

Part3: For the Triangulation Matting method experimental evaluation. I found this method need strict condition with output position.

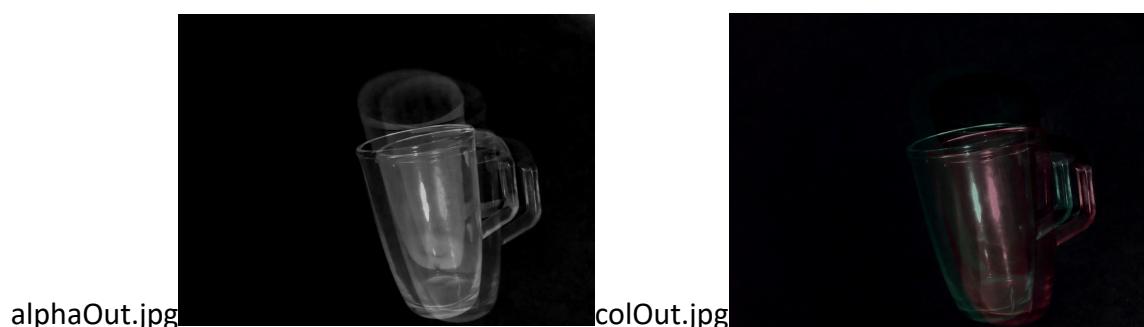
-The first experiment: try to implement Triangulation Matting method with **object's position of input composite image that slight different** with two composite images

The inputs I used:

All the image was taken by iphone with normal setting.

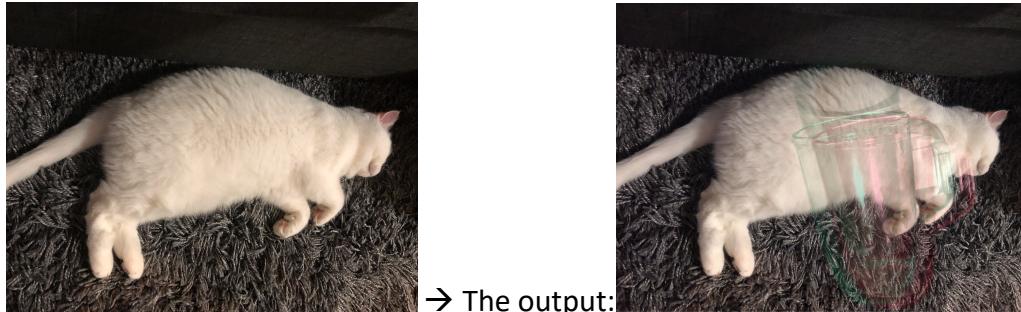


Then the alphaOut and colOut I got:



As above we can see the alphaOut.jpg and colOut.jpg is different with what we expected. The output image display two glass **overlap** each other. Since glass's position in compA.jpg and compB.jpg is slightly different. And also this method miss catch the shadow of the glass as the object.

Then I composite with this image:



→ The output:

Cocclusion:

This method can get failure easily when the object's position is slightly different between two input images. And in the real world, it is hard to take images with different background, and keep every pixel of the object at the same position.

The shadow problem: And this method cannot handle shadow of the object. Sometimes, we do not want keep the shadow after matting

-The second experiment: try to implement Triangulation Matting with **object of input composite images with same position:**

The input image:



Then the alphaOut and colOut I got:



Then compositing:



→The Output
much better than last experiment.

The **limit of this method** I got: Triangulation Matting need to be very precise with position of object in the two composite input images. Otherwise, this method will produce two object **overlap** each other.

Part4: The reason why the left side of the vase is not totally transparent:

$$\begin{bmatrix} C_{\Delta 0,r} \\ C_{\Delta 0,g} \\ C_{\Delta 0,b} \\ C_{\Delta 1,r} \\ C_{\Delta 1,g} \\ C_{\Delta 1,b} \end{bmatrix} = \begin{bmatrix} 1 & & & -B_{0,r} \\ & 1 & & -B_{0,g} \\ & & 1 & -B_{0,b} \\ 1 & & & -B_{1,r} \\ & 1 & & -B_{1,g} \\ & & 1 & -B_{1,b} \end{bmatrix} \begin{bmatrix} F_r' \\ F_g' \\ F_b' \\ \alpha_F \end{bmatrix}$$

The alpha in that area is not zero, so we can know this linear equation, it has trivial solution.

when we solve

Therefor, $C\Delta \equiv C - B \neq 0$, which means **the pixel at that area in composite image is not totally same as background image**.



we can see from the image, right side of above image are brigther.