

Guided Image-to-Image Translation with Bi-Directional Feature Transformation



Badour AlBahar
badour@vt.edu

Jia-Bin Huang
jbhuang@vt.edu

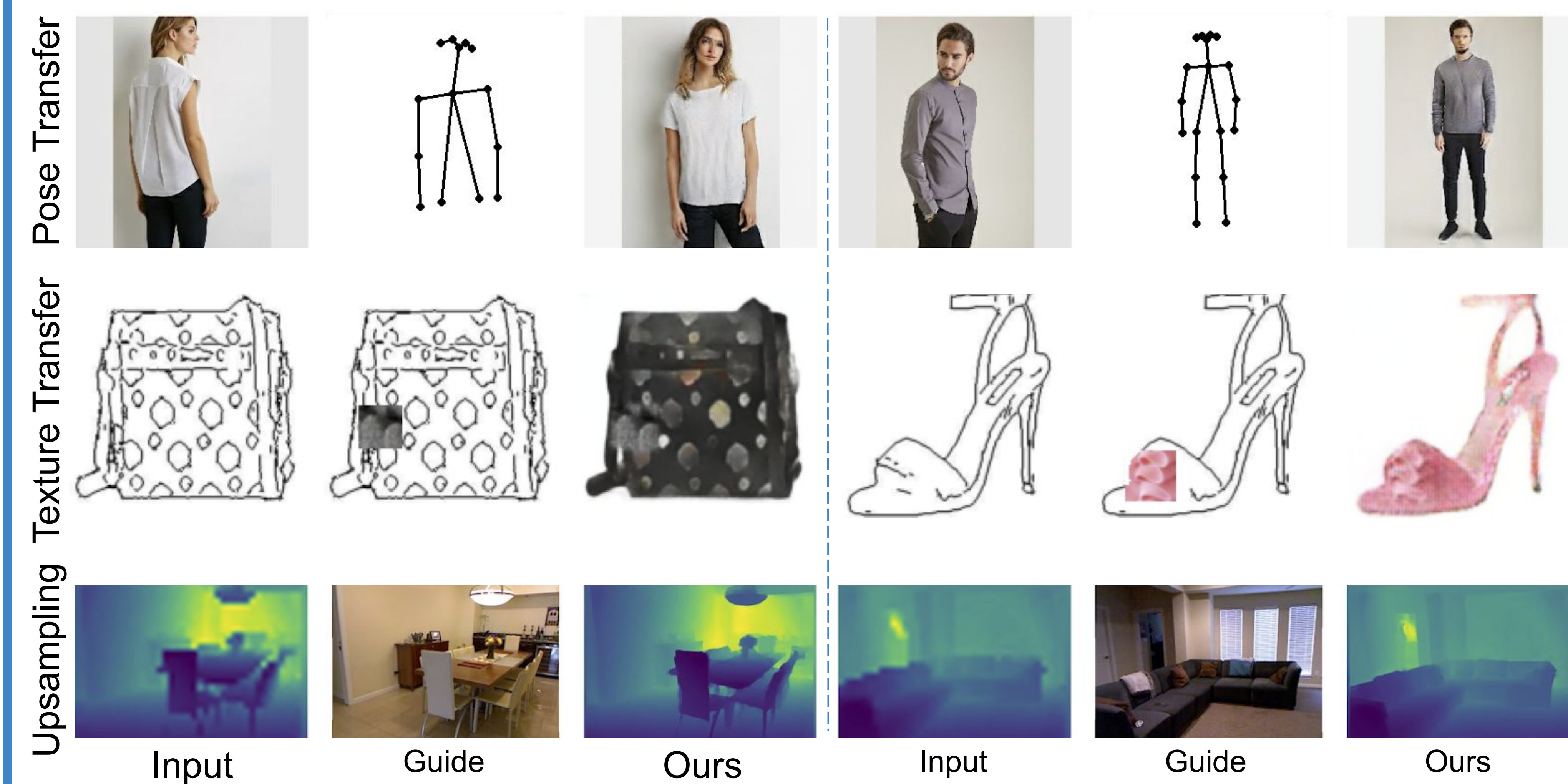
Virginia Tech

Code available at:
http://bit.ly/guided_pix2pix

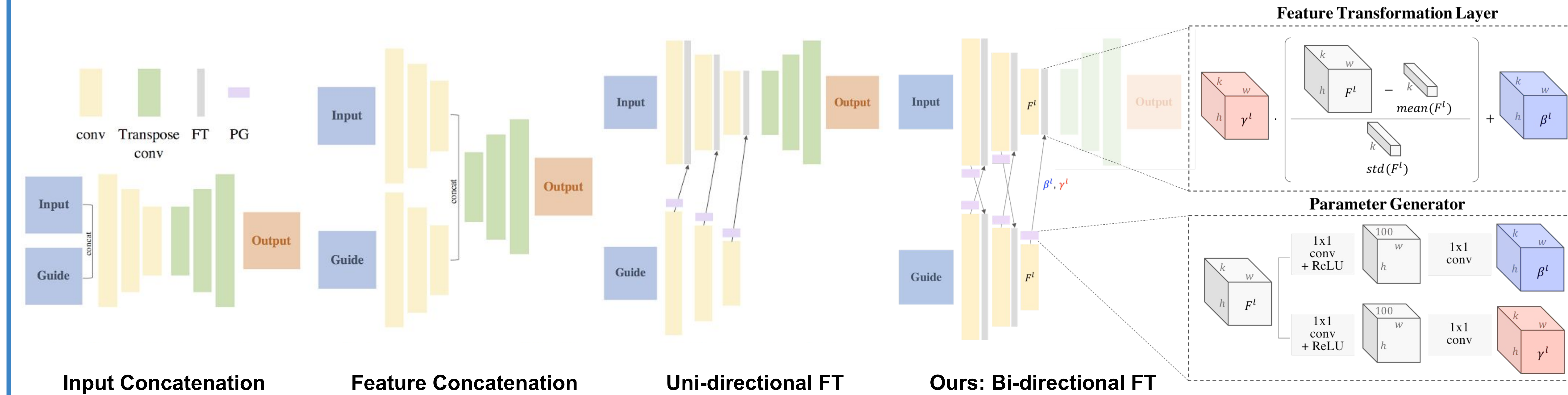


Fork me on GitHub

