1 Supplementary Material

The following items are contained in the supplementary material:

1. The comparison of GFFRN10-L with CARN when scaling factor is $\times 4$.
2. The comparison of GFFRN40 with the most state-of-the-art methods.
3. More qualitative results.

1.1 GFFRN-L vs. CARN

In our paper, GFFRN-L outperforms CARN under the scaling factors of $\times 2$ and $\times 3$. However, when the scaling factor becomes larger ($\times 4$), GFFRN-L does not have a similar advantage over CARN. For a fair comparison, we increase the number of GFFRB from 6 to 10 in order to make GFFRN-L have the same number of Multi-Adds with CARN. The comparison is shown in table 1. GFFRN-L outperforms outperforms CARN when scaling factor is $\times 4$.

Table 1. Quantitative comparisons of GFFRN10-L and CARN when scaling factor is $\times 4$. Red represents the best result.

Scale	Model	Params	Multi-Adds	Set5	Set14	B100	Urban100	Manga109
4	CARN	1.59M	91G	32.13/0.8937	28.60/0.7806	27.58/0.7349	26.07/0.7837	-/-
	GFFRN10-L	1.53M	88G	32.18/0.8950	28.64/0.7821	27.60/0.7364	26.12/0.7872	30.50/0.9080

1.2 GFFRN40 vs. EDSR and RDN

In our paper, we mainly focus on efficient and lightweight models. We designed a GFFRN (about 5M parameters) and a lightweight GFFRN-L (less than 1M parameters) to demonstrate the efficiency of the proposed GFFRB. Here we increase the number of GFFRB to further improve the performance of GFFRN. In this experiment, the number of the GFFRB D is set to 40, channel expansion factor e is set to 4, base channel number m is set to 64 and we denote this model as GFFRN40. Note that all the GFFRBs in GFFRN40 are simply stacked like EDSR. In table 2, we compare our GFFRN with the most state-of-the-art methods EDSR and RDN. We can find that even with fewer parameters and computations, our GFFRN achieves a comparable result compared with the two methods. This fully demonstrates that the proposed GFFRB are more efficient than RB and RDB. Some visual results of these methods are shown in Figure 5-8.

1.3 More Qualitative Results

In Figure 1-8, we provide more visual results of different methods.

Table 2. Quantitative comparisons of state-of-the-art methods. Red represents the best result.

Scale	Model	Params	Multi-Adds	Set5	Set14	B100	Urban100	Manga109
2	EDSR	40.7M	9390G	38.11/0.9601	33.92/0.9195	32.32/0.9013	32.93/0.9351	-
	RDN	22.1M	5096G	38.24/0.9614	34.01/0.9212	32.34/0.9017	32.89/0.9353	39.18/0.9780
	GFFRN40	17.1M	3940G	38.19/0.9611	34.03/0.9211	32.34/0.9017	32.92/0.9356	39.21/0.9782
3	EDSR	43.7M	4470G	34.65/0.9282	30.52/0.8462	29.25/0.8093	28.80/0.8653	-/-
	RDN	22.3M	2285G	34.71/0.9296	30.57/0.8468	29.26/0.8093	28.80/0.8653	34.13/0.9484
	GFFRN40	17.3M	1768G	34.74/0.9296	30.55/0.8467	29.25/0.8094	28.81/0.8661	34.14/0.9484
4	EDSR	43.1M	2900G	32.46/0.8968	28.80/0.7876	27.71/0.7420	26.64/0.8033	-/-
	RDN	22.6M	1301G	32.47/0.8990	28.81/0.7871	27.72/0.7419	26.61/0.8028	31.00/0.9151
	GFFRN40	17.2M	1020G	32.52/0.8989	28.79/0.7873	27.71/0.7414	26.60/0.8026	31.03/0.9157

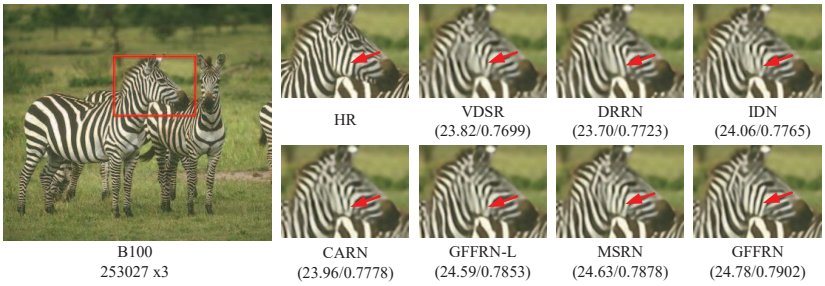

Fig. 1. Visual comparison of different methods on image "253027".

