Sunglass Filter

Summary: I am going to create a sunglass filter effect. Three image processing techniques will be used: depth map, convolution, and segmentation. The steps are given below.

Step 1 (Depth Map): Two selfies of a person will be taken in a well-lit environment, ~60 cm far from the camera, and each image taken ~5 cm apart horizontally. The person must look straight into the camera and must not wear anything in the face. Then the image will be converted to greyscale and a depth map will be created. Because the face is close to the camera, the pixel values will be whiter compared to the other pixels. The image below explains it.

Step 2 (Plain Background): Now that we know what pixels are for the face, we will store those pixels in an array. All the other pixels will be set to white for easy segmentation later.
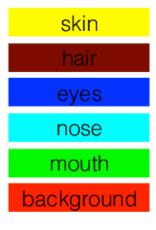

Step 3 (Convolution): A light Gaussian filter will be used to blur all the pixels. This will ensure when we do segmentation, unnecessary details like pimples or scars in the face, do not get segmented.

Step 4 (Segmentation): Finally, we can segment the background and the facial features. We will detect the eyes-brows area and the nose-mouth area from the segmentation and then we can place a sunglass with a transparent background onto the face based on the position of those two areas. It will be placed above the mouth-nose area and in between the two eyes-brows areas.

(247 words)

Link to images:

- https://lolfilter.com/files/preview_image/346143786155948.jpg
- https://aikiddie.files.wordpress.com/2017/05/figure-3-disparity-map-and-depth-map-for-a-concrete-stereo-scene.png
- https://d3i71xaburhd42.cloudfront.net/c48cea0c27c9df398651b4f1722b1179ff1fd19b/1-Figure1-1.png
- https://www.pngfind.com/pngs/m/24-248673_sunglass-clipart-transparent-background-sunglasses-png-no-background.png
- https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQWcaErsNY1XaGsKMBdRuFziqhbUcoTh91PXg&usqp=CAU
- https://cdn.photoworkout.com/images/tips/white-background-portrait/white-background-portrait-19.jpg?scale.option=fill&w=400&h=0
- https://www.usatoday.com/web-stories/want-to-blur-a-face-in-your-video-these-video-and-photo-editing-tools-can-help/assets/33.jpeg