

# 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.

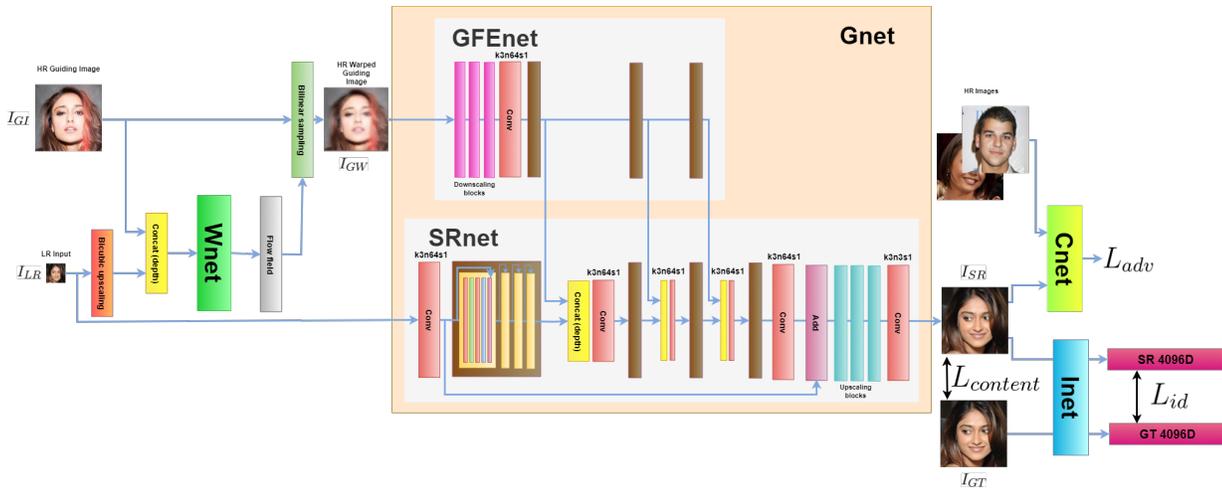


Figure 1: Proposed GWAInet and its Warper (Wnet), Generator (Gnet), Critic (Cnet) and Identity Encoder (Inet) subnetworks.

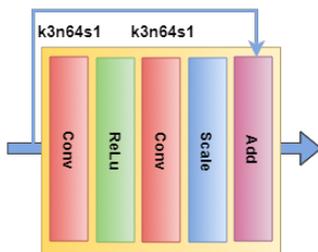


Figure 2: Residual block as introduced in [3]

- [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.