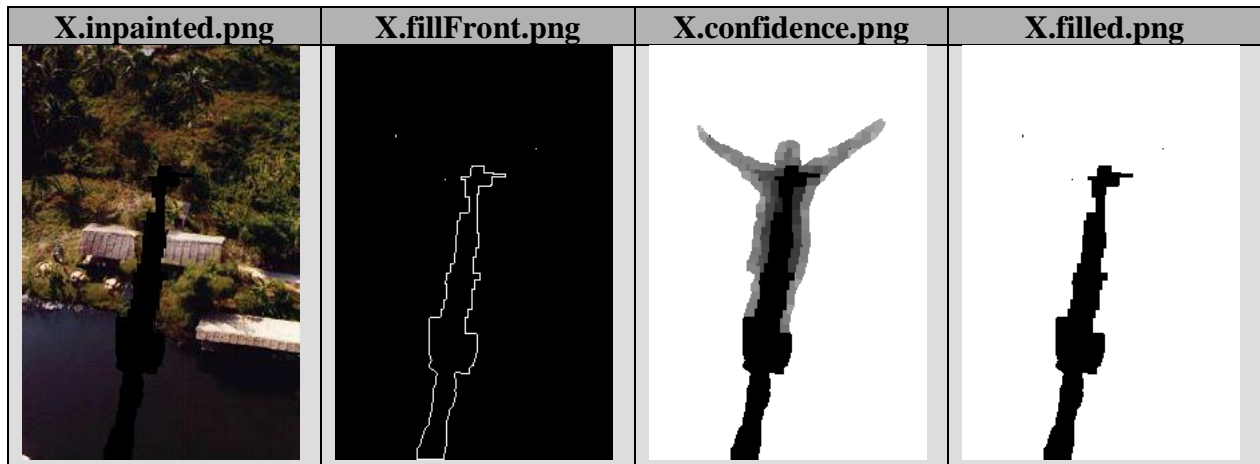


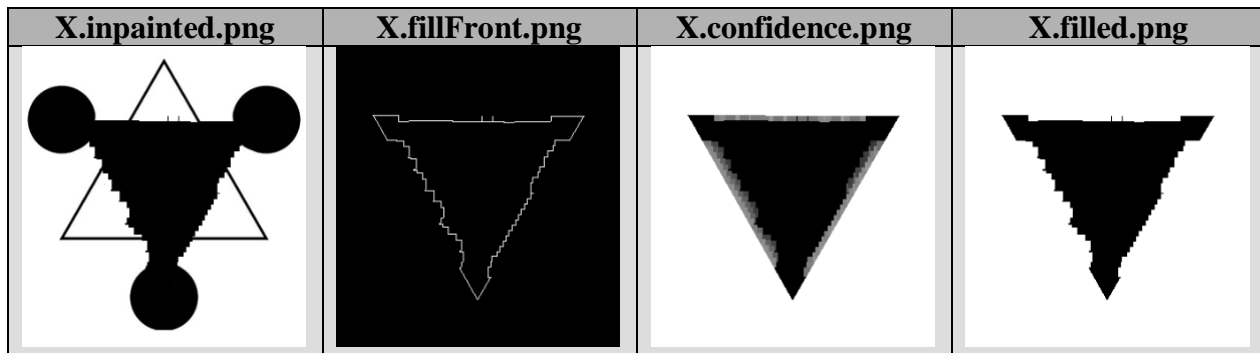
## CSC320 Assignment 2 Report

- Task1: Run input-color.jpg, input-alpha.bmp 100 times p.2
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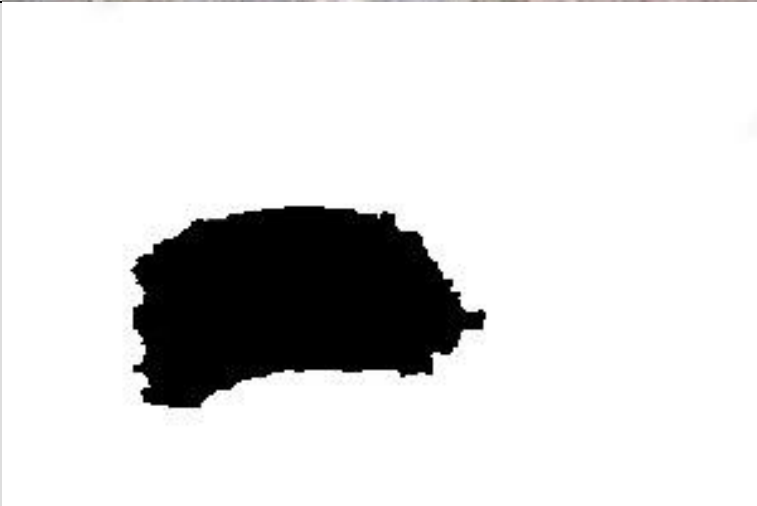

