism incorporating a mixed attention module and an AdaIN-mean operation** to effectively merge ID information and text information and also conveniently control the styles of the generated image in diffusion models.
3. Experimental results demonstrate the excellent performance of our proposed method as compared with current state-of-the-art methods on both raw photo generation and style image generation.

2. Method












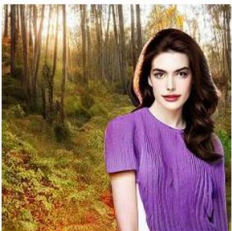



















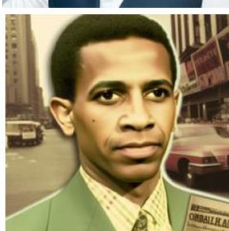
Framework of ID-semantics Decoupling Paradigm

2. Method













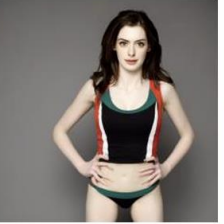



















Mixed attention mechanism

3. Experiments

References	ours	PhotoMaker	FastComposer	IP-Adapter-Face	IP-Adapter
 <p>woman wearing white sweater and hat, hold flowers, smiling in forest</p>					
 <p>a woman wearing a purple sweater, smiling to the camera, in a forest</p>					
 <p>a man wearing a colorful shirt, smiling to the camera, in the time square</p>					
 <p>a woman wear a blue shirt, smiling to the camera, sunny, in time square</p>					
 <p>a man wearing a colorful shirt, sunny, in the living room</p>					

