Supplementary Materials

I. Wavelet flow for image morping

Figure 1 and 2 show more results of wavelet flow for image morping.

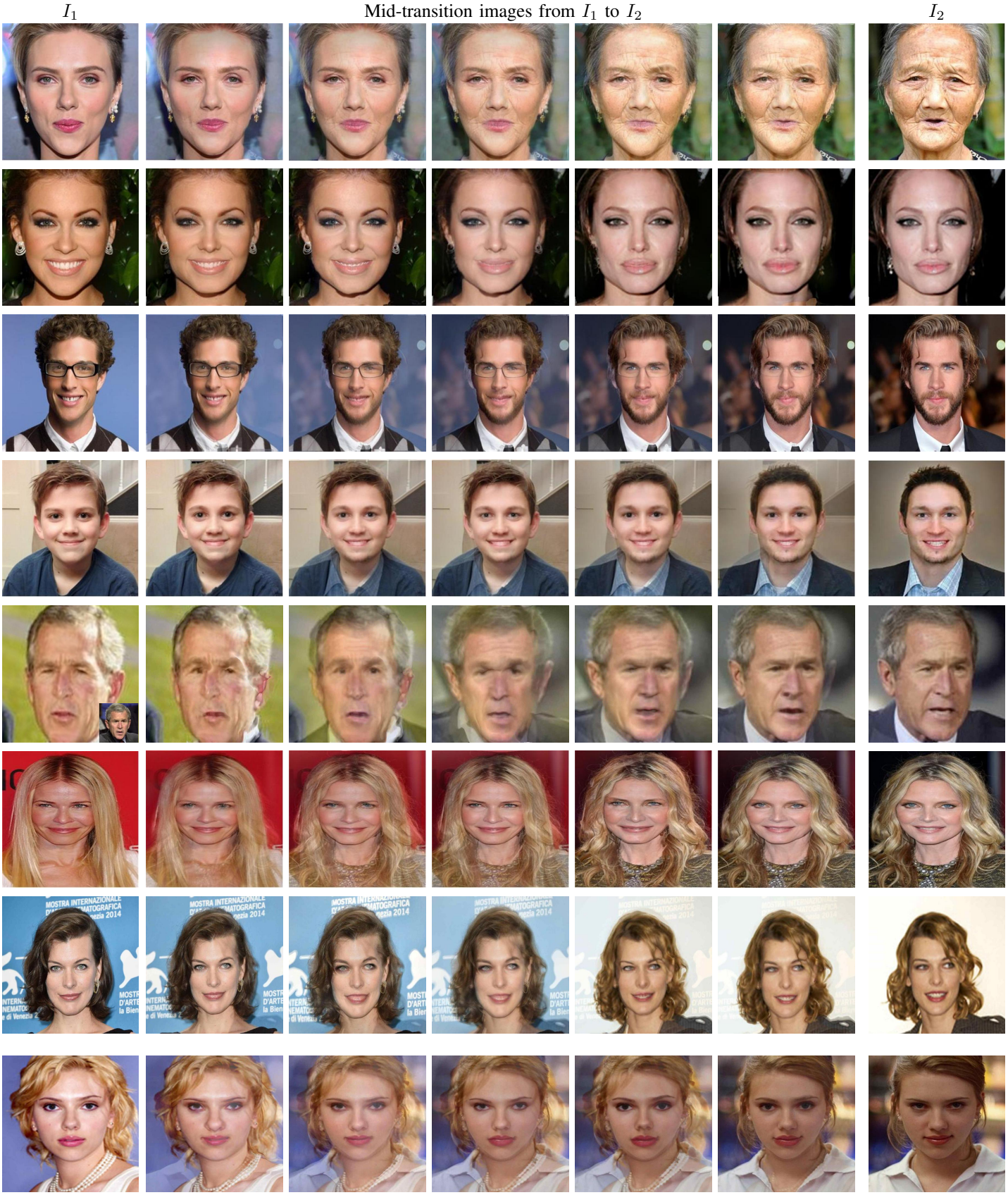


Fig. 1: Wavelet flow for image morping. Column 1 and 7 are the input pair, column 2 to 6 are the fused in-between images.