Fig. 2. Visual comparison of different methods on image "UnbalanceTokyo".

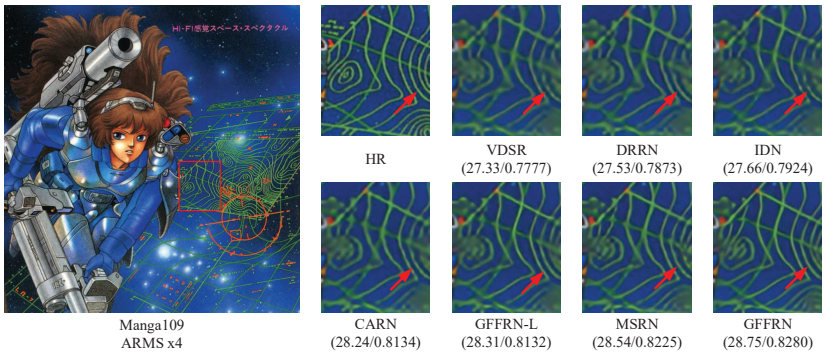

Fig. 3. Visual comparison of different methods on image "ARMS".

Fig. 4. Visual comparison of different methods on image "Barbara".

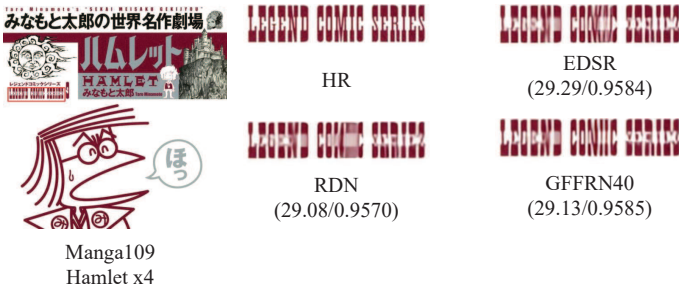

Fig. 5. Visual comparison of different methods on image "Hamlet".

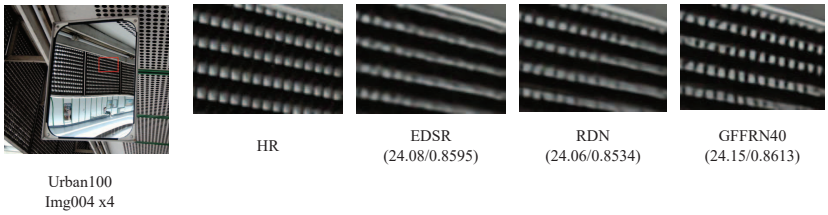

Fig. 6. Visual comparison of different methods on image "img004".

Fig. 7. Visual comparison of different methods on image "img074".

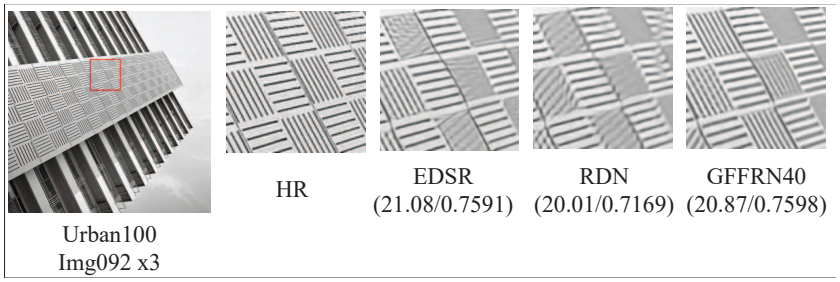

Fig. 8. Visual comparison of different methods on image "img092".