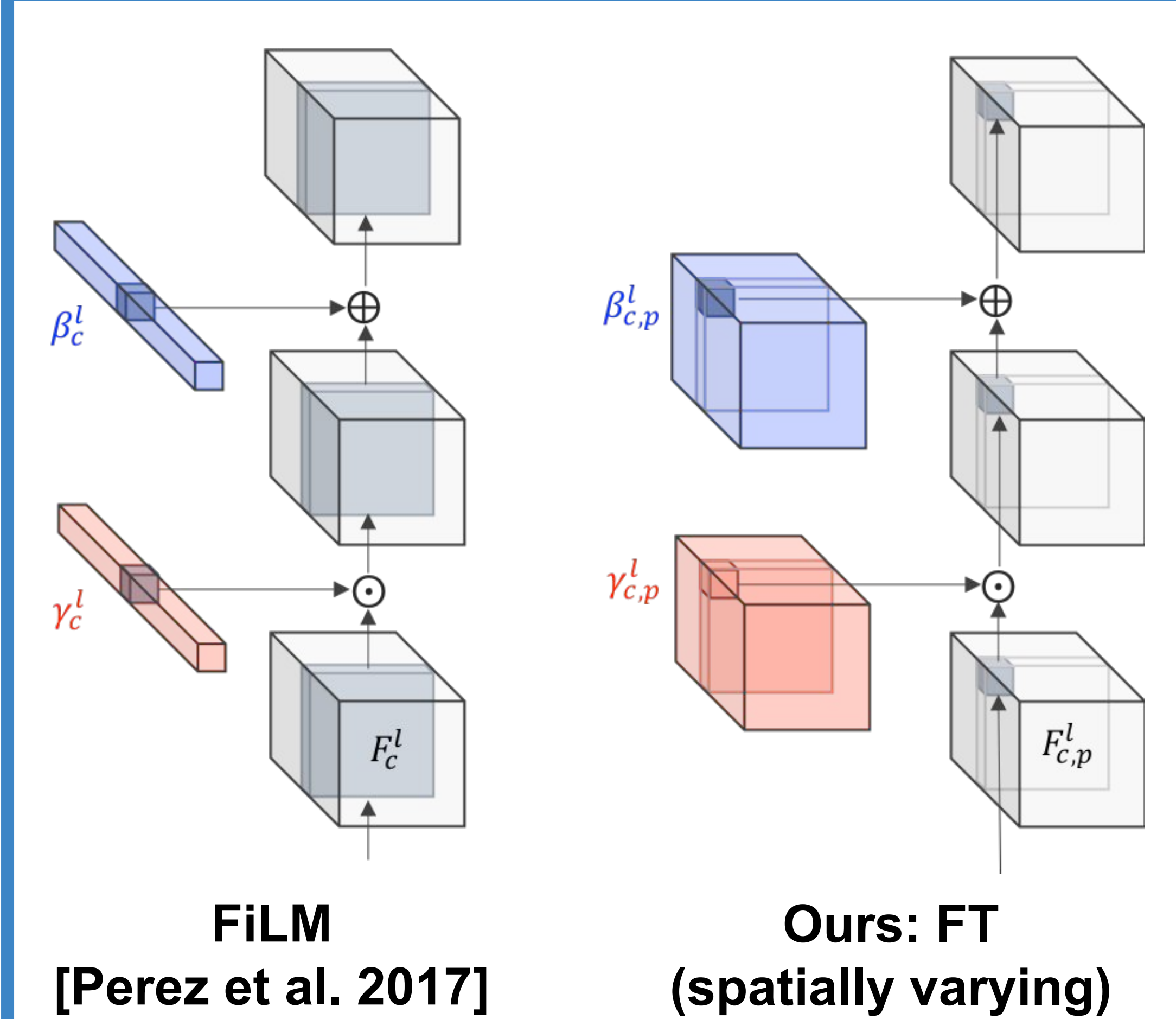
Problem



Methods for integrating additional information



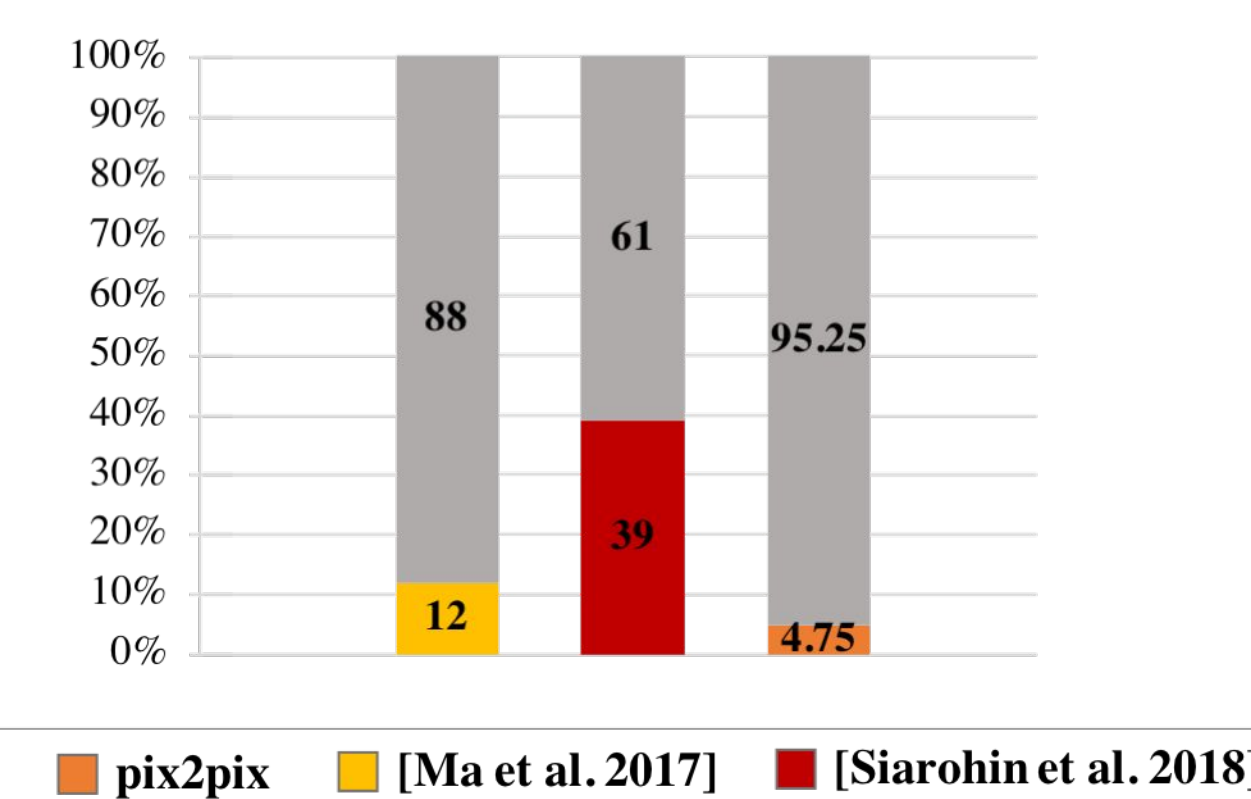
