

# Supplementary Materials: HDR Deghosting: How to deal with Saturation?

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## Instructions

Preview in FullScreen Mode, use (Page Up/Down) to toggle between images.

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Figure 1. Image one in the original stack.



Figure 2. Image two in the original stack.



Figure 3. Image three in the original stack.



Figure 4. Aligned image one



Figure 5. Aligned image two.



Figure 6. Aligned image three.



Figure 7. The fused result after the alignment using our algorithm. Note that the trees outside the window in the reference image (2nd one) is badly exposed, in particular, the regions around the lady's hair. Our result captures all the information from the three images but does not introduce artifacts.





Figure 8. Image one in the original stack.



Figure 9. Image two in the original stack.



Figure 10. Image three in the original stack.



Figure 11. Aligned image one.



Figure 12. Aligned image two.



Figure 13. Aligned image three.



Figure 14. The fused result after the alignment using our algorithm.

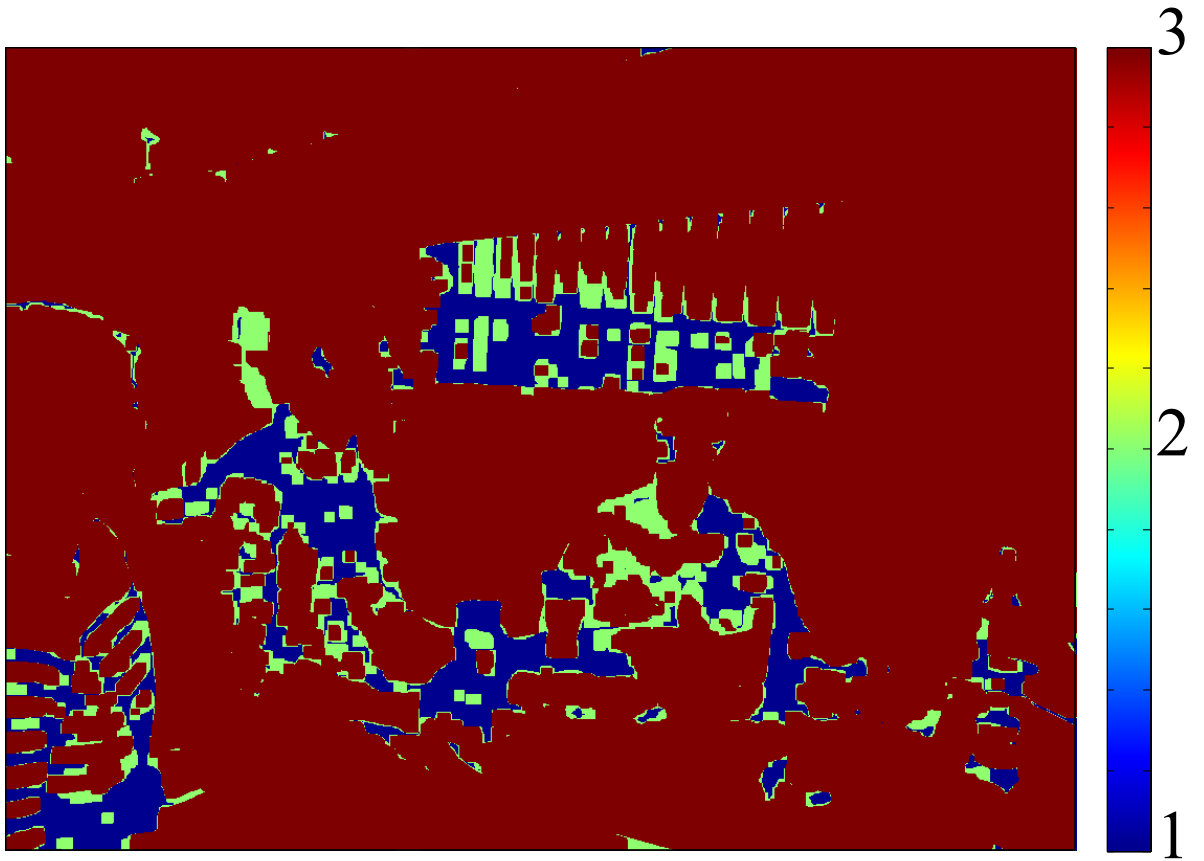


Figure 15. Taking inspiration from Gallo *et al.*, we show how many of the original images contribute to each pixel in the fused image. In our case, what this means is that the red regions were warped and synthesized in all the aligned images. For the blue region, no matches were found between the original images of the stack and the reference: those pixels are therefore reconstructed using only the reference image. A similar explanation applies to the green areas, where only two images are used.





