

Exemplar Guided Face Image Super-Resolution without Facial Landmarks – Supplementary Material

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This supplementary material provides the details on the network architectures used in our proposed solution from the main paper, and describes the additional images provided jointly with this pdf document.

1. Our Network Architectures

Table 1 provides the descriptions of the Warper (Wnet), Critic (Cnet), and Identity Encoder (Inet) subnetworks as employed in our proposed GWAInet (see Fig. 1 (Fig.2 in the paper)).

Wnet	Cnet	Inet
k3n64s1*	k5n64s2**	k3n64s1*
k3n64s2*	k5n128s2**	k3n64s1*
k3n64s1*	k5n256s2**	max_pool(k2s2)
k3n64s2*	k5n512s2**	k3n128s1*
k3n64s1*	fc(1)	k3n128s1*
k3n64s2*		max_pool(k2s2)
k3n64s1		k3n256s1*
skip start		k3n256s1*
8x ResBlock		max_pool(k2s2)
k3n64s1		k3n512s1*
skip end		k3n512s1*
pixel shuffler 2x		k3n512s1*
pixel shuffler 2x		max_pool(k2s2)
pixel shuffler 2x		k3n512s1*
k3n2s1		k3n512s1*
		k3n512s1*
		max_pool(k2s2)
		fc(4096)*
		fc(4096)*
		fc(4096)

Table 1: Architectures of Wnet, Cnet and Inet. Note that * and ** symbols refer to ReLU and LeakyReLU ($\alpha = 0.2$) layers, respectively. k3n64s1 represents a convolution operation with kernel size 3x3, 64 feature maps and stride 1.

2. Residual Block

The structure of the residual block is shown in Figure 2.

3. Additional Images and Folders

3.1. Celeba guidance with and without matched identity

Additional images for the Figure 4 in the paper are given in *random_celeba* folder. The image names have the following structure: **seq#_sr_4.type#**, where type numbers are given as

- 000 the ground truth image (high resolution, $8\times$),
- 00 the guiding image with same identity,
- 0 our result (GWAInet) when the guiding image has same identity,
- 1 our result (GWAInet) when the guiding image has different identity,
- 2 the guiding image with a different identity.

3.2. Our results vs GFRNet [1]

Additional images for the Figure 5 in the paper are given in *additional_comp* folder. For each image the sequence is as follows:

- 1) the guiding image (high resolution, $8\times$),
- 2) the result by GFRNet [1, 2],
- 3) our result (Ours - Full / GWAInet),
- 4) the ground truth image (high resolution, $8\times$).

References

- [1] X. Li, M. Liu, Y. Ye, W. Zuo, L. Lin, and R. Yang. Learning warped guidance for blind face restoration. In *The European Conference on Computer Vision (ECCV)*, September 2018.

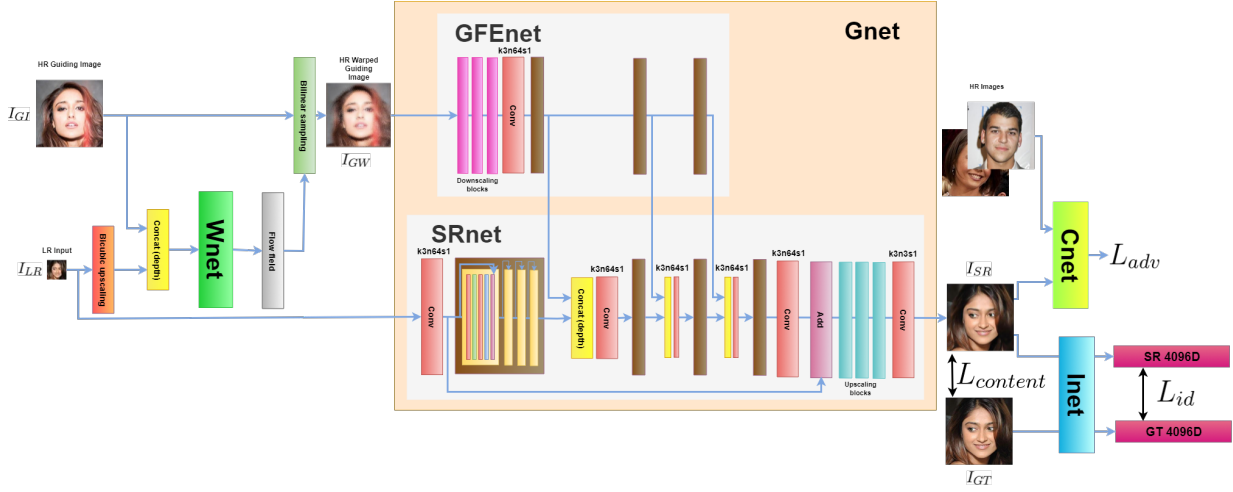


Figure 1: Proposed GWAInet and its Warper (Wnet), Generator (Gnet), Critic (Cnet) and Identity Encoder (Inet) subnetworks.

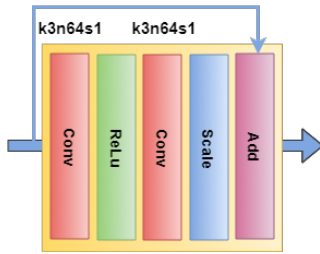


Figure 2: Residual block as introduced in [3]

- [2] X. Li, M. Liu, Y. Ye, W. Zuo, L. Lin, and R. Yang. Learning Warped Guidance for Blind Face Restoration. *ArXiv e-prints*, Apr. 2018.
- [3] B. Lim, S. Son, H. Kim, S. Nah, and K. M. Lee. Enhanced Deep Residual Networks for Single Image Super-Resolution. *ArXiv e-prints*, July 2017.