Supplementary Material:
Self-Supervised Dehazing Network
Using Physical Priors

Gwangjin Ju[1], Yeongcheol Choi[2], Donggun Lee[1], Jee Hyun Paik[2],
Gyeongha Hwang[3], and Seungyong Lee[1]⋆

[1] POSTECH, Pohang, Korea
{gwangjin, dalelee, leesy}@postech.ac.kr
[2] POSCO ICT, Pohang, Korea
{ycchoi, jeehyun100}@poscoict.com
[3] Yeungnam University, Gyeongsan, Korea
ghhwang@yu.ac.kr

In this supplementary material, we provide more comparisons between our proposed SSDN and previous baselines as well as more experimental results of our proposed SSDN. In the following sections, ours-outdoor is the model defined in Sec. 5 of our main paper.

We first provide a comparison result on OTS outdoor as shown in Fig. 1 and Table 1. We then show more comparison results on I-Haze as shown in Fig. 2 and Table 2. As shown in the figure, I-Haze includes challenging hazy images. We also provide more experimental results on OTS outdoor dataset in Fig. 3.

Table 1. Quantitative results of other methods and ours on the OTS outdoor, a synthetic hazy dataset on outdoor images. Both our method and DehazeNet show similar results to quantitative results on HSTS synthetic dataset since both OTS and HSTS are synthetic outdoor dataset.

Metrics	Supervised Method		Prior-based Method
	DehazeNet		DCP
PSNR	**22.61**		17.34
SSIM	**0.8640**		0.8444
Metrics	Unsupervised Methods		Self-Supervised Method
	DDIP	YOLY	Ours-outdoor
PSNR	13.28	15.93	19.09
SSIM	0.3734	0.4386	0.8499

⋆ ORCID IDs: {0000-0003-1006-8351}, {0000-0003-2525-873X}, {0000-0001-6482-8892}, {0000-0001-5485-2602}, {0000-0001-9791-8130}, {0000-0002-8159-4271}
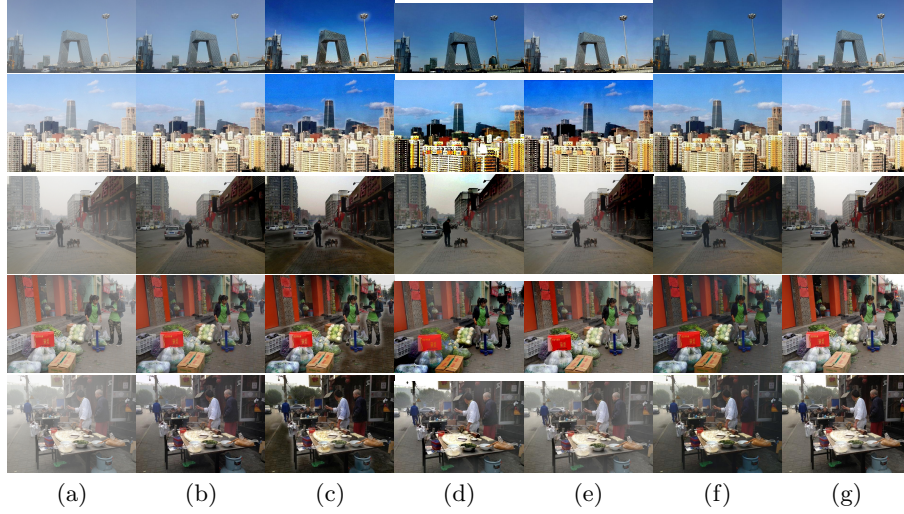
Fig. 1. Dehazing results of ours and other methods on OTS outdoor. (a) input hazy images, (b) DehazeNet, (c) DCP, (d) DDIP, (e) YOLY, (f) ours-outdoor, and (g) GT clean images. (d) and (e) have different image sizes since the public code of DDIP and YOLY crops the input image.
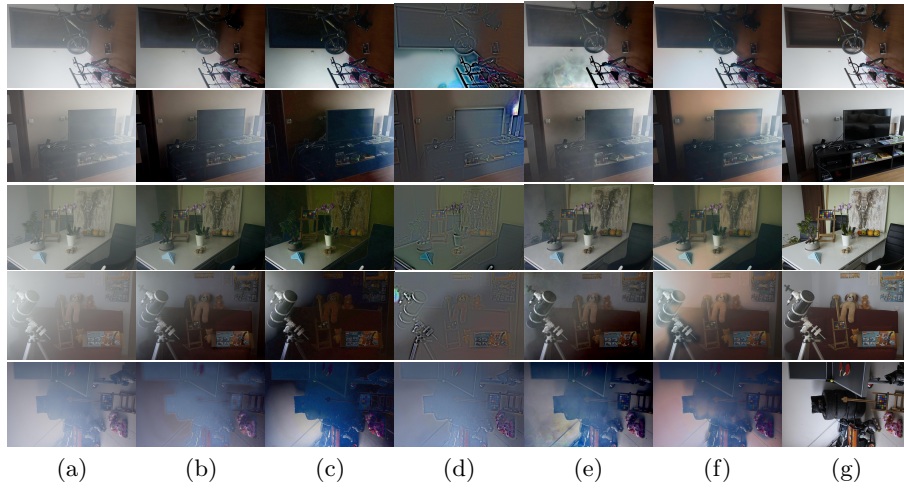

Fig. 2. Dehazing results of ours and other methods on I-Haze. (a) input hazy images, (b) DehazeNet, (c) DCP, (d) DDIP, (e) YOLY, (f) ours-outdoor, and (g) GT clean images. (d) and (e) have different image sizes since the public code of DDIP and YOLY crops the input image.