Figure 16. Image one in the original stack.



Figure 17. Image two in the original stack.



Figure 18. Image three in the original stack.



Figure 19. Image four in the original stack.



Figure 20. Image five in the original stack.



Figure 21. Aligned image one.



Figure 22. Aligned image two.



Figure 23. Aligned image three.





Figure 24. Aligned image four.



Figure 25. Aligned image five.

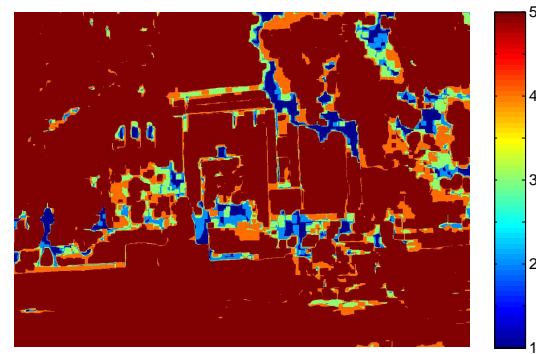


Figure 26. A comparison with Gallo *et al.*. The top left image is the result by Gallo *et al.*, the bottom left image is our fused result. The right column show blown-out of the region of the image that are not good for Gallo *et al.*, our algorithm does not generate such artifacts. We also show how many of the original images contributed to the final image. For Gallo *et al.*'s result (cropped from author's presentation slide), most pixels (stationary background) are reconstructed using four images in the original stack, while our algorithm uses all five source images to reconstruct those pixels. Note that our algorithm uses only the reference image to reconstruct people (blue regions), this is because people in those regions disappear across the exposure stack. Images courtesy of Orazio Gallo.