Feature transformation



Experimental results

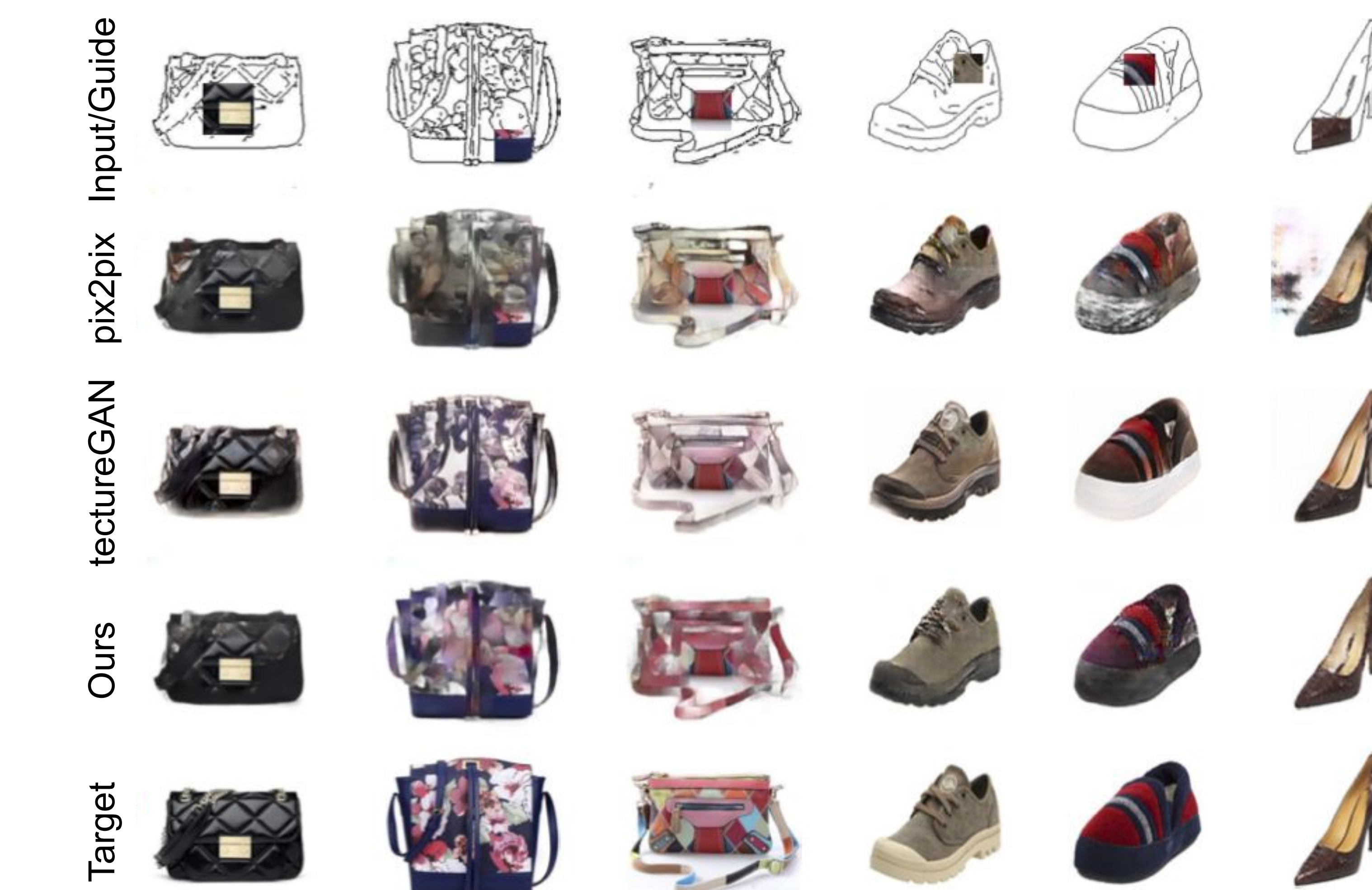
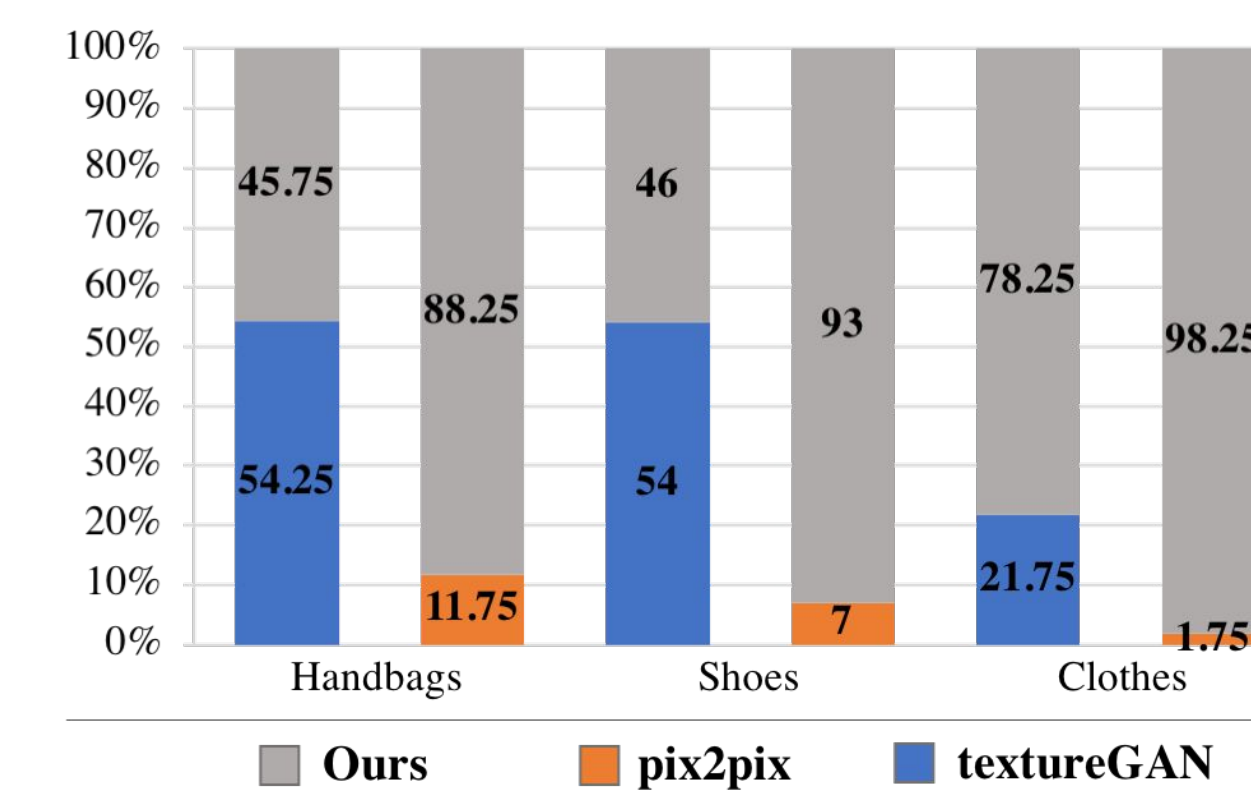
Pose Transfer

	SSIM	IS	FID
[Ma et al. 2017]	0.762	3.09	47.917
[Siarohin et al. 2018]	0.758	3.36	15.655
pix2pix [Isola et al. 2017]	0.770	2.96	66.752
Ours	<u>0.767</u>	3.22	12.266



