



上海交通大学
SHANGHAI JIAO TONG UNIVERSITY

Dual-path Image Inpainting with Auxiliary GAN Inversion

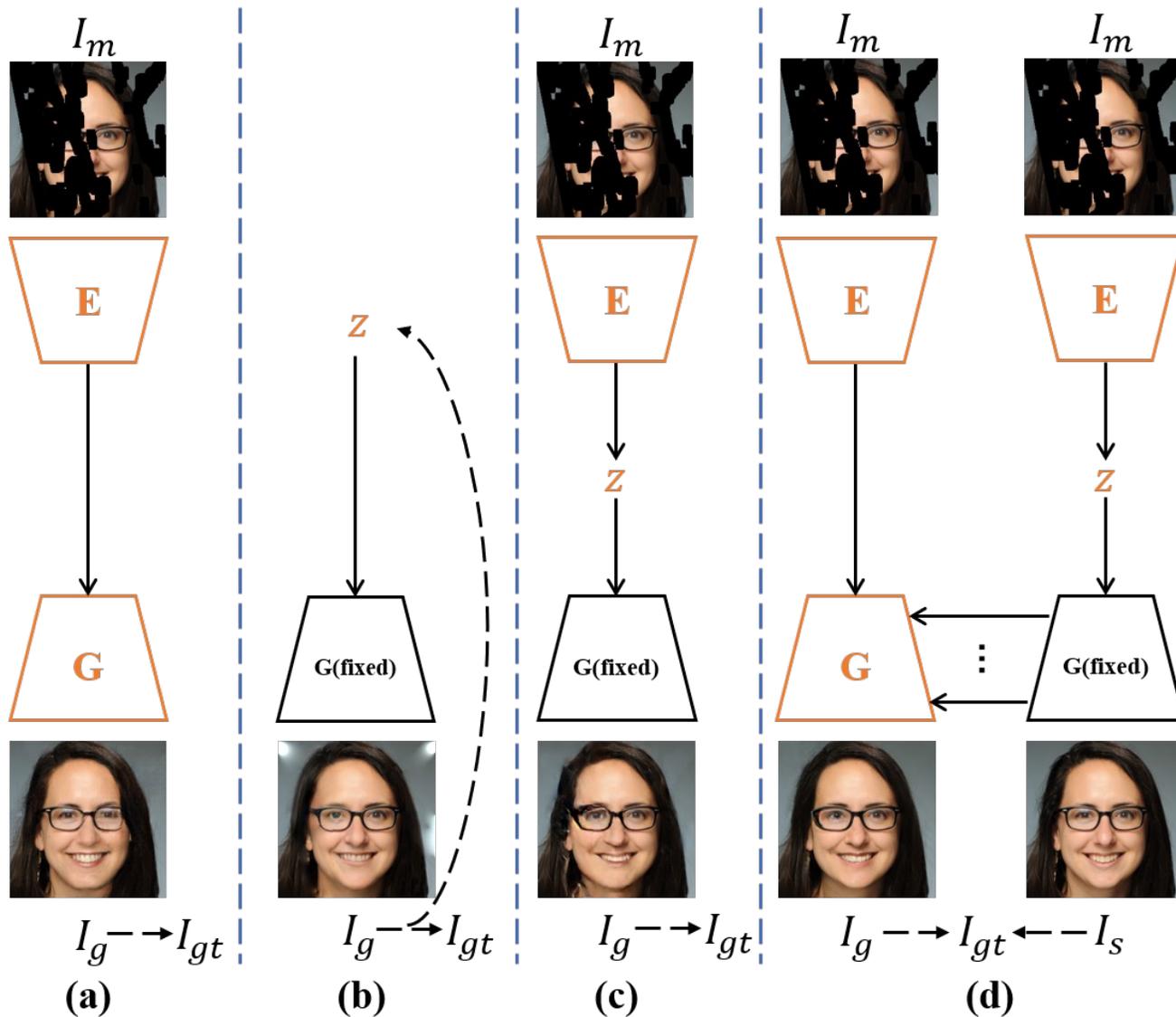
Wentao Wang, Li Niu, Jianfu Zhang, Xue Yang, Liqing Zhang