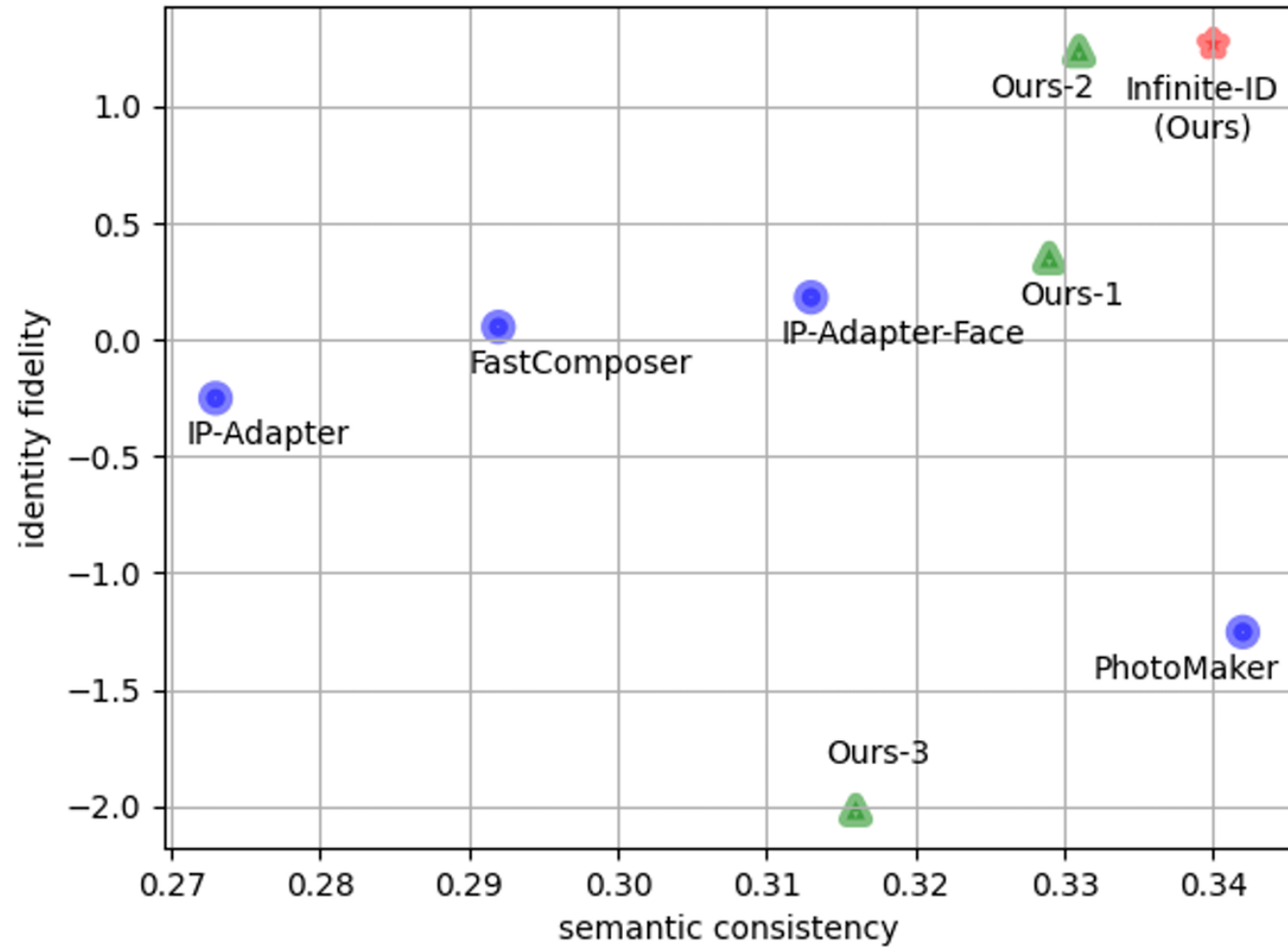
Raw photo generation

3. Experiments

References	Prompt	ours	PhotoMaker	FastComposer	IP-Adapter-Face	IP-Adapter
	<i>a photo of a woman wearing a purple dress, on the beach, sunset, anime style</i>					
	<i>a woman doing sports on the beach, sunny, facing and smiling to the camera, anime style</i>					
	<i>a woman playing the piano, facing and smiling to the camera, in comic book style</i>					
	<i>a man wearing a spacesuit, facing and smiling to the camera, in line art style</i>					
	<i>a man wearing a suit, facing and smiling to the camera, in line art style</i>					

Style photo generation

3. Experiments



Visualization of the quantitative comparison of identity fidelity and semantic consistency

3. Experiments



Ablation study of our identity-enhanced training and mixed attention (M-A)

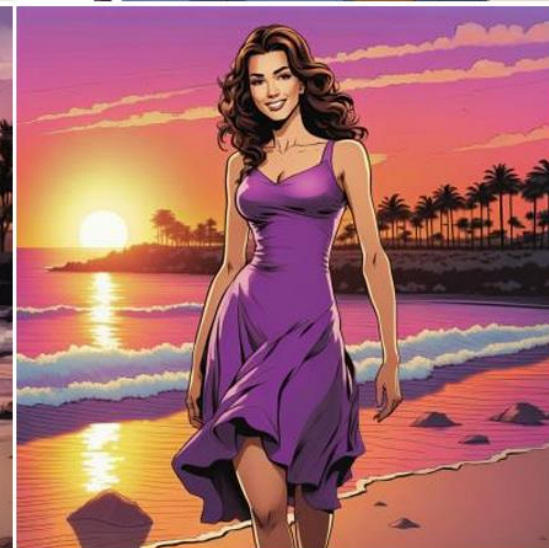
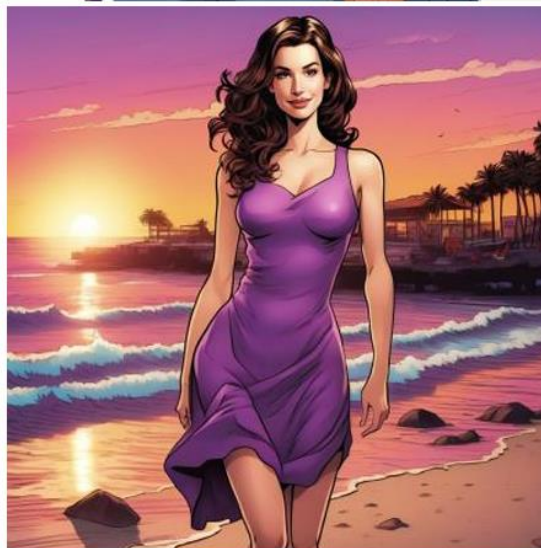
3. Experiments



a woman wearing a blue clothing, facing and smiling to the camera, in the snow, sunny, in a anime style



a woman wearing a purple dress, facing and smiling to the camera, on a beach, sunset, comic book style



ID image

Prompt

Ours

Ours (w/o AdaIN-mean)

Ours (AdaIN-mean \Rightarrow AdaIN)

