

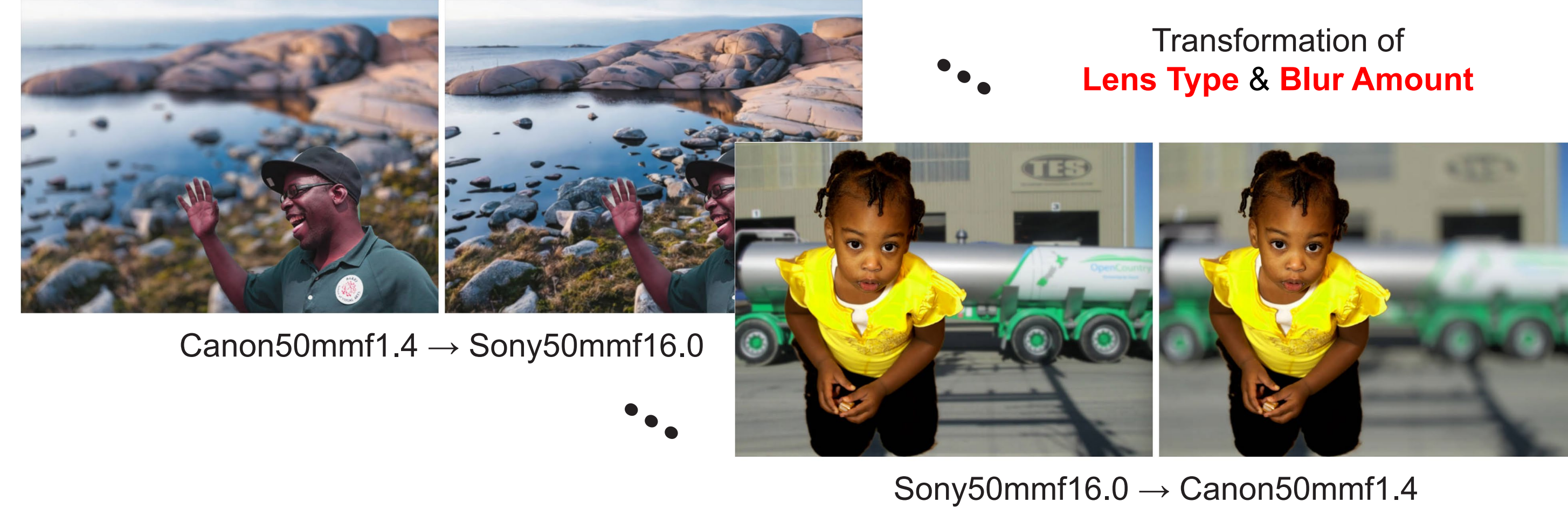
Selective Bokeh Effect Transformation

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Problem Statement

Bokeh effect transformation aims to convert bokeh effects from one camera lens to another. In this paper, we mainly consider the transformation of lens type and blur amount.

