Pik-Fix: Restoring and Colorizing Old Photos
Supplementary Materials

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Abstract

In this supplementary material, we provide more details and visualizations about the proposed RealOld dataset, as well as more qualitative comparisons between state-of-the-art models.

1. RealOld Dataset

Real-world Paired Old Photos (RealOld): We collect digitized copies of 200 real old black & white photographs, each of which paired with digitally manually restored and colorized by Photoshop experts. To the best of our knowledge, this is the first real-world old photo dataset that has aligned "ground truth" "pristine" photos to enable pixel-to-pixel processing and comparison using full-reference quality metrics. The RealOld dataset contains 200 pictures with diverse backgrounds and colors. We are making this dataset publicly available to allow other researchers to develop advanced algorithms that can both colorize and repair old photos impaired by scratches, blur, cracks, wear, film grain noise, and physical and capture distortions. Fig. 1 shows some sample image pairs from RealOld dataset.

2. More Qualitative Results

We provide more qualitative results to demonstrate the efficacy of the Pik-Fix model. Figs. 2 and 3 demonstrate the comparison on DIV2K on colorization only, while Figs. 4 and 5 show the visual results on the proposed RealOld dataset. It is quite obvious that our method visually outperforms other state-of-the-art colorization and old photo restoration models on both colorization only setting as well as the simultaneous restoration and colorization task.
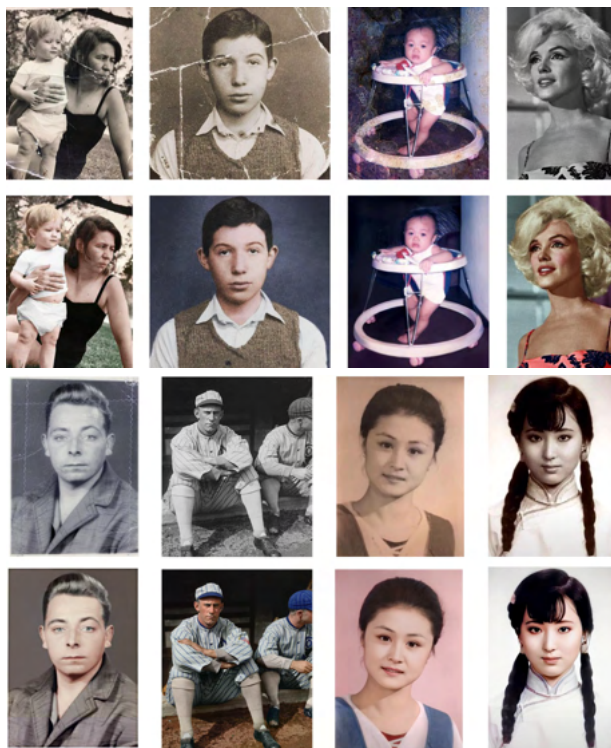
Figure 1: Exemplary authentic old photos with their corresponding reference repaired by Photoshop experts sampled from our constructed RealOld dataset.
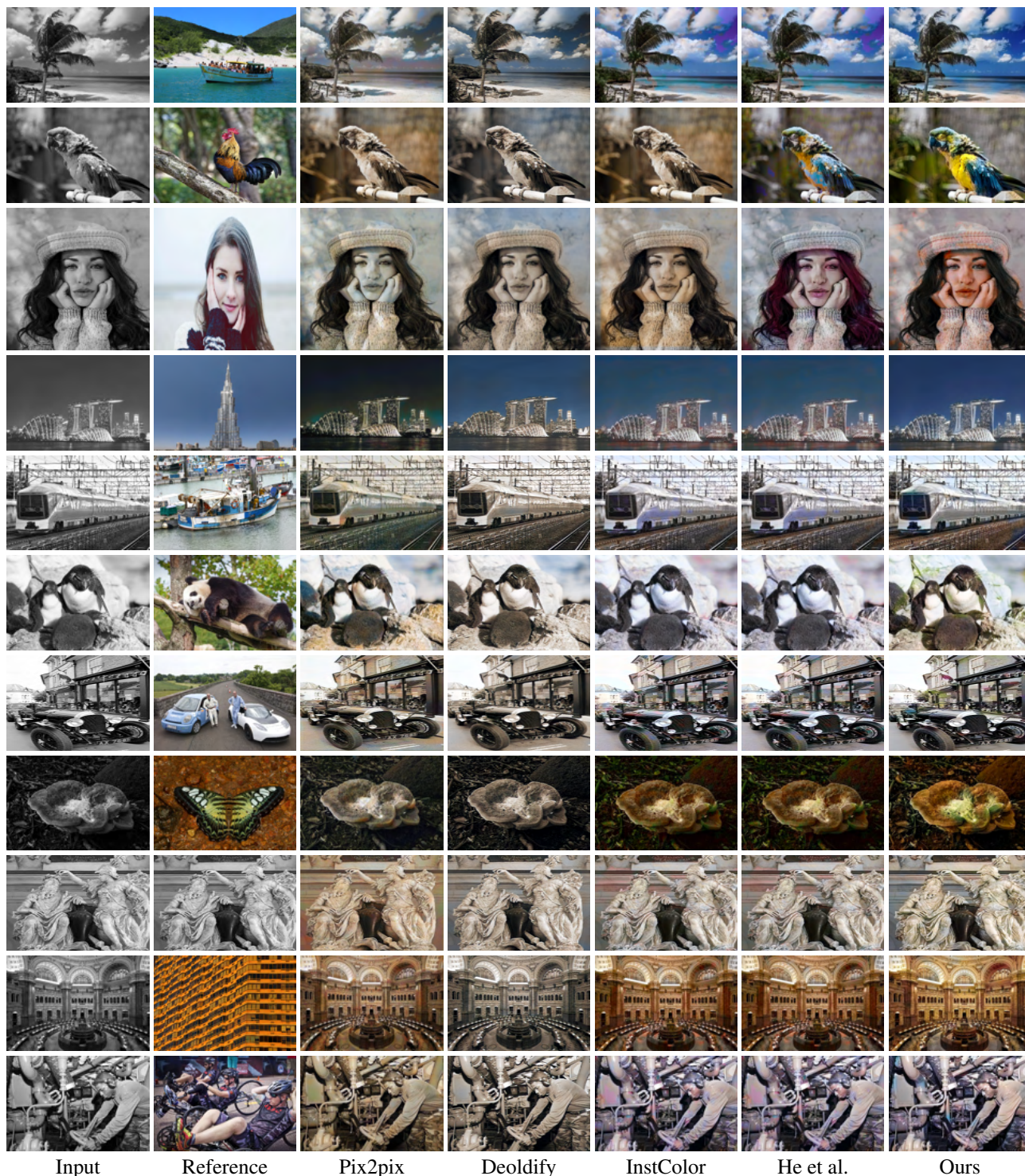
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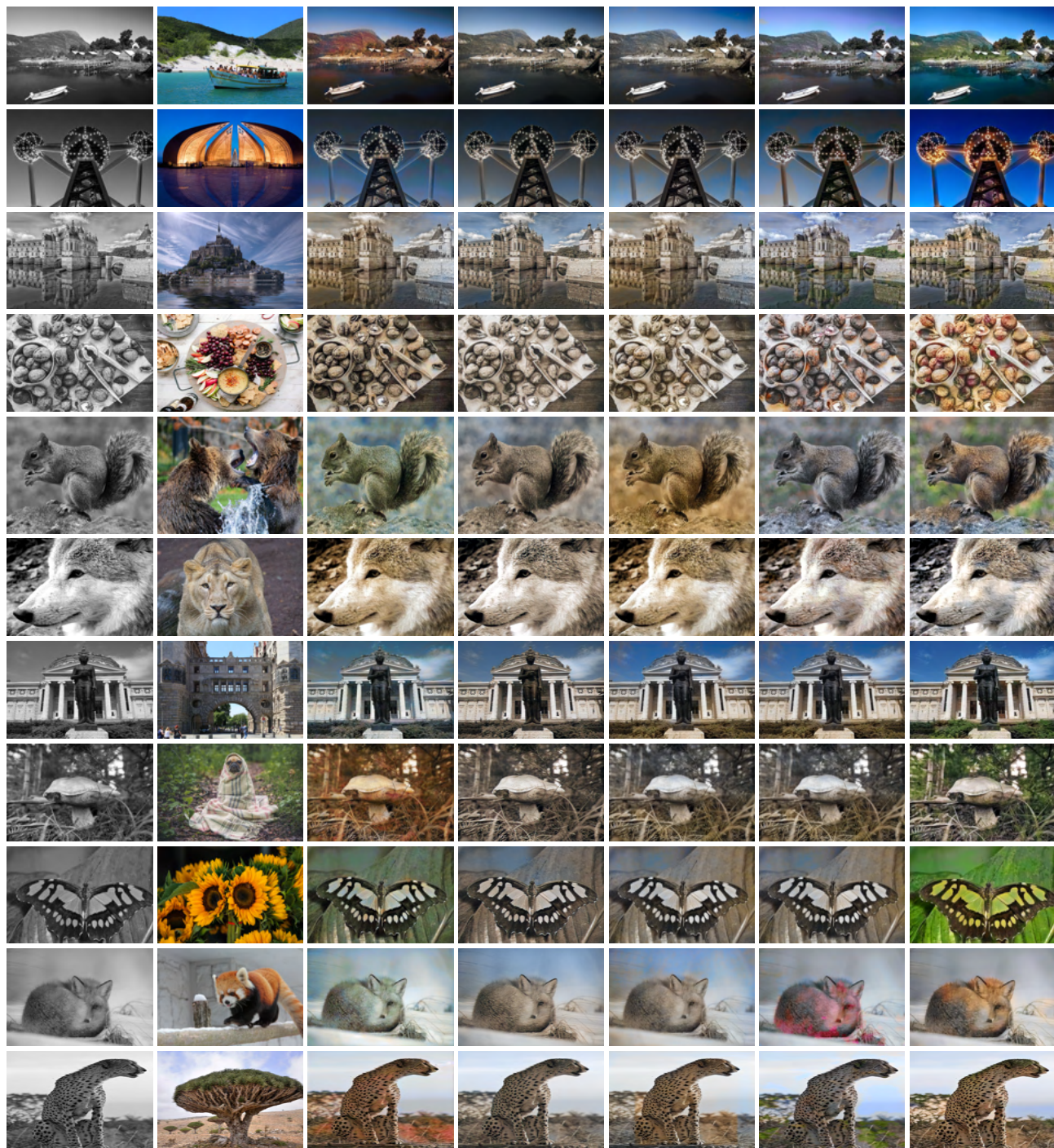
| Input | Reference | Pix2pix | Deoldify | InstColor | He et al. | Ours |

Figure 2: Visual comparisons against state-of-the-art colorization methods on DIV2K. It may be shown that with only 800 training images, our method is able to accomplish visually pleasant colorization results, which are significantly better than others.

| Input | Reference | Pix2pix | Deoldify | InstColor | He et al. | Ours |

Figure 3: More visual comparisons against state-of-the-art colorization methods on DIV2K. It shows that with only 800 training images, our method is able to accomplish visually pleasant colorization and our result is significantly better than others.

| Input | Expert Repair | Wan et al. | Deoldify | InstColor | He et al. | Ours |

Figure 4: Visual comparisons against state-of-the-art colorization and restoration methods on RealOld dataset. Our Pik-Fix model can fix most of the degradation and deliver the best visual results compared to others.

Input   Expert Repair   Wan et al.   Deoldify   InstColor   He et al.   Ours

Figure 5: More visual comparisons against state-of-the-art colorization and restoration methods on RealOld dataset.