Department of Computer Science and Engineering, MoE Key Lab of Artificial Intelligence,
Shanghai Jiao Tong University
Tensor Learning Team, RIKEN AIP

Proposed Method

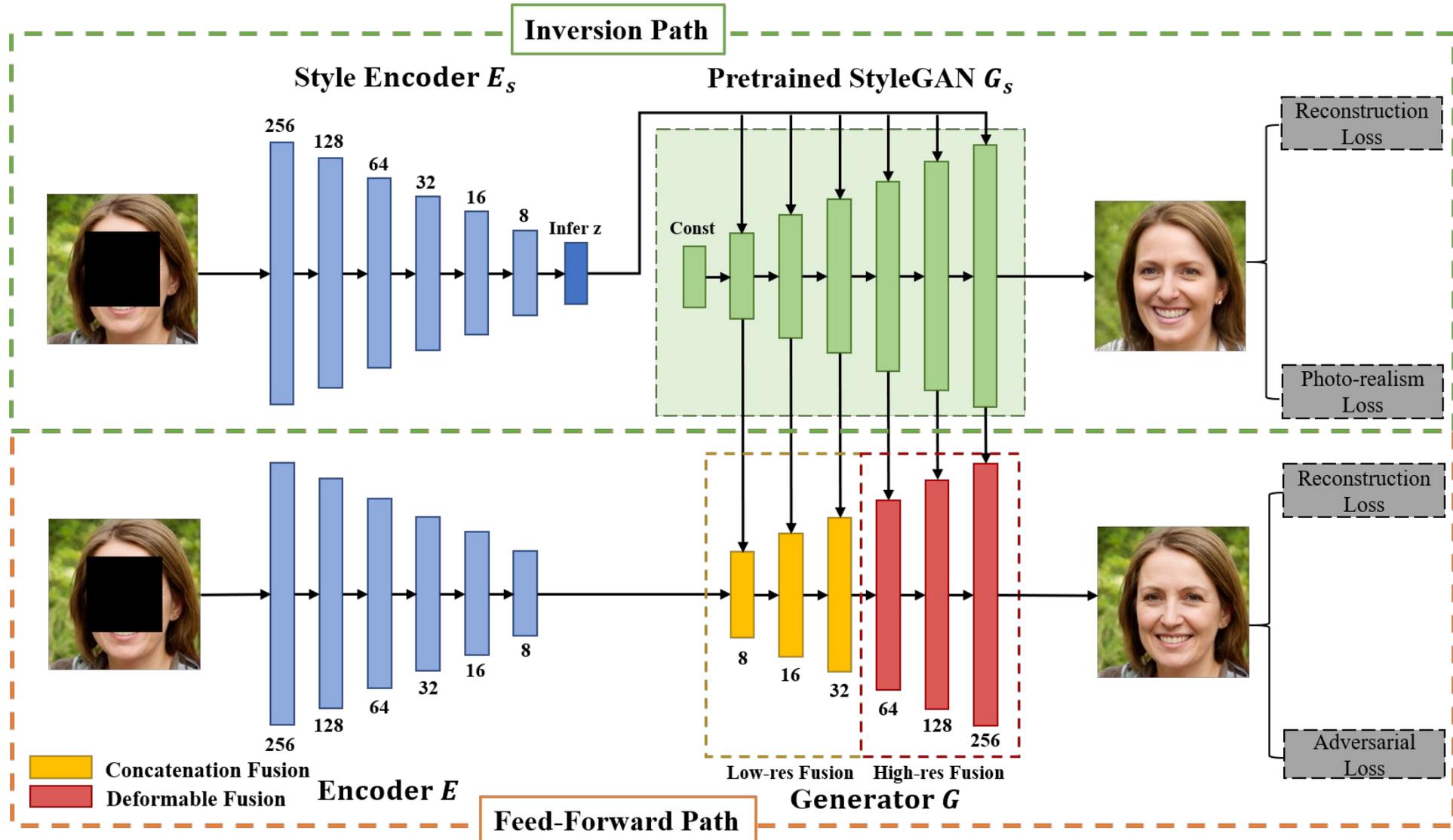
Four Types of Inpainting Methods

- Feed-Forward Inpainting Methods (a)
- GAN Inversion Inpainting Methods
 - Optimization-based (b)
 - Learning-based (c)
- Ours--A Hybrid Two-Path Framework (d)