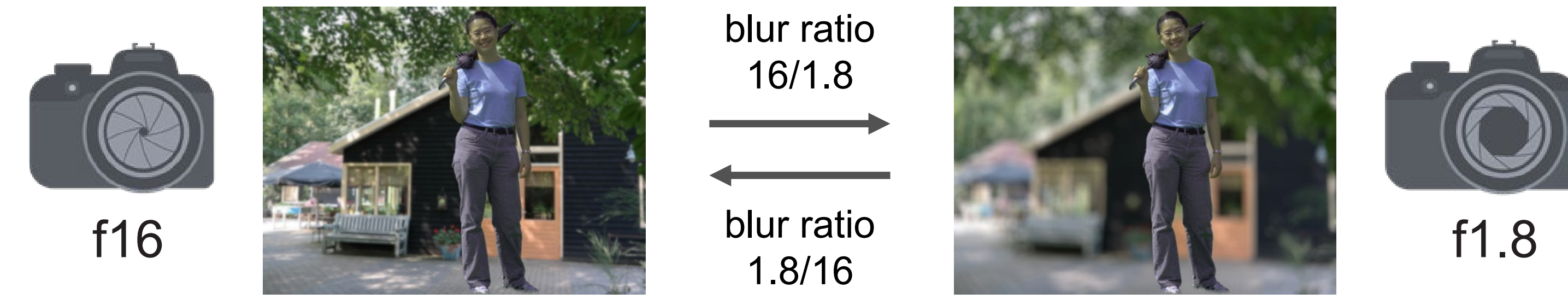


Blur Ratio

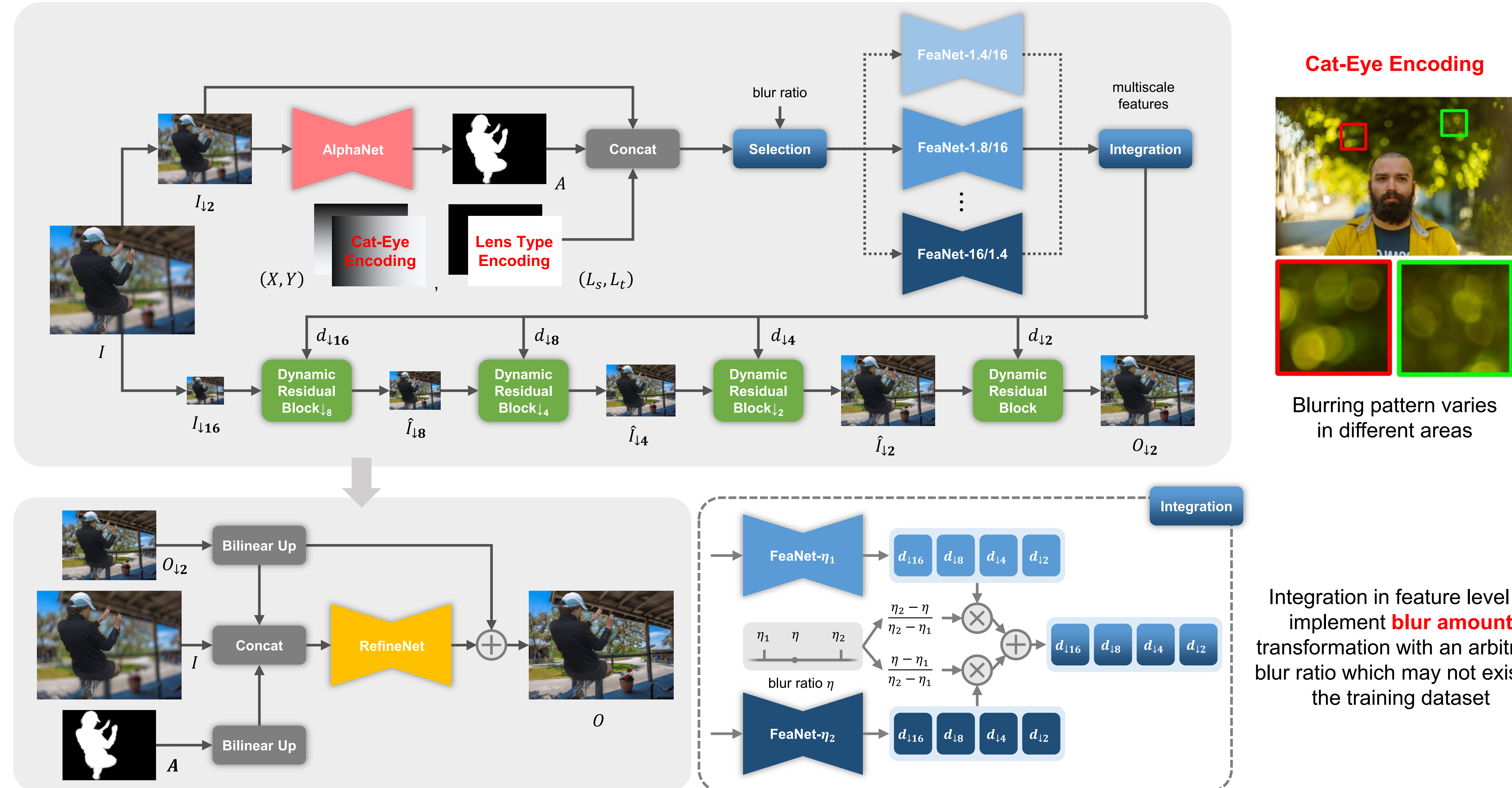
To perform blur amount transformation, we define blur ratio η :

$$\eta = \frac{S_t}{S_s} = \frac{l_t^2 f_s}{l_s^2 f_t},$$

where subscript t and s denote target lens and source lens. S is defocus map. l is focal length. f is f-number.



