

Enhance Videos of People Wearing Polarized Glasses: Darkening Reversal and Reflection Reduction Supplemental Material

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1. Issues of Plastic Polarized Eyeglasses

As mentioned in Sec.6.4 in the paper, currently our method cannot properly deal with polarized eyeglasses made with cheap plastic filters. The reason is the large deformations of reflections across views that prohibit correct estimation of spatial warping between them. Fig. 1 shows comparison of images pairs of such eyeglasses ((a) and (b)) and the eyeglasses used in our experiments ((c) and (d)), acquired at roughly the same viewpoint and subject head direction.

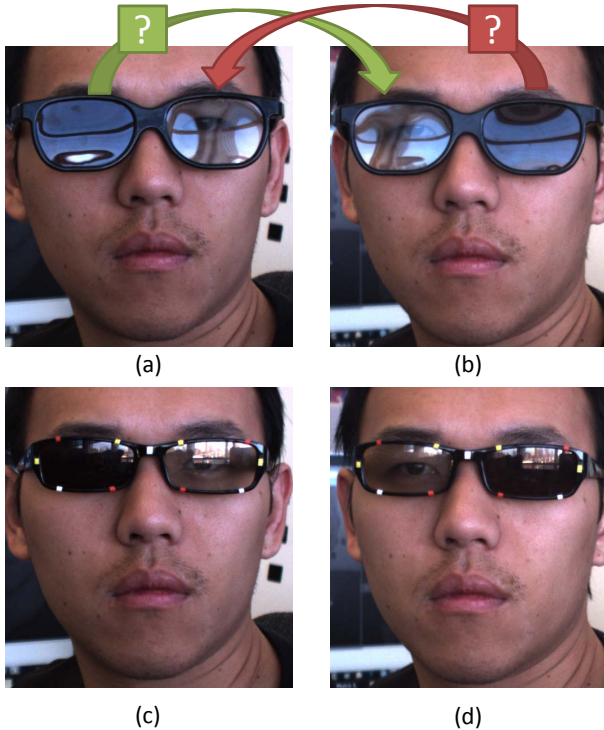


Figure 1. Example image pairs captured with plastic polarized eyeglasses ((a) and (b)) and the non-plastic one used in our experiment ((c) and (d)). The large deformations of the reflections across views in (a) prohibit estimation of spatial warping between them.



Figure 2. The case with strong reflections. (a): one view of the input image pairs acquired with our setup; (b): our results.

2. Extremely Strong Reflection

The performance of our approach degrades if the reflection on the polarized eye-glasses are extremely strong and becomes dominant, as shown in Fig. 2. The reason is that as the reflection layer dominates the composite image, the eyes and skin details play little role in some of our gradient based object functions (e.g. the one in scale factor estima-



Figure 3. Further results of static scenes. (a): Images captured with regular stereo cameras (without polarization filters on the cameras). (b): Enhanced from(a) by applying T_g^{-1} to the eye regions for darkening reversal only. (c): Images captured with our setup (with polarization filters on cameras). (d): Our results taken (c) as input, with both darkening reversal and reflection reduction achieved.

tion), and might be removed after optimization. However, under normal lighting conditions, reflections from monitor is not as strong as those in Fig. 2, and therefore will generally not cause the trouble in 3D videoconferencing applications.

3. Further Static Scene Results

This section contains some further experimental results of static scenes, as in Fig. 3. Details are explained in Sec.6.2 in the paper. Overall our results provide significantly higher visual quality.