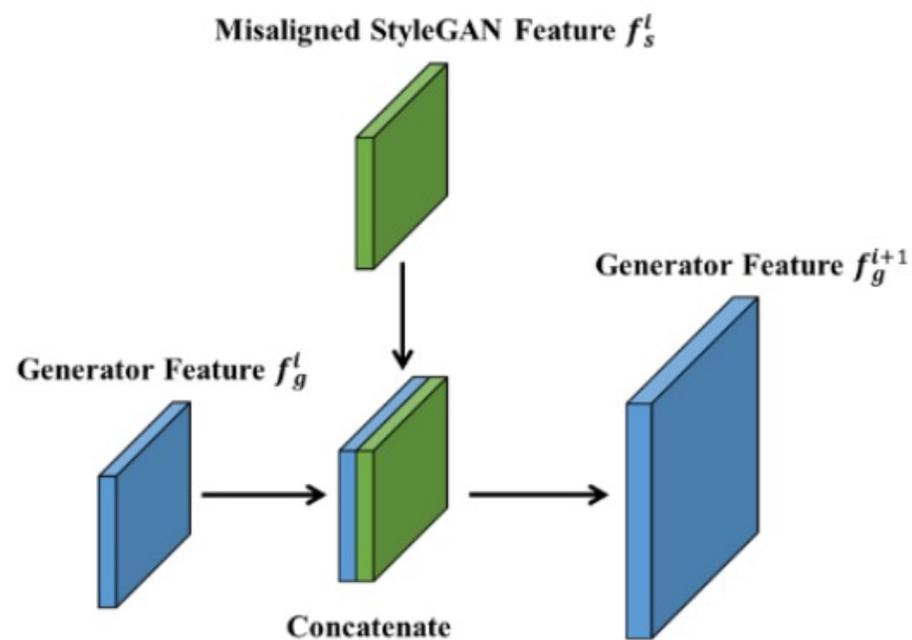
Network Architecture

Hybrid Two-Path Inpainting Network

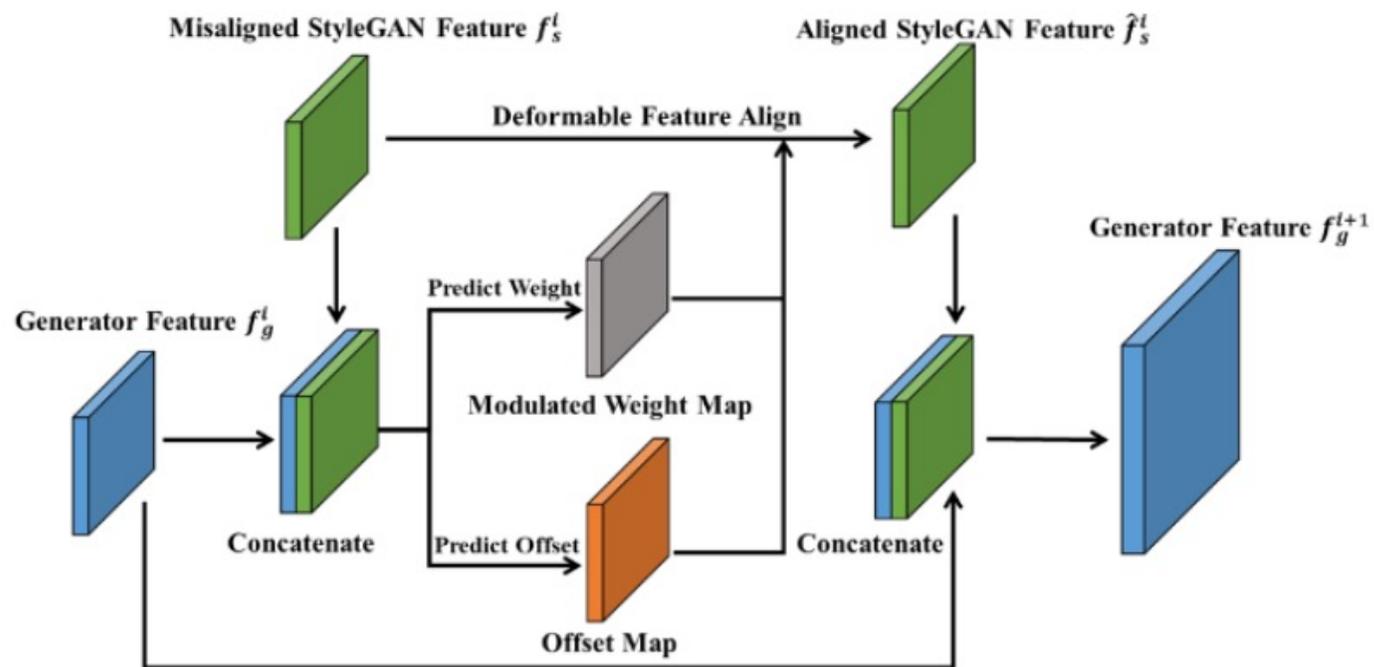


Deformable Feature Fusion Module

Two Fusion Strategies



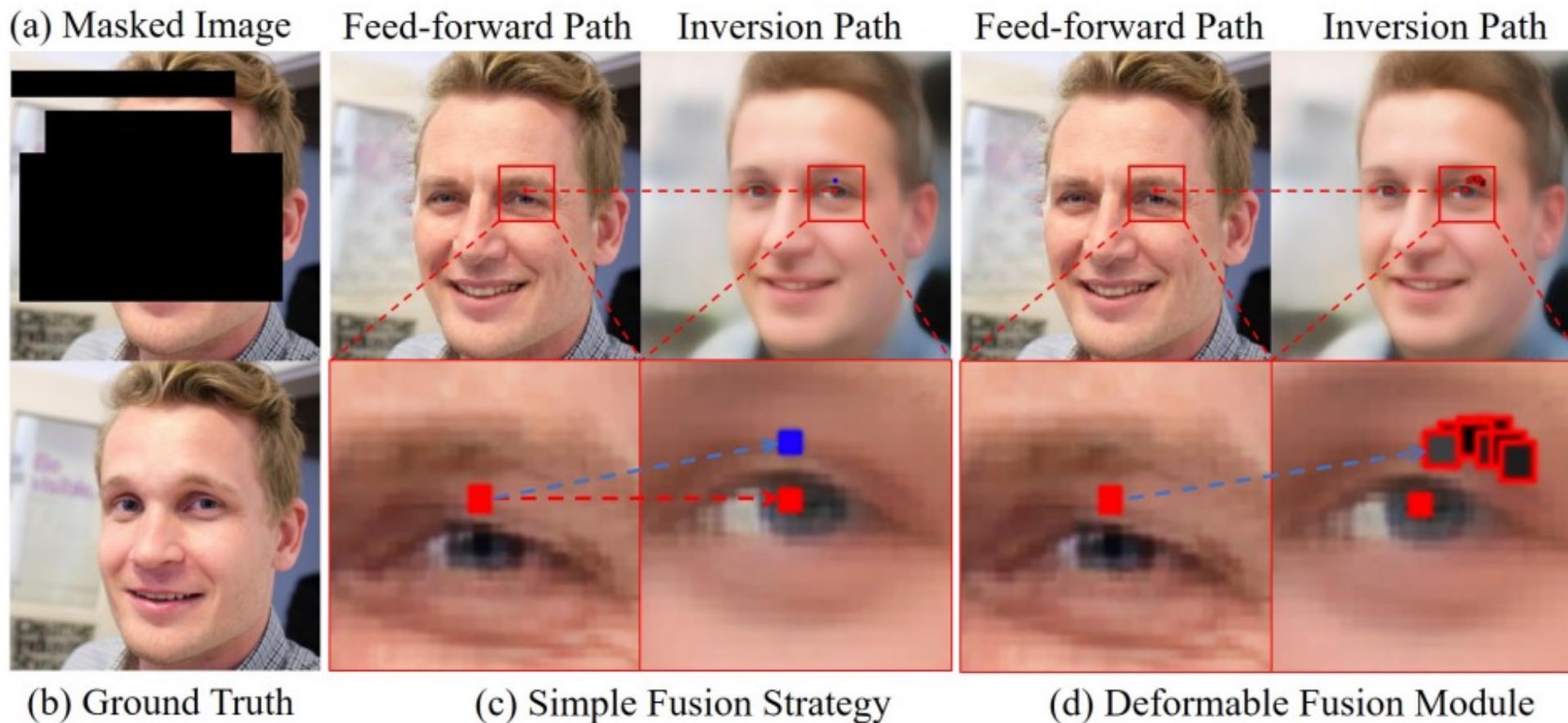
(a) Simple Fusion Strategy



(b) Deformable Fusion Strategy

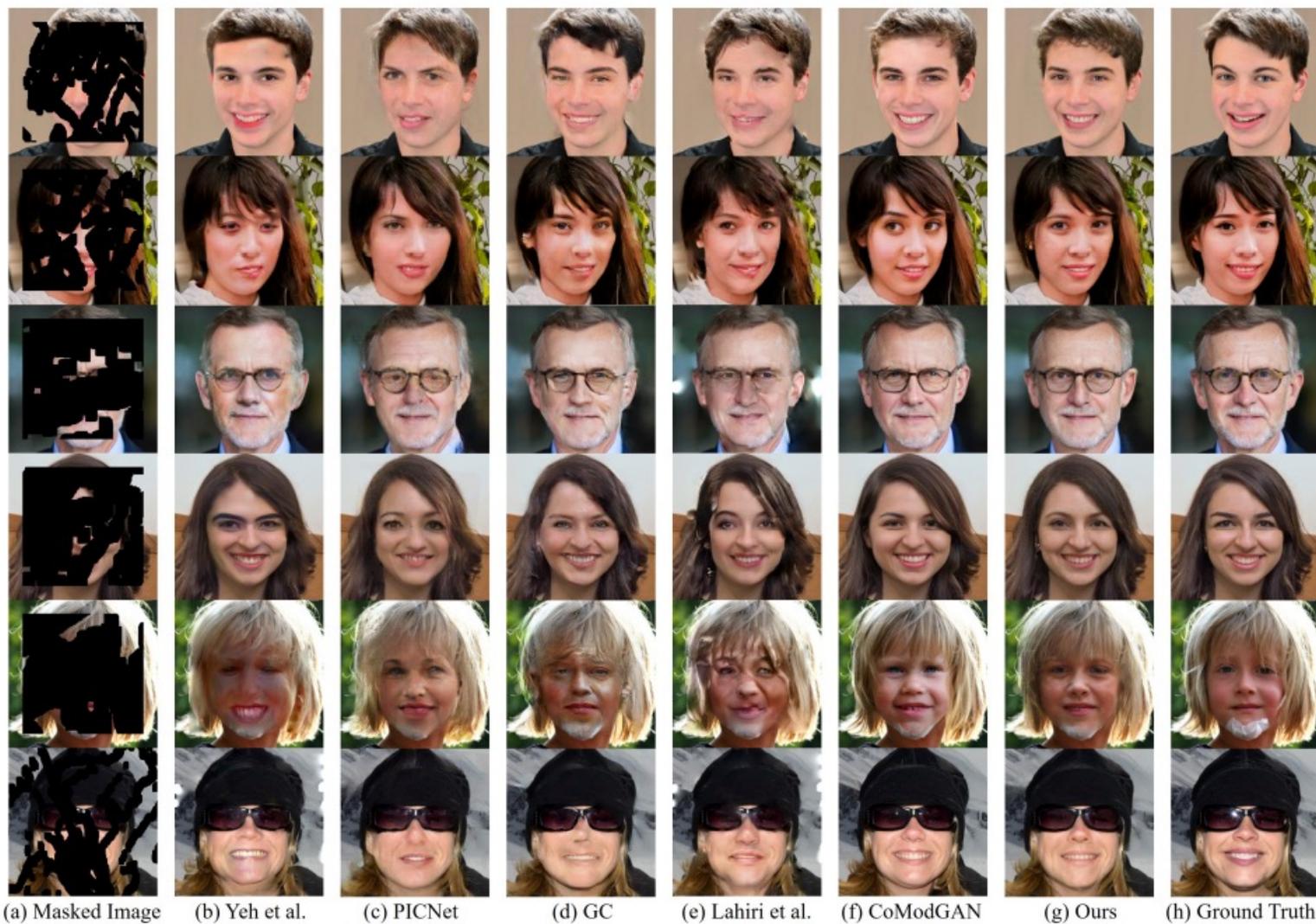
Deformable Feature Fusion Module