**Task1:** Run input-color.jpg, input-alpha.bmp *100 times*:

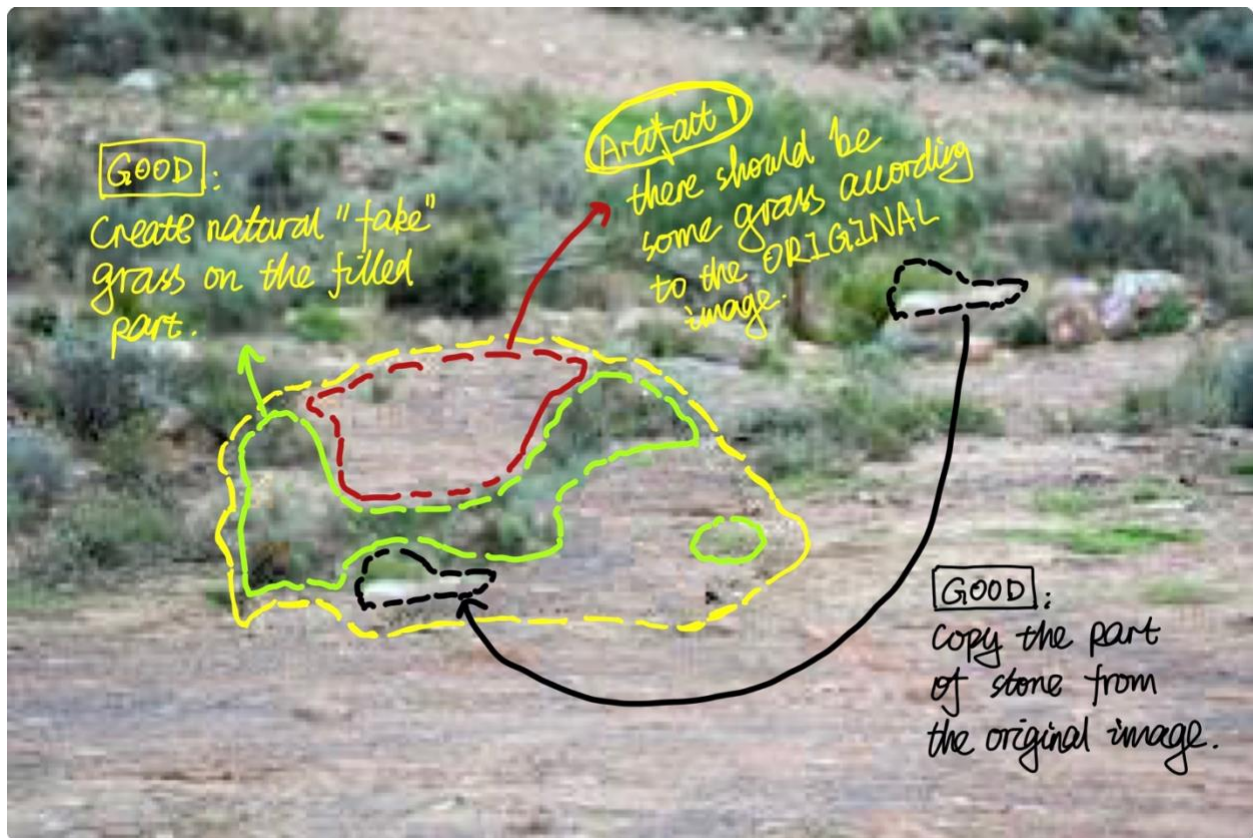


**Task2:** Run Kanizsa-triangle-tiny.jpg, Kanizsa-triangle-mask-tiny.png *100 times*:  
[Potential reason produces better result than the reference solution: using cv2.scharr() which is slightly more accurate than using cv2.sobel()]



**Task3: OUR OWN *GOOD CASE*: (patch radius = 5)**

Source1.png	
Mask1.png	
Source1.inpainted.png	



#### - Analysis the good case:

I think the pair (*Source1*, *Mask1*) represents a good case for inpainting since in the output image the original lion part has been filled with the grasses, stones and land naturally. The reason why we can get a good result probably because:

- (1) We just need to use grass' color (different range of greens) and land's color (different range of brown and gray) to fill the target area.
- (2) Resize the image to 200\*300, which with low image quality, cannot judge whether the filled part's grass and stone look fake or not.
- (3) By the algorithm, it can pick enough amounts of patches from the original image which are similar to what the target areas are supposed to be.

