

COL783 Assignment 2

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1 Face Morphing

1.1 Approach

- Established correspondence of features using dlib's automatic facial landmark detection. Additional points can be provided by the user.
- Used Delaunay triangulation to obtain the triangulation of feature points.
- Transformed the corresponding feature triangles of the input images to the destination image feature triangle using Barycentric coordinates.

1.2 Results

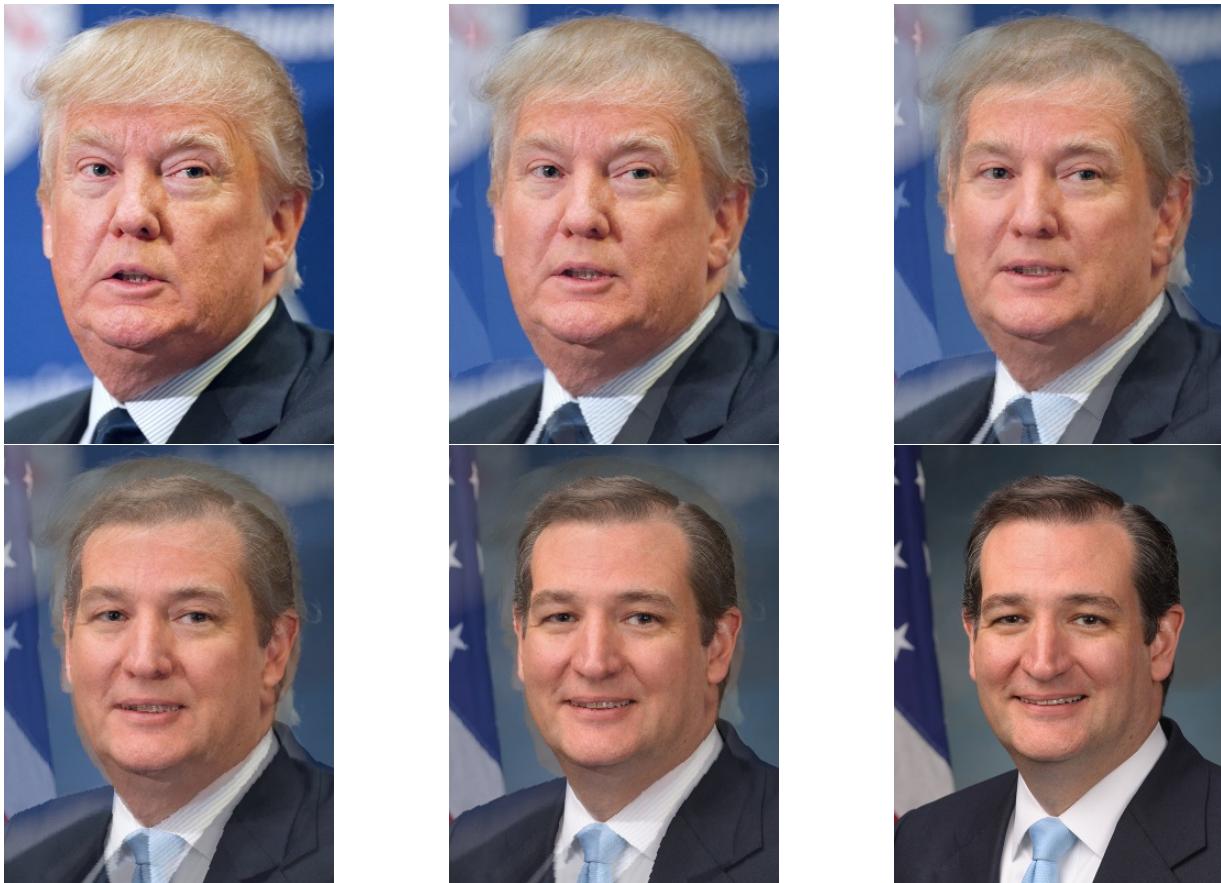


Figure 1: Face Morphing

2 Face Swapping

2.1 Approach

- Similar to the face morphing approach, corresponding feature points were obtained for only the portion of the face to be swapped.
- Computed convex hull followed by delaunay triangulation to get the novice image(simply swapped).
- Implemented local gaussian blurring to change the coloring of the image. We did it by dividing the source image by the gaussian blur of second image followed by multiplication with gaussian blur of source image.
- Implemented Seamless Cloning for colour correction and boundary smoothing using finite difference approximation and conjugate gradient method to solve the matrix equation.
- Used alpha blending for the final image to reduce sharp boundaries.