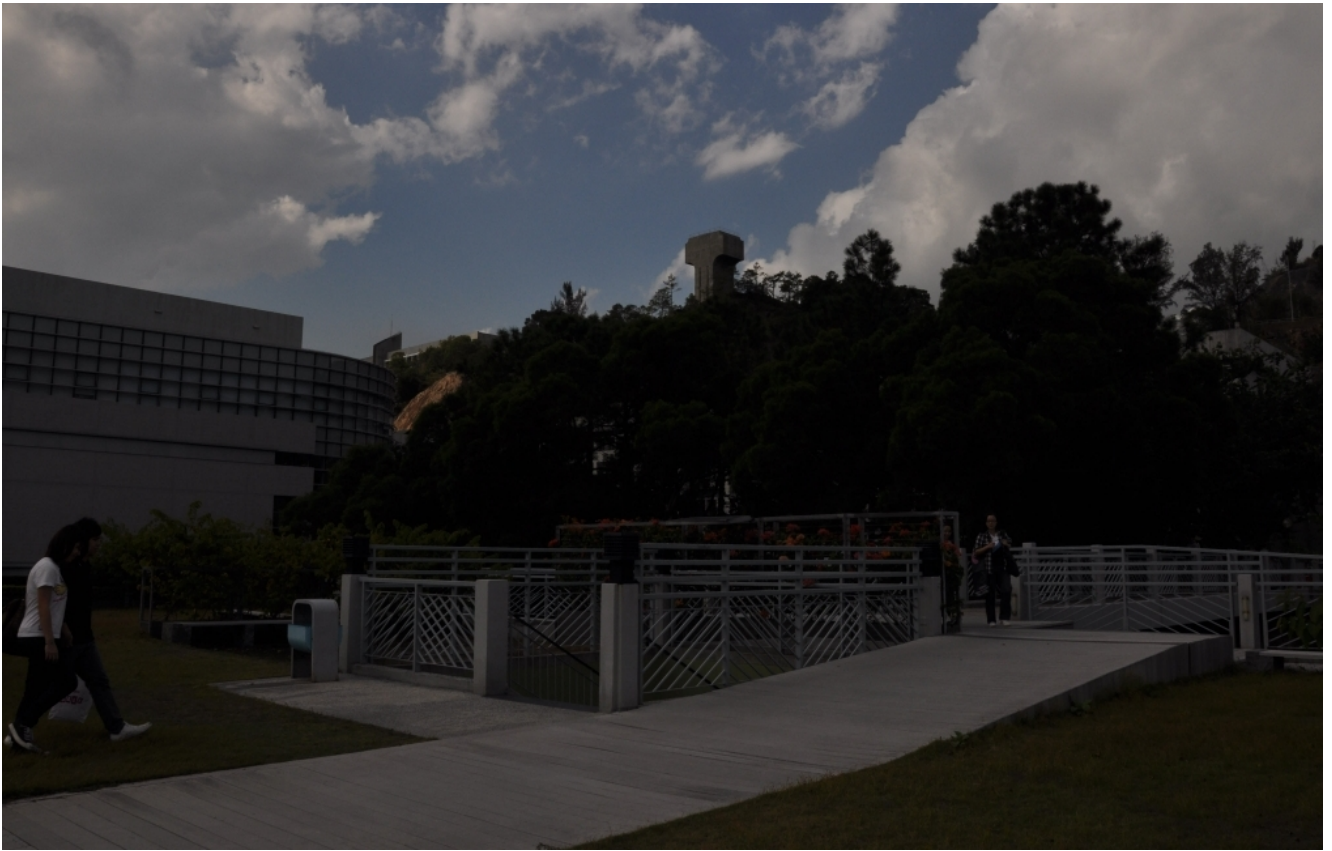


Figure 27. Image one in the original stack.



Figure 28. Image two in the original stack.



Figure 29. Image three in the original stack.



Figure 30. Image four in the original stack.



Figure 31. Image five in the original stack.





Figure 32. Image six in the original stack.



Figure 33. Aligned image one



Figure 34. Aligned image two.



Figure 35. Aligned image three.



Figure 36. Aligned image four.



Figure 37. Aligned image five.



Figure 38. Aligned image six.



Figure 39. A comparison with Zhang *et al.* The top image is the result by Zhang *et al.*, the bottom image is our result. The final results are competitive, but our algorithm has few artifacts on the sky (Green arrows). Images courtesy of Wei Zhang (Original stack) and Jun Hu (Top image with green arrows cropped from author's paper).





Figure 40. Image one in the original stack.



Figure 41. Image two in the original stack.



Figure 42. Image three in the original stack.



Figure 43. Image four in the original stack.



Figure 44. Aligned image one



Figure 45. Aligned image two.



Figure 46. Aligned image three.



Figure 47. Aligned image four.





Figure 48. A comparison with Hu *et al.* The top image is the result by Hu *et al.*, the bottom image is our result. The final results are competitive, but our algorithm is 3x-4x faster. Images courtesy of Jun Hu.



Figure 49. Image one in the original stack.



Figure 50. Image two in the original stack.



Figure 51. Image three in the original stack.



Figure 52. Aligned image one



Figure 53. Aligned image two.



Figure 54. Aligned image three.



Figure 55. The fused result after the alignment using our algorithm. Note that the sky in the reference image (3rd one) is totally saturated, but our algorithm synthesizes it well.