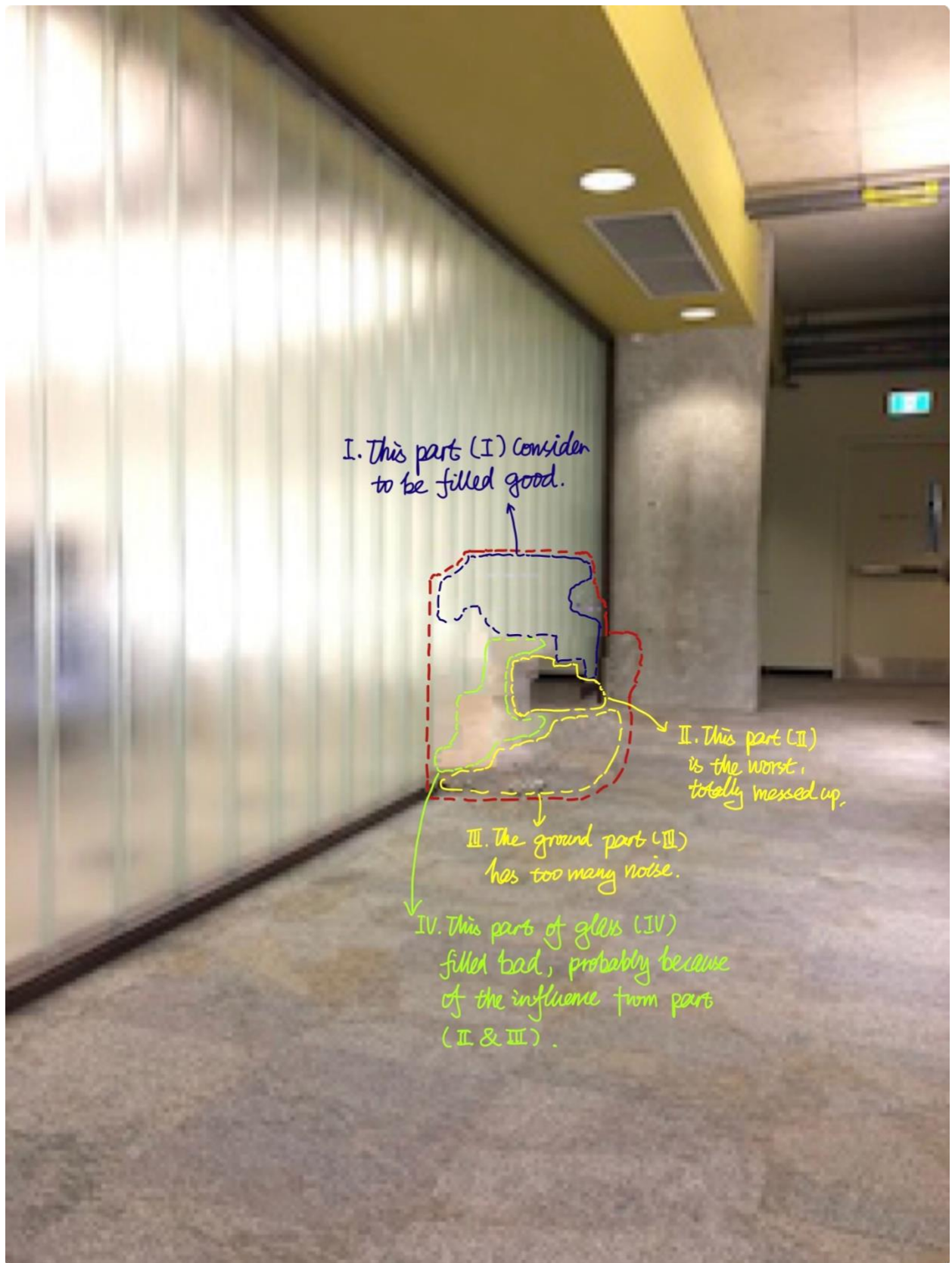
#### - Visible artifacts and the reason they occur

In *Source1.inpainted.png*, we can find that in the original image the red circled part should be some grass, but in the output image the red circled part filled with the land color. The reason why this occurred probably because in the *Mask1*, I consider the gap between the lions as the target area, therefore the top outline of the target mask becomes the land and stones in the original image. Hence, when we run the algorithm, the top outline part of target area would first to find their similar patches in the original image, i.e.: patches with the land and stones.

**Task4: OUR OWN *BAD CASE*: (patch radius = 5)**







- **Analysis the bad case**

I think the pair (*Source2*, *Mask2*) represents a bad case for inpainting since the filled part looks really bad. In particular in part (II) in the above image, the dark frame from the original image mis-filled the target area and part (III) is blur and has lots of noise. The reason why we can get a good result probably because:

- (1) The texture of the ground is too noise.
- (2) In the target area, we are supposed to fill the dark glass frame between the ground and glass, which is hard to achieve by our algorithm. (more analysis give in the next part)

- **Visible artifacts and the reason they occur**

In *Source2.inpainted.png*, there are following three main visible artifacts:

- (1) In the part (II) on the above image, the algorithm wants to fill the frame, but in reality, it fills in the wrong direction. This probably because our algorithm fills the target area according to the outline of the mask in current iteration. Therefore, when filling the glass frame, the algorithm has no idea in which direction the frame should be, but just find the similar patches on the filled part of image.
- (2) In the part (III) on the above image, the filled floor part is blur and noise, this probably because the original floor texture is itself too noise and therefore, it is hard for the algorithm to fill the target area according to the floor texture.
- (3) In the part (IV) on the above image, it is supposed to be the glass but actually it is messed up. This artifact occurs probably because of the implementation of the algorithm. As mentioned above, the algorithm fills the target area according to the outline of the mask in current iteration. Therefore, probably the mess from the part (II) and part (III) together influences this part.