Ablation study of our AdaIN-mean operation

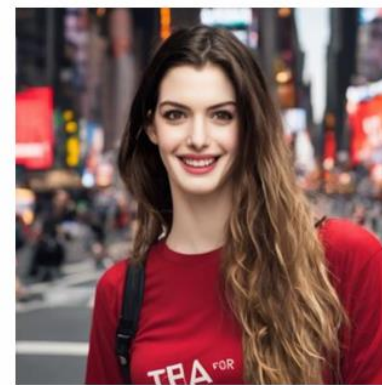
3. Experiments



a man wearing a colorful shirt facing and smiling to the camera, on the beach raw photo



a woman wearing a red shirt facing and smiling to the camera, in the time square raw photo



Input ID image

Prompt

Original

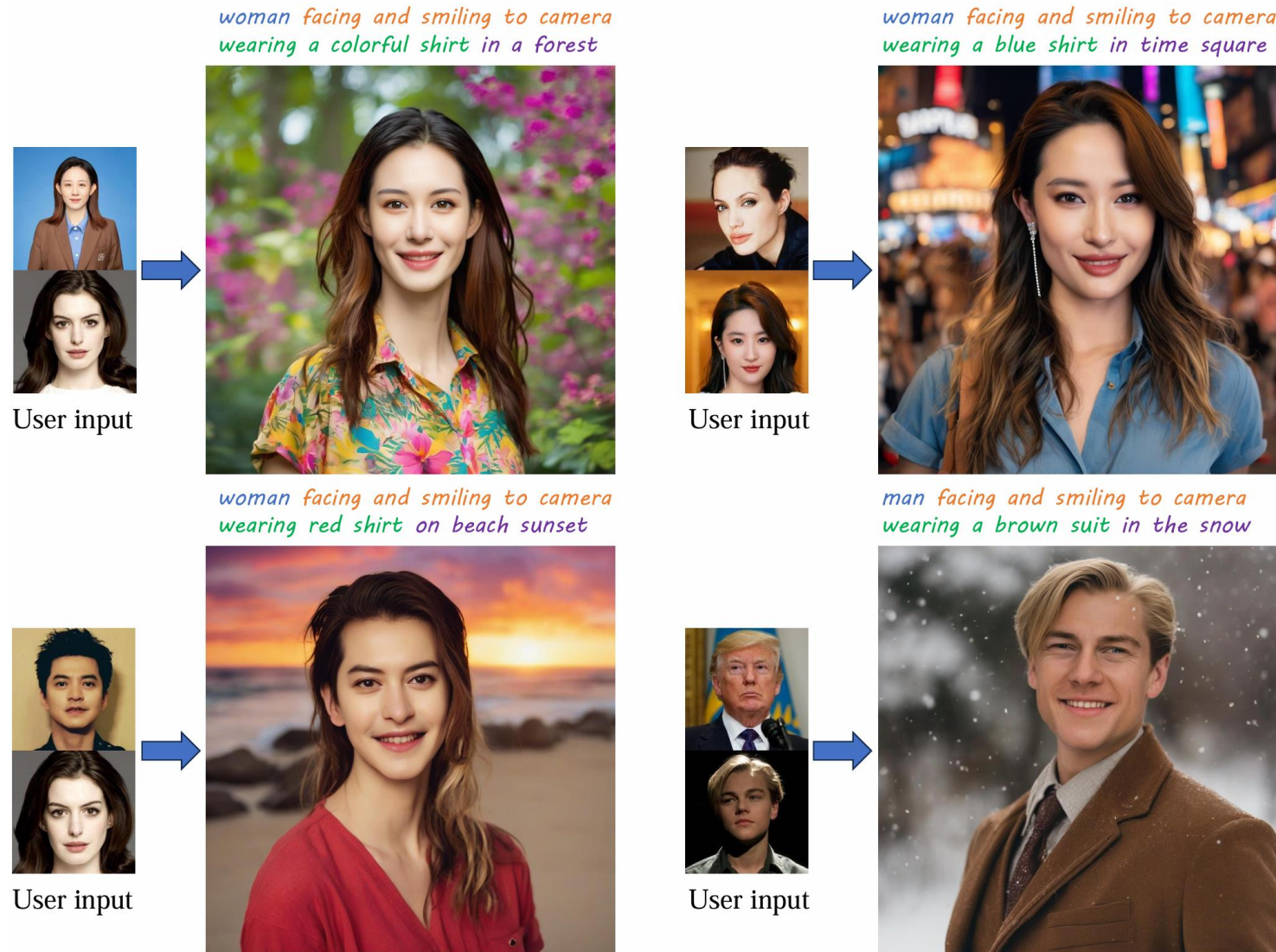
Input ID image
downsample x2

Input ID image