Two Fusion Strategies



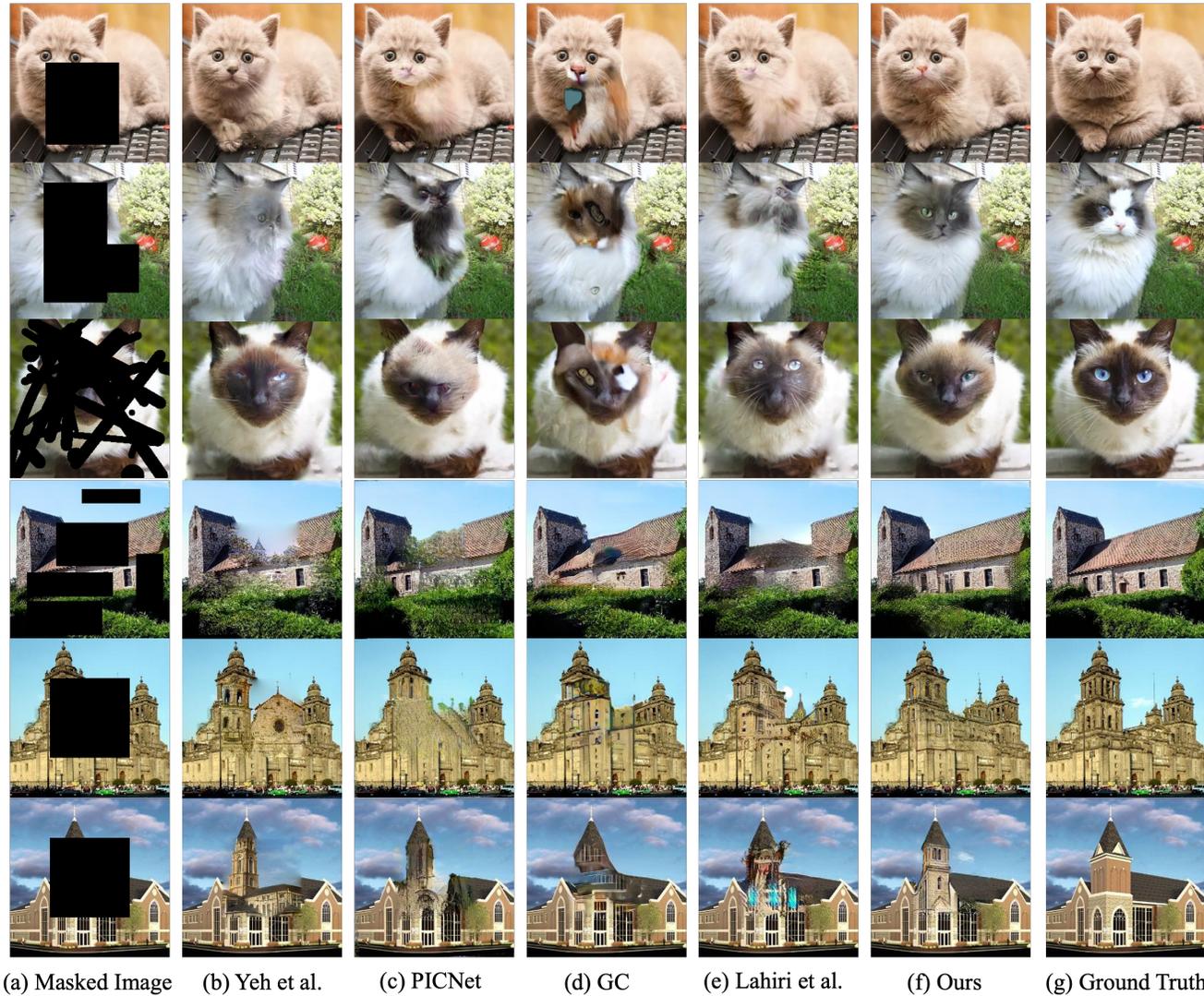
Experimental Results

Qualitative Comparison on FFHQ



Experimental Results

Qualitative Comparison on LSUN



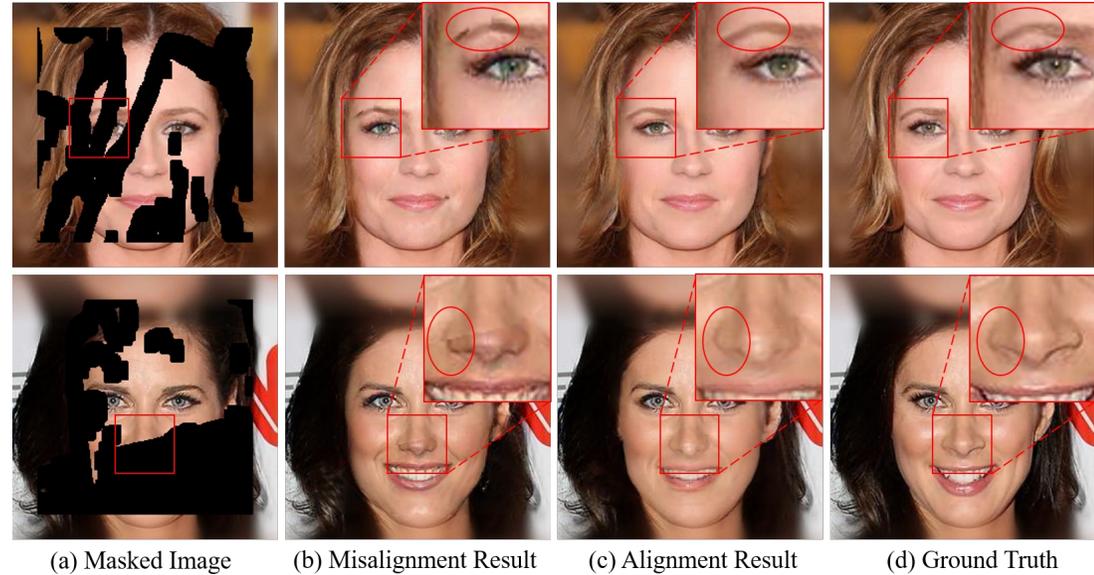
Experimental Results

Quantitative Comparison on FFHQ

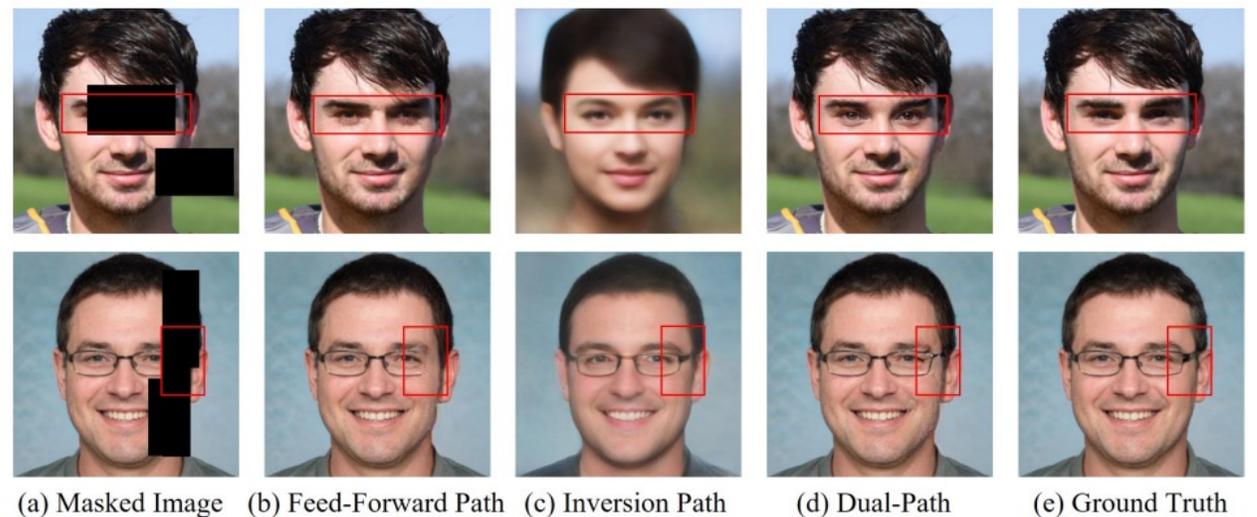
	Mask	Yeh <i>et al.</i> [25]	Lahiri <i>et al.</i> [12]	GC [29]	PICNet [33]	CoModGAN [32]	Ours
