

Face Swap

Aim -: To seamlessly swap faces of 2 people, selected from a database
We divided the problem in 3 mutually exclusive steps

1. Extracting faces from the image using Viola-Jones Algorithm, and used predefined functions (CV toolbox) to extract facial features
2. Using the affine transform to scale and rotate the source image corresponding to the target image. The rotation is done wrt to the angle made by the line joining the eyes in both images, such that the eyes of the images overlap.
3. Extracting the required part of the source image to place on the target image, and then blending the two using poisson blending to merge the two faces

Observations -:

1. Using a sparse matrix for solving the linear equation is much faster
2. We also noticed, that if the sign of the laplacian is reversed, we get very bright patch due increased gradient differences.
3. We also implemented mixed gradient poisson solver, which is useful seamlessly cloning almost transparent source images.
4. The face feature extraction algorithm, is not really reliable, and the accuracy rate is quite low
5. The rotation of the image by affine transform needs to be taken into account while superposing the two images.

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Procedure -: The image on the left, is the target image and the right image is the source image.

The source image is rotated and scaled as to match the eyeline of the target image face when superposed on it.

Following which, we do poisson blending, where we are allowed to select a mask manually from the source image, which is then blended separately for the 3 channels and merged.

Mixed Gradient -:



Work Allotment -:

Tanya - Affine transform for image alignment

Arunabh - manual mask feature, tuning the affine transform, mixed gradients

Chinmay - poisson blending algorithm, helped in the mask feature and mixed gradients method