downsample x4

Input ID image
downsample x8

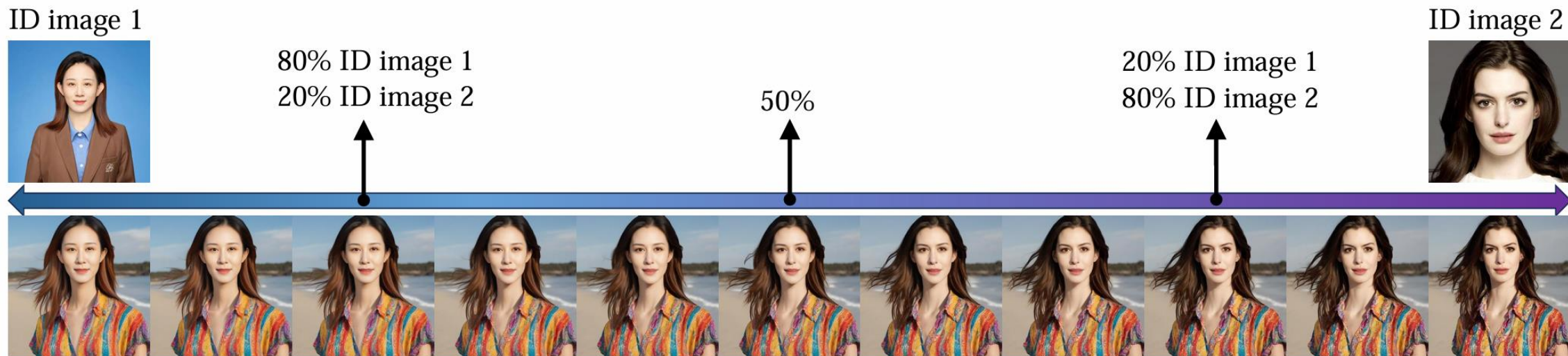
Ablation study of input ID images' resolution

3. Experiments

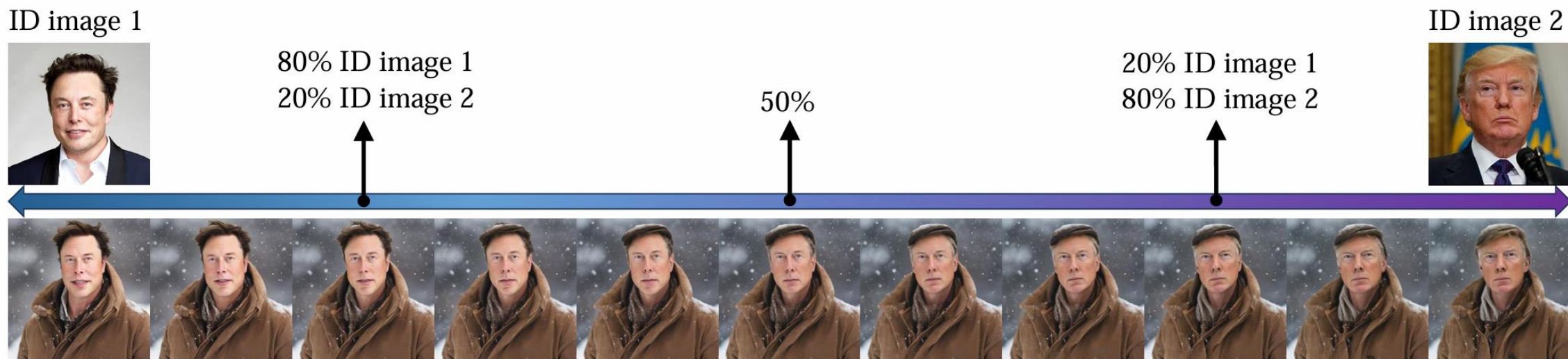


Identity mixing

3. Experiments



woman facing and smiling to camera wearing a colorful shirt on a beach



man facing and smiling to camera wearing a brown clothing in the snow

Linear interpolation of different identities