2.2 Results



(a) Image 1



(b) Image 2



(c) Gaussian Blur



(d) Seamless Cloning

Figure 2: Face Swapping 1



(a) Image 1



(b) Image 2



(c) Gaussian Blur



(d) Seamless Cloning

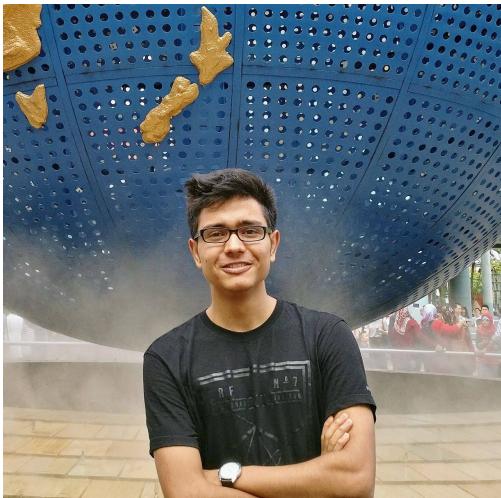
Figure 3: Face Swapping 2

3 Filters for augmenting face

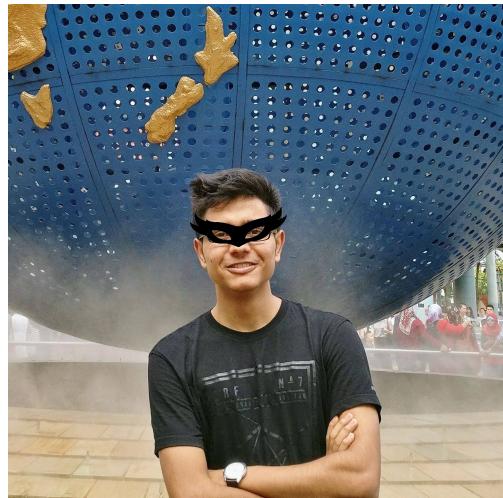
3.1 Approach

- Used three filters - moustache, eye mask and jaw cover filter.
- Used dlib's automatic feature extractor to get the face landmarks.
- Used affine transformation/perspective transformation to map the filter to the corresponding feature points and then used alpha blending to get the final image.

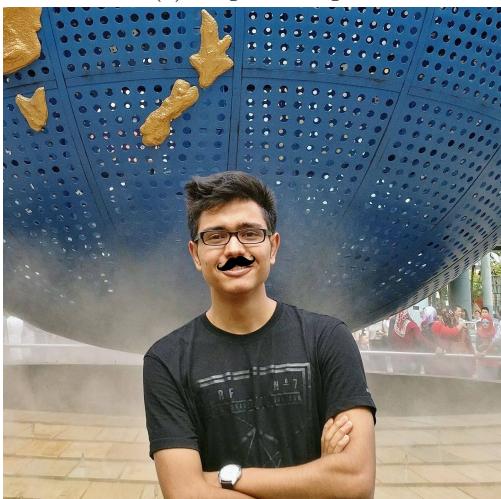
3.2 Results



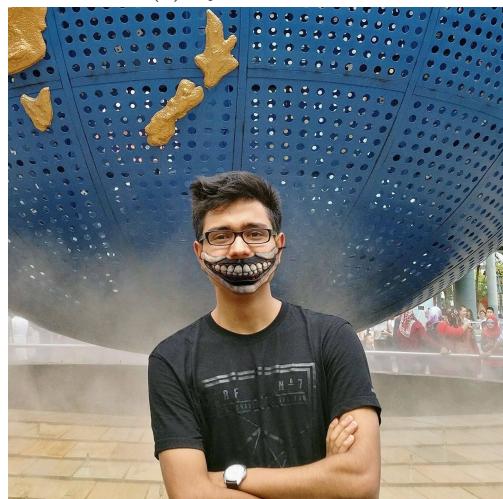
(a) Original Image



(b) Eye Mask Filter



(c) Moustache Filter



(d) Jaws Filter

Figure 4: Part 3