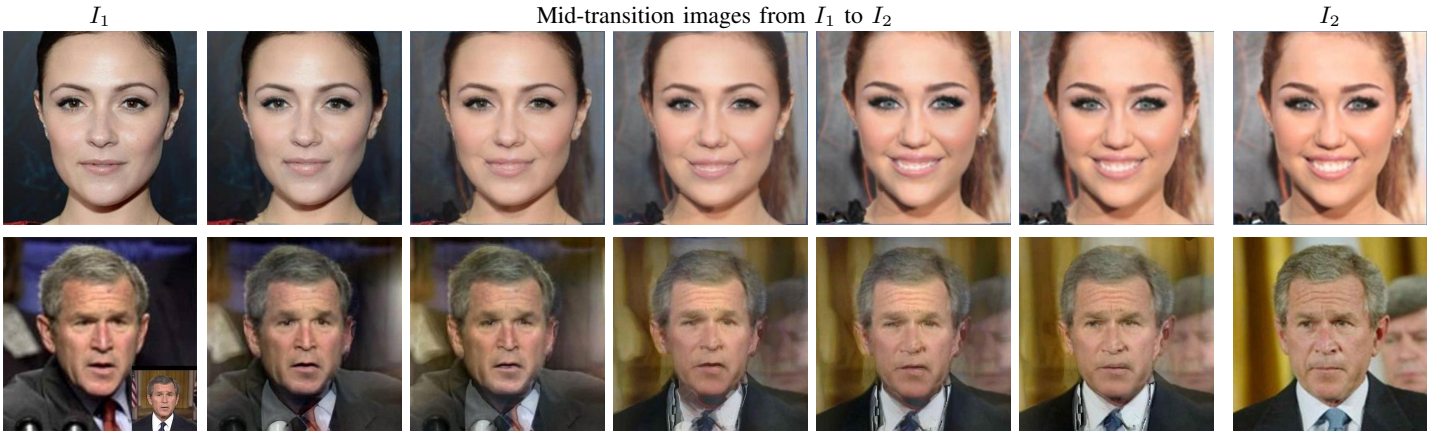


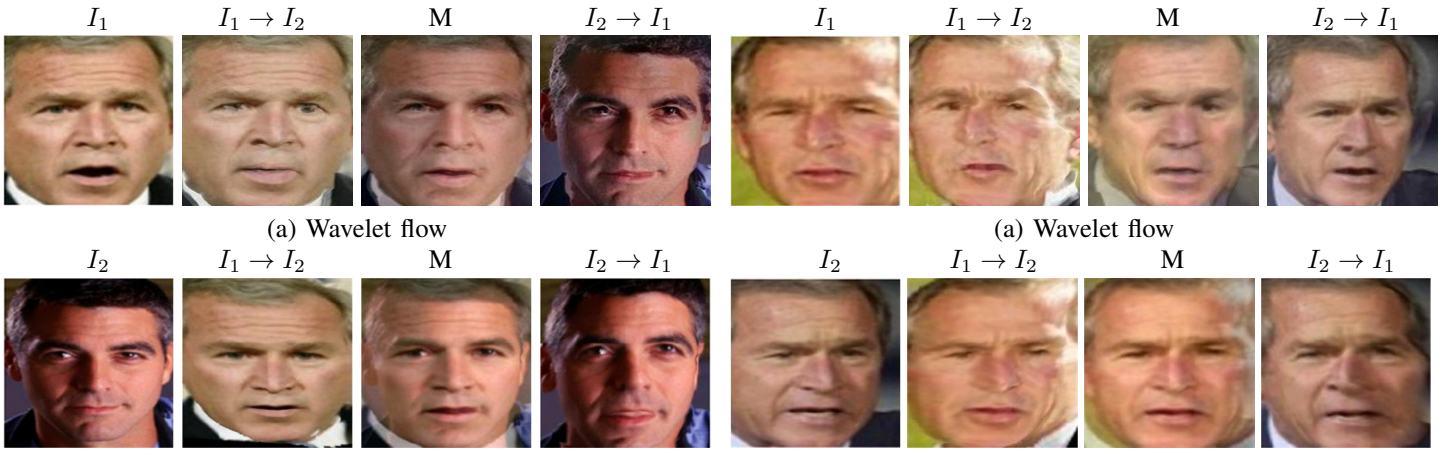
Fig. 2: Wavelet flow for image morping. Column 1 and 7 are the input pair, column 2 to 6 are the fused in-between images.