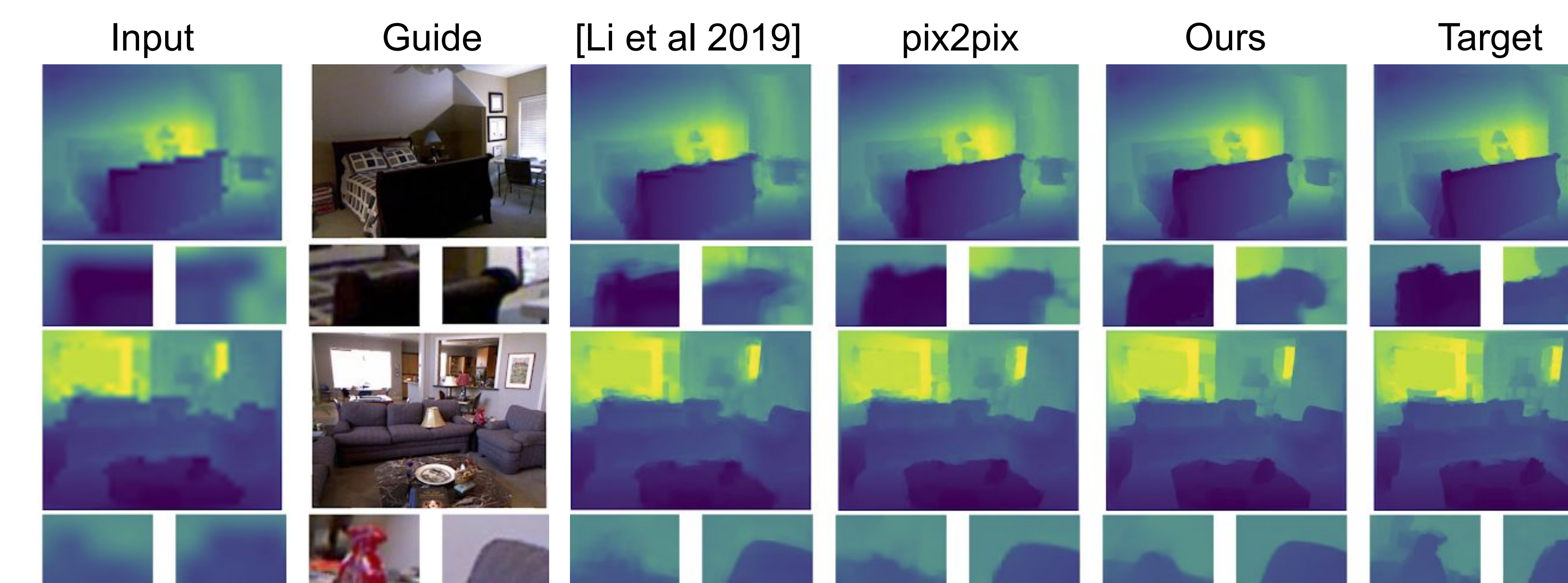
Texture Transfer

	Handbag Dataset		Shoes Dataset		Clothes Dataset	
	LPIPS	FID	LPIPS	FID	LPIPS	FID
texturGAN [Xian et al. 2018]	0.171	60.848	0.124	44.762	0.113	49.568
pix2pix [Isola et al. 2017]	0.234	96.31	0.238	197.492	0.439	190.161
Ours	0.161	74.885	0.124	121.241	0.067	58.407



Depth Upsampling

Depth Scale	×4	×8	×16
Bicubic	8.16	14.22	22.32
Deep Joint Filtering [Li et al. 2016]	3.54	6.20	10.21
Residual Deep Joint Filtering [Li et al. 2019]	3.38	5.86	10.11
pix2pix [Isola et al. 2017]	4.12	6.48	10.17
Ours	3.35	5.73	9.01



Ablation study

Conditioning method	Depth Upsampling			Pose Transfer	Texture Transfer			
	×4	×8	×16		Handbags		Shoes	
				FID	LPIPS	FID	LPIPS	FID
Input Concatenation	6.65	8.42	11.86	42.330	0.182	85.600	0.137	124.973
Feature Concatenation	6.67	7.63	11.59	14.672	0.196	87.052	0.145	104.227
uFT	5.55	7.26	11.41	13.988	0.174	85.273	0.126	119.588
bFT (Ours)	3.35	5.73	9.01	13.240	0.171	80.179	0.123	119.832

