

An Example of Green-Screen Keying in Current Practice

Supplementary material to ACM Transactions of Graphics article
Interactive High-Quality Green-Screen Keying via Color Unmixing
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As a part of our experimental evaluation, we had an independent professional keying artist generate competing results using commercially available keying software. We asked the artist to generate a document explaining the process of keying step by step for one of the challenging cases. Below are the steps as described by the artist.



The main issues on this shot are green spill on actor, folds on the green screen causing quite heavy unevenness, camera artifacts like dark edges on figure. This could either be caused by type of camera and/or lenses (some camera is known for particular artifacts) or by overexposed green screen. Motion blur is almost always an issue. Another thing is that the actor goes very close to the green screen at the end of the shot, casting a shadow that you see quite well on the keyed result. In the end it came out a not bad result, but also not production ready. For that I would need some manual work such as precise roto on some parts, some paint for motion blur in a few places and some local edge fixing as well. I think to get it done it would take 10 to 12 hours (all together with what I did already so another 8-10 hours). I used more keyers together for this one.



Figure 1: I start making a clean plate from the union of the first and last frame by a static mask. I already know that this won't be perfect because of the shadow cast on wall I mentioned and also because amit is touching the green screen at the end, so it doesn't match with the first frame anymore. 5 min



Figure 2: I use this clean plate in two different ways. The first is to feed an ibk and get some partial alpha. I had to gain it up a bit to save some parts. 5 min



Figure 3: The second is used to make a simple difference key and get some other detail. 5 min



Figure 4: I use now the primatte to get a fill matte of the safe areas. I do this by picking areas on the screen with the different primatte modes (such as clean noise fg, bg, matte sponge ecc). Then I simply erode and blur it till I can see it lays all inside the actor (trying to keep the small hole in the alpha). 10 min



Figure 5: Next keyer is just a luma key, clipping the range till I get almost only hair, skin, belt. I want to merge the darks alone because they gonna be eroded with the other keyers. 10 min



Figure 6: I merge all these alphas together. 1 min

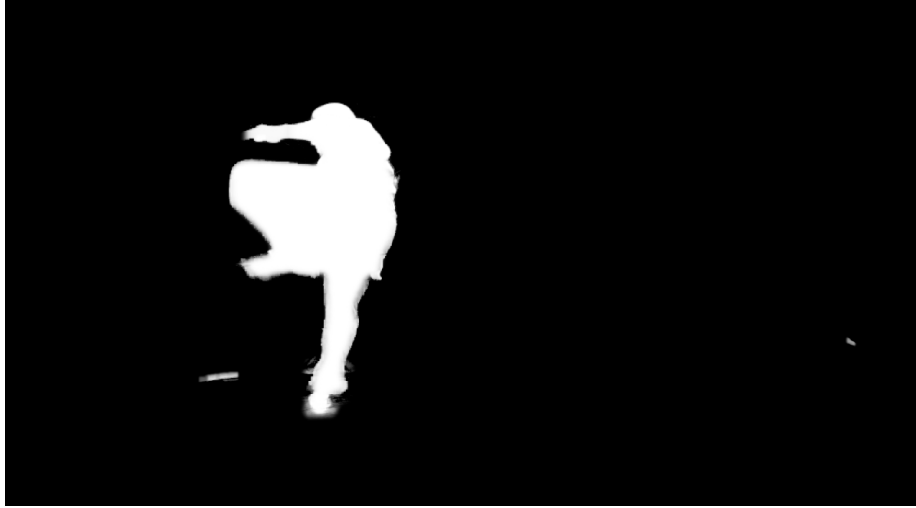


Figure 7: The fill matte comes useful again. Expanding and inverting it, I multiply with the rest to get rid of some dirt on the green screen. 5 min