II. Comparison with collection flow

The collection flow improves the effects of the optical flow between the facial images of I_1 and I_2 by using facial image set which has similarity in facial features [KSS12]. These facial image set plays an important role in improving the optical flow between I_1 and I_2. Collection flow mainly focuses on the optical flow of faces, the method does not estimate the flow for the background regions. Comparably, our wavelet flow method, incorporating multi-scale image transfer and wavelet fusion, which are used to process faces, background, color and lighting of the input facial image pair, generate intermediate facial images blending the characteristics of both I_1 and I_2, improves the image fusion results on both face and background. Figure 3 and Figure 4 show some comparison results with collection flow.

In Figure 3, we show the comparison results on faces between wavelet flow and collection flow. We present two examples for comparisons. In each example, we conduct three results, warp I_1 to I_2, warp I_2 to I_1, produce mid-transition image of I_2 and I_1. As illustrated in Figure 3, even for image pair with large pose variation, our method is better to warp the face features, and the tone and illumination are also natural.

In Figure 4, we present the comparison results on both faces and backgrounds between wavelet flow and collection flow. We used isee software [ise], which is software for image processing, to combine the faces and the backgrounds to produce the results of collection flow. We can observe that, for collection flow, as the face and background are edited, respectively, the edited faces are combined with the background of the other input facial image, the face cannot match the image background well. Furthermore, the illumination of the fused image is not consistent. Our wavelet flow algorithm handle these problems much better.



(a) Wavelet flow (a) Wavelet flow

(b) Collection flow (b) Collection flow

Fig. 3: The comparison results on the faces with collection flow. For each example, Column 1 is input facial image pair. In Column 2, I_1 is warped to I_2 while keeping the background and illumination of I_1. Column 3 is the intermediate fusion results. In Column 4, I_2 is warped to I_1 while keeping the background and illumination of I_2.

References

[ise] iseeimaging. *http://iseeimaging.com/*.

[KSS12] Kemelmacher-Shlizerman I., Seitz S. M.: Collection flow. In *Computer Vision and Pattern Recognition* (2012), pp. 1792–1799.

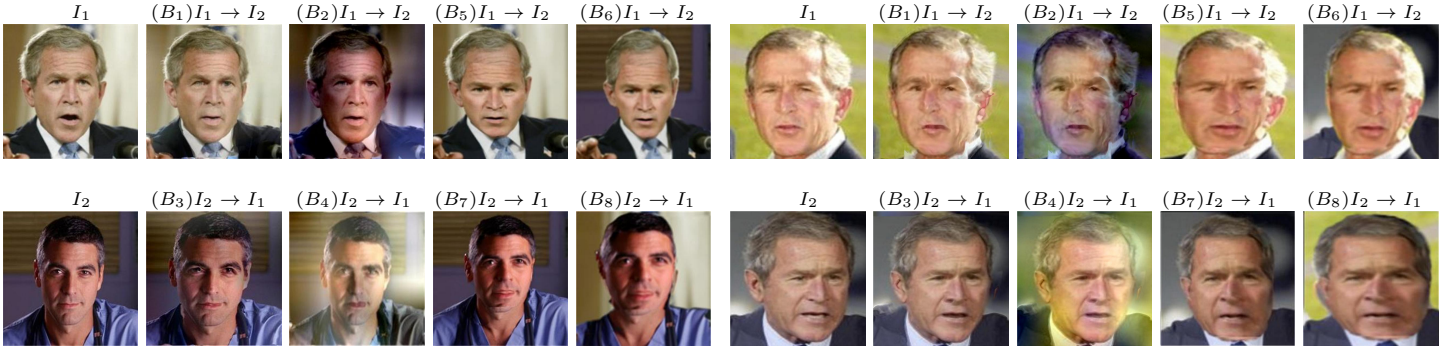


Fig. 4: The comparison results on both faces and backgrounds with collection flow. Column 1 shows the input facial image pair. For wavelet flow, B_1 and B_2 are the results warping I_1 to I_2 while with the background and illumination of I_1 and I_2, respectively, B_3 and B_4 are the results warping I_2 to I_1 while with the background and illumination of I_2 and I_1, respectively. For collection flow, B_5 and B_6 are the results warping I_1 to I_2 while copying the background of I_1 and I_2, respectively, B_7 and B_8 are the results warping I_2 to I_1 while copying the background of I_2 and I_1, respectively.