Nonlinear Spectral Image Fusion
Supplementary Material

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Fig. 1: Challenging image fusion examples of combining the facial expression of Reagan with several different statues.

1 Further Image Fusion Results

To illustrate the robustness of the proposed framework, we ran the fully automatic image fusion pipeline on an image set of US presidents gathered from the Wikipedia Commons page without changing the spectral filters. Figure 4 illustrates the results.

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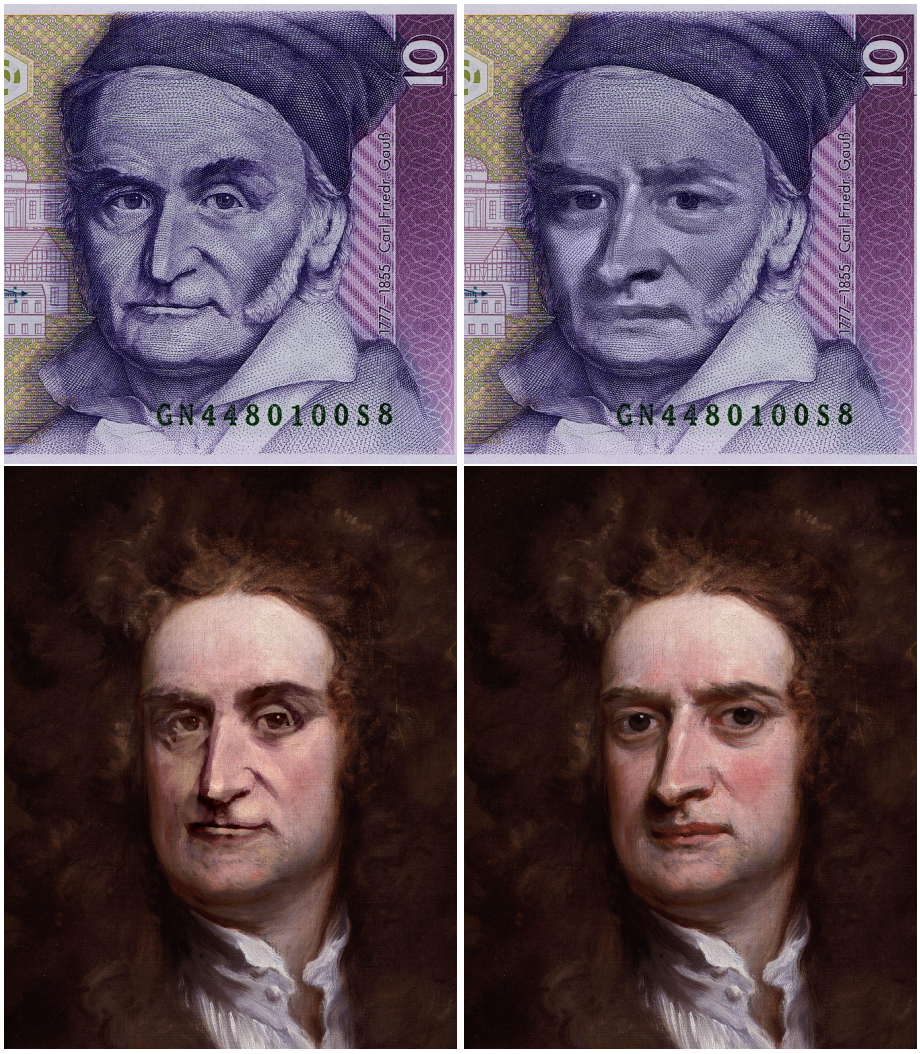

Fig. 2: Image fusion using the nonlinear spectral TV decomposition on the challenging example of fusing a banknote with a picture of Gauß and a painting of Newton.

Note that most fusion results have a realistic and natural appearance, particularly considering that the alignment was obtained via a fully automatic nonrigid registration. The bottom row of Figure 4 shows a (partial) failure case, where a halo of president Obama's ear appears on the face of president Clinton. Such effects can occur due to different poses making the alignment very challenging and due to a segmentation that includes the ear and thus allows to transfer

the corresponding frequencies. A manual editing of the underlying segmentation mask could fix such a problem with little effort.

Fig. 3: Further results on giving a photo the impression of a painting.

We would like to point out that nonlinear spectral image fusion is robust enough to yield realistic results even in challenging situations, such as the fusion of people and statues, see Figure 1, or fusing a banknote with a painting, see Figure 2. In these cases the registration and segmentation, however, had to be done manually as state-of-the art face detection algorithms do not identify banknotes or statues faithfully.