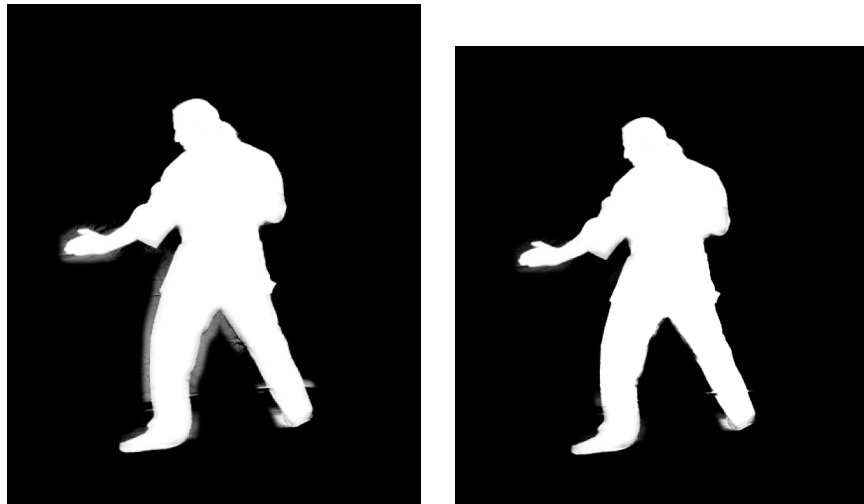


Figure 8: Then I drive a grade with a mask to color correct this alpha in the last frames, trying to clean up what I can. I also have to animate it because it doesn't work on the whole sequence. 15 min

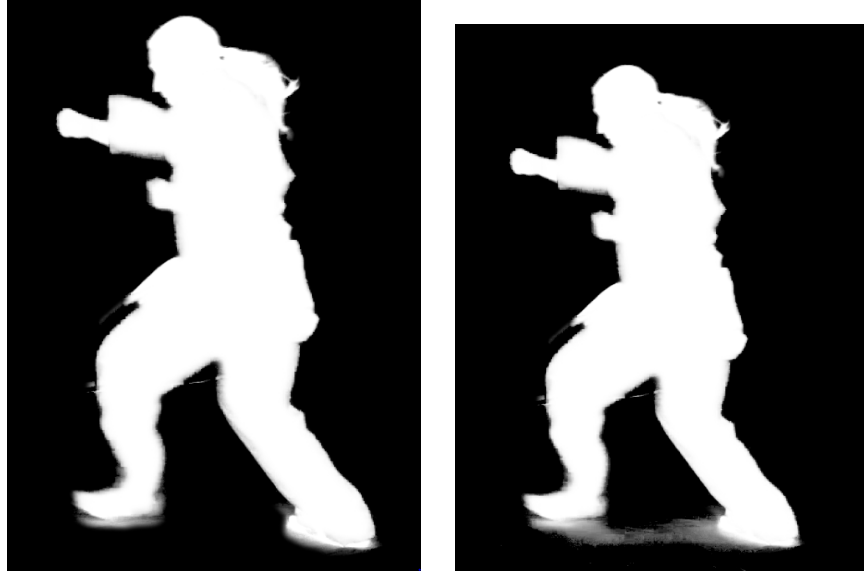


Figure 9: Then I drive a grade with a mask to color correct this alpha in the last frames, trying to clean up what I can. I also have to animate it because it doesn't work on the whole sequence. 15 min



Figure 10: Despill the original before plugging my alpha, I despilled to darker only the hair using a mask. 15 min



Figure 11: Put the alpha in the original clip and multiply as usual. Now I have the original clip and merge it with bg. 1 min



Figure 12: There are edge issues on the darks parts still. They are now too bright. I want to extend the rgb of the original to fill some green on the edges of dark parts with the closest color of amit, but without ruining what I need. I have to do this only from about one pixel inside my alpha. So I invert it and erode it just a bit. Then I multiply it with the luma key I already have so the rgb expand takes action only on the outside of my alpha and only on dark areas. 15-20 min



Figure 13: This is the final composite. It lacks those things I mentioned at the beginning but it's not bad as a starting point for a roto or paint artist. Of course all these shots are not graded to be integrated since we are working on keys only.