Table 2. Quantitative results of other methods and ours on the I-Haze, a real paired hazy dataset on indoor images. The performance is degraded over all methods because I-Haze includes images with non-uniform dense haze. However, ours dehazes the image although it has not seen any real dense haze thanks to its domain generalization performance.

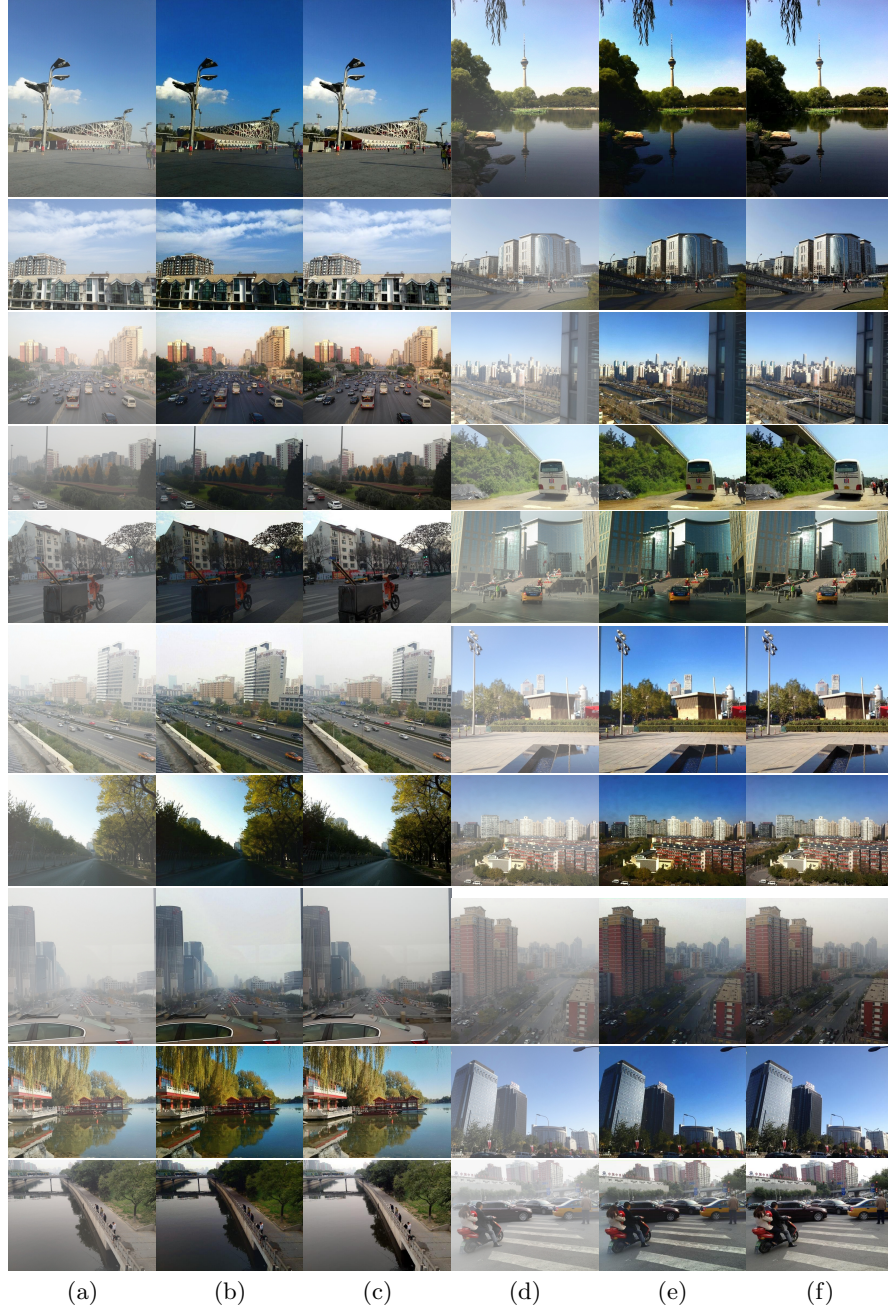| Metrics	Supervised Method		Prior-based Method
	DehazeNet		DCP
PSNR	14.43		11.98
SSIM	0.6948		0.5615
Metrics	Unsupervised Methods		Self-Supervised Method
	DDIP	YOLY	Ours-outdoor
PSNR	12.88	14.94	**15.80**
SSIM	0.6659	0.6434	**0.7631**

Fig. 3. More dehazing results on OTS outdoor dataset by our proposed SSDN. (a), (d) input hazy images, (b), (e) output dehazed images, and (c), (f) GT clear images.