Method



GitHub: <https://juewenpeng.github.io/STNet/>

Experiments

NTIRE 2023 Bokeh Effect Transformation Challenge Results:

Methods	Synthetic + Real			Real	
	PSNR↑	SSIM↑	LPIPS↓	PSNR↑	LPIPS↓
NAFBNET	35.264	0.9362	0.0985	0.8416	0.2186
SBTNet (Ours)	<u>34.572</u>	<u>0.9361</u>	0.0966	<u>0.8435</u>	0.2224
CBTNet	32.326	0.9333	0.1076	0.8420	0.2230
BokehOrNot	32.288	0.9327	0.1130	0.8423	0.2199
SGLMS	32.076	0.9324	0.1076	0.8419	0.2161
IR-SDE	30.866	0.9297	0.1301	0.8427	0.2387
BGNet	30.327	0.9281	0.1249	0.8415	0.2178
JiXiangNiu	27.970	0.9213	0.1542	0.8455	<u>0.2175</u>
EBokehNet-s (Organizers)	34.543	0.9350	0.1039	0.8414	0.2206
EBokehNet (Organizers)	35.521	0.9362	0.0993	0.8412	0.2208

Ablation Study on Cat-Eye Encoding:

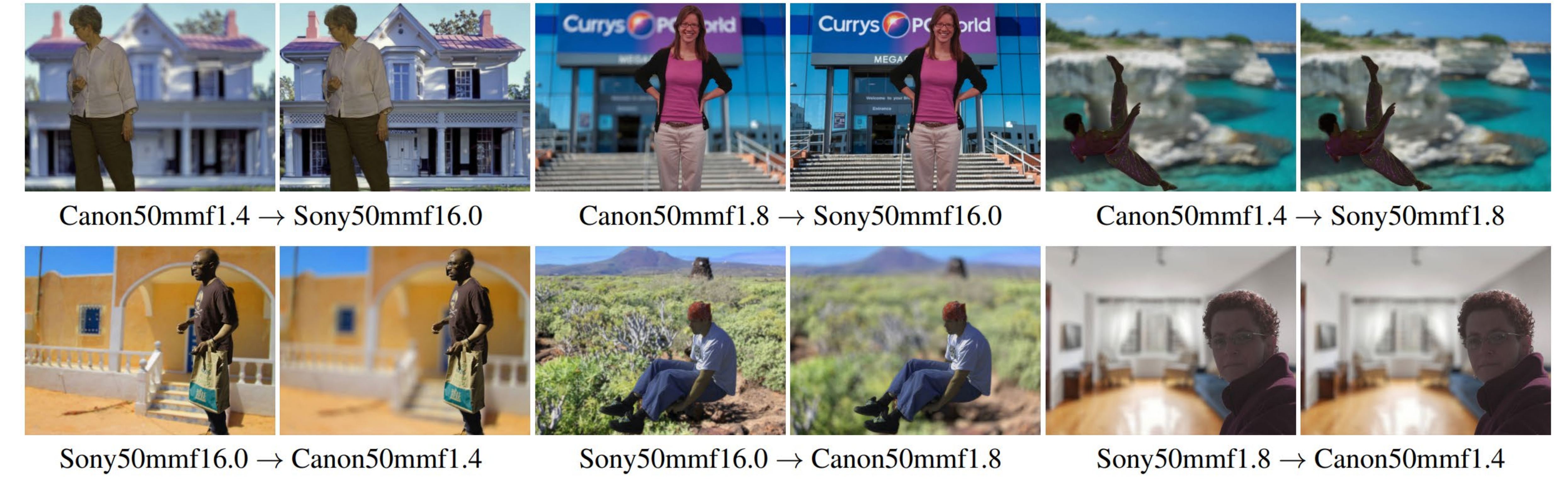
Coordinate Map	PSNR↑	SSIM↑	LPIPS↓
w/o	43.567	0.9892	0.0352
w/	45.627	0.9946	0.0331

Integration in Image Level vs. in Feature Level:

Integration Mode	PSNR↑	SSIM↑	LPIPS↓
Canon50mmf1.8 → Sony50mmf16.0			
Image Level	35.755	0.9850	0.0684
Feature Level	35.768	0.9851	0.0675
Sony50mmf16.0 → Canon50mmf1.8			
Image Level	37.282	0.9894	0.0752
Feature Level	38.005	0.9921	0.0555

Qualitative Results:

Synthetic



Real