ℓ_1 (%) \downarrow	0-10%	0.94	1.27	0.73	0.74	0.64	0.62
	10-20%	1.59	1.83	1.23	1.23	1.11	1.06
	20-30%	2.53	2.38	1.97	1.95	1.75	1.41
	30-40%	3.64	4.05	2.83	2.79	2.61	2.16
	40-50%	5.06	5.94	3.90	3.84	3.69	3.21
	50-60%	7.73	9.21	5.73	5.76	5.62	4.59
	Ave%	3.58	4.18	2.73	2.71	2.54	2.17
SSIM \uparrow	0-10%	0.969	0.911	0.974	0.973	0.978	0.979
	10-20%	0.932	0.876	0.941	0.939	0.948	0.951
	20-30%	0.881	0.827	0.895	0.893	0.905	0.914
	30-40%	0.827	0.774	0.845	0.843	0.857	0.879
	40-50%	0.767	0.711	0.789	0.785	0.802	0.827
	50-60%	0.688	0.621	0.713	0.702	0.727	0.743
	Ave%	0.844	0.787	0.859	0.856	0.870	0.882
PSNR \uparrow	0-10%	33.576	31.994	35.600	35.726	36.211	36.342
	10-20%	28.937	27.311	30.807	31.053	31.209	31.607
	20-30%	25.714	24.729	27.467	27.813	27.703	28.365
	30-40%	23.281	22.512	25.113	25.474	25.214	26.251
	40-50%	23.282	20.201	23.093	23.462	23.069	24.155
	50-60%	21.087	17.039	20.625	20.804	20.490	21.751
	Ave%	25.152	23.964	27.117	27.388	27.366	28.078
FID \downarrow	0-10%	1.83	1.97	1.50	1.57	1.31	1.20
	10-20%	3.33	3.85	2.40	2.71	2.14	2.00
	20-30%	5.42	6.70	3.93	4.55	3.86	2.99
	30-40%	7.92	10.01	6.25	6.90	5.56	4.13
	40-50%	11.04	14.42	9.69	10.64	6.25	5.67
	50-60%	13.89	21.73	15.91	16.71	9.08	8.13
	Ave%	7.24	9.77	6.61	7.18	4.75	4.02

Ablation Study

- Effectiveness of Deformable Fusion Module



- Effectiveness of Each Path





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Thanks for watching!

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