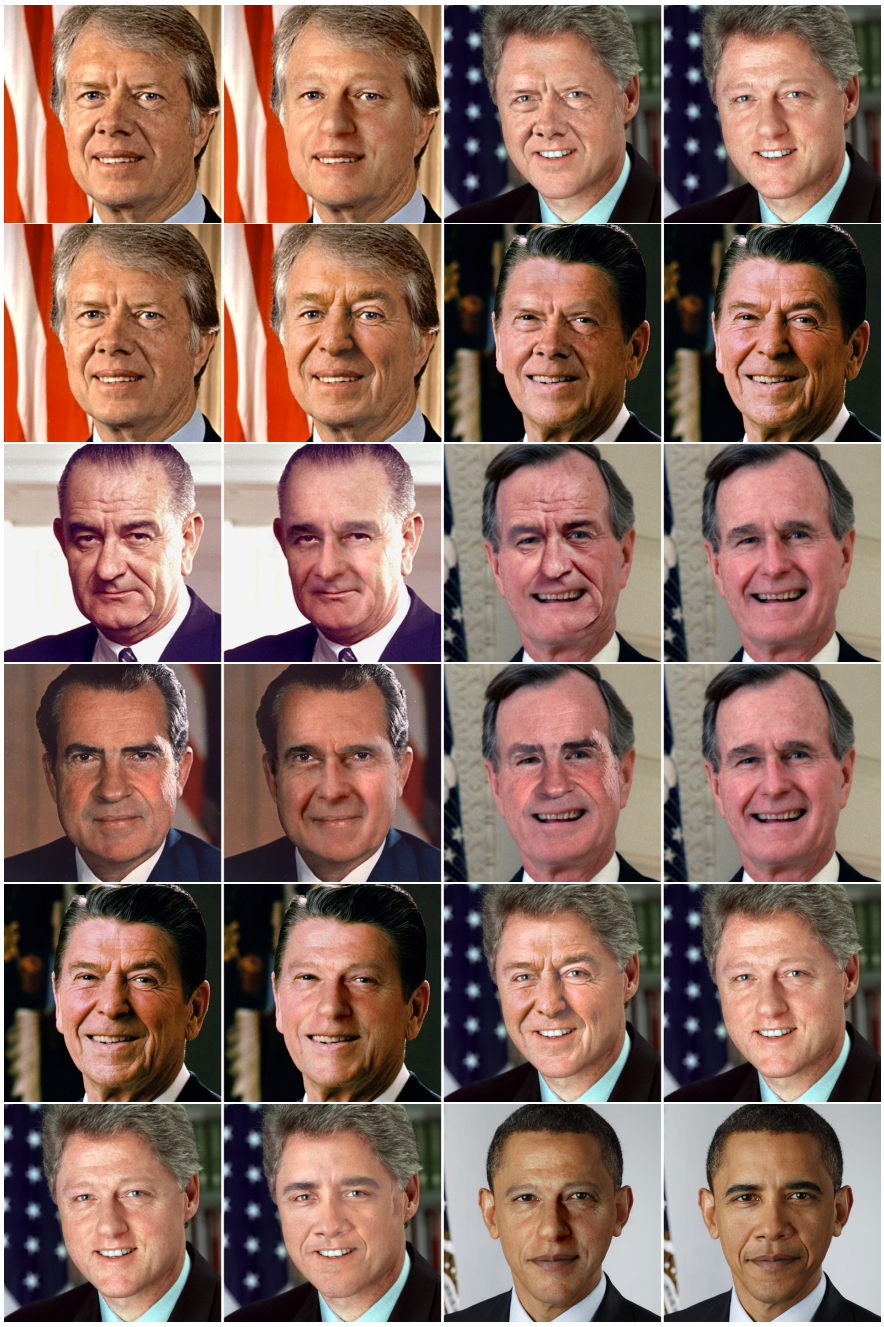

Fig. 4: Fusion results of different US presidents. All results were generated automatically and with the same spectral filters that are displayed in Figure 5 in the main paper.

A possible area of application of the proposed facial image fusion technique, could be the personalization of characters in computer games. Figure 5 shows how Reagan would join a virtual world as a warrior.

2 Further Artistic Manipulations

To complement the examples of turning a photo into a painting, Figure 3 shows further examples of this technique. The brush strokes used for all images come from the same Poppy Field image shown in Figure 8 in the main paper. Particularly fine scale structures that allow a human observer to identify the image as a photo are effectively removed by the spectral filtering.

Fig. 5: Personalizing avatars in computer games. In this case, the facial expression of the warrior is personalized to match president Reagans photo.